



November 19, 2014

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

Re: CHPRC SAF F11-031
Work Order: 360986
SDG: GEL360986

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 11, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 302853JPRC - 9C
Chain of Custody: F11-031-074
Enclosures



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Case Narrative

November 25, 2014

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F11-031
SDG: GEL360986

November 19, 2014

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 November 11, 2014, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification

The laboratory received the following sample:

Laboratory Identification	Sample Description
360986001	B2YN45

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.

This package, to the best of my knowledge, 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.

November 25, 2014
Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

November 25, 2014

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-031-074	PAGE 1 OF 1
COLLECTOR J. Aquilar	COMPANY CONTACT EVANS, RT	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION PW1-14-001-008 COMPOSITE	PROJECT DESIGNATION 200-PW-1 & 200-ZP-1 Spent GAC Canisters and Filters	SAF NO. F11-031		AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. 605-425	FIELD LOGBOOK NO. HNF-N-491-9/122	ACTUAL SAMPLE DEPTH N/A	COA 302853JPRC	ORIGINAL	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. S200	BILL OF LADING/AIR BILL NO. 1180674626			

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	None	None	None
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	*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.	HOLDING TIME	6 Months	6 Months	6 Months
		TYPE OF CONTAINER	G/P	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1
		VOLUME	60mL	60mL	500mL
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	THIS IS PLATE AREA; COMMON (Thorium-232);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS
SAMPLE NO. B2YN45	MATRIX* OTHER SOLID	SAMPLE DATE	11-7-14	1355	

36098e

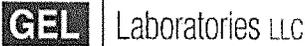
TRM-14-179

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM J. Aquilar		SSU #1	11-7-14 1500		
RELINQUISHED BY/REMOVED FROM SSU-1		LD, Wall	NOV 10 2014 0952		
RELINQUISHED BY/REMOVED FROM LD, Wall		CHPRC	NOV 10 2014 1400		
RELINQUISHED BY/REMOVED FROM FED EX		FEDEX			
RELINQUISHED BY/REMOVED FROM 047					
RELINQUISHED BY/REMOVED FROM					
RELINQUISHED BY/REMOVED FROM					
RELINQUISHED BY/REMOVED FROM					
LABORATORY SECTION	RECEIVED BY	TITLE			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY			

SPECIAL INSTRUCTIONS

TRVL-14-178 ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. COMPOSITE OF PW1-14-001, PW1-14-002, PW1-14-003, PW1-14-004, PW1-14-005, PW1-14-006, PW1-14-007, AND PW1-14-008.
 (1) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON;
 (2) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Protactinium-231}; ALPHA_GPC: COMMON; BETA_GPC: COMMON; PUISO_PLATE_AEA: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON; {Americium-241}; NP237_LLE_PLATE_AEA: COMMON; UIISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON;

November 25, 2014



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRE</u>		SDG/AR/COC/Work Order: <u>360980</u>
Received By: <u>P. Went</u>		Date Received: <u>11-11-14</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/> <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0/cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/> <input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/> <input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/> <input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input type="checkbox"/> <input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input type="checkbox"/> <input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample ID's, containers affected and observed pH: If Preservation added, Lot#: <u>All Preserved Samples PH(3) client</u>
6 VOA vials free of headspace (defined as < 6mm bubble)?		<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7718 0674 5647</u> <u>7718 0674 6036</u>

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	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	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	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).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	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).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	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.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	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.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Laboratory Certifications

List of current GEL Certifications as of 19 November 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Radiological Analysis

November 25, 2014
Radiochemistry Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG GEL360986
Work Order 360986

Method/Analysis Information

Product: AMCMISO_EIE_PLATE_AEA:COMMON
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435845
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208970	MB for batch 1435845
1203208972	Laboratory Control Sample (LCS)
1203208971	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: NP237_LLE_PLATE_AEA: COMMON
Analytical Method: ASTM C 1476-00 Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435847
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208973	MB for batch 1435847
1203208975	Laboratory Control Sample (LCS)
1203208974	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-032 REV# 19.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: PUIISO_PLATE_AEA: COMMON
Analytical Method: DOE EML HASL-300, Pu-11-RC Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435848
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208976	MB for batch 1435848
1203208978	Laboratory Control Sample (LCS)
1203208977	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	THISO_IE_PLATE_AEA: COMMON (TH232)
Analytical Method:	DOE EML HASL-300, Th-01-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1435849
Prep Batch Number:	1435585

Sample ID	Client ID
360986001	B2YN45
1203208979	MB for batch 1435849
1203208981	Laboratory Control Sample (LCS)
1203208980	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: UISO_PLATE_AEA: COMMON
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435850
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208982	MB for batch 1435850
1203208984	Laboratory Control Sample (LCS)
1203208983	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: I129_SEP_LEPS_GS: COMMON
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Batch Number: 1435688

Sample ID	Client ID
360986001	B2YN45
1203208556	MB for batch 1435688
1203208559	Laboratory Control Sample (LCS)
1203208557	360986001(B2YN45) Sample Duplicate (DUP)
1203208558	360986001(B2YN45) Matrix Spike (MS)

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

SOP Reference

November 25, 2014

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-006 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 1203208558 (B2YN45MS) recounted twice due to low recovery. The third count is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GAMMA_GS: COMMON + ADD ON (Pa231)
Analytical Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435736
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208689	MB for batch 1435736
1203208691	Laboratory Control Sample (LCS)
1203208690	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: SRTOT_SEP_PRECEIP_GPC: COMMON
Analytical Method: EPA 905.0 Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435625
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208367	MB for batch 1435625
1203208369	Laboratory Control Sample (LCS)
1203208368	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 17.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

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

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: ALPHABETA_GPC: COMMON
Analytical Method: EPA 900.0/SW846 9310/SM 7110B Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1435627
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203208378	MB for batch 1435627
1203208382	Laboratory Control Sample (LCS)
1203208379	360986001(B2YN45) Sample Duplicate (DUP)
1203208380	360986001(B2YN45) Matrix Spike (MS)
1203208381	360986001(B2YN45) Matrix Spike Duplicate (MSD)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001B REV# 17.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The discrimination settings are calibrated in beta discriminating mode to reduce beta to alpha crosstalk.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The matrix spike and matrix spike duplicate, 1203208380 (B2YN45MS) and 1203208381 (B2YN45MSD), do not meet the beta relative percent difference or relative error ratio requirements; however, they do both meet the recovery requirement.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Samples 1203208380 (B2YN45MS) and 1203208381 (B2YN45MSD) were recounted due to high recovery. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: C14_LSC: COMMON
Analytical Method: EPA EERF C-01 Modified
Analytical Batch Number: 1435499

Sample ID **Client ID**
360986001 B2YN45

November 25, 2014

1203208148 MB for batch 1435499
1203208151 Laboratory Control Sample (LCS)
1203208149 360924001(B2XN96) Sample Duplicate (DUP)
1203208150 360924001(B2XN96) Matrix Spike (MS)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360924001 (B2XN96).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 1203208149 (B2XN96DUP) was recounted to verify sample results. Recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: EPA 906.0 Modified

Analytical Batch Number: 1435501

Sample ID	Client ID
360986001	B2YN45
1203208156	MB for batch 1435501
1203208159	Laboratory Control Sample (LCS)
1203208157	360924001(B2XN96) Sample Duplicate (DUP)
1203208158	360924001(B2XN96) Matrix Spike (MS)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360924001 (B2XN96).

QC Information

November 25, 2014

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

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

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TC99_SEP_GPC: COMMON
Analytical Method: DOE EML HASL-300, Tc-02-RC Modified
Analytical Batch Number: 1435507

Sample ID	Client ID
360986001	B2YN45
1203208180	MB for batch 1435507
1203208182	Laboratory Control Sample (LCS)
1203208181	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 3.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

November 25, 2014

Product: NI63_LSC: COMMON
Analytical Method: DOE RESL Ni-1, Modified
Prep Method: Dry Soil Prep
Analytical Batch Number: 1436011
Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203209336	MB for batch 1436011
1203209338	Laboratory Control Sample (LCS)
1203209337	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: SE79_SEP_IE_LSC: COMMON

Analytical Method: NERC ORD

Prep Method: Dry Soil Prep

Analytical Batch Number: 1436012

Prep Batch Number: 1435585

Sample ID	Client ID
360986001	B2YN45
1203209339	MB for batch 1436012
1203209341	Laboratory Control Sample (LCS)
1203209340	360986001(B2YN45) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-031 REV# 11.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

November 25, 2014

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 360986001 (B2YN45).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

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

Recounts

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

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

November 25, 2014

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: GEL360986 GEL Work Order: 360986

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Kate Gellatly

Date: 25 NOV 2014

Title: Analyst I

Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F11-031

Report Date: November 25, 2014

Client Sample ID:	B2YN45	Project:	CPRC0F11031
Sample ID:	360986001	Client ID:	CPRC001
Matrix:	OTHER SOLID		
Collect Date:	07-NOV-14		
Receive Date:	11-NOV-14		
Collector:	Client		
Moisture:	24.4%		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
<i>AMCMISO_EIE_PLATE_AEA: COMMON "Dry Weight Corrected"</i>													
Americium-241 14596-10-2	U	-0.0503	+/-0.152	0.427	+/-0.152	1.00	pCi/g		HAKB	11/19/14	0945	1435845	1
<i>NP237_LLE_PLATE_AEA: COMMON "Dry Weight Corrected"</i>													
Neptunium-237 13994-20-2	U	0.093	+/-0.292	0.546	+/-0.292	1.00	pCi/g		HAKB	11/18/14	1355	1435847	2
<i>PUISO_PLATE_AEA: COMMON "Dry Weight Corrected"</i>													
Plutonium-238 13981-16-3	U	0.00	+/-0.129	0.192	+/-0.129	1.00	pCi/g		HAKB	11/19/14	0945	1435848	3
Plutonium-239/240 OER-100-70	U	0.0179	+/-0.187	0.391	+/-0.187	1.00	pCi/g						
<i>THISO_IE_PLATE_AEA: COMMON (TH232) "Dry Weight Corrected"</i>													
Thorium-232 7440-29-1	U	0.256	+/-0.347	0.348	+/-0.349	1.00	pCi/g		HAKB	11/18/14	1321	1435849	4
<i>UIISO_PLATE_AEA: COMMON "Dry Weight Corrected"</i>													
Uranium-233/234 U-233/234		1.54	+/-0.731	0.533	+/-0.774	1.00	pCi/g		HAKB	11/18/14	1253	1435850	5
Uranium-235/236 15117-96-1/13982-70-2	U	0.252	+/-0.400	0.553	+/-0.402	1.00	pCi/g						
Uranium-238 7440-61-1		1.03	+/-0.620	0.567	+/-0.644	1.00	pCi/g						
Rad Gamma Spec Analysis													
<i>GAMMA_GS: COMMON + ADD ON (Pa231) "Dry Weight Corrected"</i>													
Cesium-137 10045-97-3	U	-0.0301	+/-0.0347	0.0437	+/-0.0373	0.100	pCi/g		MXR1	11/14/14	1234	1435736	6
Cobalt-60 10198-40-0	U	-0.0228	+/-0.0297	0.0491	+/-0.0314	0.050	pCi/g						
Europium-152 14683-23-9	U	-0.0182	+/-0.0816	0.123	+/-0.082	0.100	pCi/g						
Europium-154 15585-10-1	U	-0.0411	+/-0.0879	0.150	+/-0.0899		pCi/g						
Europium-155 14391-16-3	U	-0.036	+/-0.0705	0.117	+/-0.0725		pCi/g						
Protactinium-231 14331-85-2	U	-0.313	+/-1.09	1.79	+/-1.09		pCi/g						
<i>I129_SEP_LEPS_GS: COMMON "As Received"</i>													

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F11-031

Report Date: November 25, 2014

Client Sample ID: B2YN45 Project: CPRC0F11031
 Sample ID: 360986001 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
Rad Gamma Spec Analysis												
<i>1129_SEP_LEPS_GS: COMMON "As Received"</i>												
Iodine-129 15046-84-1	U	0.946	+/-0.664	0.985	+/-0.671	2.00	pCi/g	BSW1		11/13/14	1037 1435688	7
Rad Gas Flow Proportional Counting												
<i>ALPHABETA_GPC: COMMON "Dry Weight Corrected"</i>												
Alpha 12587-46-1		8.78	+/-2.09	2.50	+/-2.70	4.00	pCi/g	JXH3		11/19/14	1938 1435627	8
Beta 12587-47-2		4.13	+/-1.13	1.60	+/-1.35	10.0	pCi/g					
<i>SRTOT_SEP_PRECEIP_GPC: COMMON "Dry Weight Corrected"</i>												
Strontium-90 10098-97-2	U	-0.0858	+/-0.418	0.791	+/-0.419	2.00	pCi/g	KSD1		11/19/14	1521 1435625	9
Rad Liquid Scintillation Analysis												
<i>C14_LSC: COMMON "As Received"</i>												
Carbon-14 14762-75-5	U	1.93	+/-1.71	2.85	+/-1.72	5.00	pCi/g	BYS1		11/13/14	1133 1435499	10
<i>NI63_LSC: COMMON "Dry Weight Corrected"</i>												
Nickel-63 NI-63	U	1.73	+/-4.67	7.98	+/-4.68	10.0	pCi/g	TYJ1		11/17/14	2317 1436011	11
<i>SE79_SEP_IE_LSC: COMMON "Dry Weight Corrected"</i>												
Selenium-79	U	1.60	+/-3.65	6.20	+/-3.67	10.0	pCi/g	EXK2		11/24/14	1508 1436012	12
<i>TC99_SEP_GPC: COMMON "As Received"</i>												
Technetium-99 14133-76-7	U	2.58	+/-6.52	11.1	+/-6.53	15.0	pCi/g	MYM1		11/16/14	2016 1435507	13
<i>TRITIUM_DIST_LSC: COMMON "As Received"</i>												
Tritium 10028-17-8	U	-8.99	+/-12.5	24.3	+/-12.5	30.0	pCi/g	BYS1		11/14/14	1714 1435501	14

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	ASTM C 1476-00 Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, Th-01-RC Modified
5	DOE EML HASL-300, U-02-RC Modified
6	DOE HASL 300, 4.5.2.3/Ga-01-R
7	DOE EML HASL-300,I-01 Modified
8	EPA 900.0/SW846 9310/SM 7110B Modified

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F11-031

Report Date: November 25, 2014

Client Sample ID: B2YN45 Project: CPRC0F11031
 Sample ID: 360986001 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
9	EPA 905.0	Modified										
10	EPA EERF C-01	Modified										
11	DOE RESL Ni-1,	Modified										
12	NERC ORD											
13	DOE EML HASL-300,	Tc-02-RC Modified										
14	EPA 906.0	Modified										

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AMCMISO_EIE_PLATE_AEA: C	75.7	(15%-125%)
Americium-243 Tracer	NP237_LLE_PLATE_AEA: COM	70.3	(15%-125%)
Plutonium-242 Tracer	PUISO_PLATE_AEA: COMMON	81.7	(15%-125%)
Thorium-229 Tracer	THISO_IE_PLATE_AEA: COMM	78.7	(15%-125%)
Uranium-232 Tracer	UIISO_PLATE_AEA: COMMON '	89.7	(15%-125%)
Strontium Carrier	SRTOT_SEP_PRECEIP_GPC: CC	85.0	(25%-125%)
Nickel Carrier	NI63_LSC: COMMON "Dry Weig	65.9	(25%-125%)
Selenium Carrier	SE79_SEP_IE_LSC: COMMON "	71.5	(25%-125%)
Technetium-99m Tracer	TC99_SEP_GPC: COMMON "As	82.8	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96 sigma).
 The Qualifiers in this report are defined as follows :

- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- 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

The above sample is reported on a dry weight basis.

Quality Control Data

November 25, 2014 GEL LABORATORIES LLC

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

QC Summary

Report Date: November 25, 2014
Page 1 of 7

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 360986

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1435845								
QC1203208970	MB								
Americium-241			U	0.326	pCi/g			HAKB	11/19/1409:45
				Uncert: +/-0.333					
				TPU: +/-0.335					
QC1203208971	360986001	DUP							
Americium-241		U	-0.0503	U	0.0727	pCi/g			
				Uncert: +/-0.152	+/-0.248	RPD: 0	N/A		
				TPU: +/-0.152	+/-0.249	RER: 0.827	(0-2)		
QC1203208972	LCS								
Americium-241	13.6			13.8	pCi/g	REC: 102	(80%-120%)		11/19/1409:45
				Uncert: +/-1.93					
				TPU: +/-2.62					
Batch	1435847								
QC1203208973	MB								
Neptunium-237			U	-0.0676	pCi/g			HAKB	11/18/1413:55
				Uncert: +/-0.128					
				TPU: +/-0.128					
QC1203208974	360986001	DUP							
Neptunium-237		U	0.093	U	-0.182	pCi/g			
				Uncert: +/-0.292	+/-0.177	RPD: 0	N/A		
				TPU: +/-0.292	+/-0.178	RER: 1.58	(0-2)		
QC1203208975	LCS								
Neptunium-237	38.5			40.0	pCi/g	REC: 104	(80%-120%)		
				Uncert: +/-2.70					
				TPU: +/-5.09					
Batch	1435848								
QC1203208976	MB								
Plutonium-238			U	-0.0133	pCi/g			HAKB	11/19/1409:45
				Uncert: +/-0.114					
				TPU: +/-0.115					
Plutonium-239/240			U	-0.0133	pCi/g				
				Uncert: +/-0.114					
				TPU: +/-0.115					
QC1203208977	360986001	DUP							
Plutonium-238		U	0.00	U	-0.073	pCi/g			
				Uncert: +/-0.129	+/-0.169	RPD: 0	N/A		
				TPU: +/-0.129	+/-0.170	RER: 0.672	(0-2)		
Plutonium-239/240		U	0.0179	U	-0.128	pCi/g			
				Uncert: +/-0.187	+/-0.180	RPD: 0	N/A		
				TPU: +/-0.187	+/-0.181	RER: 1.10	(0-2)		
QC1203208978	LCS								
Plutonium-238			U	0.0754	pCi/g				
				Uncert: +/-0.207					
				TPU: +/-0.208					
						REC:			

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1435848								
Plutonium-239/240	18.9			18.2	pCi/g	96	(80%-120%)		
	Uncert:			+/-2.03					
	TPU:			+/-3.03					
Batch	1435849								
QC1203208979	MB								
Thorium-232			U	0.135	pCi/g			HAKB	11/18/1413:21
	Uncert:			+/-0.280					
	TPU:			+/-0.281					
QC1203208980	360986001	DUP							
Thorium-232		U	0.256	U	0.0663	pCi/g			11/18/1413:22
	Uncert:	+/-0.347		+/-0.208		RPD: 0	N/A		
	TPU:	+/-0.349		+/-0.208		RER: 0.914	(0-2)		
QC1203208981	LCS								
Thorium-232	19.1			19.0	pCi/g	REC: 100	(80%-120%)		11/18/1413:22
	Uncert:			+/-2.41					
	TPU:			+/-3.81					
Batch	1435850								
QC1203208982	MB								
Uranium-233/234			U	0.153	pCi/g			HAKB	11/18/1412:53
	Uncert:			+/-0.304					
	TPU:			+/-0.305					
Uranium-235/236			U	0.185	pCi/g				
	Uncert:			+/-0.317					
	TPU:			+/-0.318					
Uranium-238			U	0.0748	pCi/g				
	Uncert:			+/-0.210					
	TPU:			+/-0.211					
QC1203208983	360986001	DUP							
Uranium-233/234			1.54	1.19	pCi/g				11/18/1412:53
	Uncert:	+/-0.731		+/-0.593		RPD: 26	(0% - 100%)		
	TPU:	+/-0.774		+/-0.622		RER: 0.687	(0-2)		
Uranium-235/236		U	0.252	U	0.0913	pCi/g			
	Uncert:	+/-0.400		+/-0.312		RPD: 0	N/A		
	TPU:	+/-0.402		+/-0.312		RER: 0.617	(0-2)		
Uranium-238			1.03	0.943	pCi/g				
	Uncert:	+/-0.620		+/-0.543		RPD: 9	(0% - 100%)		
	TPU:	+/-0.644		+/-0.564		RER: 0.208	(0-2)		
QC1203208984	LCS								
Uranium-233/234				27.4	pCi/g				11/18/1412:53
	Uncert:			+/-2.92					
	TPU:			+/-5.39					
Uranium-235/236				1.67	pCi/g				
	Uncert:			+/-0.830					
	TPU:			+/-0.875					
Uranium-238	26.1			24.3	pCi/g	REC: 93	(80%-120%)		
	Uncert:			+/-2.75					
	TPU:			+/-4.87					
Rad Gamma Spec									
Batch	1435688								

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1435688								
QC1203208556	MB								
Iodine-129			U	0.106	pCi/g			BSW1	11/13/1410:38
				Uncert: +/-0.312					
				TPU: +/-0.315					
QC1203208557	360986001	DUP							
Iodine-129		U	0.946	U	-0.00806	pCi/g			11/13/1410:39
				Uncert: +/-0.664	+/-0.251	RPD: 0	N/A		
				TPU: +/-0.671	+/-0.252	RER: 2.61	(0-2)		
QC1203208558	360986001	MS							
Iodine-129		38.5	U	0.946	32.4	pCi/g	REC: 82 (75%-125%)		11/17/1405:29
				Uncert: +/-0.664	+/-3.27				
				TPU: +/-0.671	+/-4.62				
QC1203208559	LCS								
Iodine-129		31.6			26.5	pCi/g	REC: 84 (80%-120%)		11/13/1410:39
				Uncert: +/-3.43					
				TPU: +/-4.33					
Batch	1435736								
QC1203208689	MB								
Cesium-137			U	-0.0131	pCi/g			MXR1	11/14/1412:34
				Uncert: +/-0.0256					
				TPU: +/-0.0263					
Cobalt-60			U	-0.0145	pCi/g				
				Uncert: +/-0.0214					
				TPU: +/-0.0224					
Europium-152			U	-0.0716	pCi/g				
				Uncert: +/-0.0604					
				TPU: +/-0.0688					
Europium-154			U	-0.0342	pCi/g				
				Uncert: +/-0.0631					
				TPU: +/-0.065					
Europium-155			U	-0.0254	pCi/g				
				Uncert: +/-0.0542					
				TPU: +/-0.0554					
Protactinium-231			U	-0.281	pCi/g				
				Uncert: +/-0.821					
				TPU: +/-0.831					
QC1203208690	360986001	DUP							
Cesium-137		U	-0.0301	U	-0.0111	pCi/g			11/15/1408:53
				Uncert: +/-0.0347	+/-0.0221	RPD: 0	N/A		
				TPU: +/-0.0373	+/-0.0227	RER: 0.853	(0-2)		
Cobalt-60		U	-0.0228	U	0.00977	pCi/g			
				Uncert: +/-0.0297	+/-0.0223	RPD: 0	N/A		
				TPU: +/-0.0314	+/-0.0227	RER: 1.65	(0-2)		
Europium-152		U	-0.0182	U	-0.029	pCi/g			
				Uncert: +/-0.0816	+/-0.0669	RPD: 0	N/A		
				TPU: +/-0.082	+/-0.0682	RER: 0.198	(0-2)		
Europium-154		U	-0.0411	U	0.0354	pCi/g			
				Uncert: +/-0.0879	+/-0.067	RPD: 0	N/A		
				TPU: +/-0.0899	+/-0.069	RER: 1.32	(0-2)		
Europium-155		U	-0.036	U	0.0135	pCi/g			

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch		1435736							
		Uncert:		+/-0.0705		+/-0.0551			
		TPU:		+/-0.0725		+/-0.0555			
						RPD:	0	N/A	
						RER:	1.06	(0-2)	
Protactinium-231		U	-0.313	U	-0.103	pCi/g			
		Uncert:		+/-1.09		+/-0.871			
		TPU:		+/-1.09		+/-0.873			
						RPD:	0	N/A	
						RER:	0.294	(0-2)	
QC1203208691	LCS								
Americium-241		491			531	pCi/g	REC: 108	(80%-120%)	11/14/1412:42
		Uncert:			+/-7.90				
		TPU:			+/-38.2				
Cesium-137		187			182	pCi/g	REC: 97	(80%-120%)	
		Uncert:			+/-3.13				
		TPU:			+/-16.4				
Cobalt-60		206			186	pCi/g	REC: 90	(80%-120%)	
		Uncert:			+/-3.54				
		TPU:			+/-16.5				
Europium-152				U	0.501	pCi/g			
		Uncert:			+/-1.61				
		TPU:			+/-1.62				
Europium-154				U	-0.691	pCi/g			
		Uncert:			+/-1.14				
		TPU:			+/-1.18				
Europium-155				U	-0.831	pCi/g			
		Uncert:			+/-1.32				
		TPU:			+/-1.37				
Protactinium-231				U	22.1	pCi/g			
		Uncert:			+/-22.5				
		TPU:			+/-24.7				
Rad Gas Flow									
Batch		1435625							
QC1203208367	MB								
Strontium-90				U	0.303	pCi/g			KSD1 11/19/1415:21
		Uncert:			+/-0.473				
		TPU:			+/-0.477				
QC1203208368	360986001	DUP							
Strontium-90		U	-0.0858	U	0.0934	pCi/g			11/19/1415:21
		Uncert:			+/-0.418		RPD: 0	N/A	
		TPU:			+/-0.419		RER: 0.587	(0-2)	
QC1203208369	LCS								
Strontium-90		46.2			46.7	pCi/g	REC: 101	(80%-120%)	11/19/1415:21
		Uncert:			+/-2.02				
		TPU:			+/-8.60				
Batch		1435627							
QC1203208378	MB								
Alpha				U	0.122	pCi/g			JXH3 11/19/1419:39
		Uncert:			+/-1.66				
		TPU:			+/-1.66				
Beta				U	3.37	pCi/g			
		Uncert:			+/-3.20				

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1435627								
QC1203208379	360986001	DUP		TPU:					
Alpha			8.78	11.8	pCi/g				11/19/1419:39
			Uncert: +/-2.09	+/-2.51		RPD: 29	(0% - 100%)		
			TPU: +/-2.70	+/-3.39		RER: 1.37	(0-2)		
Beta			4.13	4.08	pCi/g				
			Uncert: +/-1.13	+/-1.71		RPD: 1	(0% - 100%)		
			TPU: +/-1.35	+/-1.86		RER: 0.0421	(0-2)		
QC1203208380	360986001	MS							
Alpha	122		8.78	155	pCi/g	REC: 121	(75%-125%)		11/20/1407:59
			Uncert: +/-2.09	+/-18.1					
			TPU: +/-2.70	+/-33.9					
Beta	477		4.13	471	pCi/g	REC: 98	(75%-125%)		
			Uncert: +/-1.13	+/-17.9					
			TPU: +/-1.35	+/-62.0					
QC1203208381	360986001	MSD							
Alpha	112		8.78	134	pCi/g	REC: 112	(75%-125%)		11/20/1411:47
			Uncert: +/-2.09	+/-18.1		RPD: 15	(0%-20%)		
			TPU: +/-2.70	+/-34.9		RER: 0.878	(0-2)		
Beta	438		4.13	372	pCi/g	REC: 84	(75%-125%)		
			Uncert: +/-1.13	+/-15.9		RPD: 23*	(0%-20%)		
			TPU: +/-1.35	+/-53.7		RER: 2.36*	(0-2)		
QC1203208382	LCS								
Alpha	112			115	pCi/g	REC: 103	(80%-120%)		11/19/1418:19
				+/-11.3					
				+/-25.1					
Beta	438			452	pCi/g	REC: 103	(80%-120%)		
				+/-16.5					
				+/-66.7					
Rad Liquid Scintillation									
Batch	1435499								
QC1203208148	MB								
Carbon-14			U	0.364	pCi/g			BYS1	11/13/1411:55
			Uncert: +/-1.55						
			TPU: +/-1.55						
QC1203208149	360924001	DUP							
Carbon-14		U	3.73	3.39	pCi/g				11/15/1403:15
			Uncert: +/-2.51	+/-2.06		RPD: 10	(0% - 100%)		
			TPU: +/-2.53	+/-2.08		RER: 0.206	(0-2)		
QC1203208150	360924001	MS							
Carbon-14	77.5	U	3.73	84.0	pCi/g	REC: 108	(75%-125%)		11/13/1412:38
			Uncert: +/-2.51	+/-3.70					
			TPU: +/-2.53	+/-7.17					
QC1203208151	LCS								
Carbon-14	77.5			81.0	pCi/g	REC: 104	(80%-120%)		11/13/1412:59
				+/-3.64					
				+/-6.95					
Batch	1435501								
QC1203208156	MB								
Tritium			U	1.31	pCi/g			BYS1	11/14/1417:30

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1435501								
				Uncert:					
				TPU:					
QC1203208157	360924001	DUP							
Tritium		U	-2.32	U	-0.072	pCi/g			11/14/1417:46
				Uncert:	+/-13.0			RPD: 0	N/A
				TPU:	+/-13.0			RER: 0.236	(0-2)
QC1203208158	360924001	MS							
Tritium		U	-2.32		92.8	pCi/g	REC: 122	(75%-125%)	11/14/1416:08
				Uncert:	+/-13.0				
				TPU:	+/-13.0				
QC1203208159	LCS								
Tritium			75.7		90.5	pCi/g	REC: 120	(80%-120%)	11/14/1416:25
				Uncert:	+/-19.9				
				TPU:	+/-28.6				
Batch	1435507								
QC1203208180	MB								
Technetium-99				U	4.48	pCi/g		MYM1	11/16/1420:49
				Uncert:	+/-5.65				
				TPU:	+/-5.67				
QC1203208181	360986001	DUP							
Technetium-99		U	2.58	U	3.49	pCi/g			11/16/1421:22
				Uncert:	+/-6.52			RPD: 0	N/A
				TPU:	+/-6.53			RER: 0.190	(0-2)
QC1203208182	LCS								
Technetium-99			270		244	pCi/g	REC: 91	(80%-120%)	11/16/1421:54
				Uncert:	+/-10.6				
				TPU:	+/-30.4				
Batch	1436011								
QC1203209336	MB								
Nickel-63				U	-0.31	pCi/g		TYJ1	11/17/1423:49
				Uncert:	+/-3.96				
				TPU:	+/-3.96				
QC1203209337	360986001	DUP							
Nickel-63		U	1.73	U	-1.14	pCi/g			11/18/1400:21
				Uncert:	+/-4.67			RPD: 0	N/A
				TPU:	+/-4.68			RER: 0.913	(0-2)
QC1203209338	LCS								
Nickel-63			264		284	pCi/g	REC: 108	(80%-120%)	11/18/1400:53
				Uncert:	+/-9.52				
				TPU:	+/-53.3				
Batch	1436012								
QC1203209339	MB								
Selenium-79				U	-0.489	pCi/g		EXK2	11/24/1415:55
				Uncert:	+/-3.17				
				TPU:	+/-3.17				
QC1203209340	360986001	DUP							
Selenium-79		U	1.60	U	-2.14	pCi/g			11/24/1416:42
				Uncert:	+/-3.65			RPD: 0	N/A
				TPU:	+/-3.67			RER: 1.40	(0-2)
QC1203209341	LCS								

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch		1436012								
Selenium-79		420		476	pCi/g	REC: 113	(80%-120%)			
		Uncert:		+/-10.2						
		TPU:		+/-107						

Notes:

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

The Qualifiers in this report are defined as follows:

- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

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

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

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