

8/24/2016



August 24, 2016

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

Re: CHPRC SAF F16-028
Work Order: 402432
SDG: GEL402432

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 27, 2016. 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: per COC + price code
Chain of Custody: F16-028-016 and F16-028-018
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-028
SDG: GEL402432**

August 24, 2016

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on July 27, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. 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 and DER.

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
402432001	B35XH3
402432002	B35HX5

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: General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

8/24/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL402432
Work Order #: 402432

Metals

Determination of Metals by ICP-MS

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

Technical Information

Sample Dilutions

The ICPMS solid samples in this SDG were diluted the standard two times.

	402432	
Analyte	001	002
Uranium	2X	2X

General Chemistry

Ion Chromatography

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

Technical Information

Sample Re-analysis

Samples 1203607493 (MB), 1203607494 (B35HX5DUP), 1203607495 (B35HX5MS), 1203607502 (LCS), 402432001 (B35XH3) and 402432002 (B35HX5) were re-analyzed due to instrument failure. The results from the reanalysis are reported.

pH

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

Technical Information

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203594901 (B35XH3DUP)	pH	Received 27-JUL-16, out of holding 25-JUL-16
402432001 (B35XH3)	pH	Received 27-JUL-16, out of holding 25-JUL-16
402432002 (B35HX5)	pH	Received 27-JUL-16, out of holding 25-JUL-16

Radiochemistry**AMCMISO_EIE_PRECIP_AEA: COMMON**

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

Technical Information**Recounts**

Sample 402432001 (B35XH3) was recounted due to a peak shift. The recount is reported.

PUISO_PRECIP_AEA:COMMON

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

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

Refer to Miscellaneous Information section.

Miscellaneous Information**THISO_IE_PLATE_AEA: COMMON**

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

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

Refer to Miscellaneous Information section.

Miscellaneous Information**UIISO_IE_PRECIP_AEA:COMMON**

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

Technical Information**Recounts**

The batch was recounted due to count room analyst error. The recounts are reported, with the exception of the Method blank 1203594344. The Method blank 1203594344 was recounted a second due to a blank false positive and the second recount is reported.

NP237_IE_PRECIP_AEA: COMMON

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

Technical Information**Sample Re-prep/Re-analysis**

Samples were reprepared due to low carrier/tracer yield. The re-analysis is being reported.

Dry Weight

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.

I129_SEP_LEPS_GS

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.

GAMMA_GS:COMMON + (Add-on)

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.

SRTOT_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.

Technical Information**Recounts**

Sample 1203601566 (MB) was recounted due to a suspected blank false positive. The recount is reported.
Sample 402432002 (B35HX5) was recounted due to results more negative than the three sigma TPU. The second count is reported.

TC99_SEP_GPC

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.

C14_LSC: COMMON

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

TRITIUM_DIST_LSC: COMMON

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

Technical Information**Recounts**

Samples were recounted due to low recovery. The recounts are reported.

NI63_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

Sample Re-prep/Re-analysis

Samples were reprepared due to low recovery. The re-analysis is being 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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 402432				F16-028-016	PAGE 1 OF 2
COLLECTOR Ed Kauer CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days	
SAMPLING LOCATION C9411, I-001	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028	AIR QUALITY <input type="checkbox"/>			
ICE CHEST NO. GWS-559	FIELD LOGBOOK NO. HNF-N-645 5-3210	ACTUAL SAMPLE DEPTH 166.53-169.03	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL		
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 6807	BILL OF LADING/AIR BILL NO. 7768436 28843				
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 are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION	Cool <=6C	None	None	None	None
		HOLDING TIME	6 Months	6 Months	6 Months	None	ASAP
		TYPE OF CONTAINER	G/P	G/P	G/P	Moisture Resistant Cont	G/P
		NO. OF CONTAINER(S)	1	1	1	1	1
		VOLUME	250mL	250mL	500mL	200g	60mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B35XH3	SOIL	JUL 25 2016	0950	✓	✓	✓	✓

8/24/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Ed Kauer CHPRC	DATE/TIME JUL 25 2016	RECEIVED BY/STORED IN SSU #1	DATE/TIME JUL 25 2016	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUL 26 2016 0930	RECEIVED BY/STORED IN J.C. Fulton	DATE/TIME JUL 26 2016 0930		
RELINQUISHED BY/REMOVED FROM J.C. Fulton CHPRC	DATE/TIME JUL 26 2016 1400	RECEIVED BY/STORED IN CHPRC FEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Sarah Ball	DATE/TIME 7/27/16 0855		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 402432			F16-028-016	PAGE 2 OF 2
COLLECTOR Ed Kauer CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H	DATA TURNAROUND
SAMPLING LOCATION C9411, I-001	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028	AIR QUALITY <input type="checkbox"/>	30 Days / 30 Days	
ICE CHEST NO. <i>GWS-SS9</i>	FIELD LOGBOOK NO. HNF-N-645 <i>5-0810</i>	ACTUAL SAMPLE DEPTH <i>166.53-169.03</i>	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. <i>6867</i>	BILL OF LADING/AIR BILL NO. <i>776843628843</i>				

SPECIAL INSTRUCTIONS

- (1) 6020_METALS_ICPMS: COMMON (Add-on) {Uranium}; 9056_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 9056_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate};
- (2) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Radium-226, Radium-228};
- (3) AMCMISO_IE_PRECIP_AEA: COMMON {Americium-241}; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; PUIISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TC99_EIE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-232}; UIISO_IE_PRECIP_AEA: COMMON; NP237_IE_PRECIP_AEA: COMMON; TRITIUM_DIST_LSC: COMMON;
- (4) Moisture Content - D2216 {Percent moisture (wet sample)};
- (5) 9045_pH (Non-Aqueous): COMMON {pH Measurement};

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 402432				F16-028-018	PAGE 1 OF 2
COLLECTOR Ed Kauer CHPRC		COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9411, I-002		PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. GWS-SS9		FIELD LOGBOOK NO. HNF-N-645 5 - 0610	ACTUAL SAMPLE DEPTH 172.5-175.0	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. 6857		BILL OF LADING/AIR BILL NO. 7768 43628843			
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 are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION	Cool <=6C	None	None	None	None
		HOLDING TIME	6 Months	6 Months	6 Months	None	ASAP
		TYPE OF CONTAINER	G/P	G/P	G/P	Moisture Resistant Cont.	G/P
		NO. OF CONTAINER(S)	1	1	1	1	1
		VOLUME	250mL	250mL	500mL	200g	60mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B35XH5	SOIL	JUL 2 5 2016	1350	✓	✓	✓	✓

8/24/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Ed Kauer CHPRC	DATE/TIME JUL 2 5 2016	RECEIVED BY/STORED IN SSU #1	DATE/TIME JUL 2 5 2016	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUL 2 6 2016 0930	RECEIVED BY/STORED IN J.C. Fulton CHPRC	DATE/TIME JUL 2 6 2016 0930		
RELINQUISHED BY/REMOVED FROM J.C. Fulton CHPRC	DATE/TIME JUL 2 6 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Sara Grinball	DATE/TIME 7/27/16 0855		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 402432			F16-028-018	PAGE 2 OF 2
COLLECTOR Ed Kauer CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9411, I-002	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GLWS-SS9	FIELD LOGBOOK NO. HNF-N-645 5 - p10	ACTUAL SAMPLE DEPTH 172.5 - 175.0	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 6867		BILL OF LADING/AIR BILL NO. 776843628843			

SPECIAL INSTRUCTIONS

- (1) 6020_METALS_ICPMS: COMMON (Add-on) {Uranium}; 9056_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 9056_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate};
- (2) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Radium-226, Radium-228};
- (3) AMCMISO_IE_PRECIP_AEA: COMMON {Americium-241}; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; PUIISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TC99_EIE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-232}; UIISO_IE_PRECIP_AEA: COMMON; NP237_IE_PRECIP_AEA: COMMON; TRITIUM_DIST_LSC: COMMON;
- (4) Moisture Content - D2216 {Percent moisture (wet sample)};
- (5) 9045_pH (Non-Aqueous): COMMON {pH Measurement};

8/24/2016

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRL</u>		SDG/AR/COC/Work Order: <u>402432</u>
Received By: <u>Sarah Drimball</u>		Date Received: <u>7/26/16 7/27/16 SAG</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.
COC/Samples marked as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>Open</u>
Classified Radioactive II or III by RSO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1°C</u>
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>E5102009184</u>
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9	Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: <u>all containers of B35XHB are noted with a time of 13</u>
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7768 4362 8843</u>

Comments (Use Continuation Form if needed):

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 24 August 2016

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402432
Work Order #: 402432

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1585234

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 26
Preparation Batch: 1585233

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203593443	Method Blank (MB)ICP-MS
1203593444	Laboratory Control Sample (LCS)
1203593447	402432001(B35XH3L) Serial Dilution (SD)
1203593445	402432001(B35XH3D) Sample Duplicate (DUP)
1203593446	402432001(B35XH3S) Matrix Spike (MS)

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

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

	402432	
Analyte	001	002
Uranium	2X	2X

Certification Statement

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

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL402432 GEL Work Order: 402432

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- D Results are reported from a diluted aliquot of sample.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 23 AUG 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402432

CONTRACT: CPRC0F16028

METHOD TYPE: SW846

SAMPLE ID:402432001

BASIS: Dry Weight

DATE COLLECTED 25-JUL-16

CLIENT ID: B35XH3

LEVEL: Low

DATE RECEIVED 27-JUL-16

MATRIX: SOIL

%SOLIDS: 83

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	1230	ug/kg	D	15.7	47.5	47.5	2	MS	SKJ	08/16/16 13:09	160816-1	1585234

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1585234	1585233	SW846 3050B	0.51	g	50	mL	07/27/16	JP1

***Analytical Methods:**

MS SW846 3050B/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402432

CONTRACT: CPRC0F16028

METHOD TYPE: SW846

SAMPLE ID:402432002

BASIS: Dry Weight

DATE COLLECTED 25-JUL-16

CLIENT ID: B35XH5

LEVEL: Low

DATE RECEIVED 27-JUL-16

MATRIX: SOIL

%SOLIDS: 94

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	835	ug/kg	D	13.9	42.1	42.1	2	MS	SKJ	08/16/16 13:15	160816-1	1585234

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1585234	1585233	SW846 3050B	0.506	g	50	mL	07/27/16	JP1

***Analytical Methods:**

MS SW846 3050B/6020A

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 24, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402432

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1585234										
QC1203593445	402432001	DUP									
Uranium		D	1230	D	1290	ug/kg	5.18	(0%-20%)	SKJ	08/16/16	13:10
QC1203593444	LCS										
Uranium	4590		D		4680	ug/kg		102 (34%-166%)		08/16/16	13:08
QC1203593443	MB										
Uranium			DU		12.6	ug/kg				08/16/16	13:06
QC1203593446	402432001	MS									
Uranium	5960	D	1230	D	7070	ug/kg		98.1 (75%-125%)		08/16/16	13:12
QC1203593447	402432001	SDILT									
Uranium		D	5.17	D	1.07	ug/L	3.83	(0%-10%)		08/16/16	13:13

Notes:

The Qualifiers in this report are defined as follows:

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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 402432

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

General Chem Analysis

Case Narrative

**General Chemistry
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL402432
 Work Order #: 402432**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1590724 and 1590721

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35HX5
1203607493	Method Blank (MB)
1203607494	402432002(B35HX5) Sample Duplicate (DUP)
1203607495	402432002(B35HX5) Matrix Spike (MS)
1203607502	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information**Sample Re-analysis**

Samples 1203607493 (MB), 1203607494 (B35HX5DUP), 1203607495 (B35HX5MS), 1203607502 (LCS), 402432001 (B35XH3) and 402432002 (B35HX5) were re-analyzed due to instrument failure. The results from the reanalysis are reported.

Product: pH**Analytical Method:** SW846 9045D**Analytical Procedure:** GL-GC-E-008 REV# 21**Analytical Batch:** 1585798

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35HX5
1203594900	Laboratory Control Sample (LCS)
1203594901	402432001(B35XH3) Sample Duplicate (DUP)

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

Data Summary:

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

Technical Information**Holding Times**

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203594901 (B35XH3DUP)	pH	Received 27-JUL-16, out of holding 25-JUL-16
402432001 (B35XH3)	pH	Received 27-JUL-16, out of holding 25-JUL-16
402432002 (B35HX5)	pH	Received 27-JUL-16, out of holding 25-JUL-16

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL402432 GEL Work Order: 402432

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Kristen Mizzell

Date: 23 AUG 2016

Title: Analyst I

Sample Data Summary

8/24/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: August 23, 2016

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-028

Client Sample ID: B35XH3 Project: CPRC0F16028
 Sample ID: 402432001 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 25-JUL-16 09:50
 Receive Date: 27-JUL-16
 Collector: Client
 Moisture: 17.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Chloride		3530	870	2420	ug/Kg	9.98	1	MXL2	08/19/16	1144	1590724	1
Fluoride	B	883	411	1210	ug/Kg	9.98	1					
Nitrate-N		13300	399	1210	ug/Kg	9.98	1					
Nitrite-N	U	399	399	1210	ug/Kg	9.98	1					
Phosphorus in phosphate	U	809	809	2420	ug/Kg	9.98	1					
Sulfate		27800	1610	4830	ug/Kg	9.98	1					

Titration and Ion Analysis												
9045_pH (Non-Aqueous):COMMON "As Received"												
pH at Temp 24.2C	X	8.58	0.010	0.100	SU		1	RXB5	07/28/16	1931	1585798	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	MAR1	08/18/16	1015	1590721

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	SW846 9045D	

Notes:

Column headers are defined as follows:

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

8/24/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: August 23, 2016

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-028

Client Sample ID: B35HX5 Project: CPRC0F16028
 Sample ID: 402432002 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 25-JUL-16 13:50
 Receive Date: 27-JUL-16
 Collector: Client
 Moisture: 6.05%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Chloride	B	1350	763	2120	ug/Kg	9.95	1	MXL2	08/19/16	1214	1590724	1
Fluoride	B	765	360	1060	ug/Kg	9.95	1					
Nitrate-N		3550	349	1060	ug/Kg	9.95	1					
Nitrite-N	U	349	349	1060	ug/Kg	9.95	1					
Phosphorus in phosphate	U	710	710	2120	ug/Kg	9.95	1					
Sulfate		9820	1410	4240	ug/Kg	9.95	1					

Titration and Ion Analysis												
9045_pH (Non-Aqueous):COMMON "As Received"												
pH at Temp 24.0C	X	8.83	0.010	0.100	SU		1	RXB5	07/28/16	1934	1585798	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	MAR1	08/18/16	1015	1590721

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	SW846 9045D	

Notes:

Column headers are defined as follows:

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 23, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402432

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1590724										
QC1203607494	402432002	DUP									
Chloride	B	1350	B	1440	ug/Kg	6.15	^	(+/-2120)	MXL2	08/19/16	12:44
Fluoride	B	765	B	756	ug/Kg	1.11	^	(+/-1060)			
Nitrate-N		3550		3530	ug/Kg	0.569	^	(+/-1060)			
Nitrite-N	U	349	U	349	ug/Kg	N/A					
Phosphorus in phosphate	U	710	U	710	ug/Kg	N/A					
Sulfate		9820		9660	ug/Kg	1.62	^	(+/-4240)			
QC1203607502	LCS										
Chloride	50000			48300	ug/Kg			96.6	(80%-120%)	08/19/16	11:14
Fluoride	25000			23400	ug/Kg			93.7	(80%-120%)		
Nitrate-N	25000			24000	ug/Kg			95.9	(80%-120%)		
Nitrite-N	25000			24100	ug/Kg			96.5	(80%-120%)		
Phosphorus in phosphate	12500			12300	ug/Kg			98.1	(80%-120%)		
Sulfate	100000			95600	ug/Kg			95.6	(80%-120%)		
QC1203607493	MB										
Chloride			U	720	ug/Kg					08/19/16	10:44
Fluoride			U	340	ug/Kg						
Nitrate-N			U	330	ug/Kg						
Nitrite-N			U	330	ug/Kg						
Phosphorus in phosphate			U	670	ug/Kg						
Sulfate			U	1330	ug/Kg						
QC1203607495	402432002 MS										

GEL LABORATORIES LLC

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

QC Summary

Workorder: 402432

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1590724										
Chloride	53100	B	1350	51100	ug/Kg		93.7	(48%-145%)		08/19/16	13:14
Fluoride	26500	B	765	24200	ug/Kg		88.2	(30%-135%)	MXL2		
Nitrate-N	26500		3550	28700	ug/Kg		94.7	(70%-125%)			
Nitrite-N	26500	U	349	26000	ug/Kg		98	(70%-120%)			
Phosphorus in phosphate	13300	U	710	11000	ug/Kg		80.6	(35%-134%)			
Sulfate	106000		9820	111000	ug/Kg		95.4	(45%-162%)			

Titration and Ion Analysis

Batch	1585798										
QC1203594901	402432001	DUP									
pH		X	8.58	X	8.49	SU	1.05	(0%-30%)	RXB5	07/28/16	19:33
QC1203594900	LCS										
pH	7.00				6.99	SU	99.9	(70%-130%)		07/28/16	19:29

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

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

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

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402432
Work Order #: 402432

Product: AMCMISO_EIE_PRECIP_AEA: COMMON

Analytical Method: AMCMISO_EIE_PREC_AEA

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

Analytical Batch: 1585577

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594332	Method Blank (MB)
1203594333	402432001(B35XH3) Sample Duplicate (DUP)
1203594334	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" 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 402432001 (B35XH3) was recounted due to a peak shift. The recount is reported.

Product: PUIISO_PRECIP_AEA:COMMON

Analytical Method: PUIISO_PRECIP_AEA

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

Analytical Batch: 1585579

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594338	Method Blank (MB)
1203594339	402432001(B35XH3) Sample Duplicate (DUP)
1203594340	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" 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: Refer to Miscellaneous Information section.

Miscellaneous Information

1. Samples 402432002 and 1203594339 do not meet the resolution requirement of having a full width half maximum of 100 keV or less for the Pu-242 tracer. 2. The Pu-242 tracer peak centroid for sample 402432001 is greater than 50 keV from the expected energy value of 4890 keV. 1. The samples do meet the tracer yield requirement, the detection limits, and their tracer peaks are within the Pu-242 region of interest. Reporting results. 2. The sample does meet the tracer yield requirement, the detection limits, and its tracer peak is within the Pu-242 region of interest. Reporting results.

Product: THISO_IE_PLATE_AEA: COMMON

Analytical Method: THISO_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-038 REV# 17

Analytical Batch: 1585580

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594341	Method Blank (MB)
1203594342	402432001(B35XH3) Sample Duplicate (DUP)
1203594343	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" 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: Refer to Miscellaneous Information section.

Miscellaneous Information

1. The Th-229 tracer for the Method blank 1203594341 is greater than 50 keV from the expected energy of 4900 keV. 1. The tracer yield peak is within the Th-229 ROI and the tracer yield recovery does meet the acceptance criteria. Reporting results.

Product: UISO_IE_PRECIP_AEA:COMMON

Analytical Method: UISO_IE_PRECIP_AEA

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

Analytical Batch: 1585581

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594344	Method Blank (MB)
1203594345	402432001(B35XH3) Sample Duplicate (DUP)
1203594346	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information**Recounts**

The batch was recounted due to count room analyst error. The recounts are reported, with the exception of the Method blank 1203594344. The Method blank 1203594344 was recounted a second due to a blank false positive and the second recount is reported.

Product: NP237_IE_PRECIP_AEA: COMMON

Analytical Method: NP237_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-032 REV# 21

Analytical Batch: 1587760

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203599717	Method Blank (MB)
1203599718	402432001(B35XH3) Sample Duplicate (DUP)
1203599719	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Sample Re-prep/Re-analysis

Samples were re-prepped due to low carrier/tracer yield. The re-analysis is being reported.

Product: Dry Weight

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5

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: I129_SEP_LEPS_GS

Analytical Method: I129_SEP_LEPS_GS

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1585659

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594530	Method Blank (MB)
1203594531	402432001(B35XH3) Sample Duplicate (DUP)
1203594532	402432001(B35XH3) Matrix Spike (MS)
1203594533	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: GAMMA_GS:COMMON + (Add-on)

Analytical Method: GAMMA_GS

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

Analytical Batch: 1585665

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203594554	Method Blank (MB)
1203594555	402432002(B35XH5) Sample Duplicate (DUP)

1203594556 Laboratory Control Sample (LCS)

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

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
X	Data rejected due to interference.	Europium-155	402432001	B35XH3
			1203594555	B35XH5(402432002DUP)

Product: SRTOT_SEP_PRECIP_GPC: COMMON

Analytical Method: SRTOT_SEP_PRECIP_GPC

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

Analytical Batch: 1588469

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203601566	Method Blank (MB)
1203601567	402432002(B35XH5) Sample Duplicate (DUP)
1203601568	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" 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 1203601566 (MB) was recounted due to a suspected blank false positive. The recount is reported.

Sample 402432002 (B35XH5) was recounted due to results more negative than the three sigma TPU. The second count is reported.

Product: TC99_SEP_GPC

Analytical Method: TC99_EIE_LSC

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

Analytical Batch: 1588132

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203600560	Method Blank (MB)
1203600561	402432001(B35XH3) Sample Duplicate (DUP)
1203600562	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: C14_LSC: COMMON

Analytical Method: C14_LSC

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

Analytical Batch: 1588489

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203601657	Method Blank (MB)
1203601658	402432001(B35XH3) Sample Duplicate (DUP)
1203601659	402432001(B35XH3) Matrix Spike (MS)
1203601660	Laboratory Control Sample (LCS)

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

Data Summary:

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

continuing calibration, instrument controls and process controls where applicable.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

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

Analytical Batch: 1588517

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203601770	Method Blank (MB)
1203601771	402432001(B35XH3) Sample Duplicate (DUP)
1203601772	402432001(B35XH3) Matrix Spike (MS)
1203601773	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Recounts

Samples were recounted due to low recovery. The recounts are reported.

Product: NI63_LSC

Analytical Method: NI63_LSC

Analytical Procedure: GL-RAD-A-022 REV# 18

Analytical Batch: 1591683

Preparation Method: ASTM D 2216 (Modified)

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1585379

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402432001	B35XH3
402432002	B35XH5
1203609943	Method Blank (MB)

1203609944 402432001(B35XH3) Sample Duplicate (DUP)
1203609945 Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Sample Re-prep/Re-analysis

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

Certification Statement

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

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL402432 GEL Work Order: 402432

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.

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

Review/Validation

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

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

Signature: 

Name: Kate Gellatly

Date: 24 AUG 2016

Title: Analyst I

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1585577	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 08/16/2016 13:59	Analyst: MXS2	Instrument: 1065
Data File: S0402432001_AM.2A.gcnf	Aliquot: 0.107 g	Count Time: 240 min
Prep Batch: 1585577	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 08/02/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.0792	pCi/g	+/-0.223	0.223	0.238	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	16.2	20.0	pCi/g	81.3	(30%-105%)

Comments:

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
 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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1585579	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 08/03/2016 12:02	Analyst: MXS2	Instrument: 1254
Data File: S0402432001_PU.1A.gcnf	Aliquot: 0.107 g	Count Time: 240 min
Prep Batch: 1585579	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 08/02/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0998	pCi/g	+/-0.281	0.281	0.299	1.00
OER-100-70	Plutonium-239/240	U	-0.0479	pCi/g	+/-0.212	0.212	0.553	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	12.9	18.4	pCi/g	70.2	(30%-105%)

Comments:

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
 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: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1585580
Run Date: 08/04/2016 10:39
Data File: S0402432001_TH.1A.gcnf
Prep Batch: 1585580
Prep Date: 08/02/2016 00:00

Method: THISO_IE_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.101 g
Prep Method: DOE EML HASL-300, Th-01-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-038
Instrument: 1170
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
TH-232 <small>7440-29-1</small>	Thorium-232		1.63	pCi/g	+/-0.805	0.848	0.380	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Thorium-229 Tracer	14.7	20.1	pCi/g	73.1	(30%-105%)

Comments:

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

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: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1585581
Run Date: 08/17/2016 09:00
Data File: S0402432001_UU.2A.gcnf
Prep Batch: 1585581
Prep Date: 08/02/2016 00:00

Method: UIISO_IE_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.107 g
Prep Method: DOE EML HASL-300, U-02-R

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1018
Count Time: 239.9998 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.18	pCi/g	+/-0.591	0.612	0.571	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.306	pCi/g	+/-0.337	0.340	0.230	1.00
7440-61-1	Uranium-238		0.916	pCi/g	+/-0.505	0.520	0.434	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	17.6	19.5	pCi/g	90.4	(30%-105%)

Comments:

- 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
- 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: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1587760
Run Date: 08/06/2016 13:26
Data File: S0402432001_NP.2A.gcnf
Prep Batch: 1587760
Prep Date: 08/04/2016 00:00

Method: NP237_IE_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.102 g
Prep Method: ASTM C 1476-00 Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-032
Instrument: 1035
Count Time: 239.9998 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.182	pCi/g	+/-0.312	0.312	0.777	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1860	1970	pCi/g	94.3	(30%-105%)

Comments:

- 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
- 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: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1588469
Run Date: 08/22/2016 17:16
Data File: S1588469r2.xls
Prep Batch: 1588469
Prep Date: 08/19/2016 00:00

Method: SRTOT_SEP_PRECIP_GPC
Analyst: KSD1
Aliquot: 0.355 g
Prep Method: EPA 905.0 Modified/DOE RP5

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-004
Instrument: PIC5B
Count Time: 60 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	-0.136	pCi/g	+/-0.531	0.531	1.06	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.50	7.37	mg	102	(40%-110%)

Comments:

- 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
- 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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "As Received"
Batch ID: 1585659	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 08/22/2016 11:08	Analyst: MJH1	Instrument: XRAY5
Data File: I402432001.CNF;1	Aliquot: 1.47 g	Count Time: 60 min
Prep Batch: 1585659	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 08/19/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.435	pCi/g	+/-0.415	0.461	1.26	2.00

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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: GEL402432
 Lab Sample ID: 402432001

 Client ID: B35XH3
 Batch ID: 1585665
 Run Date: 08/19/2016 05:53
 Data File: G402432001.CNF;2
 Prep Batch: 1585665
 Prep Date: 07/29/2016 00:00

Client: CPRC001
 Date Collected: 07/25/2016 09:50
 Date Received: 07/27/2016 08:55

 Method: GAMMA_GS
 Analyst: MXR1
 Aliquot: 119.145 g
 Prep Method: DOE HASL 300, 4.5.2.3/Ga-01

Project: CPRC0F16028
 Matrix: SOIL
 %Moisture: 17.4

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM06
 Count Time: 720 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.0152	pCi/g	+/-0.0179	0.0192	0.0263	0.100
10198-40-0	Cobalt-60	U	-0.00877	pCi/g	+/-0.0163	0.0168	0.0279	0.100
14683-23-9	Europium-152	U	-0.0293	pCi/g	+/-0.0437	0.0458	0.0656	0.100
15585-10-1	Europium-154	U	-0.00697	pCi/g	+/-0.0568	0.0569	0.0854	0.100
14391-16-3	Europium-155	UX	0.00	pCi/g	+/-0.0668	0.0671	0.0673	0.100
13982-63-3	Radium-226		0.950	pCi/g	+/-0.0692	0.106	0.0496	1.00
15262-20-1	Radium-228		1.39	pCi/g	+/-0.132	0.225	0.0986	3.00

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.
 X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
 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: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1588132
Run Date: 08/17/2016 08:10
Data File: E1588132.xls
Prep Batch: 1588132
Prep Date: 08/11/2016 13:02

Method: TC99_EIE_LSC
Analyst: CXS7
Aliquot: 1.232 g
Prep Method: DOE EML HASL-300, Tc-02-

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-059
Instrument: LSCGOLD
Count Time: 20 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.53	pCi/g	+/-1.90	1.90	3.40	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	27400	31800	CPM	86.1	(30%-105%)

Comments:

- 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
- 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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "As Received"
Batch ID: 1588489	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 08/18/2016 06:39	Analyst: TXJ1	Instrument: LSCYELLOW
Data File: C1588489.xls	Aliquot: 0.56 g	Count Time: 45 min
Prep Batch: 1588489	Prep Method: EPA EERF C-01 Modified	
Prep Date: 08/17/2016 16:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	1.23	pCi/g	+/-1.59	1.59	2.68	5.00

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.
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "As Received"
Batch ID: 1588517	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 08/17/2016 23:11	Analyst: TXJ1	Instrument: LSCGOLD
Data File: T1588517R3.xls	Aliquot: 1.34 g	Count Time: 60 min
Prep Batch: 1588517	Prep Method: EPA 906.0 Modified	
Prep Date: 08/15/2016 15:12		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-5.81	pCi/g	+/-7.41	7.41	13.5	30.0

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.
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
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Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432
Lab Sample ID: 402432001

Client: CPRC001
Date Collected: 07/25/2016 09:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 17.4

Client ID: B35XH3
Batch ID: 1591683
Run Date: 08/23/2016 11:56
Data File: N1591683.xls
Prep Batch: 1591683
Prep Date: 08/22/2016 09:39

Method: NI63_LSC
Analyst: CXS7
Aliquot: 0.523 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCBROWN
Count Time: 30 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	0.607	pCi/g	+/-3.98	3.98	6.90	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	17.4	24.6	mg	70.8	(40%-110%)

Comments:

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 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432001	Date Collected: 07/25/2016 09:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 17.4
Client ID: B35XH3		Prep Basis: "As Received"
Batch ID: 1585379	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 07/28/2016 05:43	Analyst: LYT1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1585379		
Prep Date: 07/28/2016 05:43		

CAS No.	Parmname	Qual	Result	Units	MDC		
%MOISTURE	Moisture		17.4	percent	+/-		
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.
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1585577	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 08/04/2016 15:23	Analyst: MXS2	Instrument: 1110
Data File: S0402432002_AM.1A.gcnf	Aliquot: 0.106 g	Count Time: 240 min
Prep Batch: 1585577	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 08/02/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	-0.0168	pCi/g	+/-0.145	0.145	0.336	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	16.3	20.2	pCi/g	80.7	(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: GEL402432
Lab Sample ID: 402432002

Client: CPRC001
Date Collected: 07/25/2016 13:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 6

Client ID: B35XH5
Batch ID: 1585579
Run Date: 08/03/2016 12:02
Data File: S0402432002_PU.1A.gcnf
Prep Batch: 1585579
Prep Date: 08/02/2016 00:00

Method: PUIISO_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.106 g
Prep Method: DOE EML HASL-300, Pu-11-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1255
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0234	pCi/g	+/-0.245	0.245	0.511	1.00
OER-100-70	Plutonium-239/240	U	0.147	pCi/g	+/-0.289	0.290	0.401	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	15.7	18.6	pCi/g	84.2	(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: GEL402432
 Lab Sample ID: 402432002

Client: CPRC001
 Date Collected: 07/25/2016 13:50
 Date Received: 07/27/2016 08:55

Project: CPRC0F16028
 Matrix: SOIL
 %Moisture: 6

Client ID: B35XH5
 Batch ID: 1585580
 Run Date: 08/04/2016 10:39
 Data File: S0402432002_TH.1A.gcnf
 Prep Batch: 1585580
 Prep Date: 08/02/2016 00:00

Method: THISO_IE_PRECIP_AEA
 Analyst: MXS2
 Aliquot: 0.103 g
 Prep Method: DOE EML HASL-300, Th-01-

Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-038
 Instrument: 1175
 Count Time: 240 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
TH-232 <small>7440-29-1</small>	Thorium-232		1.21	pCi/g	+/-0.595	0.622	0.292	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Thorium-229 Tracer	18.7	19.7	pCi/g	94.9	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432
Lab Sample ID: 402432002

Client: CPRC001
Date Collected: 07/25/2016 13:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 6

Client ID: B35XH5
Batch ID: 1585581
Run Date: 08/18/2016 09:13
Data File: S0402432002_UU.2B.gcnf
Prep Batch: 1585581
Prep Date: 08/02/2016 00:00

Method: UIISO_IE_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.106 g
Prep Method: DOE EML HASL-300, U-02-R

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1013
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.09	pCi/g	+/-0.558	0.578	0.488	1.00
15117-96-1/13982-7	Uranium-235/236		0.448	pCi/g	+/-0.407	0.411	0.373	1.00
7440-61-1	Uranium-238		1.11	pCi/g	+/-0.558	0.577	0.466	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	16.0	19.7	pCi/g	81.6	(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: GEL402432
Lab Sample ID: 402432002

Client: CPRC001
Date Collected: 07/25/2016 13:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 6

Client ID: B35XH5
Batch ID: 1587760
Run Date: 08/06/2016 13:26
Data File: S0402432002_NP.2A.gcnf
Prep Batch: 1587760
Prep Date: 08/04/2016 00:00

Method: NP237_IE_PRECIP_AEA
Analyst: MXS2
Aliquot: 0.102 g
Prep Method: ASTM C 1476-00 Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-032
Instrument: 1043
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.0858	pCi/g	+/-0.138	0.138	0.441	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1790	1970	pCi/g	90.6	(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: GEL402432
Lab Sample ID: 402432002

Client: CPRC001
Date Collected: 07/25/2016 13:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 6

Client ID: B35XH5
Batch ID: 1588469
Run Date: 08/23/2016 10:46
Data File: S1588469r2.xls
Prep Batch: 1588469
Prep Date: 08/19/2016 00:00

Method: SRTOT_SEP_PRECIP_GPC
Analyst: KSD1
Aliquot: 0.342 g
Prep Method: EPA 905.0 Modified/DOE RP5

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-004
Instrument: PIC5C
Count Time: 60 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	-0.276	pCi/g	+/-0.533	0.533	1.09	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.10	7.37	mg	96.4	(40%-110%)

Comments:

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TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
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Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "As Received"
Batch ID: 1585659	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 08/22/2016 11:30	Analyst: MJH1	Instrument: XRAY1
Data File: I402432002.CNF;1	Aliquot: 1.072 g	Count Time: 57 min
Prep Batch: 1585659	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 08/19/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.0647	pCi/g	+/-0.662	0.663	1.27	2.00

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: GEL402432
 Lab Sample ID: 402432002

 Client ID: B35XH5
 Batch ID: 1585665
 Run Date: 08/19/2016 05:54
 Data File: G402432002.CNF;2
 Prep Batch: 1585665
 Prep Date: 07/29/2016 00:00

Client: CPRC001
 Date Collected: 07/25/2016 13:50
 Date Received: 07/27/2016 08:55

 Method: GAMMA_GS
 Analyst: MXR1
 Aliquot: 137.504 g
 Prep Method: DOE HASL 300, 4.5.2.3/Ga-01

Project: CPRC0F16028
 Matrix: SOIL
 %Moisture: 6

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM05
 Count Time: 300 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.0102	pCi/g	+/-0.0207	0.0212	0.0315	0.100
10198-40-0	Cobalt-60	U	0.00247	pCi/g	+/-0.0174	0.0174	0.0318	0.100
14683-23-9	Europium-152	U	-0.0159	pCi/g	+/-0.0484	0.049	0.0755	0.100
15585-10-1	Europium-154	U	-0.0301	pCi/g	+/-0.0564	0.0581	0.0978	0.100
14391-16-3	Europium-155	U	0.0503	pCi/g	+/-0.0656	0.0658	0.0702	0.100
13982-63-3	Radium-226		0.849	pCi/g	+/-0.0861	0.112	0.0569	1.00
15262-20-1	Radium-228		1.11	pCi/g	+/-0.136	0.219	0.118	3.00

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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "As Received"
Batch ID: 1588132	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 08/17/2016 08:32	Analyst: CXS7	Instrument: LSCGOLD
Data File: E1588132.xls	Aliquot: 1.219 g	Count Time: 20 min
Prep Batch: 1588132	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 08/11/2016 13:02		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.48	pCi/g	+/-2.25	2.25	4.01	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	23600	31800	CPM	74.1	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "As Received"
Batch ID: 1588489	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 08/18/2016 07:25	Analyst: TXJ1	Instrument: LSCYELLOW
Data File: C1588489.xls	Aliquot: 0.53 g	Count Time: 45 min
Prep Batch: 1588489	Prep Method: EPA EERF C-01 Modified	
Prep Date: 08/17/2016 16:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	2.10	pCi/g	+/-1.70	1.70	2.82	5.00

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

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SDG Number: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "As Received"
Batch ID: 1588517	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 08/18/2016 00:13	Analyst: TXJ1	Instrument: LSCGOLD
Data File: T1588517R3.xls	Aliquot: 1.26 g	Count Time: 60 min
Prep Batch: 1588517	Prep Method: EPA 906.0 Modified	
Prep Date: 08/15/2016 15:12		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-6.68	pCi/g	+/-7.45	7.45	13.6	30.0

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).
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Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402432
Lab Sample ID: 402432002

Client: CPRC001
Date Collected: 07/25/2016 13:50
Date Received: 07/27/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 6

Client ID: B35XH5
Batch ID: 1591683
Run Date: 08/23/2016 12:28
Data File: N1591683.xls
Prep Batch: 1591683
Prep Date: 08/22/2016 09:39

Method: NI63_LSC
Analyst: CXS7
Aliquot: 0.566 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCBROWN
Count Time: 30 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-0.601	pCi/g	+/-3.19	3.19	5.61	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	19.9	24.6	mg	81	(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: GEL402432	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402432002	Date Collected: 07/25/2016 13:50	Matrix: SOIL
	Date Received: 07/27/2016 08:55	%Moisture: 6
Client ID: B35XH5		Prep Basis: "As Received"
Batch ID: 1585379	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 07/28/2016 05:43	Analyst: LYT1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1585379		
Prep Date: 07/28/2016 05:43		

CAS No.	Parmname	Qual	Result	Units	MDC		
%MOISTURE	Moisture		6.05	percent	+/-		
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.

Quality Control Summary

8/24/2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 24, 2016

Page 1 of 8

Client : CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 402432

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1585577								
QC1203594332	MB								
Americium-241			U	-0.052	pCi/g			MXS2	08/04/1615:23
				Uncert: +/-0.120					
				TPU: +/-0.121					
**Americium-243 Tracer	19.6			17.5	pCi/g	REC: 89	(30%-105%)		
				Uncert: +/-2.01					
				TPU: +/-3.13					
QC1203594333	402432001	DUP							
Americium-241		U	0.0792	U	0.0741	pCi/g			
			Uncert: +/-0.223		+/-0.208		RPD: 0	N/A	
			TPU: +/-0.223		+/-0.209		RER: 0.0332	(0-2)	
**Americium-243 Tracer	19.6		16.2		13.5	pCi/g	REC: 69	(30%-105%)	
			Uncert: +/-2.45		+/-2.36				
			TPU: +/-3.72		+/-3.59				
QC1203594334	LCS								
Americium-241					20.1	pCi/g	REC: 111	(80%-120%)	08/04/1615:22
					Uncert: +/-2.27				
					TPU: +/-3.50				
**Americium-243 Tracer	19.6				20.2	pCi/g	REC: 103	(30%-105%)	
					Uncert: +/-2.23				
					TPU: +/-3.42				
Batch	1585579								
QC1203594338	MB								
Plutonium-238			U	0.178	pCi/g			MXS2	08/03/1612:02
				Uncert: +/-0.350					
				TPU: +/-0.351					
Plutonium-239/240			U	0.0283	pCi/g				
				Uncert: +/-0.296					
				TPU: +/-0.296					
**Plutonium-242 Tracer	18.1				11.9	pCi/g	REC: 66	(30%-105%)	
					Uncert: +/-2.67				
					TPU: +/-3.91				
QC1203594339	402432001	DUP							
Plutonium-238		U	0.0998	U	0.238	pCi/g			08/03/1615:12
			Uncert: +/-0.281		+/-0.342		RPD: 0	N/A	
			TPU: +/-0.281		+/-0.344		RER: 0.608	(0-2)	
Plutonium-239/240		U	-0.0479	U	0.0895	pCi/g			
			Uncert: +/-0.212		+/-0.306		RPD: 0	N/A	
			TPU: +/-0.212		+/-0.306		RER: 0.723	(0-2)	
**Plutonium-242 Tracer	18.1		12.9		14.4	pCi/g	REC: 79	(30%-105%)	
			Uncert: +/-2.67		+/-2.46				
			TPU: +/-3.93		+/-3.62				
QC1203594340	LCS								
Plutonium-238			U	0.217	pCi/g				08/03/1615:12
				Uncert: +/-0.313					

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1585579								
Plutonium-239/240	18.1	TPU:		+/-0.314					
		Uncert:		18.4	pCi/g	REC: 101	(80%-120%)		
		TPU:		+/-2.37					
**Plutonium-242 Tracer	18.1	TPU:		+/-3.52					
		Uncert:		15.2	pCi/g	REC: 84	(30%-105%)		
		TPU:		+/-2.35					
		TPU:		+/-3.48					
Batch	1585580								
QC1203594341	MB								
Thorium-232			U	-0.0947	pCi/g			MXS2	08/04/1610:40
		Uncert:		+/-0.385					
		TPU:		+/-0.387					
**Thorium-229 Tracer	19.5			7.46	pCi/g	REC: 38	(30%-105%)		
		Uncert:		+/-3.74					
		TPU:		+/-5.56					
QC1203594342	402432001	DUP							
Thorium-232		1.63		1.75	pCi/g				08/04/1610:40
		Uncert:	+/-0.805	+/-0.713		RPD: 7	(0% - 100%)		
		TPU:	+/-0.848	+/-0.759		RER: 0.206	(0-2)		
**Thorium-229 Tracer	19.5	14.7		19.5	pCi/g	REC: 100	(30%-105%)		
		Uncert:	+/-2.75	+/-2.32					
		TPU:	+/-4.29	+/-3.72					
QC1203594343	LCS								
Thorium-230		20.1		19.7	pCi/g	REC: 98	(80%-120%)		08/04/1610:40
		Uncert:		+/-2.53					
		TPU:		+/-4.02					
Thorium-232			U	0.119	pCi/g				
		Uncert:		+/-0.290					
		TPU:		+/-0.291					
**Thorium-229 Tracer	19.5			16.1	pCi/g	REC: 82	(30%-105%)		
		Uncert:		+/-2.51					
		TPU:		+/-3.95					
Batch	1585581								
QC1203594344	MB								
Uranium-233/234			U	0.519	pCi/g			MXS2	08/18/1616:02
		Uncert:		+/-0.650					
		TPU:		+/-0.658					
Uranium-235/236			U	0.160	pCi/g				
		Uncert:		+/-0.508					
		TPU:		+/-0.510					
Uranium-238			U	0.130	pCi/g				
		Uncert:		+/-0.411					
		TPU:		+/-0.412					
**Uranium-232 Tracer	19.1			17.7	pCi/g	REC: 93	(30%-105%)		
		Uncert:		+/-3.31					
		TPU:		+/-4.89					
QC1203594345	402432001	DUP							
Uranium-233/234		1.18		0.992	pCi/g				08/17/1609:00
		Uncert:	+/-0.591	+/-0.536		RPD: 18	(0% - 100%)		
		TPU:	+/-0.612	+/-0.553		RER: 0.454	(0-2)		

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1585581								
Uranium-235/236		U	0.306	0.593	pCi/g				
		Uncert:	+/-0.337	+/-0.468		RPD:	64 (0% - 100%)		
		TPU:	+/-0.340	+/-0.475		RER:	0.963 (0-2)		
Uranium-238			0.916	0.814	pCi/g				
		Uncert:	+/-0.505	+/-0.470		RPD:	12 (0% - 100%)		
		TPU:	+/-0.520	+/-0.483		RER:	0.283 (0-2)		
**Uranium-232 Tracer		19.1	17.6	16.1	pCi/g	REC:	84 (30%-105%)		
		Uncert:	+/-2.18	+/-2.19					
		TPU:	+/-3.41	+/-3.41					
QC1203594346	LCS								
Uranium-233/234				27.8	pCi/g				
		Uncert:		+/-2.58					
		TPU:		+/-4.55					
Uranium-235/236				1.81	pCi/g				
		Uncert:		+/-0.757					
		TPU:		+/-0.795					
Uranium-238		24.7		27.3	pCi/g	REC:	110 (80%-120%)		
		Uncert:		+/-2.56					
		TPU:		+/-4.48					
**Uranium-232 Tracer		19.1		15.5	pCi/g	REC:	81 (30%-105%)		
		Uncert:		+/-2.15					
		TPU:		+/-3.36					
Batch	1587760								
QC1203599717	MB								
Neptunium-237			U	-0.0503	pCi/g			MXS2	08/06/1613:26
		Uncert:		+/-0.170					
		TPU:		+/-0.170					
**Americium-243 Tracer		1970		1890	pCi/g	REC:	96 (30%-105%)		
QC1203599718	402432001	DUP							
Neptunium-237		U	-0.182	U	-0.0473	pCi/g			
		Uncert:	+/-0.312	+/-0.143		RPD:	0 N/A		
		TPU:	+/-0.312	+/-0.143		RER:	0.767 (0-2)		
**Americium-243 Tracer		1990	1860	1620	pCi/g	REC:	81 (30%-105%)		
QC1203599719	LCS								
Neptunium-237		43.8		50.9	pCi/g	REC:	116 (80%-120%)		
		Uncert:		+/-3.66					
		TPU:		+/-6.76					
**Americium-243 Tracer		1970		1470	pCi/g	REC:	74 (30%-105%)		
Rad Gamma Spec									
Batch	1585659								
QC1203594530	MB								
Iodine-129			U	-0.191	pCi/g			MJH1	08/22/1612:30
		Uncert:		+/-0.373					
		TPU:		+/-0.383					
QC1203594531	402432001	DUP							
Iodine-129		U	0.435	U	0.0841	pCi/g			08/22/1612:30
		Uncert:	+/-0.415	+/-0.357		RPD:	0 N/A		
		TPU:	+/-0.461	+/-0.359		RER:	1.18 (0-2)		
QC1203594532	402432001	MS							
						REC:			

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1585659								
Iodine-129	31.9	U	0.435	33.6	pCi/g	105	(75%-125%)		
	Uncert:		+/-0.415	+/-3.62					
	TPU:		+/-0.461	+/-4.89					
QC1203594533	LCS								
Iodine-129	26.3			27.8	pCi/g	REC: 106	(80%-120%)		08/22/1613:08
	Uncert:			+/-3.37					
	TPU:			+/-4.37					
Batch	1585665								
QC1203594554	MB								
Cesium-137			U	-0.00322	pCi/g			MXR1	08/19/1606:02
	Uncert:			+/-0.025					
	TPU:			+/-0.0251					
Cobalt-60			U	-0.00221	pCi/g				
	Uncert:			+/-0.0195					
	TPU:			+/-0.0195					
Europium-152			U	-0.0134	pCi/g				
	Uncert:			+/-0.0597					
	TPU:			+/-0.060					
Europium-154			U	0.0414	pCi/g				
	Uncert:			+/-0.0464					
	TPU:			+/-0.0501					
Europium-155			U	-0.0304	pCi/g				
	Uncert:			+/-0.0432					
	TPU:			+/-0.0454					
Radium-226			U	0.0022	pCi/g				
	Uncert:			+/-0.0497					
	TPU:			+/-0.0497					
Radium-228			U	0.0203	pCi/g				
	Uncert:			+/-0.123					
	TPU:			+/-0.123					
QC1203594555	402432002	DUP							
Cesium-137		U	-0.0102	U	-0.0134	pCi/g			08/19/1606:03
	Uncert:		+/-0.0207		+/-0.016		RPD: 0	N/A	
	TPU:		+/-0.0212		+/-0.0171		RER: 0.23	(0-2)	
Cobalt-60		U	0.00247	U	-0.013	pCi/g			
	Uncert:		+/-0.0174		+/-0.0157		RPD: 0	N/A	
	TPU:		+/-0.0174		+/-0.0168		RER: 1.25	(0-2)	
Europium-152		U	-0.0159	U	-0.0238	pCi/g			
	Uncert:		+/-0.0484		+/-0.0427		RPD: 0	N/A	
	TPU:		+/-0.049		+/-0.0441		RER: 0.237	(0-2)	
Europium-154		U	-0.0301	U	-0.0313	pCi/g			
	Uncert:		+/-0.0564		+/-0.0544		RPD: 0	N/A	
	TPU:		+/-0.0581		+/-0.0562		RER: 0.0293	(0-2)	
Europium-155		U	0.0503	UX	0.00	pCi/g			
	Uncert:		+/-0.0656		+/-0.0508		RPD: 0	N/A	
	TPU:		+/-0.0658		+/-0.0512		RER: 1.18	(0-2)	
Radium-226			0.849		0.956	pCi/g			
	Uncert:		+/-0.0861		+/-0.0741		RPD: 12	(0% - 20%)	
	TPU:		+/-0.112		+/-0.0846		RER: 1.49	(0-2)	
Radium-228			1.11		1.22	pCi/g			

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1585665								
		Uncert:	+/-0.136	+/-0.134					
		TPU:	+/-0.219	+/-0.147		RPD: 10	(0% - 20%)		
						RER: 0.855	(0-2)		
QC1203594556	LCS								
Americium-241	489			518	pCi/g	REC: 106	(80%-120%)		08/19/1606:29
		Uncert:		+/-5.63					
		TPU:		+/-70.9					
Cesium-137	180			179	pCi/g	REC: 100	(80%-120%)		
		Uncert:		+/-3.70					
		TPU:		+/-15.1					
Cobalt-60	164			160	pCi/g	REC: 97	(80%-120%)		
		Uncert:		+/-4.08					
		TPU:		+/-13.1					
Europium-152			U	1.23	pCi/g				
		Uncert:		+/-1.92					
		TPU:		+/-2.00					
Europium-154			U	-0.335	pCi/g				
		Uncert:		+/-1.28					
		TPU:		+/-1.29					
Europium-155			U	-0.542	pCi/g				
		Uncert:		+/-1.42					
		TPU:		+/-1.44					
Radium-226			U	-1.23	pCi/g				
		Uncert:		+/-1.41					
		TPU:		+/-1.52					
Radium-228			U	2.73	pCi/g				
		Uncert:		+/-4.35					
		TPU:		+/-4.53					
Rad Gas Flow									
Batch	1588469								
QC1203601566	MB								
Total Strontium			U	-0.201	pCi/g			KSD1	08/23/1610:51
		Uncert:		+/-0.299					
		TPU:		+/-0.299					
**Strontium Carrier		7.37		6.60	mg	REC: 90	(40%-110%)		
QC1203601567	402432002	DUP							
Total Strontium		U	-0.276	U	0.387	pCi/g			08/22/1617:24
		Uncert:	+/-0.533	+/-0.827		RPD: 0	N/A		
		TPU:	+/-0.533	+/-0.833		RER: 1.31	(0-2)		
**Strontium Carrier		7.37	7.10	7.00	mg	REC: 95	(40%-110%)		
QC1203601568	LCS								
Total Strontium		45.3		47.3	pCi/g	REC: 104	(80%-120%)		08/22/1617:24
		Uncert:		+/-2.65					
		TPU:		+/-12.2					
**Strontium Carrier		7.37		6.80	mg	REC: 92	(40%-110%)		
Rad Liquid Scintillation									
Batch	1588132								
QC1203600560	MB								
Technetium-99			U	-0.696	pCi/g			CXS7	08/17/1610:41

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1588132								
		Uncert:		+/-1.85					
		TPU:		+/-1.85					
**Technetium-99m Tracer	31800			25200	CPM	REC: 79	(30%-105%)		
QC1203600561	402432001	DUP							
Technetium-99		U	-1.53	U	-1.6	pCi/g			08/17/1611:03
		Uncert:	+/-1.90		+/-2.01	RPD:	0	N/A	
		TPU:	+/-1.90		+/-2.01	RER:	0.0483	(0-2)	
**Technetium-99m Tracer	31800			27400	CPM	REC: 76	(30%-105%)		
QC1203600562	LCS								
Technetium-99		62.0		74.0	pCi/g	REC: 119	(80%-120%)		08/17/1611:24
		Uncert:		+/-3.82					
		TPU:		+/-9.33					
**Technetium-99m Tracer	31800			24300	CPM	REC: 76	(30%-105%)		
Batch	1588489								
QC1203601657	MB								
Carbon-14			U	1.69	pCi/g			TXJ1	08/18/1612:03
		Uncert:		+/-1.47					
		TPU:		+/-1.48					
QC1203601658	402432001	DUP							
Carbon-14		U	1.23	U	0.652	pCi/g			08/18/1612:49
		Uncert:	+/-1.59		+/-1.45	RPD:	0	N/A	
		TPU:	+/-1.59		+/-1.45	RER:	0.525	(0-2)	
QC1203601659	402432001	MS							
Carbon-14		133	U	1.23	133	pCi/g	REC: 100	(75%-125%)	08/18/1613:35
		Uncert:	+/-1.59		+/-3.91				
		TPU:	+/-1.59		+/-10.6				
QC1203601660	LCS								
Carbon-14		124		127	pCi/g	REC: 102	(80%-120%)		08/18/1614:21
		Uncert:		+/-3.68					
		TPU:		+/-10.0					
Batch	1588517								
QC1203601770	MB								
Tritium			U	-3.78	pCi/g			TXJ1	08/18/1607:38
		Uncert:		+/-6.87					
		TPU:		+/-6.87					
QC1203601771	402432001	DUP							
Tritium		U	-5.81	U	0.214	pCi/g			08/18/1608:40
		Uncert:	+/-7.41		+/-7.65	RPD:	0	N/A	
		TPU:	+/-7.41		+/-7.65	RER:	1.11	(0-2)	
QC1203601772	402432001	MS							
Tritium		84.0	U	-5.81	73.0	pCi/g	REC: 87	(75%-125%)	08/18/1609:43
		Uncert:	+/-7.41		+/-10.3				
		TPU:	+/-7.41		+/-19.5				
QC1203601773	LCS								
Tritium		83.7		67.2	pCi/g	REC: 80	(80%-120%)		08/18/1610:45
		Uncert:		+/-9.64					
		TPU:		+/-18.0					
Batch	1591683								
QC1203609943	MB								
Nickel-63			U	-0.199	pCi/g			CXS7	08/23/1615:39

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch	1591683									
				Uncert:						
				TPU:						
**Nickel Carrier	24.6			20.7	mg	REC:	84 (40%-110%)			
QC1203609944	402432001	DUP								
Nickel-63		U	0.607	U	-0.434	pCi/g				08/23/1616:11
				Uncert:	+/-3.98		RPD:	0	N/A	
				TPU:	+/-3.98		RER:	0.373	(0-2)	
**Nickel Carrier	24.6		17.4	19.3	mg	REC:	79 (40%-110%)			
QC1203609945	LCS									
Nickel-63	230			218	pCi/g	REC:	95 (80%-120%)			08/23/1616:43
				Uncert:	+/-8.03					
				TPU:	+/-41.1					
**Nickel Carrier	24.6			20.1	mg	REC:	82 (40%-110%)			

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- 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.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** 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.