CHPRC - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
6/7/12	RCR-VSR12-015
3. Project No. 100K	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
VSR12-015 100-K-53 Samples Project 100-K	SGRP	SL Huggins	SGRP QA	MO-2216E/A101 373-3630

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
6/7/12 Date	Reviewer/Point of Contact (print and sign)	SL Huggins Reviewer/Point of Contact (print and sign)
SL Huggins Organization Manager (optional) (print and sign)	Date	6/7/12 Date
	Author/Originator (print and sign)	Author/Originator (print and sign)

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	No issues noted.					

CHPRC - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
06/12/2012	
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5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
VSR12-015		Scot Fitzgerald	Analytical Support Group	2753/373-7495

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: ____ Organization Manager (optional) (print and sign): ____	Reviewer/Point of Contact (print and sign): Scot Fitzgerald Date: 06/12/2012 Author/Originator (print and sign): [signature]	Reviewer/Point of Contact (print and sign): Scot Fitzgerald Date: 06/12/2012 Author/Originator (print and sign): [signature]

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	No issues noted.					

REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
06/12/2012	
3. Project No.	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Data Validation Report for CH2M Hill Plateau Remediation Company: VSR12-015, 100-K-53 Samples, 100-K Project	100-K-53 Waste Site	D. L. Klages	100-K Soil Remediation	(509)942-3947

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: _____ Organization Manager (optional) (print and sign): _____	Deanna L. Klages Reviewer/Point of Contact (print and sign) 6/12/2012 Date Deanna L. Klages Author/Originator (print and sign)	Deanna L. Klages Reviewer/Point of Contact (print and sign) 6/12/2012 Date Deanna L. Klages Author/Originator (print and sign)

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	No issues noted with this report.					

ANALYTICAL QUALITY ASSOCIATES, INC.
616 Maxine NE
Albuquerque, NM 87123
505-299-5201
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Data Validation Report for CH2M Hill
Plateau Remediation Company

VSR12-015
100-K-53 Samples
Project 100-K

Chemical & Radiochemical Validation - Level C

Validation Performed By: Eyda Hergenreder Eyda Hergenreder ***Date: 06-05-12***

Validation reviewed by: ***Date: 06-06-12***
Marcia Hilchey

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Date: 05 June 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: Semivolatile Organics - Sample Data Groups (SDGs) SL1177, WSCF112775, WSCF113325 and WSCF113366

INTRODUCTION

This memorandum presents the results of data validation for SDG SL1177 prepared by TestAmerica and SDGs WSCF112775, WSCF113325 and WSCF113366 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2J3M0	10/13/11	Soil	C	8015B
B2J3L8	10/13/11	Soil	C	8015B
B2J3N2	10/13/11	Soil	C	8015B
B2D1M1	7/20/11	Soil	C	8015B
B2D1M2	7/20/11	Soil	C	8015B
B2FBM5	7/20/11	Soil	C	8015B
B2FBN5	7/20/11	Soil	C	8015B
B2FBN6	7/20/11	Soil	C	8015B
B2FBN7	7/20/11	Soil	C	8015B
B2FBN8	7/20/11	Soil	C	8015B
B2FBN9	7/20/11	Soil	C	8015B
B2HRH5	10/06/11	Soil	C	8015B
B2HRF6	10/06/11	Soil	C	8015B
B2HRF9	10/06/11	Soil	C	8015B
B2HRF7	10/13/11	Soil	C	8015B
B2HRF8	10/13/11	Soil	C	8015B
B2HRH4	10/13/11	Soil	C	8015B

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. All Chain-of-Custody's associated with SDG SL1177 have holding time recorded as 6 month; however the recommended holding time requirements for method 8015B Alcohols/Glycols are analyses within 14 days from sample collection. Sample preservation requires chilling to 4 degrees Celsius.

The samples were analyzed within the prescribed holding times and properly preserved with the following exceptions.

For SDG SL1177, all samples were analyzed beyond the holding time but within 2X the holding time. All sample results were non-detect and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the matrix spike and laboratory control sample accuracy limits are 50% to 150%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Surrogates

All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

For SDG WSCF112775, ethylene glycol was not represented in the MS/MSD. All sample results were non-detects and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exceptions.

For SDG WSCF112775, ethylene glycol was not represented in the LCS. All sample results were non-detects and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, laboratory duplicate sample results, field duplicate sample results, field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits with differences <2X the required detection limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD relative percent difference values were acceptable.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs with associated non-detected sample results were below the CRDLs with the following exceptions. The ethylene glycol MDLs for samples B2J3M0, B2J3L8 and B2J3N2 were greater than the CRDL.

- **Completeness**

SDGs SL1177, WSCF112775, WSCF113325 and WSCF113366 were submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of sample results for ethylene glycol as estimates were due to non-represented MS/MSD and LCS data and missed holding time. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Semivolatile Organics Data Qualification Summary			
SDG: SL1177, WSCF112775. WSCF113325, WSCF113366	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Ethylene glycol	UJ	B2J3M0, B2J3L8, B2J3N2	Analyzed beyond the holding time but within 2X the holding time.
Ethylene glycol	UJ	B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9	Non-represented MS/MSD & LCS data

Comments: None

Appendix 3

Annotated Laboratory Reports

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3M0

GC Volatiles

Lot-Sample #...: F1J240433-001 Work Order #...: MNE3X1DK Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
Prep Date.....: 11/03/11 Analysis Date..: 11/08/11
Prep Batch #...: 1312055
Dilution Factor: 1
% Moisture.....: 6.7 Method.....: SW846 8015B

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Ethylene glycol	UJ	ND	100	mg/kg	13

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	96	(78 - 130)

EH
06/05/12

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3L8

GC Volatiles

Lot-Sample #...: F1J240433-002 Work Order #...: MNE311A4 Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
Prep Date.....: 11/03/11 Analysis Date..: 11/08/11
Prep Batch #...: 1312055
Dilution Factor: 1
% Moisture.....: 4.7 Method.....: SW846 8015B

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Ethylene glycol	UJ	ND		mg/kg	13

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	95	(78 - 130)

EH
06/05/12

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3N2

GC Volatiles

Lot-Sample #...: F1J240433-003 Work Order #...: MNE321A4 Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
Prep Date.....: 11/03/11 Analysis Date..: 11/08/11
Prep Batch #...: 1312055
Dilution Factor: 1
% Moisture.....: 4.5 Method.....: SW846 8015B

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Ethylene glycol	UJ	ND	100	mg/kg	13

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	94	(78 - 130)

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775001
SAF# F11-092
Sample ID B2D1M1

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/29/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/29/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/29/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/29/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/29/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5200	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775002
SAF# F11-092
Sample ID B2D1M2

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5200	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775003
SAF# F11-092
Sample ID B2FBM5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2000		ug/kg	1	2000	5000	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2000		ug/kg	1	2000	5000	07/30/11
Methanol	67-56-1	LA-523-494	U		<2000		ug/kg	1	2000	5000	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2000		ug/kg	1	2000	5000	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2000		ug/kg	1	2000	5000	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2000		ug/kg	1	2000	5000	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775004
SAF# F11-092
Sample ID B2FBN5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5200	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775005
SAF# F11-092
Sample ID B2FBN6

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5200	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5200	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775006
SAF# F11-092
Sample ID B2FBN7

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5300	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775007
SAF# F11-092
Sample ID B2FBN8

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5300	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Sample # 112775008
SAF# F11-092
Sample ID B2FBN9

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep											**07/29/11**
SW-846 8015B											
Diethyl ether	60-29-7	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethyl acetate	141-78-6	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Methanol	67-56-1	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethanol	64-17-5	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
1-Propanol	71-23-8	LA-523-494	U		<2100		ug/kg	1	2100	5300	07/30/11
Ethylene glycol	107-21-1	LA-523-494	U	UJ	<2100		ug/kg	1	2100	5300	07/30/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

Sample # 113325001
SAF# F11-092
Sample ID B2HRH5

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/10/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2000		ug/kg	1	2000	5000	10/10/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

Sample # 113325002
SAF# F11-092
Sample ID B2HRF6

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/10/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2300		ug/kg	1	2300	5600	10/10/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

Sample # 113325003
SAF# F11-092
Sample ID B2HRF9

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/10/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2100		ug/kg	1	2100	5400	10/11/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

Sample # 113366001
SAF# F11-092
Sample ID B2HRF7

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/18/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2100		ug/kg	1	2100	5300	10/18/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

Sample # 113366002
SAF# F11-092
Sample ID B2HRF8

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/18/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2100		ug/kg	1	2100	5400	10/19/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

Sample # 113366003
SAF# F11-092
Sample ID B2HRH4

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8015 Prep										**10/18/11**
SW-846 8015B										
Ethylene glycol	107-21-1	LA-523-494	U	<2100		ug/kg	1	2100	5200	10/19/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < PQL (or EQL) >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
N - MS and/or MSD recovery outside control limits.
PQL is equivalent to Estimated Quantitation Limit (EQL)

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

NOVEMBER 15, 2011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
MS B3-60
Richland, Washington 99352
November 13, 2011
Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1177
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: October 24, 2011

II. Introduction

On October 24, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-092

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company
November 13, 2011
SDG: SL1177

TestAmerica Laboratories, Inc.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

Glycols

Batch: 1312055

The ICV recovery for Ethylene Glycol is outside the upper QC limits (greater than 20%D). The samples associated with this ICV were non-detect for this target analytes.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

ICPMS Metals

Batch: 1304035

The MS/MSD recovery for Manganese is outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. The analyte is qualified with an "N" flag.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

Due to LDR failures, the LDR has been lowered for Beryllium (200ppb) and Lithium (200ppb). The LCS and the MS/MSD results were above the LDR. The LCS and MS/MSD recoveries were within acceptable QC limits. The MS/MSD results are reported as estimated values.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company
November 13, 2011
SDG: SL1177

TestAmerica Laboratories, Inc.

The internal standard was outside QC limits in the CCV and/or CCB. All analytes were within acceptable limits, showing that there was no bias.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

There were no observations or nonconformances for the following methods:

Mercury

I certify that this Summary Package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Jayna Awalt "for"
Michael Franks
St. Louis Project Manager

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-241	PAGE 1 OF 1
COLLECTOR SL1177 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #3	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC7

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3M0	SOIL	OCT 13 2011	1305	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/24/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

☐ 10/5/11

~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~

(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

Alcohols, glycols, & Ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

NOVEMBER 15, 2011

TestAmerica - St. Louis

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-239	PAGE 1 OF 1
COLLECTOR SL1177 ~~SL1176~~ 10/20/11 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #2	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC6

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L8	SOIL	OCT 13 2011	1249	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FED EX	DATE/TIME
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/21/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
☐ DB 2 10/5/11
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
Alcohols, glycols, & Ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

NOVEMBER 15, 2011

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-253	PAGE 1 OF 1
COLLECTOR SL1177 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #5	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24.	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS		
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 may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C
		HOLDING TIME	6 Months
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	120mL
	SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B2HRD3	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3N2	SOIL	OCT 13 2011	1249	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/24/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

Alcohols, glycols, & ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

NOVEMBER 15, 2011

TestAmerica - St. Louis

Attachment 2
Narrative
WSCF112775

Revision: This report has been revised due to changes in 8015 QC reporting.

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Batch QC 186899

Attachment 2
Narrative
WSCF112775

- Fluoride – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Matrix Spike and Post Spike recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Antimony and Manganese – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

pH – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

Narrative

- There was no Laboratory Control Sample, Matrix Spike, or Matrix Spike Duplicate for Ethylene Glycol.
- All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

Sample Receipt

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

F11-092-049 — PAGE 1 OF 2

COLLECTOR	FM Hall CHPRC
SAMPLING LOCATION	Area AH Sample 24
ICE CHEST NO.	SML-777
SHIPPED TO	Waste Sampling & Characterization
COMPANY CONTACT	LUKE, SN
TELEPHONE NO.	372-1667
PROJECT COORDINATOR	LUKE, SN
PRICE CODE	C01
DATA TURNAROUND	15 ~~14~~ Days / ~~12~~ 15 Days
AIR QUALITY	☐
PROJECT DESIGNATION	ARRA Area AH In-Process Sampling - Soil
SAF NO.	F11-092
FIELD LOGBOOK NO.	HNF-N-507-22
ACTUAL SAMPLE DEPTH	0-1'
COA	302679ES10
METHOD OF SHIPMENT	GOVERNMENT VEHICLE
OFFSITE PROPERTY NO.	N/A
BILL OF LADING/AIR BILL NO.	N/A

ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

112776

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M1	SOIL	JUL 20 2011	0821	✓	✓	✓		

Not collected KLY 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 20 2011 1000	MO 1109 SSU #1	JUL 20 2011 1000
MO 1109 SSU #1	7-26-11 0930	FM Hall	7-26-11 0930
FM Hall	7-26-11 1015	TAPMAZIM	7-26-11 1015

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected.

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

PRINTED ON 5/31/2011 — A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-049

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: ~~12 Days~~ 15 / ~~12~~ 15 Days 6/1/11
SAMPLING LOCATION: Area AH Sample 24	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	ORIGINAL
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-~~N-507~~-22	ACTUAL SAMPLE DEPTH: 0-11'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium 137, Cobalt 60, Europium 152, Europium 154, Europium 155};~~
~~(5) Americium 241; Isotopic Plutonium {Plutonium 238, Plutonium 239/240}; Isotopic Uranium {Uranium 233/234, Uranium 235, Uranium 238}; Strontium 89,90 Total Sr;~~
Not collected KJY 7/20/11

PRINTED ON 5/31/2011

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REVISED112775 -

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-050

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: ~~12~~ Days / ~~12~~ 15 Days 15 6/1/11

AIR QUALITY: ☐

SAMPLING LOCATION: Area AH Sample 25

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: SMC-777

FIELD LOGBOOK NO.: HNF-N-807-22

ACTUAL SAMPLE DEPTH

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M2 2	SOIL	JUL 20 2011	0831	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	JUL 20 2011 1000	M01109 SSU#1	JUL 20 2011 1000
M01109 SSU#1	7-20-11	FM Hall	7-20-11 0930
FM Hall	7-26-11 1045	TA Fnazim	7-26-11 1015
			7-26-11

RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME

RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME

RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD | DISPOSED BY | DATE/TIME

PRINTED ON 5/31/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-050 — PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
SAMPLING LOCATION: Area AH Sample 25	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01

AIR QUALITY: ☐

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

DATA TURNAROUND: ~~12 Days~~ / ~~21~~ 15 Days 15 ~~21~~ 6/1/11

ORIGINAL

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241, Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KJ 7/20/11

PRINTED ON 5/31/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-101 | PAGE 1 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: 8C

DATA TURNAROUND: 15 Days / 15 Days

SAMPLING LOCATION: Area AH Sample 31

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11 092

AIR QUALITY

ICE CHEST NO.: SAL-777

FIELD LOGBOOK NO.: HNF-14607-22

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

Waste Sampling & Characterization

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	None	Cool~4C	None	None
				HOLDING TIME	14 Days	14/40 Days	14/40 Days	6 Months	30 Days	6 Months	6 Months
				TYPE OF CONTAINER	G	aG	G	G/P	G/P	Square Bottle - poly	G/P
				NO. OF CONTAINER(S)	1	1	1	1	1	1	1
				VOLUME	120mL	250mL	120mL	120mL	120mL	500mL	120mL
				SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Semi VOA - 8270 (TCL)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS
B2FBM5	3 SOIL	JUL 20 2011	0820	[redacted]	✓			✓		✓	

SPECIAL HANDLING AND/OR STORAGE

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (2)(5)(6) & Semi VOA Not collected

7-26-11 TA 7-28-11

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 20 2011 1000	[illegible] SSU #1	JUL 20 2011 1000
[illegible] SSU #1	7-28-11	[illegible]	7-28-11 0730
[illegible]	7-28-11	[illegible]	7-28-11
[illegible]	7-28-11 1015	[illegible]	7-28-11 1015
[illegible]	7-28-11	TA Franklin [illegible]	7-28-11
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
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

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-101	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 31	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMIL-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
~~(2) TPH DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};~~
(3) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(4) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(6) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	15 Days / 15 Days
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN5 4	SOIL	JUL 2 0 2011	0846	✓	✓	✓		

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 2 0 2011 1000	RECEIVED BY/STORED IN: H01109 SSL #1	DATE/TIME: JUL 2 0 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: H10 1109 SSL #1	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-11	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Frazier	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-607-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KT 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SAIL-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN6 5	SOIL	JUL 20 2011	0903	✓	✓	✓		

Not collected
Ky 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: JUL 20 2011 1000	RECEIVED BY/STORED IN: MO1109 SSU#1	DATE/TIME: JUL 20 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: MO1109 SSU#1	DATE/TIME: 7-26-11 0930	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-11 0930	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Fnorzimi	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/S[redacted]	DATE/TIME	

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

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium 238, Plutonium 239/240}; Isotopic Uranium {Uranium 233/234, Uranium 235, Uranium 238}; Strontium 89,90 Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F11-092-113	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil	SAF NO.: F11-092	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0 - 1	COA: 302679ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None		
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months		
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P		
NO. OF CONTAINER(S)	1	1	1	1	1		
VOLUME	120mL	120mL	120mL	500mL	120mL		
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				
B2FBN7 10	SOIL	JUL 20 2011	0925	✓	✓	✓	

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall CHPRC	JUL 20 2011 1000	MO1109 SSU#1	JUL 20 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109 SSU#1 7-26-11	7-26-11 0930	FM Hall	7-26-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall	7-26-11 1015	DAHAZIM	7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-113	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-114	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION			Cool~4C	None	Cool~4C	None	None
HOLDING TIME			14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER			G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)			1	1	1	1	1
VOLUME			120mL	120mL	120mL	500mL	120mL
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				
B2FBN8 7	SOIL	JUL 2 0 2011	0939	✓	✓	✓	

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall CHPRC	JUL 2 0 2011 1000	MO1109 SSU#1	JUL 2 0 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109 SSU#1	7-20-11 7-26-11 0930	FM Hall	7-20-11 7-26-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall	7-26-11 1015	TA Fnazi	7-26-11 1015 7-26-11 7-28-11	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-114	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A	

DATA TURNAROUND: 15 Days / 15 Days

ORIGINAL

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None	Cool-4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN9 8	SOIL	JUL 20 2011	0925	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION	DATE/TIME	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	JUL 20 2011 1000	RECEIVED BY/STORED IN: MD 1109 SSU #1	JUL 20 2011 1000
RELINQUISHED BY/REMOVED FROM: MD 1109 SSU #	7-26-11	RECEIVED BY/STORED IN: FM Hall	7-26-11 0920
RELINQUISHED BY/REMOVED FROM: FM Hall	7-26-11 1015	RECEIVED BY/STORED IN: TA Pinazin	7-26-11 1015
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected.

7-26-11 tad 7-28-11

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

PRINTED ON 6/16/2011

A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 2 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL - 777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Attachment 2
Narrative REV1
WSCF113325

Revision 1 Report: Revision to Remove the < sign from Rad Chem Data – Case Narrative Replaces the Prior Submittal in its Entirety

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Attachment 2
Narrative REV1
WSCF113325

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gamma Energy Analysis:
    - All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

Sample Receipt

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-211 — PAGE 1 OF 1

COLLECTOR	K.J. Young CHPRC
SAMPLING LOCATION	100-K-53 Sample #6
ICE CHEST NO.	GWS-257
SHIPPED TO	Waste Sampling & Characterization
COMPANY CONTACT	TRENT, SJ
TELEPHONE NO.	373-5869
PROJECT COORDINATOR	TRENT, SJ
PRICE CODE	C01
DATA TURNAROUND	12 Days / 12 Days
PROJECT DESIGNATION	Area AH In-Process Sampling - Soil
SAF NO.	F11-092
AIR QUALITY	
FIELD LOGBOOK NO.	HNF-N-507-24
ACTUAL SAMPLE DEPTH	N/A
COA	302718ES10
METHOD OF SHIPMENT	GOVERNMENT VEHICLE
OFFSITE PROPERTY NO.	N/A
BILL OF LADING/AIR BILL NO.	N/A

ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

113325

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRH5	SOIL	OCT 06 2011	0910	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1335	Received 1335	OCT 06 2011 1335
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The CACN for all analytical work at WSCF laboratory is 403023ES20..□** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-184

PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT COORDINATOR: TRENT, SJ

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-53 Sample #1

PROJECT DESIGNATION: Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: GWS-257

FIELD LOGBOOK NO.: HNF-N-807-24.

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302718ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF6	SOIL	OCT 06 2011	0923	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1335		OCT 06 2011 1335

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023E520.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

LABORATORY SECTION — RECEIVED BY — TITLE — DATE/TIME

FINAL SAMPLE DISPOSITION — DISPOSAL METHOD — DISPOSED BY — DATE/TIME

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-193 — PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days	SAMPLING LOCATION: 100-K-53 Sample #4	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil
SAF NO.: F11-092	AIR QUALITY:	ICE CHEST NO.: GWS-257	FIELD LOGBOOK NO.: HNF-N-507-24.
ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF9 3	SOIL	OCT 06 2011	1010	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1133	M01109SSU#1	OCT 06 2011 1133
M01109SSU#1	OCT 06 2011 1200	K.J. Young CHPRC	OCT 06 2011 1200
K.J. Young CHPRC	OCT 06 2011 1335	Vbazan	OCT 06 2011 1336

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20..☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Attachment 2
Narrative
WSCF113366

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Attachment 2
Narrative
WSCF113366

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gamma Energy Analysis:
    - All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-187

PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT COORDINATOR: TRENT, SJ

PRICE CODE: C01

DATA TURNAROUND: ~~12~~ Days / ~~12~~ Days 15 15 54

AIR QUALITY: ☐

SAMPLING LOCATION: 100-K-53 Sample #2

PROJECT DESIGNATION: Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: 6WS-107

FIELD LOGBOOK NO.: HNF-N-507-24

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302718ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL 10/13/11

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

113366

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF7	1	SOIL	OCT 13 2011	1249	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young	OCT 13 2011 / 1505	TARMAZIN	OCT 13 2011 / 1505

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD | DISPOSED BY | DATE/TIME

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-190

PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: C01	DATA TURNAROUND: ~~12~~ Days / ~~12~~ 15 Days 15 KY		
SAMPLING LOCATION: 100-K-53 Sample #3	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
AIR QUALITY: ☐			
ICE CHEST NO.: GWS-107	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302/18E510
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF8	SOIL	OCT 13 2011	1305	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011/1505	TA Frazier	OCT 13 2011/1505
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-208 — PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 100-K-53 Sample #5	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: GWS-107	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01 — AIR QUALITY: ☐ — METHOD OF SHIPMENT: GOVERNMENT VEHICLE

DATA TURNAROUND: ~~22~~ Days / ~~22~~ Days 15 15 15

ORIGINAL 10/13/11

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRH4	3	SOIL	OCT 13 2011	1249	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011 1505	TA Fazim	OCT 13 2011 1505

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-015		
VALIDATOR: Eyda Hergenreder		LAB: TestAmerica, WSCF		DATE: 06-05-2012	
			SDG: SL1177, WSCF112775, WSCF113325, WSCF113366		
ANALYSES PERFORMED					
8015 X	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX: Soil samples

SDG SL1177: B2J3M0, B2J3L8, B2J3N2

SDG WSCF112775: B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9

SDG WSCF113325: B2HRH5, B2HRF6, B2HRF9

SDG WSCF113366: B2HRF7, B2HRF8, B2HRH4

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: None

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

SDG WSCF112775: ethylene glycol was not included in the LCS and MS/MSD spiking solution

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?.....Yes No N/A

Duplicate results acceptable?.....Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? .....Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments: None

6. HOLDING TIMES (all levels)

Samples properly preserved? .....Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

SDG SL1177: Samples were prepped 21 days after collection and analyzed 26 days after collection

7. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?.....Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

SDG SL1177: ethylene glycol MDL> RDL

8. SAMPLE CLEANUP (Levels D and E)

Fluorisil ® (or other absorbent) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries acceptable?..... Yes No N/A

Check materials traceable?..... Yes No N/A

Check materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup?..... Yes No N/A

Transcription/Calculation Errors?..... Yes No N/A

Comments:

Comments:

More

Appendix 6

Additional Documentation Requested By Client

NOVEMBER 15, 2011

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: F1J240433 Work Order #...: MNR4Q1AA Matrix.....: SOLID
MB Lot-Sample #: F1K080000-055

Prep Date.....: 11/03/11
Analysis Date..: 11/08/11 Prep Batch #...: 1312055
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Ethylene glycol	ND	100	mg/kg	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	95	(78 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

NOVEMBER 15, 2011

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: F1J240433 Work Order #...: MNR4Q1AC Matrix.....: SOLID
LCS Lot-Sample#: F1K080000-055
Prep Date.....: 11/03/11 Analysis Date..: 11/08/11
Prep Batch #...: 1312055
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Ethylene glycol	500	490	mg/kg	98	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	97	(79 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: F1J240433 Work Order #...: MNE311A5-MS Matrix.....: SOLID
MS Lot-Sample #: F1J240433-002 MNE311A6-MSD
Date Sampled...: 10/13/11 Date Received..: 10/24/11
Prep Date.....: 11/03/11 Analysis Date..: 11/08/11
Prep Batch #...: 1312055
Dilution Factor: 1 % Moisture.....: 4.7

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Ethylene glycol	ND	500	354	mg/kg	71		SW846 8015B
	ND	500	463	mg/kg	93	27	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Isobutanol	89	(78 - 130)
	94	(78 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Batch QC List

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187147	187983	1	BLANK	61728	BLANK		SW-846 Method 8015 for GPP
187147	187983	2	LCS	61729	LCS		SW-846 Method 8015 for GPP
187147	187983	3	MS	61730	B2D1M1(112775001MS)	112775001	SW-846 Method 8015 for GPP
187147	187983	4	MSD	61731	B2D1M1(112775001MSD	112775001	SW-846 Method 8015 for GPP
187147	187983	5	DUP	61732	B2D1M1(112775001DUP)	112775001	SW-846 Method 8015 for GPP
187147	187983	6	SAMPLE	112775001	B2D1M1		SW-846 Method 8015 for GPP
187147	187983	7	SAMPLE	112775002	B2D1M2		SW-846 Method 8015 for GPP
187147	187983	8	SAMPLE	112775003	B2FBM5		SW-846 Method 8015 for GPP
187147	187983	9	SAMPLE	112775004	B2FBN5		SW-846 Method 8015 for GPP
187147	187983	10	SAMPLE	112775005	B2FBN6		SW-846 Method 8015 for GPP
187147	187983	11	SAMPLE	112775006	B2FBN7		SW-846 Method 8015 for GPP
187147	187983	12	SAMPLE	112775007	B2FBN8		SW-846 Method 8015 for GPP
187147	187983	13	SAMPLE	112775008	B2FBN9		SW-846 Method 8015 for GPP

Quality Control Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

QC Batch 187147 **Test** SW-846 Method 8015 for GPP
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61728**							
Diethyl ether	60-29-7		<2000	ug/kg					U	07/29/11
Ethyl acetate	141-78-6		<2000	ug/kg					U	07/29/11
Methanol	67-56-1		<2000	ug/kg					U	07/29/11
Ethanol	64-17-5		<2000	ug/kg					U	07/29/11
1-Propanol	71-23-8		<2000	ug/kg					U	07/29/11
Ethylene glycol	107-21-1		<2000	ug/kg					U	07/29/11
LCS			**QC Sample #61729**							
Diethyl ether	60-29-7		8490000	ug/kg	119.6	70 - 130				07/30/11
Ethyl acetate	141-78-6		6680000	ug/kg	74.2	70 - 130				07/30/11
Methanol	67-56-1		6600000	ug/kg	83.9	70 - 130				07/30/11
Ethanol	64-17-5		8370000	ug/kg	106.1	70 - 130				07/30/11
1-Propanol	71-23-8		8080000	ug/kg	101	70 - 130			U	07/30/11
MS			**QC Sample #61730**							
			Original 112775001							
Diethyl ether	60-29-7	<2100	6890000	ug/kg	97	70 - 130				07/30/11
Ethyl acetate	141-78-6	<2100	8890000	ug/kg	98.8	70 - 130				07/30/11
Methanol	67-56-1	<2100	6770000	ug/kg	86	70 - 130				07/30/11
Ethanol	64-17-5	<2100	8920000	ug/kg	113.1	70 - 130				07/30/11

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Quality Control Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
1-Propanol	71-23-8	<2100	8400000	ug/kg	105	70 - 130			U	07/30/11
MSD			**QC Sample #61731**							
			Original	**112775001**				**Paired**	**61730**	
Diethyl ether	60-29-7	<2100	7490000	ug/kg	105.5	70 - 130	8.40	30		07/30/11
Ethyl acetate	141-78-6	<2100	8630000	ug/kg	95.9	70 - 130	3.00	30		07/30/11
Methanol	67-56-1	<2100	7120000	ug/kg	90.5	70 - 130	5.10	30		07/30/11
Ethanol	64-17-5	<2100	7270000	ug/kg	92.1	70 - 130	20.50	30		07/30/11
1-Propanol	71-23-8	<2100	7100000	ug/kg	88.8	70 - 130	16.70	30	U	07/30/11
DUP			**QC Sample #61732**							
			Original	**112775001**						
Diethyl ether	60-29-7	<2100	<2100	ug/kg			0.00	30	U	07/29/11
Ethyl acetate	141-78-6	<2100	<2100	ug/kg			0.00	30	U	07/29/11
Methanol	67-56-1	<2100	<2100	ug/kg			0.00	30	U	07/29/11
Ethanol	64-17-5	<2100	<2100	ug/kg			0.00	30	U	07/29/11
1-Propanol	71-23-8	<2100	<2100	ug/kg			0.00	30	U	07/29/11
Ethylene glycol	107-21-1	<2100	<2100	ug/kg			0.00	30	U	07/29/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

QC Batch 187147 **Test** SW-846 Method 8015 for GPP
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #112775001**							
2-Bromoethanol	540-51-2				99.4	70 - 130				07/29/11
SAMPLE			**Sample #112775002**							
2-Bromoethanol	540-51-2				117.6	70 - 130				07/30/11
SAMPLE			**Sample #112775003**							
2-Bromoethanol	540-51-2				126.7	70 - 130				07/30/11
SAMPLE			**Sample #112775004**							
2-Bromoethanol	540-51-2				102.8	70 - 130				07/30/11
SAMPLE			**Sample #112775005**							
2-Bromoethanol	540-51-2				101.1	70 - 130				07/30/11
SAMPLE			**Sample #112775006**							
2-Bromoethanol	540-51-2				121	70 - 130				07/30/11
SAMPLE			**Sample #112775007**							
2-Bromoethanol	540-51-2				122.2	70 - 130				07/30/11

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Quality Control Report

Attention Michael Neely
Department Organic, Volatiles

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #112775008**							
2-Bromoethanol	540-51-2				92.6	70 - 130				07/30/11
BLANK			**QC Sample #61728**							
2-Bromoethanol	540-51-2				118.8	70 - 130				07/29/11
LCS			**QC Sample #61729**							
2-Bromoethanol	540-51-2				112.5	70 - 130				07/30/11
MS			**QC Sample #61730**							
			Original	**112775001**						
2-Bromoethanol	540-51-2				94.3	70 - 130				07/30/11
MSD			**QC Sample #61731**							
			Original	**112775001**				**Paired**	**61730**	
2-Bromoethanol	540-51-2				109.7	70 - 130	n/a			07/30/11
DUP			**QC Sample #61732**							
			Original	**112775001**						
2-Bromoethanol	540-51-2				106.2	70 - 130	n/a			07/29/11

REVISED112775 -

Batch QC List

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
190946	190947	1	BLANK	65585	BLANK		SW-846 Method 8015 for GPP
190946	190947	2	LCS	65737	LCS		SW-846 Method 8015 for GPP
190946	190947	3	MS	65587	B2HRF6(113325002MS)	113325002	SW-846 Method 8015 for GPP
190946	190947	4	MSD	65588	B2HRF6(113325002MSD)	113325002	SW-846 Method 8015 for GPP
190946	190947	5	DUP	65589	B2HRF6(113325002DUP)	113325002	SW-846 Method 8015 for GPP
190946	190947	6	SAMPLE	113325001	B2HRH5		SW-846 Method 8015 for GPP
190946	190947	7	SAMPLE	113325002	B2HRF6		SW-846 Method 8015 for GPP
190946	190947	8	SAMPLE	113325003	B2HRF9		SW-846 Method 8015 for GPP

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

QC Batch 190946
Associated Samples 113325001, 113325002, 113325003

Test SW-846 Method 8015 for GPP

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #65585**								
Ethylene glycol	107-21-1		<2000	ug/kg						U	10/10/11
MS			**QC Sample #65587**								
			Original 113325002								
Ethylene glycol	107-21-1	<2300	9420	ug/kg	84.6	70 - 130					10/10/11
MSD			**QC Sample #65588**								
			Original 113325002						**Paired**	**65587**	
Ethylene glycol	107-21-1	<2300	8680	ug/kg	77.9	70 - 130	8.20	30			10/10/11
DUP			**QC Sample #65589**								
			Original 113325002								
Ethylene glycol	107-21-1	<2300	<2300	ug/kg			0.00	30		U	10/10/11
LCS			**QC Sample #65737**								
Ethylene glycol	107-21-1		9610	ug/kg	86.3	70 - 130					10/11/11

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Quality Control Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

QC Batch 190946
Associated Samples 113325001, 113325002, 113325003

Test SW-846 Method 8015 for GPP

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #113325001**							
2-Bromoethanol	540-51-2				93.2	70 - 130				10/10/11
SAMPLE			**Sample #113325002**							
2-Bromoethanol	540-51-2				90.3	70 - 130				10/10/11
SAMPLE			**Sample #113325003**							
2-Bromoethanol	540-51-2				92.6	70 - 130				10/11/11
BLANK			**QC Sample #65585**							
2-Bromoethanol	540-51-2				113.6	70 - 130				10/10/11
MS			**QC Sample #65587**							
			Original 113325002							
2-Bromoethanol	540-51-2				106.8	70 - 130				10/10/11
MSD			**QC Sample #65588**							
			Original 113325002					**Paired**	**65587**	
2-Bromoethanol	540-51-2				109.1	70 - 130	n/a			10/10/11
DUP			**QC Sample #65589**							
			Original 113325002							
2-Bromoethanol	540-51-2				122.2	70 - 130	n/a			10/10/11

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Quality Control Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113325

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #65737**							
2-Bromoethanol	540-51-2				89.2	70 - 130				10/11/11

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Batch QC List

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
191289	191290	1	BLANK	65833	BLANK		SW-846 Method 8015 for GPP
191289	191290	2	LCS	65834	LCS		SW-846 Method 8015 for GPP
191289	191290	3	MS	65835	B2HRF7(113366001MS)	113366001	SW-846 Method 8015 for GPP
191289	191290	4	MSD	65836	B2HRF7(113366001MSD)	113366001	SW-846 Method 8015 for GPP
191289	191290	5	DUP	65837	B2HRF7(113366001DUP)	113366001	SW-846 Method 8015 for GPP
191289	191290	6	SAMPLE	113366001	B2HRF7		SW-846 Method 8015 for GPP
191289	191290	7	SAMPLE	113366002	B2HRF8		SW-846 Method 8015 for GPP
191289	191290	8	SAMPLE	113366003	B2HRH4		SW-846 Method 8015 for GPP

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

QC Batch 191289
Associated Samples 113366001, 113366002, 113366003

Test SW-846 Method 8015 for GPP

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #65833**								
Ethylene glycol	107-21-1		<2000	ug/kg						U	10/18/11
LCS			**QC Sample #65834**								
Ethylene glycol	107-21-1		10200	ug/mL	91.6	70 - 130					10/19/11
MS			**QC Sample #65835**								
			Original 113366001								
Ethylene glycol	107-21-1	<2100	9270	ug/kg	83.2	70 - 130					10/19/11
MSD			**QC Sample #65836**								
			Original 113366001						**Paired**	**65835**	
Ethylene glycol	107-21-1	<2100	8600	ug/kg	77.2	70 - 130	7.50	30			10/19/11
DUP			**QC Sample #65837**								
			Original 113366001								
Ethylene glycol	107-21-1	<2100	<2100	ug/kg			0.00	30		U	10/19/11
SAMPLE			**Sample #113366001**								
2-Bromoethanol	540-51-2				116.5	70 - 130					10/18/11
SAMPLE			**Sample #113366002**								
2-Bromoethanol	540-51-2				105.7	70 - 130					10/19/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Volatiles

Group # WSCF113366

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #113366003**							
2-Bromoethanol	540-51-2				109.7	70 - 130				10/19/11
BLANK			**QC Sample #65833**							
2-Bromoethanol	540-51-2				93.8	70 - 130				10/18/11
LCS			**QC Sample #65834**							
2-Bromoethanol	540-51-2			ug/kg	94.3	70 - 130				10/19/11
MS			**QC Sample #65835**							
			Original 113366001							
2-Bromoethanol	540-51-2				102.3	70 - 130				10/19/11
MSD			**QC Sample #65836**							
			Original 113366001					**Paired**	**65835**	
2-Bromoethanol	540-51-2				90.9	70 - 130	n/a			10/19/11
DUP			**QC Sample #65837**							
			Original 113366001							
2-Bromoethanol	540-51-2				88.1	70 - 130	n/a			10/19/11

Date: 05 June 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: Inorganics - Sample Data Groups (SDGs) SL1153, SL1177 and WSCF112775

INTRODUCTION

This memorandum presents the results of data validation for SDGs SL1153 and SL1177 prepared by TestAmerica Laboratories, Inc and SDG WSCF112775 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2J3L6	10/06/11	Soil	C	6020 & 7471A
B2J3M2	10/06/11	Soil	C	6020 & 7471A
B2J3N4	10/06/11	Soil	C	6020 & 7471A
B2J3M0	10/13/11	Soil	C	6020 & 7471A
B2J3L8	10/13/11	Soil	C	6020 & 7471A
B2J3N2	10/13/11	Soil	C	6020 & 7471A
B2D1M1	07/20/11	Soil	C	6010 & 200.8
B2D1M2	07/20/11	Soil	C	6010 & 200.8
B2FBM5	07/20/11	Soil	C	6010 & 200.8
B2FBN5	07/20/11	Soil	C	6010 & 200.8
B2FBN6	07/20/11	Soil	C	6010 & 200.8
B2FBN7	07/20/11	Soil	C	6010 & 200.8
B2FBN8	07/20/11	Soil	C	6010 & 200.8
B2FBN9	07/20/11	Soil	C	6010 & 200.8

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirement for ICP metals are analysis within 180 days of sample

collection, and the holding time requirement for mercury is analysis within 28 days of sample collection. Sample preservation for all analytes requires chilling to 4 degrees Celsius.

The samples were analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exceptions.

For SDG SL1153, the Sb laboratory blank result was > the method detection limit (MDL) but < the reporting limit (RL). The Sb results for samples B2J3L6 and B2J3M2 were detects < the RL and should be qualified as non-detects at the RL (0.50 mg/kg) and flagged "U." The Sb result for sample B2J3N4 was non-detect and should not be qualified.

For SDG WSCF112775, the B laboratory blank result was > the MDL but < the RL. The B results for samples B2D1M1 and B2D1M2, were detects < the RL and should be qualified as non-detects at the RL (21 mg/kg) and flagged “U.” All other sample results were non-detects and should not be qualified.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable with the following exceptions. Ba, Be, B, Co, Mn,. Pb, Sn, Sr, U and Zn were detected in equipment blank B2J3N4. Mn, Ba, Cr, Co, Cu, V, Pb, Mo, Sr, U and As were detected in equipment blank B2FBM5.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample results, and ICP-AES interference check sample results. According to the SAP, the matrix spike sample and the laboratory control sample accuracy limits are 70% to 130%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. The interference check sample limits are ones specified by the DV procedure.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

For SDG SL1153, the MS and/or MSD recoveries for Cu and Zn were > the upper acceptance limit. All sample results that were detects should be qualified as estimates and flagged "J+." See the table in Appendix 2 for a listing of all affected sample results.

For SDG SL1177, the MS recovery for Mn was > the upper acceptance limit. All associated sample results were detects and should be qualified as estimates and flagged “J+.” See the table in Appendix 2 for a listing of all affected sample results.

For SDG WSCF112775, the MS and/or MSD recoveries for Mn and Ba were > the upper acceptance limit. All sample results were detects and should be qualified as estimates and flagged "J+." The MS/MSD recoveries for Sb were below the lower acceptance limit but ≥30%. All sample results were non-detects and should be qualified as estimates and flagged “UJ.” See the table in Appendix 2 for a listing of all affected sample results.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exceptions.

For SDG WSCF112775, the LCS recovery for Sb was > the upper acceptance limit. All associated sample results were non-detects and should not be qualified. The LCS recovery for Li was < the lower acceptance limit but ≥30%. The Li result for sample B2FBM5 was non-detect and should be qualified as an estimate and flagged "UJ." All other sample results were detects and should be qualified as estimates and flagged "J-." See the table in Appendix 2 for a listing of all affected sample results.

ICP-AES Interference Check Samples (ICSs)

ICS data was not included in the data package. Sample results should not be qualified based on this.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results, and ICP serial dilution results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the reporting limit (RL) with differences <2X the required detection limits no precision infraction occurred. The serial dilution limits are ones specified by the DV procedure.

MS/MSD Samples

All MS/MSD RPD values were acceptable with the following exceptions.

For SDG SL1153, the Cu and Zn RPDs were above the acceptance limit. The Cu and Zn results for samples B2J3L6 and B2J3M2 and Zn for sample B2J3N4 were detects and should be qualified as estimates and would be flagged "J," but were flagged "J+" due to MS recovery infraction. The Cu result for sample B2J3N4 was non-detect and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results.

For SDG WSCF112775, the Mn and Ba RPDs were above the acceptance limit. All sample results were detects and should be qualified as estimated and would be flagged "J," but were flagged "J+" due to MS recovery infraction. See the table in Appendix 2 for a listing of all affected sample results.

Field Duplicate Samples

All field duplicate results were acceptable with the following exceptions. Samples B2J3L8 and B2J3N2 had a Cu RPD = 69%.

Field Split Samples

No field splits were submitted for validation.

ICP Serial Dilution Samples

ICS serial dilution data was not included in the data package. Sample results should not be qualified based on this.

- **ICP-MS Internal Standards**

The analysis of ICP-MS internal standards is used to determine the existences and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all samples (including QC) analyzed during the analytical run, beginning with the calibration.

ICP-MS internal standards data was not included in the data package. Sample results should not be qualified based on this.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs with associated non-detected sample results were below the CRDLs.

For SDGs SL1153 and SL1177 all Zn MDLs were slightly > the CRDLs.

- **Completeness**

SDGs SL1153, SL1177 and WSCF112775 were submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of sample results as estimates were due to a laboratory blank infraction for Sb and B, several matrix spike and LCS recovery infractions and poor precision for several analytes. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Inorganic Data Qualification Summary			
SDG: SL1153, SL1177, WSCF112775	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Sb	0.5U	B2J3L6, B2J3M2	Laboratory blank contamination
B	21U	B2D1M1, B2D1M2	Laboratory blank contamination
Cu, Zn	J+	B2J3L6, B2J3M2	High matrix spike recoveries and poor MS/MSD precision
Zn	J+	B2J3N4	High matrix spike recovery and poor MS/MSD precision
Mn	J+	B2J3M0, B2J3L8, B2J3N2,	High matrix spike recovery
Mn, Ba	J+	B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9	High matrix spike recovery and poor MS/MSD precision
Sb	UJ	B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9	Low matrix spike recoveries
Li	UJ	B2FBM5	Low LCS recovery
Li	J-	B2D1M1, B2D1M2, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9	Low LCS recovery
Cu	UJ	B2J3N4	Poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3L6

TOTAL Metals

Lot-Sample #...: F1J110446-001 Matrix.....: SOLID
Date Sampled...: 10/06/11 Date Received..: 10/11/11
% Moisture.....: 12

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1285026						
Silver	0.078 B	0.23	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AT
		Dilution Factor: 1		MDL.....: 0.016		
Arsenic	4.3	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AE
		Dilution Factor: 1		MDL.....: 0.23		
Barium	103	2.3	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AF
		Dilution Factor: 1		MDL.....: 0.065		
Beryllium	0.47	0.11	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AG
		Dilution Factor: 1		MDL.....: 0.019		
Boron	6.4 B	11.4	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AH
		Dilution Factor: 1		MDL.....: 3.8		
Cadmium	0.17	0.057	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AJ
		Dilution Factor: 1		MDL.....: 0.018		
Cobalt	11.9	0.23	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AK
		Dilution Factor: 1		MDL.....: 0.049		
Chromium	17.7	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1A0
		Dilution Factor: 1		MDL.....: 0.51		
Copper J+	29.4 N	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AL
		Dilution Factor: 1		MDL.....: 0.073		
Lithium	12.2	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1A2
		Dilution Factor: 1		MDL.....: 0.34		
Manganese	509 N	0.57	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AN
		Dilution Factor: 1		MDL.....: 0.084		
Molybdenum	0.54 B	0.57	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AP
		Dilution Factor: 1		MDL.....: 0.088		
Nickel	17.9	0.57	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AQ
		Dilution Factor: 1		MDL.....: 0.093		
Lead	11.0	0.34	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AM
		Dilution Factor: 1		MDL.....: 0.11		

(Continued on next page)

EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3L6

TOTAL Metals

Lot-Sample #...: F1J110446-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	1.3	0.57	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AR
		Dilution Factor: 1		MDL.....: 0.18		
Tin	0.99	0.23	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AV
		Dilution Factor: 1		MDL.....: 0.11		
Strontium	44.3	0.57	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AU
		Dilution Factor: 1		MDL.....: 0.24		
Uranium	0.78	0.11	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1A1
		Dilution Factor: 1		MDL.....: 0.023		
Vanadium	57.3	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AW
		Dilution Factor: 1		MDL.....: 0.84		
Zinc J+	79.7 N	5.7	mg/kg	SW846 6020	10/12-10/17/11	MM4JV1AX
		Dilution Factor: 1		MDL.....: 1.5		
Prep Batch #...: 1285027						
Antimony 0.5U	0.33 B,C	0.50	mg/kg	SW846 6020	10/13-10/19/11	MM4JV1A3
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1287047						
Mercury	0.019 B	0.038	mg/kg	SW846 7471A	10/14-10/18/11	MM4JV1AD
		Dilution Factor: 1		MDL.....: 0.013		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

C Method blank contamination. The associated method blank contains the target analyte at a reportable level.

EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3M2

TOTAL Metals

Lot-Sample #...: F1J110446-002 Matrix.....: SOLID
Date Sampled...: 10/06/11 Date Received..: 10/11/11
% Moisture.....: 7.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1285026						
Silver	0.049 B	0.22	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AX
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	2.2	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AJ
		Dilution Factor: 1		MDL.....: 0.22		
Barium	65.1	2.2	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AK
		Dilution Factor: 1		MDL.....: 0.061		
Beryllium	0.30	0.11	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AL
		Dilution Factor: 1		MDL.....: 0.018		
Boron	7.3 B	10.8	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AM
		Dilution Factor: 1		MDL.....: 3.6		
Cadmium	0.075	0.054	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AN
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	10.5	0.22	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AP
		Dilution Factor: 1		MDL.....: 0.046		
Chromium	6.4	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AA
		Dilution Factor: 1		MDL.....: 0.48		
Copper J+	18.5 N	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AQ
		Dilution Factor: 1		MDL.....: 0.069		
Lithium	5.1	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AD
		Dilution Factor: 1		MDL.....: 0.32		
Manganese	316 N	0.54	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AT
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	0.48 B	0.54	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AU
		Dilution Factor: 1		MDL.....: 0.083		
Nickel	8.4	0.54	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AV
		Dilution Factor: 1		MDL.....: 0.088		
Lead	5.6	0.32	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AR
		Dilution Factor: 1		MDL.....: 0.11		

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EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3M2

TOTAL Metals

Lot-Sample #...: F1J110446-002 Matrix.....: SOLID

PARAMETER		RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium		1.3	0.54	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AW
			Dilution Factor: 1		MDL.....: 0.17		
Tin		0.75	0.22	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1A1
			Dilution Factor: 1		MDL.....: 0.11		
Strontium		29.8	0.54	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1A0
			Dilution Factor: 1		MDL.....: 0.23		
Uranium		0.51	0.11	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1AC
			Dilution Factor: 1		MDL.....: 0.021		
Vanadium		74.3	1.1	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1A2
			Dilution Factor: 1		MDL.....: 0.79		
Zinc	J+	52.9 N	5.4	mg/kg	SW846 6020	10/12-10/17/11	MM4JW1A3
			Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1285027							
Antimony	0.5U	0.25 B,C	0.50	mg/kg	SW846 6020	10/13-10/19/11	MM4JW1AE
			Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1287047							
Mercury		ND	0.036	mg/kg	SW846 7471A	10/14-10/18/11	MM4JW1AH
			Dilution Factor: 1		MDL.....: 0.012		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

C Method blank contamination. The associated method blank contains the target analyte at a reportable level.

EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3N4

TOTAL Metals

Lot-Sample #...: F1J110446-003 Matrix.....: SOLID
Date Sampled...: 10/06/11 Date Received..: 10/11/11
% Moisture.....: 0.030

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1285026						
Silver	ND	0.20	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AX
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	ND	1.0	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AJ
		Dilution Factor: 1		MDL.....: 0.20		
Barium	**2.0**	**2.0**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AK**
		Dilution Factor: 1		MDL.....: 0.057		
Beryllium	**0.027 B**	**0.10**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AL**
		Dilution Factor: 1		MDL.....: 0.017		
Boron	**4.6 B**	**10.0**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AM**
		Dilution Factor: 1		MDL.....: 3.3		
Cadmium	ND	0.050	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AN
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	**0.078 B**	**0.20**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AP**
		Dilution Factor: 1		MDL.....: 0.043		
Chromium	ND	1.0	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AA
		Dilution Factor: 1		MDL.....: 0.45		
Copper UJ	ND N	1.0	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AQ
		Dilution Factor: 1		MDL.....: 0.064		
Lithium	ND	1.0	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AD
		Dilution Factor: 1		MDL.....: 0.30		
Manganese	**4.7 N**	**0.50**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AT**
		Dilution Factor: 1		MDL.....: 0.074		
Molybdenum	ND	0.50	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AU
		Dilution Factor: 1		MDL.....: 0.077		
Nickel	ND	0.50	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AV
		Dilution Factor: 1		MDL.....: 0.082		
Lead	**0.34**	**0.30**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AR**
		Dilution Factor: 1		MDL.....: 0.10		

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EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3N4

TOTAL Metals

Lot-Sample #...: F1J110446-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	ND	0.50	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1AW
		Dilution Factor: 1		MDL.....: 0.16		
Tin	**0.15 B**	**0.20**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1A1**
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	**0.44 B**	**0.50**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1A0**
		Dilution Factor: 1		MDL.....: 0.21		
Uranium	**0.10**	**0.10**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1AC**
		Dilution Factor: 1		MDL.....: 0.020		
Vanadium	ND	1.0	mg/kg	SW846 6020	10/12-10/18/11	MM4JX1A2
		Dilution Factor: 1		MDL.....: 0.74		
Zinc J+	**1.9 B,N**	**5.0**	**mg/kg**	**SW846 6020**	**10/12-10/18/11**	**MM4JX1A3**
		Dilution Factor: 1		MDL.....: 1.3		
Prep Batch #...: 1285027						
Antimony	ND	0.50	mg/kg	SW846 6020	10/13-10/19/11	MM4JX1AE
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1287047						
Mercury	ND	0.033	mg/kg	SW846 7471A	10/14-10/18/11	MM4JX1AH
		Dilution Factor: 1		MDL.....: 0.011		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

EH
06/05/12

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3M0

TOTAL Metals

Lot-Sample #...: F1J240433-001 Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
% Moisture.....: 6.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1304035						
Silver	0.053 B	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AT
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	3.2	1.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AE
		Dilution Factor: 1		MDL.....: 0.22		
Barium	76.3	2.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AF
		Dilution Factor: 1		MDL.....: 0.061		
Beryllium	0.42	0.11	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AG
		Dilution Factor: 1		MDL.....: 0.018		
Boron	7.2 B	10.7	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AH
		Dilution Factor: 1		MDL.....: 3.6		
Cadmium	0.10	0.054	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AJ
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	11.7	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AK
		Dilution Factor: 1		MDL.....: 0.046		
Chromium	7.9	1.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1A0
		Dilution Factor: 1		MDL.....: 0.48		
Copper	20.7	1.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AL
		Dilution Factor: 1		MDL.....: 0.069		
Lithium	7.1	1.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1A2
		Dilution Factor: 1		MDL.....: 0.32		
Manganese J+	389 N	0.54	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AN
		Dilution Factor: 1		MDL.....: 0.079		
Molybdenum	0.57	0.54	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AP
		Dilution Factor: 1		MDL.....: 0.083		
Nickel	11.0	0.54	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AQ
		Dilution Factor: 1		MDL.....: 0.088		
Lead	5.4	0.32	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AM
		Dilution Factor: 1		MDL.....: 0.11		

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EH
06/05/12

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3M0

TOTAL Metals

Lot-Sample #...: F1J240433-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	1.8	0.54	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AR
		Dilution Factor: 1		MDL.....: 0.17		
Tin	0.68	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AV
		Dilution Factor: 1		MDL.....: 0.11		
Strontium	35.4	0.54	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AU
		Dilution Factor: 1		MDL.....: 0.23		
Uranium	0.59	0.11	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1A1
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	71.4	1.1	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AW
		Dilution Factor: 1		MDL.....: 0.79		
Zinc	63.3	5.4	mg/kg	SW846 6020	10/31-11/06/11	MNE3X1AX
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1304041						
Antimony	0.58	0.50	mg/kg	SW846 6020	11/02-11/05/11	MNE3X1A3
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1308016						
Mercury	0.015 B	0.035	mg/kg	SW846 7471A	11/05/11	MNE3X1AD
		Dilution Factor: 1		MDL.....: 0.012		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3L8

TOTAL Metals

Lot-Sample #...: F1J240433-002 Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
% Moisture.....: 4.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1304035						
Silver	0.055 B	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE311AX
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	3.2	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE311AJ
		Dilution Factor: 1		MDL.....: 0.21		
Barium	74.1	2.1	mg/kg	SW846 6020	10/31-11/06/11	MNE311AK
		Dilution Factor: 1		MDL.....: 0.060		
Beryllium	0.46	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNE311AL
		Dilution Factor: 1		MDL.....: 0.018		
Boron	8.8 B	10.5	mg/kg	SW846 6020	10/31-11/06/11	MNE311AM
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.080	0.052	mg/kg	SW846 6020	10/31-11/06/11	MNE311AN
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	11.1	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE311AP
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	9.9	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE311AA
		Dilution Factor: 1		MDL.....: 0.47		
Copper	23.3	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE311AQ
		Dilution Factor: 1		MDL.....: 0.067		
Lithium	7.8	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE311AD
		Dilution Factor: 1		MDL.....: 0.31		
Manganese J+	389 N	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE311AT
		Dilution Factor: 1		MDL.....: 0.078		
Molybdenum	0.55	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE311AU
		Dilution Factor: 1		MDL.....: 0.081		
Nickel	12.6	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE311AV
		Dilution Factor: 1		MDL.....: 0.086		
Lead	5.3	0.31	mg/kg	SW846 6020	10/31-11/06/11	MNE311AR
		Dilution Factor: 1		MDL.....: 0.10		

(Continued on next page)

EH
06/05/12

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3L8

TOTAL Metals

Lot-Sample #...: F1J240433-002 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	1.6	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE311AW
		Dilution Factor: 1		MDL.....: 0.17		
Tin	0.60	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE311A1
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	32.7	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE311A0
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.53	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNE311AC
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	64.0	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE311A2
		Dilution Factor: 1		MDL.....: 0.77		
Zinc	53.3	5.2	mg/kg	SW846 6020	10/31-11/06/11	MNE311A3
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1304041						
Antimony	0.14 B	0.50	mg/kg	SW846 6020	11/02-11/05/11	MNE311AE
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1308016						
Mercury	0.014 B	0.035	mg/kg	SW846 7471A	11/05/11	MNE311AH
		Dilution Factor: 1		MDL.....: 0.012		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

NOVEMBER 15, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3N2

TOTAL Metals

Lot-Sample #...: F1J240433-003 Matrix.....: SOLID
Date Sampled...: 10/13/11 Date Received..: 10/24/11
% Moisture.....: 4.5

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1304035						
Silver	0.060 B	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE321AX
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	3.5	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE321AJ
		Dilution Factor: 1		MDL.....: 0.21		
Barium	66.9	2.1	mg/kg	SW846 6020	10/31-11/06/11	MNE321AK
		Dilution Factor: 1		MDL.....: 0.060		
Beryllium	0.47	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNE321AL
		Dilution Factor: 1		MDL.....: 0.018		
Boron	5.6 B	10.5	mg/kg	SW846 6020	10/31-11/06/11	MNE321AM
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.088	0.052	mg/kg	SW846 6020	10/31-11/06/11	MNE321AN
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	11.6	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE321AP
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	10.9	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE321AA
		Dilution Factor: 1		MDL.....: 0.47		
Copper	48.0	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE321AQ
		Dilution Factor: 1		MDL.....: 0.067		
Lithium	8.8	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE321AD
		Dilution Factor: 1		MDL.....: 0.31		
Manganese J+	405 N	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE321AT
		Dilution Factor: 1		MDL.....: 0.078		
Molybdenum	0.46 B	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE321AU
		Dilution Factor: 1		MDL.....: 0.081		
Nickel	14.3	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE321AV
		Dilution Factor: 1		MDL.....: 0.086		
Lead	5.9	0.31	mg/kg	SW846 6020	10/31-11/06/11	MNE321AR
		Dilution Factor: 1		MDL.....: 0.10		

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EH
06/05/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2J3N2

TOTAL Metals

Lot-Sample #...: F1J240433-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Selenium	1.5	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE321AW
		Dilution Factor: 1		MDL.....: 0.17		
Tin	0.64	0.21	mg/kg	SW846 6020	10/31-11/06/11	MNE321A1
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	32.3	0.52	mg/kg	SW846 6020	10/31-11/06/11	MNE321A0
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.58	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNE321AC
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	61.3	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNE321A2
		Dilution Factor: 1		MDL.....: 0.77		
Zinc	57.7	5.2	mg/kg	SW846 6020	10/31-11/06/11	MNE321A3
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1304041						
Antimony	0.095 B	0.50	mg/kg	SW846 6020	11/02-11/05/11	MNE321AE
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1308016						
Mercury	0.020 B	0.035	mg/kg	SW846 7471A	11/05/11	MNE321AH
		Dilution Factor: 1		MDL.....: 0.012		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775001
SAF# F11-092
Sample ID B2D1M1

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN		<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			31.7		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		2.09		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410			441		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	6.01		mg/kg	1	0.41	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	21U	2.80		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	365		mg/kg	1	0.096	0.96	07/29/11
Nickel	7440-02-0	LA-505-412			11.6		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775001
SAF# F11-092
Sample ID B2D1M1

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.29		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	49.4		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.363		mg/kg	1	0.096	0.48	07/29/11
Cadmium	7440-43-9	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11
Chromium	7440-47-3	LA-505-412			6.80		mg/kg	1	0.48	4.8	07/29/11
Cobalt	7440-48-4	LA-505-412			10.1		mg/kg	1	0.096	0.48	07/29/11
Copper	7440-50-8	LA-505-412			16.3		mg/kg	1	0.096	0.96	07/29/11
Vanadium	7440-62-2	LA-505-412			73.0		mg/kg	1	0.19	1.9	07/29/11
Zinc	7440-66-6	LA-505-412			49.6		mg/kg	1	0.76	4.8	07/29/11
Lead	7439-92-1	LA-505-412			4.29		mg/kg	1	0.096	0.96	07/29/11
Mercury	7439-97-6	LA-505-412	B		0.0497		mg/kg	1	0.048	0.19	07/29/11
Molybdenum	7439-98-7	LA-505-412			1.04		mg/kg	1	0.096	0.96	07/29/11
Strontium	7440-24-6	LA-505-412			26.3		mg/kg	1	0.096	0.96	07/29/11
Tin	7440-31-5	LA-505-412			0.511		mg/kg	1	0.096	0.48	07/29/11
Uranium	7440-61-1	LA-505-412			0.514		mg/kg	1	0.096	0.48	07/29/11
Arsenic	7440-38-2	LA-505-412	B		2.67		mg/kg	1	0.38	3.8	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.764		mg/kg	1	0.29	2.9	07/29/11

MDL = Minimum Detection
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TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775002
SAF# F11-092
Sample ID B2D1M2

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN		<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410	B		17.5		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		2.39		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		9.62		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	6.44		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	21U	1.25		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	275		mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412			7.97		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.10		mg/kg	1	0.10	1.0	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775002
SAF# F11-092
Sample ID B2D1M2

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.30		mg/kg	1	0.30	3.0	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	43.9		mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.288		mg/kg	1	0.10	0.50	07/29/11
Cadmium	7440-43-9	LA-505-412	U		<0.10		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412			10.6		mg/kg	1	0.50	5.0	07/29/11
Cobalt	7440-48-4	LA-505-412			7.83		mg/kg	1	0.10	0.50	07/29/11
Copper	7440-50-8	LA-505-412			13.7		mg/kg	1	0.10	1.0	07/29/11
Vanadium	7440-62-2	LA-505-412			51.1		mg/kg	1	0.20	2.0	07/29/11
Zinc	7440-66-6	LA-505-412			37.3		mg/kg	1	0.80	5.0	07/29/11
Lead	7439-92-1	LA-505-412			3.83		mg/kg	1	0.10	1.0	07/29/11
Mercury	7439-97-6	LA-505-412	U		<0.050		mg/kg	1	0.050	0.20	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.756		mg/kg	1	0.10	1.0	07/29/11
Strontium	7440-24-6	LA-505-412			23.2		mg/kg	1	0.10	1.0	07/29/11
Tin	7440-31-5	LA-505-412	B		0.404		mg/kg	1	0.10	0.50	07/29/11
Uranium	7440-61-1	LA-505-412	B		0.420		mg/kg	1	0.10	0.50	07/29/11
Arsenic	7440-38-2	LA-505-412	B		2.98		mg/kg	1	0.40	4.0	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.638		mg/kg	1	0.30	3.0	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775003
SAF# F11-092
Sample ID B2FBM5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN		<1.8		mg/kg	1	1.8	3.6	07/26/11
Chloride	16887-00-6	LA-533-410	U		<3.1		mg/kg	1	3.1	20	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<0.99		mg/kg	1	0.99	4.9	07/26/11
Nitrate-N	NO3-N	LA-533-410	U		<0.94		mg/kg	1	0.94	4.9	07/26/11
Sulfate	14808-79-8	LA-533-410	U		<3.6		mg/kg	1	3.6	52	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.50	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411	U	UJ	<0.40		mg/kg	1	0.40	2.0	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.60		mg/kg	1	0.60	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	BN	J+	0.715		mg/kg	1	0.094	0.94	07/29/11
Nickel	7440-02-0	LA-505-412	U		<0.19		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.094		mg/kg	1	0.094	0.94	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775003
SAF# F11-092
Sample ID B2FBM5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.28		mg/kg	1	0.28	2.8	07/29/11
Barium	7440-39-3	LA-505-412	BN	J+	0.324		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	U		<0.094		mg/kg	1	0.094	0.47	07/29/11
Cadmium	7440-43-9	LA-505-412	U		<0.094		mg/kg	1	0.094	0.94	07/29/11
Chromium	7440-47-3	LA-505-412	B		0.577		mg/kg	1	0.47	4.7	07/29/11
Cobalt	7440-48-4	LA-505-412	B		0.123		mg/kg	1	0.094	0.47	07/29/11
Copper	7440-50-8	LA-505-412			2.54		mg/kg	1	0.094	0.94	07/29/11
Vanadium	7440-62-2	LA-505-412	B		0.579		mg/kg	1	0.19	1.9	07/29/11
Zinc	7440-66-6	LA-505-412	U		<0.75		mg/kg	1	0.75	4.7	07/29/11
Lead	7439-92-1	LA-505-412	B		0.294		mg/kg	1	0.094	0.94	07/29/11
Mercury	7439-97-6	LA-505-412	U		<0.047		mg/kg	1	0.047	0.19	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.168		mg/kg	1	0.094	0.94	07/29/11
Strontium	7440-24-6	LA-505-412	B		0.174		mg/kg	1	0.094	0.94	07/29/11
Tin	7440-31-5	LA-505-412	U		<0.094		mg/kg	1	0.094	0.47	07/29/11
Uranium	7440-61-1	LA-505-412	B		0.204		mg/kg	1	0.094	0.47	07/29/11
Arsenic	7440-38-2	LA-505-412	B		0.615		mg/kg	1	0.38	3.8	07/29/11
Selenium	7782-49-2	LA-505-412	U		<0.28		mg/kg	1	0.28	2.8	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775004
SAF# F11-092
Sample ID B2FBN5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN		<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			152		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		1.33		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		12.9		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	BN		0.102		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	8.09		mg/kg	1	0.41	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.62		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	303		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412			11.2		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.099		mg/kg	1	0.099	0.99	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775004
SAF# F11-092
Sample ID B2FBN5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.30		mg/kg	1	0.30	3.0	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	55.7		mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.273		mg/kg	1	0.099	0.50	07/29/11
Cadmium	7440-43-9	LA-505-412	B		0.123		mg/kg	1	0.099	0.99	07/29/11
Chromium	7440-47-3	LA-505-412			10.7		mg/kg	1	0.50	5.0	07/29/11
Cobalt	7440-48-4	LA-505-412			7.79		mg/kg	1	0.099	0.50	07/29/11
Copper	7440-50-8	LA-505-412			16.3		mg/kg	1	0.099	0.99	07/29/11
Vanadium	7440-62-2	LA-505-412			48.3		mg/kg	1	0.20	2.0	07/29/11
Zinc	7440-66-6	LA-505-412			41.6		mg/kg	1	0.79	5.0	07/29/11
Lead	7439-92-1	LA-505-412			5.50		mg/kg	1	0.099	0.99	07/29/11
Mercury	7439-97-6	LA-505-412	U		<0.050		mg/kg	1	0.050	0.20	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.413		mg/kg	1	0.099	0.99	07/29/11
Strontium	7440-24-6	LA-505-412			26.5		mg/kg	1	0.099	0.99	07/29/11
Tin	7440-31-5	LA-505-412	B		0.393		mg/kg	1	0.099	0.50	07/29/11
Uranium	7440-61-1	LA-505-412			0.565		mg/kg	1	0.099	0.50	07/29/11
Arsenic	7440-38-2	LA-505-412	B		2.55		mg/kg	1	0.40	4.0	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.357		mg/kg	1	0.30	3.0	07/29/11

MDL = Minimum Detection
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B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775005
SAF# F11-092
Sample ID B2FBN6

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN		<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			42.6		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.1	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		1.03		mg/kg	1	0.99	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		15.3		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	7.25		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	298		mg/kg	1	0.096	0.96	07/29/11
Nickel	7440-02-0	LA-505-412			11.9		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11

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TP Err = Total Propagated
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C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775005
SAF# F11-092
Sample ID B2FBN6

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.29		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	52.4		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.249		mg/kg	1	0.096	0.48	07/29/11
Cadmium	7440-43-9	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11
Chromium	7440-47-3	LA-505-412			10.1		mg/kg	1	0.48	4.8	07/29/11
Cobalt	7440-48-4	LA-505-412			8.53		mg/kg	1	0.096	0.48	07/29/11
Copper	7440-50-8	LA-505-412			37.0		mg/kg	1	0.096	0.96	07/29/11
Vanadium	7440-62-2	LA-505-412			58.5		mg/kg	1	0.19	1.9	07/29/11
Zinc	7440-66-6	LA-505-412			42.2		mg/kg	1	0.77	4.8	07/29/11
Lead	7439-92-1	LA-505-412			4.37		mg/kg	1	0.096	0.96	07/29/11
Mercury	7439-97-6	LA-505-412	U		<0.048		mg/kg	1	0.048	0.19	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.460		mg/kg	1	0.096	0.96	07/29/11
Strontium	7440-24-6	LA-505-412			31.2		mg/kg	1	0.096	0.96	07/29/11
Tin	7440-31-5	LA-505-412			0.519		mg/kg	1	0.096	0.48	07/29/11
Uranium	7440-61-1	LA-505-412	B		0.474		mg/kg	1	0.096	0.48	07/29/11
Arsenic	7440-38-2	LA-505-412	B		2.52		mg/kg	1	0.39	3.9	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.407		mg/kg	1	0.29	2.9	07/29/11

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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775006
SAF# F11-092
Sample ID B2FBN7

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/27/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	U		<1.9		mg/kg	1	1.9	3.7	07/27/11
Chloride	16887-00-6	LA-533-410			265		mg/kg	1	3.2	21	07/27/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.1	07/27/11
Nitrate-N	NO3-N	LA-533-410	U		<0.99		mg/kg	1	0.99	5.1	07/27/11
Sulfate	14808-79-8	LA-533-410	B		7.45		mg/kg	1	3.7	54	07/27/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	5.48		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	357		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412			8.72		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.099		mg/kg	1	0.099	0.99	07/29/11

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TP Err = Total Propagated
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E - Analyte is an estimate, see comment section.
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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775006
SAF# F11-092
Sample ID B2FBN7

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.30		mg/kg	1	0.30	3.0	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	59.6		mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.173		mg/kg	1	0.099	0.50	07/29/11
Cadmium	7440-43-9	LA-505-412	B		0.120		mg/kg	1	0.099	0.99	07/29/11
Chromium	7440-47-3	LA-505-412			5.85		mg/kg	1	0.50	5.0	07/29/11
Cobalt	7440-48-4	LA-505-412			11.4		mg/kg	1	0.099	0.50	07/29/11
Copper	7440-50-8	LA-505-412			25.3		mg/kg	1	0.099	0.99	07/29/11
Vanadium	7440-62-2	LA-505-412			81.2		mg/kg	1	0.20	2.0	07/29/11
Zinc	7440-66-6	LA-505-412			62.3		mg/kg	1	0.79	5.0	07/29/11
Lead	7439-92-1	LA-505-412			5.25		mg/kg	1	0.099	0.99	07/29/11
Mercury	7439-97-6	LA-505-412	B		0.0634		mg/kg	1	0.050	0.20	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.542		mg/kg	1	0.099	0.99	07/29/11
Strontium	7440-24-6	LA-505-412			27.0		mg/kg	1	0.099	0.99	07/29/11
Tin	7440-31-5	LA-505-412	B		0.468		mg/kg	1	0.099	0.50	07/29/11
Uranium	7440-61-1	LA-505-412	B		0.491		mg/kg	1	0.099	0.50	07/29/11
Arsenic	7440-38-2	LA-505-412			6.27		mg/kg	1	0.40	4.0	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.666		mg/kg	1	0.30	3.0	07/29/11

MDL = Minimum Detection
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+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775007
SAF# F11-092
Sample ID B2FBN8

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/27/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	U		<1.9		mg/kg	1	1.9	3.8	07/27/11
Chloride	16887-00-6	LA-533-410			23.3		mg/kg	1	3.3	22	07/27/11
Nitrite-N	NO2-N	LA-533-410	U		<1.1		mg/kg	1	1.1	5.2	07/27/11
Nitrate-N	NO3-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.3	07/27/11
Sulfate	14808-79-8	LA-533-410			123		mg/kg	1	3.8	56	07/27/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	6.56		mg/kg	1	0.43	2.2	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.65		mg/kg	1	0.65	22	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	323		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412			9.12		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.099		mg/kg	1	0.099	0.99	07/29/11

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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775007
SAF# F11-092
Sample ID B2FBN8

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.30		mg/kg	1	0.30	3.0	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	57.2		mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	U		<0.099		mg/kg	1	0.099	0.50	07/29/11
Cadmium	7440-43-9	LA-505-412	B		0.118		mg/kg	1	0.099	0.99	07/29/11
Chromium	7440-47-3	LA-505-412			7.75		mg/kg	1	0.50	5.0	07/29/11
Cobalt	7440-48-4	LA-505-412			9.41		mg/kg	1	0.099	0.50	07/29/11
Copper	7440-50-8	LA-505-412			17.3		mg/kg	1	0.099	0.99	07/29/11
Vanadium	7440-62-2	LA-505-412			72.9		mg/kg	1	0.20	2.0	07/29/11
Zinc	7440-66-6	LA-505-412			50.9		mg/kg	1	0.79	5.0	07/29/11
Lead	7439-92-1	LA-505-412			5.59		mg/kg	1	0.099	0.99	07/29/11
Mercury	7439-97-6	LA-505-412	U		<0.050		mg/kg	1	0.050	0.20	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.811		mg/kg	1	0.099	0.99	07/29/11
Strontium	7440-24-6	LA-505-412			28.7		mg/kg	1	0.099	0.99	07/29/11
Tin	7440-31-5	LA-505-412	B		0.490		mg/kg	1	0.099	0.50	07/29/11
Uranium	7440-61-1	LA-505-412			0.537		mg/kg	1	0.099	0.50	07/29/11
Arsenic	7440-38-2	LA-505-412			9.87		mg/kg	1	0.40	4.0	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.771		mg/kg	1	0.30	3.0	07/29/11

MDL = Minimum Detection
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TP Err = Total Propagated
DF = Dilution Factor
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C - Analyte was found in the Associated Blank. (Inorganic)
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N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775008
SAF# F11-092
Sample ID B2FBN9

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/27/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	U		<1.9		mg/kg	1	1.9	3.8	07/27/11
Chloride	16887-00-6	LA-533-410			279		mg/kg	1	3.3	21	07/27/11
Nitrite-N	NO2-N	LA-533-410	U		<1.1		mg/kg	1	1.1	5.2	07/27/11
Nitrate-N	NO3-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.2	07/27/11
Sulfate	14808-79-8	LA-533-410	B		7.99		mg/kg	1	3.8	55	07/27/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411		J-	5.49		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N	J+	313		mg/kg	1	0.097	0.97	07/29/11
Nickel	7440-02-0	LA-505-412			7.83		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.097		mg/kg	1	0.097	0.97	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775008
SAF# F11-092
Sample ID B2FBN9

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Antimony	7440-36-0	LA-505-412	UN	UJ	<0.29		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	N	J+	53.8		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	B		0.294		mg/kg	1	0.097	0.48	07/29/11
Cadmium	7440-43-9	LA-505-412	B		0.103		mg/kg	1	0.097	0.97	07/29/11
Chromium	7440-47-3	LA-505-412			5.54		mg/kg	1	0.48	4.8	07/29/11
Cobalt	7440-48-4	LA-505-412			9.35		mg/kg	1	0.097	0.48	07/29/11
Copper	7440-50-8	LA-505-412			21.1		mg/kg	1	0.097	0.97	07/29/11
Vanadium	7440-62-2	LA-505-412			70.1		mg/kg	1	0.19	1.9	07/29/11
Zinc	7440-66-6	LA-505-412			54.9		mg/kg	1	0.78	4.8	07/29/11
Lead	7439-92-1	LA-505-412			5.84		mg/kg	1	0.097	0.97	07/29/11
Mercury	7439-97-6	LA-505-412	B		0.0500		mg/kg	1	0.048	0.19	07/29/11
Molybdenum	7439-98-7	LA-505-412	B		0.469		mg/kg	1	0.097	0.97	07/29/11
Strontium	7440-24-6	LA-505-412			24.9		mg/kg	1	0.097	0.97	07/29/11
Tin	7440-31-5	LA-505-412	B		0.470		mg/kg	1	0.097	0.48	07/29/11
Uranium	7440-61-1	LA-505-412	B		0.451		mg/kg	1	0.097	0.48	07/29/11
Arsenic	7440-38-2	LA-505-412			6.16		mg/kg	1	0.39	3.9	07/29/11
Selenium	7782-49-2	LA-505-412	B		0.675		mg/kg	1	0.29	2.9	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
MS B3-60
Richland, Washington 99352
October 22, 2011
Attention: Mike Neely

TestAmerica Laboratories, Inc.

SDG	: SL1153
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: October 11, 2011

II. Introduction

On October 11, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-092

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

October 22, 2011
SDG: SL1153

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

ICPMS Metals

Batch: 1285026

The MS/MSD recovery for Manganese is outside the established QC limits. The said analyte concentration in the original sample is greater than four times the amount spiked, making percent recovery information ineffective. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery.
Affected Samples:
F1J110446 (1): B2J3L6
F1J110446 (2): B2J3M2
F1J110446 (3): B2J3N4

The MS or MSD recovery for Copper and Zinc is outside the established QC limits. A matrix interference is physically evident in the sample. The sample is a non-homogenous mixture of rock and soil. The MS/MSD RPD is outside acceptance limits. Method performance is demonstrated by acceptable LCS recovery.
Affected Samples:
F1J110446 (1): B2J3L6
F1J110446 (2): B2J3M2
F1J110446 (3): B2J3N4

The CCV bracketing the initial QC (ICSA, ICSAB, and LLC) was outside the QC limit for Boron. The initial QC all passed within acceptable limits. The CCV bracketing the samples was outside the upper QC limit (greater than 110%) for Boron indicating a potential high bias. This analyte was not detected above the reporting limit in the associated samples.
Affected Samples:
F1J110446 (1): B2J3L6
F1J110446 (2): B2J3M2
F1J110446 (3): B2J3N4

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

October 22, 2011
SDG: SL1153

Batch: 1258027

Antimony was detected in the method blank at a concentration above the MDL but less than the RL. The analyte is qualified with a "C" flag in the associated samples.
Affected Samples:
F1J110446 (1): B2J3L6
F1J110446 (2): B2J3M2
F1J110446 (3): B2J3N4

There were no observations or nonconformances for the following methods:

Mercury

I certify that this Summary Package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Michael Franks
St. Louis Project Manager

52153

SDG# SL1153

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-237	PAGE 1 OF 1
COLLECTOR: Curt III — K.J. Young, CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-53 Sample #1	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: GWS - 257	FIELD LOGBOOK NO.: ~~HNF-N-507-~~ 24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR FEDEX 7952-7805-8475		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC5

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L6	SOIL	OCT 06 2011	0923	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: K.J. Young, CHPRC	DATE/TIME: OCT 06 2011 / 1135	RECEIVED BY/STORED IN: M01109SSU#1	DATE/TIME: OCT 06 2011 / 1135
RELINQUISHED BY/REMOVED FROM: M01109SSU#1	DATE/TIME: 10/10/11 1200	RECEIVED BY/STORED IN: K.J. Young	DATE/TIME: 10/10/11 1200
RELINQUISHED BY/REMOVED FROM: K.J. Young	DATE/TIME: 10/10/11 1310	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: Nicholas Burbrs	DATE/TIME: 10/11/11 0910
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~ 10/5/11

(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

SDG# SL1153

SL1153

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-243	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-53 Sample #4	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: GWS-257	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR FEDEX 7952-7805-8475		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC8

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3M2	SOIL	OCT 06 2011	1010	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: K.J. Young CHPRC	DATE/TIME: OCT 06 2011 1135	RECEIVED BY/STORED IN: M01109SSU#1	DATE/TIME: OCT 06 2011 1135
RELINQUISHED BY/REMOVED FROM: M01109SSU#1 10/10/11	DATE/TIME: 1200	RECEIVED BY/STORED IN: KJ. Young 10/10/11	DATE/TIME: 1200
RELINQUISHED BY/REMOVED FROM: KJ. Young 10/10/11	DATE/TIME: 1310	RECEIVED BY/STORED IN: FED EX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FedEx	DATE/TIME:	RECEIVED BY/STORED IN: [illegible] 10/11/11	DATE/TIME: 0910
RELINQUISHED BY/REMOVED FROM:	DATE/TIME:	RECEIVED BY/STORED IN:	DATE/TIME:
RELINQUISHED BY/REMOVED FROM:	DATE/TIME:	RECEIVED BY/STORED IN:	DATE/TIME:
RELINQUISHED BY/REMOVED FROM:	DATE/TIME:	RECEIVED BY/STORED IN:	DATE/TIME:

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ☐☐ ~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~ SJR 10/5/11

(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

SL1153

SDG# SL1153

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-255	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-53 Sample #6	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY ☐	
ICE CHEST NO.: GWS-257	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: N/A	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR FEDEx 7952-7805-8475		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3N4	SOIL	OCT 06 2011	0910	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1130	M01109SSU#1	OCT 06 2011 1130
M01109SSU#1	10/10/11 1200	K.J. Young	10/10/11 1200
K.J. Young	10/10/11 1310	FEDEx	
FEDEx		NICHOLAS EVANS	10/8/11 0910

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ☐☐ ~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~ 10/5/11
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
MS B3-60
Richland, Washington 99352
November 13, 2011
Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1177
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: October 24, 2011

II. Introduction

On October 24, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-092

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company
November 13, 2011
SDG: SL1177

TestAmerica Laboratories, Inc.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

Glycols

Batch: 1312055

The ICV recovery for Ethylene Glycol is outside the upper QC limits (greater than 20%D). The samples associated with this ICV were non-detect for this target analytes.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

ICPMS Metals

Batch: 1304035

The MS/MSD recovery for Manganese is outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. The analyte is qualified with an "N" flag.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

Due to LDR failures, the LDR has been lowered for Beryllium (200ppb) and Lithium (200ppb). The LCS and the MS/MSD results were above the LDR. The LCS and MS/MSD recoveries were within acceptable QC limits. The MS/MSD results are reported as estimated values.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company
November 13, 2011
SDG: SL1177

TestAmerica Laboratories, Inc.

The internal standard was outside QC limits in the CCV and/or CCB. All analytes were within acceptable limits, showing that there was no bias.
Affected Samples:
F1J240433 (1): B2J3M0
F1J240433 (2): B2J3L8
F1J240433 (3): B2J3N2

There were no observations or nonconformances for the following methods:

Mercury

I certify that this Summary Package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Jayna Awalt "for"
Michael Franks
St. Louis Project Manager

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-241	PAGE 1 OF 1
COLLECTOR SL1177 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #3	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC7

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3M0	SOIL	OCT 13 2011	1305	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/24/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
☐ 10/5/11
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
Alcohols, glycols, & Ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011 A-6003-618 (REV 2)

NOVEMBER 15, 2011

TestAmerica - St. Louis

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-239	PAGE 1 OF 1
COLLECTOR SL1177 ~~SL1176~~ 10/20/11 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #2	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC6

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L8	SOIL	OCT 13 2011	1249	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FED EX	DATE/TIME
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/21/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
☐ DB 10/5/11
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
Alcohols, glycols, & Ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011

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NOVEMBER 15, 2011

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-253	PAGE 1 OF 1
COLLECTOR SL1177 K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND
SAMPLING LOCATION 100-K-53 Sample #5	PROJECT DESIGNATION Area AH In-Process Sampling - Soil		SAF NO. F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO. GWS-258	FIELD LOGBOOK NO. HNF-N-507-24.	ACTUAL SAMPLE DEPTH 0-1'	COA 302718ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7953-2169-3385		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRD3

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3N2	SOIL	OCT 13 2011	1249	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME OCT 13 2011 / 1430	RECEIVED BY/STORED IN SSU-1 M01109	DATE/TIME OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM SSU-1 M01109	DATE/TIME OCT 21 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME OCT 21 2011 / 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 10/24/11 0915
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Lithium, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
Alcohols, glycols, & ketones - 8015 (Ethylene glycol)

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

NOVEMBER 15, 2011

Attachment 2
Narrative
WSCF112775

Revision: This report has been revised due to changes in 8015 QC reporting.

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Batch QC 186899

- Fluoride – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Matrix Spike and Post Spike recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Antimony and Manganese – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

pH – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

Narrative

- There was no Laboratory Control Sample, Matrix Spike, or Matrix Spike Duplicate for Ethylene Glycol.
- All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

Sample Receipt

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

F11-092-049 — PAGE 1 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: ~~14 Days~~ / ~~15 Days~~ 15

AIR QUALITY: ☐

SAMPLING LOCATION: Area AH Sample 24

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: SML-777

FIELD LOGBOOK NO.: HNF-N-507-22

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

112776

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M1	SOIL	JUL 20 2011	0821	✓	✓	✓		

Not collected
KLY 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 20 2011 1000	MO 1109 SSU #1	JUL 20 2011 1000
MO 1109 SSU #1	7-26-11 0930	FM Hall	7-26-11 0930
FM Hall	7-26-11 1015	TAPPAZIM	7-26-11 1015

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected.

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

PRINTED ON 5/31/2011

A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-049

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: ~~12 Days~~ 15 / ~~12~~ 15 Days 6/1/11
SAMPLING LOCATION: Area AH Sample 24	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	ORIGINAL
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-~~N-507~~-22	ACTUAL SAMPLE DEPTH: 0-11'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium 137, Cobalt 60, Europium 152, Europium 154, Europium 155};~~
~~(5) Americium 241; Isotopic Plutonium {Plutonium 238, Plutonium 239/240}; Isotopic Uranium {Uranium 233/234, Uranium 235, Uranium 238}; Strontium 89,90 Total Sr;~~
Not collected KJY 7/20/11

PRINTED ON 5/31/2011

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REVISED112775 -

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-050

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: ~~12 Days~~ / ~~14~~ 15 Days 6/1/11

AIR QUALITY: ☐

SAMPLING LOCATION: Area AH Sample 25

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: SMC-777

FIELD LOGBOOK NO.: HNF-N-807-22

ACTUAL SAMPLE DEPTH

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M2	2	SOIL	JUL 20 2011	0831	✓	✓	✓		

Not collected KT 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	JUL 20 2011 1000	M01109 SSU#1	JUL 20 2011 1000
M01109 SSU#1	7-20-11 0930	FM Hall	7-20-11 0930
FM Hall	7-20-11 1015	TA Fnazim	7-20-11 1015
			7-20-11
			7-20-11

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected

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

PRINTED ON 5/31/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-050 — PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
SAMPLING LOCATION: Area AH Sample 25	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01 — AIR QUALITY: ☐ — METHOD OF SHIPMENT: GOVERNMENT VEHICLE — DATA TURNAROUND: ~~12~~ Days / ~~21~~ 15 Days 15 6/1/11 — ORIGINAL

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241, Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KJ 7/20/11

PRINTED ON 5/31/2011 — A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-101 | PAGE 1 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: 8C

DATA TURNAROUND: 15 Days / 15 Days

SAMPLING LOCATION: Area AH Sample 31

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11 092

AIR QUALITY

ICE CHEST NO.: SAL-777

FIELD LOGBOOK NO.: HNF-14607-22

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302579ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

Waste Sampling & Characterization

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

PRESERVATION	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	Cool~4C	None	None		
HOLDING TIME	14 Days	14/40 Days	14/40 Days	6 Months	30 Days	6 Months	6 Months			
TYPE OF CONTAINER	G	aG	G	G/P	G/P	Square Bottle - poly	G/P			
NO. OF CONTAINER(S)	1	1	1	1	1	1	1			
VOLUME	120mL	250mL	120mL	120mL	120mL	500mL	120mL			
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Semi VOA - 8270 (TCL)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS			

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2FBM5 3	SOIL	JUL 20 2011	0820

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (2)(5)(6) & Semi VOA Not collected

7-26-11 TH 7-28-11

CHAIN OF POSSESSION | SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC — DATE/TIME JUL 20 2011 1000

RECEIVED BY/STORED IN: SSU #1 — DATE/TIME JUL 20 2011 1000

RELINQUISHED BY/REMOVED FROM: SSU #1 — DATE/TIME 7-28-11 0730

RECEIVED BY/STORED IN: FM Hall — DATE/TIME 7-28-11

RELINQUISHED BY/REMOVED FROM: FM Hall — DATE/TIME 7-28-11 1015

RECEIVED BY/STORED IN: TA Fuglian — DATE/TIME 7-28-11 1015

RELINQUISHED BY/REMOVED FROM: FM Hall — DATE/TIME 7-28-11

RECEIVED BY/STORED IN: — DATE/TIME 7-28-11

RELINQUISHED BY/REMOVED FROM: — DATE/TIME

RECEIVED BY/STORED IN: — DATE/TIME

RELINQUISHED BY/REMOVED FROM: — DATE/TIME

RECEIVED BY/STORED IN: — DATE/TIME

RELINQUISHED BY/REMOVED FROM: — DATE/TIME

RECEIVED BY/STORED IN: — DATE/TIME

LABORATORY SECTION: RECEIVED BY — TITLE — DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD — DISPOSED BY — DATE/TIME

PRINTED ON 5/16/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-101	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 31	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMIL-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
~~(2) TPH DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};~~
(3) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(4) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(6) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	15 Days / 15 Days
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN5 4	SOIL	JUL 2 0 2011	0846	✓	✓	✓		

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 2 0 2011 1000	RECEIVED BY/STORED IN: H01109 SSL #1	DATE/TIME: JUL 2 0 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: H10 1109 SSL #1	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-2011	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Fridge in Lab	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-607-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KT 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SAIL-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN6 5	SOIL	JUL 20 2011	0903	✓	✓	✓		

Not collected
Ky 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: JUL 20 2011 1000	RECEIVED BY/STORED IN: MO1109 SSU#1	DATE/TIME: JUL 20 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: MO1109 SSU#1	DATE/TIME: 7-26-11 0930	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-11 0930	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Fnorzimi	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/S[redacted]	DATE/TIME	

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

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F11-092-113	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil	SAF NO.: F11-092	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0 - 1	COA: 302679ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN7 10	SOIL	JUL 20 2011	0925	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall CHPRC	JUL 20 2011 1000	MO1109 SSU#1	JUL 20 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109 SSU#1 7-26-11	7-26-11 0930	FM Hall 7-26-11	7-26-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall 7-26-11	7-26-11 1015	DAHAZIM 7-26-11	7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-113	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-114	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION			Cool~4C	None	Cool~4C	None	None
HOLDING TIME			14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER			G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)			1	1	1	1	1
VOLUME			120mL	120mL	120mL	500mL	120mL
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				
B2FBN8 7	SOIL	JUL 2 0 2011	0939	✓	✓	✓	

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall JUL 2 0 2011	1000	MO1109	JUL 2 0 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109	7-26-11 0930	FM Hall	7-26-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall	7-26 1015	TA FMAZ12	7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-114	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A	

DATA TURNAROUND: 15 Days / 15 Days

ORIGINAL

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None	Cool-4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN9 8	SOIL	JUL 20 2011	0925	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 20 2011 1000	RECEIVED BY/STORED IN: HAD 1109 SSU#1	DATE/TIME: JUL 20 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: HAD 1109 SSU # 7-26-11	DATE/TIME: 0930 7-26-11	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 0930 7-26-11	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 1015 7-26-11	RECEIVED BY/STORED IN: TA Pinazin	DATE/TIME: 1015 7-26-11	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011 — A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL - 777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

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Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-015		
VALIDATOR: Eyda Hergenreder		LAB: TestAmerica, WSCF		DATE: 06-05-2012	
			SDG: SL1153, SL1177, WSCF112775		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg X		EPA 200.8	

SAMPLES/MATRIX Soil samples

SDG SL1153: B2J3L6, B2J3M2, B2J3N4

SDG SL1177: B2J3M0, B2J3L8, B2J3N2

SDG WSCF112775: B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: None

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:
SDG SL1153: Sb MB 0.084 mg/kg
SDG WSCF112775: B MB 9.0 mg/kg

EB B2J3N4: Ba 2.0 mg/kg; Be 0.027 mg/kg; B 4.6 mg/kg; Co 0.078 mg/kg; Mn 4.7 mg/kg; Pb 0.34 mg/kg Sn 0.15 mg/kg; Sr 0.44 mg/kg; U 0.10 mg/kg; Zn 1.9 mg/kg
EB B2FBM5: Mn 0.715 mg/kg; Ba 0.324 mg/kg; Cr 0.577 mg/kg; Co 0.123 mg/kg; Cu 2.54 mg/kg; V 0.579 mg/kg; Pb 0.294 mg/kg; Mo 0.168 mg/kg; Sr 0.174 mg/kg; U 0.204 mg/kg; As 0.615 mg/kg

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

SL1153: Cu MSD%R 312%; Zn MS%R 394%
SL1177: Mn MS% 143%
WSCF112775: Mn MS%R 151%: Sb MS/MSD%R 65%/60%; Ba MSD%R 142%
Li LCS%R 67%; Sb LCS%R 147%

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?..... Yes (No) N/A

Duplicate results acceptable?..... (Yes) No N/A

MS/MSD standards NIST traceable? (Levels D, E)..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E)..... Yes No (N/A)

Field duplicate RPD values acceptable?..... Yes (No) N/A

Field split RPD values acceptable?..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E)..... Yes No (N/A)

Comments:

SL1153: MS/MSD RPD Cu 98%; Zn 89%
WSCF112775: MS/MSD RPD Mn 59%; Ba 41%

Samples B2J3L8/B2J3N2: Cu 69% RPD

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: None

8. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?.....Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

SL1153 and SL1177: Zn MDL > CRDL for all samples

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1J120000-026 **Prep Batch #...:** 1285026						
Arsenic	ND	1.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AD
		Dilution Factor: 1				
Boron	ND	10.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AE
		Dilution Factor: 1				
Cadmium	ND	0.050	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AV
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AG
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AH
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AJ
		Dilution Factor: 1				
Lithium	ND	1.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AX
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AK
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AL
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AM
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AN
		Dilution Factor: 1				
Silver	ND	0.20	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AP
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Strontium	ND	0.50	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AQ
		Dilution Factor: 1				
Tin	ND	0.20	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AR
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AW
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AT
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	10/12-10/17/11	MM42F1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1J120000-027 **Prep Batch #...:** 1285027

Antimony	**0.084 B**	**0.50**	**mg/kg**	**SW846 6020**	**10/13-10/19/11**	**MM42H1AA**
		Dilution Factor: 1				

MB Lot-Sample #: F1J140000-047 **Prep Batch #...:** 1287047

Mercury	ND	0.033	mg/kg	SW846 7471A	10/14-10/18/11	MM61T1AA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID

LCS Lot-Sample#: F1J120000-026 **Prep Batch #...:** 1285026

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	109	106	mg/kg	98	SW846 6020	10/12-10/17/11	MM42F1A0
			Dilution Factor: 2.5				
Barium	325	329	mg/kg	101	SW846 6020	10/12-10/17/11	MM42F1A1
			Dilution Factor: 2.5				
Beryllium	92.0	91.1	mg/kg	99	SW846 6020	10/12-10/17/11	MM42F1A2
			Dilution Factor: 2.5				
Boron	142	165	mg/kg	116	SW846 6020	10/12-10/17/11	MM42F1A3
			Dilution Factor: 2.5				
Cadmium	110	118	mg/kg	107	SW846 6020	10/12-10/17/11	MM42F1A4
			Dilution Factor: 2.5				
Cobalt	133	148	mg/kg	112	SW846 6020	10/12-10/17/11	MM42F1A5
			Dilution Factor: 2.5				
Copper	74.7	76.5	mg/kg	102	SW846 6020	10/12-10/17/11	MM42F1A6
			Dilution Factor: 2.5				
Lead	152	167	mg/kg	110	SW846 6020	10/12-10/17/11	MM42F1A7
			Dilution Factor: 2.5				
Manganese	443	495	mg/kg	112	SW846 6020	10/12-10/17/11	MM42F1A8
			Dilution Factor: 2.5				
Molybdenum	82.5	99.3	mg/kg	120	SW846 6020	10/12-10/17/11	MM42F1A9
			Dilution Factor: 2.5				
Nickel	109	120	mg/kg	110	SW846 6020	10/12-10/17/11	MM42F1CA
			Dilution Factor: 2.5				
Selenium	207	238	mg/kg	115	SW846 6020	10/12-10/17/11	MM42F1CC
			Dilution Factor: 2.5				
Silver	52.0	50.4	mg/kg	97	SW846 6020	10/12-10/17/11	MM42F1CD
			Dilution Factor: 2.5				
Strontium	111	127	mg/kg	115	SW846 6020	10/12-10/17/11	MM42F1CE
			Dilution Factor: 2.5				

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Tin	135	130	mg/kg	96	SW846 6020	10/12-10/17/11	MM42F1CF
			Dilution Factor: 2.5				
Vanadium	110	109	mg/kg	99	SW846 6020	10/12-10/17/11	MM42F1CG
			Dilution Factor: 2.5				
Zinc	299	318	mg/kg	106	SW846 6020	10/12-10/17/11	MM42F1CH
			Dilution Factor: 2.5				
Chromium	93.4	92.9	mg/kg	99	SW846 6020	10/12-10/17/11	MM42F1CJ
			Dilution Factor: 2.5				
Uranium	100	104	mg/kg	104	SW846 6020	10/12-10/17/11	MM42F1CK
			Dilution Factor: 1				
Lithium	100	101	mg/kg	101	SW846 6020	10/12-10/17/11	MM42F1CL
			Dilution Factor: 1				
LCS Lot-Sample#: F1J120000-027 **Prep Batch #...:** 1285027							
Antimony	50.0	44.8	mg/kg	90	SW846 6020	10/13-10/19/11	MM42H1AC
			Dilution Factor: 1				
LCS Lot-Sample#: F1J140000-047 **Prep Batch #...:** 1287047							
Mercury	16.3	17.1	mg/kg	105	SW846 7471A	10/14-10/18/11	MM61T1AC
			Dilution Factor: 50				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID
Date Sampled...: 10/06/11 **Date Received..:** 10/11/11

MS Lot-Sample #: F1J110446-001 **Prep Batch #...:** 1285026
% Moisture.....: 12

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic									
	4.3	114	110	mg/kg	93		SW846 6020	10/12-10/17/11	MM4JV1CF
	4.3	114	113	mg/kg	95	2.1	SW846 6020	10/12-10/17/11	MM4JV1CG
			Dilution Factor: 1						
Barium									
	103	114	193	mg/kg	80		SW846 6020	10/12-10/17/11	MM4JV1CH
	103	114	208	mg/kg	93	7.4	SW846 6020	10/12-10/17/11	MM4JV1CJ
			Dilution Factor: 1						
Beryllium									
	0.47	114	119	mg/kg	104		SW846 6020	10/12-10/17/11	MM4JV1CK
	0.47	114	123	mg/kg	108	3.2	SW846 6020	10/12-10/17/11	MM4JV1CL
			Dilution Factor: 1						
Boron									
	6.4	114	131	mg/kg	110		SW846 6020	10/12-10/17/11	MM4JV1CM
	6.4	114	136	mg/kg	114	3.8	SW846 6020	10/12-10/17/11	MM4JV1CN
			Dilution Factor: 1						
Cadmium									
	0.17	114	114	mg/kg	100		SW846 6020	10/12-10/17/11	MM4JV1CP
	0.17	114	115	mg/kg	101	1.5	SW846 6020	10/12-10/17/11	MM4JV1CQ
			Dilution Factor: 1						
Chromium									
	17.7	114	117	mg/kg	87		SW846 6020	10/12-10/17/11	MM4JV1A4
	17.7	114	130	mg/kg	99	11	SW846 6020	10/12-10/17/11	MM4JV1A5
			Dilution Factor: 1						
Cobalt									
	11.9	114	119	mg/kg	94		SW846 6020	10/12-10/17/11	MM4JV1CR
	11.9	114	121	mg/kg	96	1.4	SW846 6020	10/12-10/17/11	MM4JV1CT
			Dilution Factor: 1						
Copper									
	29.4	114	130	mg/kg	89		SW846 6020	10/12-10/17/11	MM4JV1CU
	29.4	114	384 N,*	mg/kg	312	98	SW846 6020	10/12-10/17/11	MM4JV1CV
			Dilution Factor: 1						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID
Date Sampled...: 10/06/11 **Date Received..:** 10/11/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Lead									
	11.0	114	123	mg/kg	98		SW846 6020	10/12-10/17/11	MM4JV1CW
	11.0	114	139	mg/kg	113	12	SW846 6020	10/12-10/17/11	MM4JV1CX
			Dilution Factor: 1						
Lithium									
	12.2	114	122	mg/kg	97		SW846 6020	10/12-10/17/11	MM4JV1A8
	12.2	114	127	mg/kg	101	4.0	SW846 6020	10/12-10/17/11	MM4JV1A9
			Dilution Factor: 1						
Manganese									
	509	114	458 N	mg/kg	0.0		SW846 6020	10/12-10/17/11	MM4JV1C0
	509	114	554 N	mg/kg	40	0.0	SW846 6020	10/12-10/17/11	MM4JV1C1
			Dilution Factor: 1						
Molybdenum									
	0.54	114	116	mg/kg	102		SW846 6020	10/12-10/17/11	MM4JV1C2
	0.54	114	119	mg/kg	104	2.1	SW846 6020	10/12-10/17/11	MM4JV1C3
			Dilution Factor: 1						
Nickel									
	17.9	114	121	mg/kg	91		SW846 6020	10/12-10/17/11	MM4JV1C4
	17.9	114	136	mg/kg	104	12	SW846 6020	10/12-10/17/11	MM4JV1C5
			Dilution Factor: 1						
Selenium									
	1.3	114	109	mg/kg	95		SW846 6020	10/12-10/17/11	MM4JV1C6
	1.3	114	110	mg/kg	96	0.87	SW846 6020	10/12-10/17/11	MM4JV1C7
			Dilution Factor: 1						
Silver									
	0.078	11.4	11.3	mg/kg	99		SW846 6020	10/12-10/17/11	MM4JV1C8
	0.078	11.4	11.5	mg/kg	100	1.6	SW846 6020	10/12-10/17/11	MM4JV1C9
			Dilution Factor: 1						
Strontium									
	44.3	114	148	mg/kg	92		SW846 6020	10/12-10/17/11	MM4JV1DA
	44.3	114	153	mg/kg	96	3.2	SW846 6020	10/12-10/17/11	MM4JV1DC
			Dilution Factor: 1						
Tin									
	0.99	114	114	mg/kg	100		SW846 6020	10/12-10/17/11	MM4JV1DD
	0.99	114	119	mg/kg	104	3.7	SW846 6020	10/12-10/17/11	MM4JV1DE
			Dilution Factor: 1						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J110446 **Matrix.....:** SOLID
Date Sampled...: 10/06/11 **Date Received..:** 10/11/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Uranium									
	0.78	114	121	mg/kg	106		SW846 6020	10/12-10/17/11	MM4JV1A6
	0.78	114	126	mg/kg	110	3.7	SW846 6020	10/12-10/17/11	MM4JV1A7
			Dilution Factor: 1						
Vanadium									
	57.3	114	159	mg/kg	90		SW846 6020	10/12-10/17/11	MM4JV1DF
	57.3	114	172	mg/kg	101	7.3	SW846 6020	10/12-10/17/11	MM4JV1DG
			Dilution Factor: 1						
Zinc									
	79.7	114	527 N	mg/kg	394		SW846 6020	10/12-10/17/11	MM4JV1DH
	79.7	114	201 *	mg/kg	107	89	SW846 6020	10/12-10/17/11	MM4JV1DJ
			Dilution Factor: 1						

MS Lot-Sample #: F1J110446-001 **Prep Batch #...:** 1285027
% Moisture.....: 12

Antimony									
	0.33	50.0	46.1	mg/kg	92		SW846 6020	10/13-10/19/11	MM4JV1CA
	0.33	50.0	44.9	mg/kg	89	2.6	SW846 6020	10/13-10/19/11	MM4JV1CC
			Dilution Factor: 1						

MS Lot-Sample #: F1J110446-001 **Prep Batch #...:** 1287047
% Moisture.....: 12

Mercury									
	0.019	0.189	0.246	mg/kg	120		SW846 7471A	10/14-10/18/11	MM4JV1CD
	0.019	0.189	0.247	mg/kg	120	0.56	SW846 7471A	10/14-10/18/11	MM4JV1CE
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1J240433 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1J310000-035 **Prep Batch #...:** 1304035						
Arsenic	ND	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AD
		Dilution Factor: 1				
Boron	ND	10.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AE
		Dilution Factor: 1				
Cadmium	ND	0.050	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AV
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AG
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AH
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AJ
		Dilution Factor: 1				
Lithium	ND	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AX
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AK
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AL
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AM
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AN
		Dilution Factor: 1				
Silver	ND	0.20	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AP
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Strontium	ND	0.50	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AQ
		Dilution Factor: 1				
Tin	ND	0.20	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AR
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AW
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AT
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	10/31-11/06/11	MNKTD1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1J310000-041 **Prep Batch #...:** 1304041

Antimony	ND	0.50	mg/kg	SW846 6020	11/02-11/05/11	MNKTN1AA
		Dilution Factor: 1				

MB Lot-Sample #: F1K040000-016 **Prep Batch #...:** 1308016

Mercury	ND	0.033	mg/kg	SW846 7471A	11/05/11	MNP131AA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID

LCS Lot-Sample#: F1J310000-035 **Prep Batch #...:** 1304035

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	109	115	mg/kg	106	SW846 6020	10/31-11/06/11	MNKTD1A0
			Dilution Factor: 2.5				
Barium	325	329	mg/kg	101	SW846 6020	10/31-11/06/11	MNKTD1A1
			Dilution Factor: 2.5				
Beryllium	92.0	95.8	mg/kg	104	SW846 6020	10/31-11/06/11	MNKTD1A2
			Dilution Factor: 2.5				
Boron	142	173	mg/kg	122	SW846 6020	10/31-11/06/11	MNKTD1A3
			Dilution Factor: 2.5				
Cadmium	110	119	mg/kg	108	SW846 6020	10/31-11/06/11	MNKTD1A4
			Dilution Factor: 2.5				
Cobalt	133	156	mg/kg	118	SW846 6020	10/31-11/06/11	MNKTD1A5
			Dilution Factor: 2.5				
Copper	74.7	81.1	mg/kg	109	SW846 6020	10/31-11/06/11	MNKTD1A6
			Dilution Factor: 2.5				
Lead	152	171	mg/kg	112	SW846 6020	10/31-11/06/11	MNKTD1A7
			Dilution Factor: 2.5				
Manganese	443	508	mg/kg	115	SW846 6020	10/31-11/06/11	MNKTD1A8
			Dilution Factor: 2.5				
Molybdenum	82.5	98.0	mg/kg	119	SW846 6020	10/31-11/06/11	MNKTD1A9
			Dilution Factor: 2.5				
Nickel	109	126	mg/kg	115	SW846 6020	10/31-11/06/11	MNKTD1CA
			Dilution Factor: 2.5				
Selenium	207	244	mg/kg	118	SW846 6020	10/31-11/06/11	MNKTD1CC
			Dilution Factor: 2.5				
Silver	52.0	51.0	mg/kg	98	SW846 6020	10/31-11/06/11	MNKTD1CD
			Dilution Factor: 2.5				
Strontium	111	122	mg/kg	110	SW846 6020	10/31-11/06/11	MNKTD1CE
			Dilution Factor: 2.5				

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LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Tin	135	134	mg/kg	99	SW846 6020	10/31-11/06/11	MNKTD1CF
			Dilution Factor: 2.5				
Vanadium	110	111	mg/kg	101	SW846 6020	10/31-11/06/11	MNKTD1CG
			Dilution Factor: 2.5				
Zinc	299	335	mg/kg	112	SW846 6020	10/31-11/06/11	MNKTD1CH
			Dilution Factor: 2.5				
Chromium	93.4	96.0	mg/kg	103	SW846 6020	10/31-11/06/11	MNKTD1CJ
			Dilution Factor: 2.5				
Uranium	100	108	mg/kg	108	SW846 6020	10/31-11/06/11	MNKTD1CK
			Dilution Factor: 1				
Lithium	100	104	mg/kg	104	SW846 6020	10/31-11/06/11	MNKTD1CL
			Dilution Factor: 1				
LCS Lot-Sample#: F1J310000-041 **Prep Batch #...:** 1304041							
Antimony	50.0	46.5	mg/kg	93	SW846 6020	11/02-11/05/11	MNKTN1AC
			Dilution Factor: 1				
LCS Lot-Sample#: F1K040000-016 **Prep Batch #...:** 1308016							
Mercury	16.3	14.8	mg/kg	91	SW846 7471A	11/05/11	MNP131AC
			Dilution Factor: 50				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID
Date Sampled...: 10/13/11 **Date Received..:** 10/24/11

MS Lot-Sample #: F1J240433-001 **Prep Batch #...:** 1304035
% Moisture.....: 6.7

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic									
	3.2	107	104	mg/kg	94		SW846 6020	10/31-11/06/11	MNE3X1CF
	3.2	107	103	mg/kg	93	0.93	SW846 6020	10/31-11/06/11	MNE3X1CG
			Dilution Factor: 1						
Barium									
	76.3	107	180	mg/kg	97		SW846 6020	10/31-11/06/11	MNE3X1CH
	76.3	107	179	mg/kg	96	0.23	SW846 6020	10/31-11/06/11	MNE3X1CJ
			Dilution Factor: 1						
Beryllium									
	0.42	107	124	mg/kg	115		SW846 6020	10/31-11/06/11	MNE3X1CK
	0.42	107	125	mg/kg	116	0.59	SW846 6020	10/31-11/06/11	MNE3X1CL
			Dilution Factor: 1						
Boron									
	7.2	107	128	mg/kg	113		SW846 6020	10/31-11/06/11	MNE3X1CM
	7.2	107	132	mg/kg	117	3.2	SW846 6020	10/31-11/06/11	MNE3X1CN
			Dilution Factor: 1						
Cadmium									
	0.10	107	105	mg/kg	98		SW846 6020	10/31-11/06/11	MNE3X1CP
	0.10	107	106	mg/kg	98	0.53	SW846 6020	10/31-11/06/11	MNE3X1CQ
			Dilution Factor: 1						
Chromium									
	7.9	107	99.0	mg/kg	85		SW846 6020	10/31-11/06/11	MNE3X1A4
	7.9	107	102	mg/kg	88	2.7	SW846 6020	10/31-11/06/11	MNE3X1A5
			Dilution Factor: 1						
Cobalt									
	11.7	107	114	mg/kg	95		SW846 6020	10/31-11/06/11	MNE3X1CR
	11.7	107	114	mg/kg	95	0.27	SW846 6020	10/31-11/06/11	MNE3X1CT
			Dilution Factor: 1						
Copper									
	20.7	107	121	mg/kg	94		SW846 6020	10/31-11/06/11	MNE3X1CU
	20.7	107	121	mg/kg	94	0.0	SW846 6020	10/31-11/06/11	MNE3X1CV
			Dilution Factor: 1						

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID
Date Sampled...: 10/13/11 **Date Received..:** 10/24/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Lead									
	5.4	107	112	mg/kg	99		SW846 6020	10/31-11/06/11	MNE3X1CW
	5.4	107	113	mg/kg	100	0.97	SW846 6020	10/31-11/06/11	MNE3X1CX
			Dilution Factor: 1						
Lithium									
	7.1	107	123	mg/kg	108		SW846 6020	10/31-11/06/11	MNE3X1A8
	7.1	107	122	mg/kg	107	0.31	SW846 6020	10/31-11/06/11	MNE3X1A9
			Dilution Factor: 1						
Manganese									
	389	107	543 N	mg/kg	143		SW846 6020	10/31-11/06/11	MNE3X1C0
	389	107	525 N	mg/kg	127	3.4	SW846 6020	10/31-11/06/11	MNE3X1C1
			Dilution Factor: 1						
Molybdenum									
	0.57	107	104	mg/kg	96		SW846 6020	10/31-11/06/11	MNE3X1C2
	0.57	107	105	mg/kg	97	0.79	SW846 6020	10/31-11/06/11	MNE3X1C3
			Dilution Factor: 1						
Nickel									
	11.0	107	113	mg/kg	95		SW846 6020	10/31-11/06/11	MNE3X1C4
	11.0	107	116	mg/kg	98	2.5	SW846 6020	10/31-11/06/11	MNE3X1C5
			Dilution Factor: 1						
Selenium									
	1.8	107	104	mg/kg	96		SW846 6020	10/31-11/06/11	MNE3X1C6
	1.8	107	102	mg/kg	94	2.2	SW846 6020	10/31-11/06/11	MNE3X1C7
			Dilution Factor: 1						
Silver									
	0.053	10.7	10.4	mg/kg	96		SW846 6020	10/31-11/06/11	MNE3X1C8
	0.053	10.7	10.4	mg/kg	97	0.61	SW846 6020	10/31-11/06/11	MNE3X1C9
			Dilution Factor: 1						
Strontium									
	35.4	107	144	mg/kg	102		SW846 6020	10/31-11/06/11	MNE3X1DA
	35.4	107	144	mg/kg	102	0.13	SW846 6020	10/31-11/06/11	MNE3X1DC
			Dilution Factor: 1						
Tin									
	0.68	107	103	mg/kg	96		SW846 6020	10/31-11/06/11	MNE3X1DD
	0.68	107	103	mg/kg	96	0.14	SW846 6020	10/31-11/06/11	MNE3X1DE
			Dilution Factor: 1						

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1J240433 **Matrix.....:** SOLID
Date Sampled...: 10/13/11 **Date Received..:** 10/24/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Uranium									
	0.59	107	114	mg/kg	106		SW846 6020	10/31-11/06/11	MNE3X1A6
	0.59	107	117	mg/kg	109	2.6	SW846 6020	10/31-11/06/11	MNE3X1A7
			Dilution Factor: 1						
Vanadium									
	71.4	107	160	mg/kg	82		SW846 6020	10/31-11/06/11	MNE3X1DF
	71.4	107	157	mg/kg	80	1.8	SW846 6020	10/31-11/06/11	MNE3X1DG
			Dilution Factor: 1						
Zinc									
	63.3	107	164	mg/kg	94		SW846 6020	10/31-11/06/11	MNE3X1DH
	63.3	107	161	mg/kg	91	2.4	SW846 6020	10/31-11/06/11	MNE3X1DJ
			Dilution Factor: 1						

MS Lot-Sample #: F1J240433-001 **Prep Batch #...:** 1304041
% Moisture.....: 6.7

Antimony									
	0.58	50.0	47.4	mg/kg	94		SW846 6020	11/02-11/05/11	MNE3X1CA
	0.58	50.0	47.7	mg/kg	94	0.55	SW846 6020	11/02-11/05/11	MNE3X1CC
			Dilution Factor: 1						

MS Lot-Sample #: F1J240433-001 **Prep Batch #...:** 1308016
% Moisture.....: 6.7

Mercury									
	0.015	0.179	0.193	mg/kg	100		SW846 7471A	11/05/11	MNE3X1CD
	0.015	0.179	0.185	mg/kg	95	4.4	SW846 7471A	11/05/11	MNE3X1CE
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
186870	186871	5	BLANK	61503	BLANK		ICP-6010 - All possible metals
186870	186871	6	LCS	61504	LCS		ICP-6010 - All possible metals
186870	186871	8	MS	61505	B2FPL7(112777001MS)	112777001	ICP-6010 - All possible metals
186870	186871	9	MSD	61506	B2FPL7(112777001MSD)	112777001	ICP-6010 - All possible metals
186870	186871	15	SAMPLE	112775001	B2D1M1		ICP-6010 - All possible metals
186870	186871	16	SAMPLE	112775002	B2D1M2		ICP-6010 - All possible metals
186870	186871	17	SAMPLE	112775003	B2FBM5		ICP-6010 - All possible metals
186870	186871	18	SAMPLE	112775004	B2FBN5		ICP-6010 - All possible metals
186870	186871	21	SAMPLE	112775005	B2FBN6		ICP-6010 - All possible metals
186870	186871	22	SAMPLE	112775006	B2FBN7		ICP-6010 - All possible metals
186870	186871	23	SAMPLE	112775007	B2FBN8		ICP-6010 - All possible metals
186870	186871	24	SAMPLE	112775008	B2FBN9		ICP-6010 - All possible metals
186899	186900	2	BLANK	61561	BLANK		Anions by Ion Chromatography (Solid)
186899	186900	3	LCS	61562	LCS		Anions by Ion Chromatography (Solid)
186899	186900	4	MS	61563	B2FJ56(112763010MS)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	5	MSD	61564	B2FJ56(112763010MSD)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	6	DUP	61565	B2FJ56(112763010DUP)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	11	SAMPLE	112775001	B2D1M1		Anions by Ion Chromatography (Solid)
186899	186900	12	SAMPLE	112775002	B2D1M2		Anions by Ion Chromatography (Solid)
186899	186900	13	SAMPLE	112775003	B2FBM5		Anions by Ion Chromatography (Solid)
186899	186900	14	SAMPLE	112775004	B2FBN5		Anions by Ion Chromatography (Solid)
186899	186900	15	SAMPLE	112775005	B2FBN6		Anions by Ion Chromatography (Solid)
187061	187062	3	BLANK	61670	BLANK		Hexavalent chromium

REVISED112775 -

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187061	187062	4	LCS	61671	LCS		Hexavalent chromium
187061	187062	5	DUP	61672	B2D1M1(112775001DUP)	112775001	Hexavalent chromium
187061	187062	6	MS	61673	B2D1M1(112775001MS)	112775001	Hexavalent chromium
187061	187062	7	PSTSPK	61674	PSTSPK		Hexavalent chromium
187061	187062	8	IMS	61675	B2D1M1(112775001IMS)	112775001	Hexavalent chromium
187061	187062	9	SAMPLE	112775001	B2D1M1		Hexavalent chromium
187061	187062	10	SAMPLE	112775002	B2D1M2		Hexavalent chromium
187061	187062	11	SAMPLE	112775003	B2FBM5		Hexavalent chromium
187061	187062	12	SAMPLE	112775004	B2FBN5		Hexavalent chromium
187061	187062	13	SAMPLE	112775005	B2FBN6		Hexavalent chromium
187061	187062	14	SAMPLE	112775006	B2FBN7		Hexavalent chromium
187061	187062	15	SAMPLE	112775007	B2FBN8		Hexavalent chromium
187061	187062	16	SAMPLE	112775008	B2FBN9		Hexavalent chromium
187074	187075	4	BLANK	61703	BLANK		ICP-2008 MS All possible metal
187074	187075	5	LCS	61704	LCS		ICP-2008 MS All possible metal
187074	187075	6	MS	61770	B2FK54(112772002MS)	112772002	ICP-2008 MS All possible metal
187074	187075	7	MSD	61771	B2FK54(112772002MSD)	112772002	ICP-2008 MS All possible metal
187074	187075	10	SAMPLE	112775001	B2D1M1		ICP-2008 MS All possible metal
187074	187075	11	SAMPLE	112775002	B2D1M2		ICP-2008 MS All possible metal
187074	187075	12	SAMPLE	112775003	B2FBM5		ICP-2008 MS All possible metal
187074	187075	13	SAMPLE	112775004	B2FBN5		ICP-2008 MS All possible metal
187074	187075	14	SAMPLE	112775005	B2FBN6		ICP-2008 MS All possible metal
187074	187075	15	SAMPLE	112775006	B2FBN7		ICP-2008 MS All possible metal

REVISED112775 -

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187074	187075	18	SAMPLE	112775007	B2FBN8		ICP-2008 MS All possible metal
187074	187075	19	SAMPLE	112775008	B2FBN9		ICP-2008 MS All possible metal
187365	187366	2	BLANK	61892	BLANK		Anions by Ion Chromatography (Solid)
187365	187366	3	LCS	61893	LCS		Anions by Ion Chromatography (Solid)
187365	187366	4	MS	61894	B2FD58(112788001MS)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	5	MSD	61895	B2FD58(112788001MSD)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	6	DUP	61896	B2FD58(112788001DUP)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	8	SAMPLE	112775006	B2FBN7		Anions by Ion Chromatography (Solid)
187365	187366	9	SAMPLE	112775007	B2FBN8		Anions by Ion Chromatography (Solid)
187365	187366	10	SAMPLE	112775008	B2FBN9		Anions by Ion Chromatography (Solid)

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch 186870 **Test** ICP-6010 - All possible metals
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61503**							
Lithium	7439-93-2		<4.0	ug/L					U	08/05/11
Boron	7440-42-8		9.00	ug/L					B	08/05/11
LCS			**QC Sample #61504**							
Lithium	7439-93-2		70.3	mg/kg	66.7	20 - 180				08/05/11
Boron	7440-42-8		84.9	mg/kg	90.5	40 - 160				08/05/11
MS			**QC Sample #61505**							
			Original 112777001							
Lithium	7439-93-2		109	mg/kg	108.7	75 - 125				08/05/11
Boron	7440-42-8		192	mg/kg	96	75 - 125				08/05/11
MSD			**QC Sample #61506**							
			Original 112777001					**Paired**	**61505**	
Lithium	7439-93-2		106	mg/kg	105.7	75 - 125	2.80	30		08/05/11
Boron	7440-42-8		192	mg/kg	96	75 - 125	0.00	30		08/05/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch 187074 **Test** ICP-2008 MS All possible metal
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61703**						
Manganese	7439-96-5		<0.10	ug/L				U	07/29/11
Nickel	7440-02-0		<0.20	ug/L				U	07/29/11
Silver	7440-22-4		<0.050	ug/L				U	07/29/11
Antimony	7440-36-0		<0.050	ug/L				U	07/29/11
Barium	7440-39-3		<0.20	ug/L				U	07/29/11
Beryllium	7440-41-7		<0.050	ug/L				U	07/29/11
Cadmium	7440-43-9		<0.050	ug/L				U	07/29/11
Chromium	7440-47-3		<0.10	ug/L				U	07/29/11
Cobalt	7440-48-4		<0.10	ug/L				U	07/29/11
Copper	7440-50-8		<0.10	ug/L				U	07/29/11
Vanadium	7440-62-2		<0.20	ug/L				U	07/29/11
Zinc	7440-66-6		<0.80	ug/L				U	07/29/11
Lead	7439-92-1		<0.10	ug/L				U	07/29/11
Mercury	7439-97-6		<0.030	ug/L				U	07/29/11
Molybdenum	7439-98-7		<0.10	ug/L				U	07/29/11
Strontium	7440-24-6		<0.10	ug/L				U	07/29/11
Tin	7440-31-5		<0.10	ug/L				U	07/29/11
Uranium	7440-61-1		<0.10	ug/L				U	07/29/11
Arsenic	7440-38-2		<0.40	ug/L				U	07/29/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Selenium	7782-49-2		<0.30	ug/L					U	07/29/11
LCS			**QC Sample #61704**							
Manganese	7439-96-5		279	mg/kg	97.6	75 - 121				07/29/11
Nickel	7440-02-0		57.6	mg/kg	97.5	74 - 122				07/29/11
Silver	7440-22-4		35.0	mg/kg	101.9	83 - 127				07/29/11
Antimony	7440-36-0		179	mg/kg	146.7	62 - 205				07/29/11
Barium	7440-39-3		171	mg/kg	101	78 - 118				07/29/11
Beryllium	7440-41-7		60.7	mg/kg	97.2	77 - 120				07/29/11
Cadmium	7440-43-9		60.8	mg/kg	98.4	76 - 129				07/29/11
Chromium	7440-47-3		70.4	mg/kg	98.7	68 - 119				07/29/11
Cobalt	7440-48-4		102	mg/kg	99.2	77 - 122				07/29/11
Copper	7440-50-8		77.2	mg/kg	95.1	67 - 120				07/29/11
Vanadium	7440-62-2		59.4	mg/kg	100.4	67 - 122				07/29/11
Zinc	7440-66-6		135	mg/kg	95.9	73 - 131				07/29/11
Lead	7439-92-1		93.7	mg/kg	101.4	79 - 124				07/29/11
Mercury	7439-97-6		3.87	mg/kg	102.6	69 - 124				07/29/11
Molybdenum	7439-98-7		46.6	mg/kg	109.5	80 - 125				07/29/11
Strontium	7440-24-6		74.2	mg/kg	102.4	78 - 119				07/29/11
Tin	7440-31-5		111	mg/kg	104.2	84 - 130				07/29/11
Uranium	7440-61-1		359	mg/kg	89.8	86 - 113				07/29/11
Arsenic	7440-38-2		95.3	mg/kg	102.9	79 - 125				07/29/11
Selenium	7782-49-2		95.6	mg/kg	106.8	82 - 133				07/29/11
MS			**QC Sample #61770**							
			Original 112772002							

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Manganese	7439-96-5		148	mg/kg	150.7	70 - 130				N	07/29/11
Nickel	7440-02-0		79.2	mg/kg	80.9	70 - 130					07/29/11
Silver	7440-22-4		78.9	mg/kg	80.6	70 - 130					07/29/11
Antimony	7440-36-0		63.9	mg/kg	65.3	70 - 130				N	07/29/11
Barium	7440-39-3		91.5	mg/kg	93.5	70 - 130					07/29/11
Beryllium	7440-41-7		78.5	mg/kg	80.3	70 - 130					07/29/11
Cadmium	7440-43-9		79.7	mg/kg	81.4	70 - 130					07/29/11
Chromium	7440-47-3		78.8	mg/kg	80.6	70 - 130					07/29/11
Cobalt	7440-48-4		78.0	mg/kg	79.7	70 - 130					07/29/11
Copper	7440-50-8		76.8	mg/kg	78.4	70 - 130					07/29/11
Vanadium	7440-62-2		75.9	mg/kg	77.6	70 - 130					07/29/11
Zinc	7440-66-6		72.3	mg/kg	73.9	70 - 130					07/29/11
Lead	7439-92-1		81.2	mg/kg	83	70 - 130					07/29/11
Mercury	7439-97-6		1.47	mg/kg	75	70 - 130					07/29/11
Molybdenum	7439-98-7		72.1	mg/kg	73.7	70 - 130					07/29/11
Strontium	7440-24-6		88.2	mg/kg	90.1	70 - 130					07/29/11
Tin	7440-31-5		73.0	mg/kg	74.6	70 - 130					07/29/11
Uranium	7440-61-1		75.6	mg/kg	77.2	70 - 130					07/29/11
Arsenic	7440-38-2		81.4	mg/kg	83.2	70 - 130					07/29/11
Selenium	7782-49-2		81.0	mg/kg	82.8	70 - 130					07/29/11
MSD			**QC Sample #61771**								
			Original 112772002						**Paired**	**61770**	
Manganese	7439-96-5		80.8	mg/kg	82.1	70 - 130	58.90	30	*	X	07/29/11
Nickel	7440-02-0		83.2	mg/kg	84.6	70 - 130	4.50	30			07/29/11
Silver	7440-22-4		78.7	mg/kg	79.9	70 - 130	0.90	30			07/29/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Antimony	7440-36-0		59.3	mg/kg	60.2	70 - 130	8.10	30		N	07/29/11
Barium	7440-39-3		140	mg/kg	142.3	70 - 130	41.40	30	*	NX	07/29/11
Beryllium	7440-41-7		81.6	mg/kg	82.8	70 - 130	3.10	30			07/29/11
Cadmium	7440-43-9		79.0	mg/kg	80.2	70 - 130	1.50	30			07/29/11
Chromium	7440-47-3		83.2	mg/kg	84.5	70 - 130	4.70	30			07/29/11
Cobalt	7440-48-4		84.5	mg/kg	85.9	70 - 130	7.50	30			07/29/11
Copper	7440-50-8		77.6	mg/kg	78.8	70 - 130	0.50	30			07/29/11
Vanadium	7440-62-2		81.8	mg/kg	83.1	70 - 130	6.80	30			07/29/11
Zinc	7440-66-6		91.6	mg/kg	93	70 - 130	22.90	30			07/29/11
Lead	7439-92-1		81.5	mg/kg	82.8	70 - 130	0.20	30			07/29/11
Mercury	7439-97-6		1.43	mg/kg	72.5	70 - 130	3.40	30			07/29/11
Molybdenum	7439-98-7		70.9	mg/kg	72	70 - 130	2.30	30			07/29/11
Strontium	7440-24-6		122	mg/kg	123.6	70 - 130	31.40	30	*	X	07/29/11
Tin	7440-31-5		70.4	mg/kg	71.5	70 - 130	4.20	30			07/29/11
Uranium	7440-61-1		76.3	mg/kg	77.5	70 - 130	0.40	30			07/29/11
Arsenic	7440-38-2		81.0	mg/kg	82.2	70 - 130	1.20	30			07/29/11
Selenium	7782-49-2		80.2	mg/kg	81.5	70 - 130	1.60	30			07/29/11

REVISED112775 -

Date: 05 June 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: General Chemistry - Sample Data Groups (SDGs) W06260, W06277 and WSCF112775

INTRODUCTION

This memorandum presents the results of data validation for SDGs W06260 and W06277 prepared by TestAmerica Laboratory, Inc and SDG WSCF112775 prepared by WSCF Analytical Laboratories, A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2J3L5	10/06/11	Soil	C	7196A
B2J3M1	10/06/11	Soil	C	7196A
B2J3N3	10/06/11	Soil	C	7196A
B2J3L7	10/13/11	Soil	C	7196A
B2J3L9	10/13/11	Soil	C	7196A
B2J3N1	10/13/11	Soil	C	7196A
B2D1M1	07/20/11	Soil	C	300.0, 7196A & 9045
B2D1M2	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBM5	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBN5	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBN6	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBN7	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBN8	07/20/11	Soil	C	300.0, 7196A & 9045
B2FBN9	07/20/11	Soil	C	300.0, 7196A & 9045

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirements are as follows:

- Hexavalent chromium – analysis within 30 days of sample collection
- All anions except nitrate and nitrite – extraction within 30 days of sample
- Nitrate and nitrite – extraction within 30 days of sample collection and analysis within 48 hours of extraction
- pH – analysis within 30 days and analysis as soon as possible after sample extraction

Sample preservation requires chilling to 4 degrees Celsius.

The samples were extracted and analyzed within the prescribed holding times and properly preserved with the following exceptions.

For SDG W06277, samples were received well above the required 4° C at 14.5° C. All hexavalent chromium sample results were non-detects and should be qualified as unusable and flagged "UR."

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

The laboratory blank result was acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results and laboratory control sample results. According to the SAP, the matrix spike and laboratory control sample accuracy limits are 70% to 130%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

For SDG W06260, the MS recovery for hexavalent chromium was < the lower acceptance limit. The hexavalent chromium result for samples B2J3M1 and B2J3N3 were non-detects and should be qualified as estimates and flagged "UJ." The hexavalent chromium result for sample B2J3L5 was a detect and should be qualified as an estimate and flagged "J."

For SDG WSCF112775 (batch 186899), the MS and MSD recoveries for fluoride were < the lower acceptance limit. All associated sample results were non-detects and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, laboratory duplicate sample results, field duplicate sample results, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The RPD limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the reporting limits (RL) with difference <2X the required detection limits no precision infraction occurred

MS/MSD Samples

All MS/MSD RPD values were acceptable.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable with the following exception.

For SDG W06260, the parent sample result for hexavalent chromium was >5X the RL and the duplicate sample was <5X the RL. The difference between results were >2X the RL; therefore the hexavalent chromium results for samples B2J3M1 and B2J3N3 were non-detects and should be qualified as estimates and flagged "UJ." The hexavalent chromium result for sample B2J3L5 was a detect and should be qualified as an estimates and flagged "J."

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs were below the CRDLs.

- **Completeness**

SDGs W06260, W06277 and WSCF112775 were submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage for hexavalent chromium was 79%. The completion percentages for all remaining analyses were 100%.

MAJOR DEFICIENCIES

Major deficiencies leading to qualification of hexavalent chromium sample results as unusable were due to improper preservation. See the table in Appendix 2 for a listing of all affected sample results.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of hexavalent chromium and fluoride sample result as estimates were due to low spike recovery and/or poor duplicate precision. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

General Chemistry Data Qualification Summary			
SDG: W06260, W06277, WSCF112775	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Hexavalent chromium	**UR**	B2J3L7, B2J3L9, B2J3N1	Improperly preserved
Hexavalent chromium	J	B2J3L5	Low MS recovery and poor duplicate precision
Hexavalent chromium	UJ	B2J3M1, B2J3N3	Low MS recovery and poor duplicate precision
Fluoride	UJ	B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6	Low MS/MSD recoveries

Comments: None

Appendix 3

Annotated Laboratory Reports

FORM I

SAMPLE RESULTS

Date: 25-Oct-11

Lab Name:	**TestAmerica**	**SDG:**	W06260	**Collection Date:**	10/6/2011 9:23:00 AM
Lot-Sample No.:	**J1J100451-1**	**Report No. :**	48929	**Received Date:**	10/10/2011 2:15:00 PM
Client Sample ID:	**B2J3L5**	**COC No. :**	F11-092-236	**Matrix:**	Soil

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			**Work Order:** MM3W61AA			**Report DB ID:** 9MM3W610					
HEXCHROME	***8.39E-01***	J		0.0E+00	1.55E-01	mg/kg	N/A	*(5.4)*	10/12/11 08:45 a		2.5061	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.15 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

FORM I

SAMPLE RESULTS

Date: 25-Oct-11

Lab Name:	TestAmerica	**SDG:**	W06260	**Collection Date:**	10/6/2011 10:10:00 AM
Lot-Sample No.:	J1J100451-2	**Report No. :**	48929	**Received Date:**	10/10/2011 2:15:00 PM
Client Sample ID:	B2J3M1	**COC No. :**	F11-092-236	**Matrix:**	Soil

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			**Work Order:** MM3W91AA			**Report DB ID:** 9MM3W910					
HEXCHROME	***1.55E-01***	U	UJ	0.0E+00	1.55E-01	mg/kg	N/A	*(1.)*	10/12/11 08:45 a		2.5015	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.15 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

FORM I

SAMPLE RESULTS

Date: 25-Oct-11

Lab Name:	TestAmerica	**SDG:**	W06260	**Collection Date:**	10/6/2011 9:10:00 AM
Lot-Sample No.:	J1J100451-3	**Report No. :**	48929	**Received Date:**	10/10/2011 2:15:00 PM
Client Sample ID:	B2J3N3	**COC No. :**	F11-092-236	**Matrix:**	Soil

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			**Work Order:** MM3XA1AA			**Report DB ID:** 9MM3XA10					
HEXCHROME	***1.55E-01***	U	UJ	0.0E+00	1.55E-01	mg/kg	N/A 1.55E-01	*(1.)* *N/A*	10/12/11 08:45 a		2.5075 g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.15 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

FORM I

SAMPLE RESULTS

Date: 21-Nov-11

Lab Name:	TestAmerica	**SDG:**	W06277	**Collection Date:**	10/13/2011 12:49:00 PM
Lot-Sample No.:	J1J240406-1	**Report No. :**	49386	**Received Date:**	10/21/2011 2:00:00 PM
Client Sample ID:	B2J3L7	**COC No. :**	F11-092-238	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:** MNERH1AA			**Report DB ID:** 9MNERH10					
HEXCHROME	***1.55E-01***	U	UR	0.0E+00	1.55E-01	mg/kg	N/A	*(1.)*	10/31/11 08:50 a		2.5087	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.18 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

FORM I

SAMPLE RESULTS

Date: 21-Nov-11

Lab Name:	TestAmerica	**SDG:**	W06277	**Collection Date:**	10/13/2011 1:05:00 PM
Lot-Sample No.:	J1J240406-2	**Report No. :**	49386	**Received Date:**	10/21/2011 2:00:00 PM
Client Sample ID:	B2J3L9	**COC No. :**	F11-092-240	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:** MNERK1AA			**Report DB ID:** 9MNERK10					
HEXCHROME	***1.55E-01***	U	UR	0.0E+00	1.55E-01	mg/kg	N/A	*(1.)*	10/31/11 08:50 a		2.5108	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.18 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

FORM I

SAMPLE RESULTS

Date: 21-Nov-11

Lab Name:	TestAmerica	**SDG:**	W06277	**Collection Date:**	10/13/2011 12:49:00 PM
Lot-Sample No.:	J1J240406-3	**Report No. :**	49386	**Received Date:**	10/21/2011 2:00:00 PM
Client Sample ID:	B2J3N1	**COC No. :**	F11-092-252	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:** MNERL1AA			**Report DB ID:** 9MNERL10					
HEXCHROME	***1.55E-01***	U	UR	0.0E+00	1.55E-01	mg/kg	N/A	*(1.)*	10/31/11 08:50 a		3.5421	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.18 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775001
SAF# F11-092
Sample ID B2D1M1

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN	UJ	<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			31.7		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		2.09		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410			441		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411			6.01		mg/kg	1	0.41	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC		2.80		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N		365		mg/kg	1	0.096	0.96	07/29/11
Nickel	7440-02-0	LA-505-412			11.6		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775002
SAF# F11-092
Sample ID B2D1M2

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN	UJ	<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410	B		17.5		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		2.39		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		9.62		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411			6.44		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC		1.25		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N		275		mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412			7.97		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.10		mg/kg	1	0.10	1.0	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775003
SAF# F11-092
Sample ID B2FBM5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN	UJ	<1.8		mg/kg	1	1.8	3.6	07/26/11
Chloride	16887-00-6	LA-533-410	U		<3.1		mg/kg	1	3.1	20	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<0.99		mg/kg	1	0.99	4.9	07/26/11
Nitrate-N	NO3-N	LA-533-410	U		<0.94		mg/kg	1	0.94	4.9	07/26/11
Sulfate	14808-79-8	LA-533-410	U		<3.6		mg/kg	1	3.6	52	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.50	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411	U		<0.40		mg/kg	1	0.40	2.0	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.60		mg/kg	1	0.60	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	BN		0.715		mg/kg	1	0.094	0.94	07/29/11
Nickel	7440-02-0	LA-505-412	U		<0.19		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.094		mg/kg	1	0.094	0.94	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775004
SAF# F11-092
Sample ID B2FBN5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN	UJ	<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			152		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.0	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		1.33		mg/kg	1	0.98	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		12.9		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	BN		0.102		ug/g	1	0.10	0.51	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411			8.09		mg/kg	1	0.41	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.62		mg/kg	1	0.62	21	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N		303		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412			11.2		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.099		mg/kg	1	0.099	0.99	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

EH
06/05/12

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775005
SAF# F11-092
Sample ID B2FBN6

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ		Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC											**07/26/11**
Anions by IC											
Fluoride	16984-48-8	LA-533-410	UN	UJ	<1.9		mg/kg	1	1.9	3.7	07/26/11
Chloride	16887-00-6	LA-533-410			42.6		mg/kg	1	3.2	21	07/26/11
Nitrite-N	NO2-N	LA-533-410	U		<1.0		mg/kg	1	1.0	5.1	07/26/11
Nitrate-N	NO3-N	LA-533-410	B		1.03		mg/kg	1	0.99	5.1	07/26/11
Sulfate	14808-79-8	LA-533-410	B		15.3		mg/kg	1	3.7	54	07/26/11
Cr(VI) Prep											**07/27/11**
Cr(VI)											
Hexavalent chromium	18540-29-9	LA-265-403	UN		<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep											**07/27/11**
ICP-AES											
Lithium	7439-93-2	LA-505-411			7.25		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U		<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep											**07/28/11**
ICP-MS											
Manganese	7439-96-5	LA-505-412	N		298		mg/kg	1	0.096	0.96	07/29/11
Nickel	7440-02-0	LA-505-412			11.9		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U		<0.096		mg/kg	1	0.096	0.96	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775006
SAF# F11-092
Sample ID B2FBN7

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**07/27/11**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	U	<1.9		mg/kg	1	1.9	3.7	07/27/11
Chloride	16887-00-6	LA-533-410		265		mg/kg	1	3.2	21	07/27/11
Nitrite-N	NO2-N	LA-533-410	U	<1.0		mg/kg	1	1.0	5.1	07/27/11
Nitrate-N	NO3-N	LA-533-410	U	<0.99		mg/kg	1	0.99	5.1	07/27/11
Sulfate	14808-79-8	LA-533-410	B	7.45		mg/kg	1	3.7	54	07/27/11
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		5.48		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	357		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412		8.72		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.099		mg/kg	1	0.099	0.99	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775007
SAF# F11-092
Sample ID B2FBN8

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**07/27/11**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	U	<1.9		mg/kg	1	1.9	3.8	07/27/11
Chloride	16887-00-6	LA-533-410		23.3		mg/kg	1	3.3	22	07/27/11
Nitrite-N	NO2-N	LA-533-410	U	<1.1		mg/kg	1	1.1	5.2	07/27/11
Nitrate-N	NO3-N	LA-533-410	U	<1.0		mg/kg	1	1.0	5.3	07/27/11
Sulfate	14808-79-8	LA-533-410		123		mg/kg	1	3.8	56	07/27/11
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		6.56		mg/kg	1	0.43	2.2	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.65		mg/kg	1	0.65	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	323		mg/kg	1	0.099	0.99	07/29/11
Nickel	7440-02-0	LA-505-412		9.12		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.099		mg/kg	1	0.099	0.99	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Sample # 112775008
SAF# F11-092
Sample ID B2FBN9

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**07/27/11**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	U	<1.9		mg/kg	1	1.9	3.8	07/27/11
Chloride	16887-00-6	LA-533-410		279		mg/kg	1	3.3	21	07/27/11
Nitrite-N	NO2-N	LA-533-410	U	<1.1		mg/kg	1	1.1	5.2	07/27/11
Nitrate-N	NO3-N	LA-533-410	U	<1.0		mg/kg	1	1.0	5.2	07/27/11
Sulfate	14808-79-8	LA-533-410	B	7.99		mg/kg	1	3.8	55	07/27/11
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		5.49		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	313		mg/kg	1	0.097	0.97	07/29/11
Nickel	7440-02-0	LA-505-412		7.83		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775001
SAF# F11-092
Sample ID B2D1M1

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		97		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		8.14		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775002
SAF# F11-092
Sample ID B2D1M2

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		96		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		9.58		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775003
SAF# F11-092
Sample ID B2FBM5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		100		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		6.68		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775004
SAF# F11-092
Sample ID B2FBN5

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		97		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		8.84		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775005
SAF# F11-092
Sample ID B2FBN6

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		96		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		9.08		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775006
SAF# F11-092
Sample ID B2FBN7

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		95		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		8.66		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775007
SAF# F11-092
Sample ID B2FBN8

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		94		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		8.66		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

Sample # 112775008
SAF# F11-092
Sample ID B2FBN9

Matrix SOIL
Sampled 07/20/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Total Residue										**07/27/11**
Total Residue										
Percent Solids	%SOLIDS	LA-519-412		95		percent	1			07/27/11
pH on Solids										**07/27/11**
pH on Solids										
pH	PH	LA-212-411		8.64		unitless	1	0.010	0.50	07/27/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

REVISED112775 -

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

October 25, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-092
Date SDG Closed	:	October 10, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06260
Data Deliverable	:	15 Day / 15 Day Summary

CASE NARRATIVE

I. Introduction

On October 10, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

CH2M ID#	TARL ID#	MATRIX	DATE OF RECEIPT
B2J3L5	MM3W6	SOIL	10/10/11
B2J3M1	MM3W9	SOIL	10/10/11
B2J3N3	MM3XA	SOIL	10/10/11

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

CH2M Hill Plateau Remediation Company
October 25, 2011

The requested analyses were:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The matrix spike (B2J3L5) failed due to a low recovery of 41.2%. The post digestive matrix spike recovery was 83.8%. The LCS recovery was 98.1%. Suspect a reducing capacity / matrix interference in the sample but not enough to reduce the insoluble PbCrO4. The insoluble PbCrO4 was at 95.5%.

The duplicate result (B2J3L5 68.9%) was not within acceptance criteria, possibly due to inhomogeneity of the sample.

Except as noted, the LCS, batch blank, samples, sample duplicate (B2J3L5) and sample matrix spike (B2J3L5) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Sandra Seger
Project Manager

Clouseau Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-19411**
NCM Initiated By: Hooshang Rahavi
Date Opened: 10/17/2011
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Classical Chemistry
Tests: 7196A
Lot #'s (Sample #'s): J1J100000 (204), J1J100451 (1,2,3),
QC Batches: 1283204,

Nonconformance: QC data exceeded criteria
Subcategory: MS/MSD accuracy and/or precision out of control

Problem Description / Root Cause

Name	Date	Description
Hooshang Rahavi	10/17/2011	Matrix spike failed low at 41.2%, the PDMS covered at 83.8% and the LCS is at 98.1%, suspect a reducing capacity/ matrix interference in the sample but not enough to reduce the insoluble PbCr04. The insoluble PbCr04 is at 95.5%. Duplicate not within acceptance criteria(%68.9), possibly due to inhomogeneity of sample.

Corrective Action

Name	Date	Corrective Action
Hooshang Rahavi	10/17/2011	Report data

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-236	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #1	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-Z-1	ACTUAL SAMPLE DEPTH: 0 - 1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC5

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SDG# WD6260
LOT# J1J100451
Report: 11/2/11

J1J100451

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L5	SOIL MM3W6	OCT 0 6 2011	0923	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 0 6 2011 1135	M01109SSU #1	OCT 0 6 2011 1135
M01109SSU #1	10/10/11 1230	K.J. Young	10/10/11 1230
K.J. Young	10/10/11 1415	J. Stock / Beck TALL	10-10-11 1415

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
JPZ 10/5/11

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-242	PAGE 1 OF 1
COLLECTOR: K.J. Young, CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #4	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-24.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC8

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SDG# W06260
LOT# JIJ100451

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3M1	SOIL MM3W9	OCT 0 6 2011	1010	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ☐ ☐ ~~*** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~ JG 10/5/11
K.J. Young CHPRC	OCT 0 6 2011 / 1135	MG1109SSU#1	OCT 0 6 2011 / 1135	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MG1109SSU#1	10/10/11 / 1230	K.J. Young	10/10/11 1230	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
K.J. Young	10/10/11 1415	J Back / J Back TALL	10-10-11 / 1415	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-254	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #6	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: N/A	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SDG # W06240
LOT # J1J100451

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3N3	SOIL MM3XA	OCT 06 2011	0910	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: K.J. Young CHPRC — DATE/TIME: OCT 06 2011 1130	RECEIVED BY/STORED IN: MG11G9SSU# 1 — DATE/TIME: OCT 06 2011 1130	** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
RELINQUISHED BY/REMOVED FROM: MG11G9SSU#1 — DATE/TIME: 10/10/11 1230	RECEIVED BY/STORED IN: KJ Young — DATE/TIME: 10/10/11 1230	
RELINQUISHED BY/REMOVED FROM: KJ Young — DATE/TIME: 10/10/11 1415	RECEIVED BY/STORED IN: J. Beck TALR — DATE/TIME: 10-10-11 1415	
RELINQUISHED BY/REMOVED FROM — DATE/TIME	RECEIVED BY/STORED IN — DATE/TIME	
RELINQUISHED BY/REMOVED FROM — DATE/TIME	RECEIVED BY/STORED IN — DATE/TIME	
RELINQUISHED BY/REMOVED FROM — DATE/TIME	RECEIVED BY/STORED IN — DATE/TIME	
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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

November 18, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-092
Date SDG Closed	:	October 21, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06277
Data Deliverable	:	15 Day / 15 Day Summary

CASE NARRATIVE

I. Introduction

On October 21, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

CH2M ID#	TARL ID#	MATRIX	DATE OF RECEIPT
B2J3L7	MNERH	SOIL	10/21/11
B2J3L9	MNERK	SOIL	10/21/11
B2J3N1	MNERL	SOIL	10/21/11

II. Sample Receipt

The samples were received in good condition. The samples were received at 14.5°C. The COCs indicate the samples should be at 4°C. TestAmerica submitted an SIR to the client on November 14, 2011. The client approved the proposed resolution (SIR CHPRC Tracking Number: SDR12-053) on November 14, 2011. No other anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

CH2M Hill Plateau Remediation Company
November 18, 2011

The requested analyses were:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (B2J3L7), sample matrix spike (B2J3L7), and matrix spike duplicate (B2J3L7) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Sandra Seger
Project Manager

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR12-053
REV NUM	0
DATE INITIATED	11/14/2011

SAMPLE EVENT INFORMATION

SAF NUM(S)	F11-092
OPERABLE UNIT(S)	100-KR-2
PROJECT(S)	100K Area AH
SAMPLE EVENT TITLE(S)	Area AH Sampling
LABORATORY	TestAmerica Incorporated, Richland

SAMPLING INFORMATION

NUMBER OF SAMPLES	3
SAMPLE NUMBERS	B2J3L7, B2J3L9, B2J3N1
SAMPLE MATRIX	SOIL
COLLECTION DATE	10/13/2011 - 10/13/2011
SDG NUM	W06277

ISSUE BACKGROUND

CLASS	Field Sampling Issue
TYPE	Incorrect Sample Preservation
DESCRIPTION	For the listed samples, the COCs indicate the samples should have been preserved at 4°C. Instead, the samples were received at 14.5°C

DISPOSITION

DESCRIPTION	Proposed Disposition: Report results and note elevated sample preservation temperature in the case narrative.
JUSTIFICATION	Accepted Disposition:

Submitted by:	Sandra Seger / TARL	Date: 11/14/2011
Accepted by:	Steve Trent / CHPRC	Date: 11/15/2011

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-238	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #2	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0 ft	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC6

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L7	SOIL	OCT 13 2011	1249	✓

MNERH

Lot# J1J240406
Due: 11.07.11 SKS 10/26/11
SDG# W06277

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: K.J. Young	DATE/TIME: OCT 13 2011 / 1430	RECEIVED BY/STORED IN: SSU-1 M01109	DATE/TIME: OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM: SSU-1 M01109	DATE/TIME: OCT 21 2011 / 0900	RECEIVED BY/STORED IN: K.J. Young CHPRC	DATE/TIME: OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM: K.J. Young CHPRC	DATE/TIME: OCT 21 2011 / 1400	RECEIVED BY/STORED IN: Cameron Hoange	DATE/TIME: OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
☐
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
AJ2 10/5/11

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-240	PAGE 1 OF 1
COLLECTOR: K.J. Young, CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #3	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-21	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC7

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3L9	SOIL	OCT 13 2011	1305	✓

MNERK

Lot# JIJ240406
Dve 11-07-11 sics 10/20/11
SDG# WC6277

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young, CHPRC	OCT 13 2011 / 1430	SSU-1 MO1109	OCT 13 2011 / 1430
SSU-1 MO1109	OCT 21 2011 / 0900	K.J. Young, CHPRC	OCT 21 2011 / 0900
K.J. Young, CHPRC	OCT 21 2011 / 1400	FED EX	OCT 21 2011 / 1400

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
☐
~~** The laboratory is to achieve a detection limit of 10 pCi/g for Tritium.~~
AJ2 10/5/11

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-252	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: 100-K-53 Sample #5	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	15 Days / 15 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRD3

PRESERVATION	Cool~4C
HOLDING TIME	30 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Chromium Hex - 7196;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2J3N1	SOIL	OCT 13 2011	1249	✓

Lot# JIJ240406
Due 11-07-11 SCS 10/26/11
SDG# WU6277

MNERL

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011 / 1430	SSU-1 MO1109	OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
SSU-1 MO1109	OCT 21 2011 / 0900	K.J. Young CHPRC	OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 21 2011 / 1400	Chris Krampe	OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Attachment 2
Narrative
WSCF112775

Revision: This report has been revised due to changes in 8015 QC reporting.

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Batch QC 186899

- Fluoride – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Matrix Spike and Post Spike recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Antimony and Manganese – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

pH – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

Narrative

Attachment 2
Narrative
WSCF112775

- There was no Laboratory Control Sample, Matrix Spike, or Matrix Spike Duplicate for Ethylene Glycol.
- All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

Sample Receipt

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

F11-092-049 — PAGE 1 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 15 ~~10~~ Days / ~~12~~ 15 Days

AIR QUALITY: ☐

SAMPLING LOCATION: Area AH Sample 24

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: SML-777

FIELD LOGBOOK NO.: HNF-N-507-22

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

112776

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M1	SOIL	JUL 20 2011	0821	✓	✓	✓		

Not collected
KLY 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 20 2011 1000	MO 1109 SSM #1	JUL 20 2011 1000
MO 1109 SSM #1	7-26-11 0930	FM Hall	7-26-11 0930
FM Hall	7-26-11 1015	TAPPAZIM	7-26-11 1015

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected.

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

PRINTED ON 5/31/2011

A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-049

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: ~~12 Days~~ 15 / ~~12~~ 15 Days 6/1/11
SAMPLING LOCATION: Area AH Sample 24	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	ORIGINAL
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-~~N-507~~-22	ACTUAL SAMPLE DEPTH: 0-11'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium 137, Cobalt 60, Europium 152, Europium 154, Europium 155};~~
~~(5) Americium 241; Isotopic Plutonium {Plutonium 238, Plutonium 239/240}; Isotopic Uranium {Uranium 233/234, Uranium 235, Uranium 238}; Strontium 89,90 Total Sr;~~
Not collected KJY 7/20/11

PRINTED ON 5/31/2011

A-6003-618 (REV 2)

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-050

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: ~~12~~ Days / ~~12~~ 15 Days 15 6/1/11

AIR QUALITY: ☐

SAMPLING LOCATION: Area AH Sample 25

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: SMC-777

FIELD LOGBOOK NO.: HNF-N-807-22

ACTUAL SAMPLE DEPTH

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2D1M2 2	SOIL	JUL 20 2011	0831	✓	✓	✓		

Not collected KT 7/20/11

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	JUL 20 2011 1000	M01109 SSU#1	JUL 20 2011 1000
M01109 SSU#1	7-20-11 0930	FM Hall	7-20-11 0930
FM Hall	7-20-11 1015	TA Fnazim Chaudhry	7-20-11 1015

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Special Instructions (4) & (5) Not collected

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

PRINTED ON 5/31/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-050 — PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
SAMPLING LOCATION: Area AH Sample 25	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01 — AIR QUALITY: ☐ — METHOD OF SHIPMENT: GOVERNMENT VEHICLE — DATA TURNAROUND: ~~12~~ 15 Days / ~~21~~ 15 Days — 6/1/11 — **ORIGINAL**

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241, Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KJ 7/20/11

PRINTED ON 5/31/2011 — A-6003-618 (REV 2)

Thursday, July 28, 2011 11:38:40 AM
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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-101	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 31	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: | |	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	14/40 Days	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	aG	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1	1	1
VOLUME	120mL	250mL	120mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Semi VOA - 8270 (TCL).	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B2FBM5 3	SOIL	JUL 2 0 2011	0820	✓			✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 2 0 2011 1000	RECEIVED BY/STORED IN: MD 109 SSU #1	DATE/TIME: JUL 2 0 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: MD 109 SSU #1	DATE/TIME: 7-28-11 7-26-11 0730	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-28-11 7-26-11 0730	Special Instructions (2)(5)(6) & Semi VOA Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-28-11 7-26-11 1015	RECEIVED BY/STORED IN: TA Pwazim	DATE/TIME: 1015 6-26-11	7-26-11 to 7-28-11
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-101	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C / DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 31	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐
ICE CHEST NO.: SMIL-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE / ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A	

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
~~(2) TPH DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};~~
(3) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(4) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(6) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN5 4	SOIL	JUL 2 0 2011	0846	✓	✓	✓		

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 2 0 2011 1000	RECEIVED BY/STORED IN: H01109 SSL #1	DATE/TIME: JUL 2 0 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: H10 1109 SSL #1	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-2011	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Pouch in Cooler	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-111	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 26	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-607-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KY 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SAIL-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
PRESERVATION				Cool~4C	None	Cool~4C	None	None
HOLDING TIME				14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER				G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)				1	1	1	1	1
VOLUME				120mL	120mL	120mL	500mL	120mL
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
B2FBN6	5	SOIL	JUL 20 2011	0903	✓	✓	✓	

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: JUL 20 2011 1000	RECEIVED BY/STORED IN: MO1109 SSU#1	DATE/TIME: JUL 20 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: MO1109 SSU#1	DATE/TIME: 7-26-11 0930	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-11 0930	Special Instructions (4) & (5) Not collected
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 7-26-11 1015	RECEIVED BY/STORED IN: TA Fnorimi	DATE/TIME: 7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME: 7-26-11	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/S[redacted]	DATE/TIME	

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

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-112	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 27	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 Total Sr;~~
Not collected KY 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F11-092-113	PAGE 1 OF 2
COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil	SAF NO.: F11-092	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0 - 1	COA: 302679ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN7 10	SOIL	JUL 20 2011	0925	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall, CHPRC	JUL 20 2011 1000	MO1109 SSU#1	JUL 20 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109 SSU#1 7-26-11	7-26-11 0930	FM Hall 7-26-11	7-26-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall 7-26-11	7-26-11 1015	DAHAZIM 7-26-11	7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-113	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 28	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: [ ]	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-114	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-507-22.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION			Cool~4C	None	Cool~4C	None	None
HOLDING TIME			14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER			G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)			1	1	1	1	1
VOLUME			120mL	120mL	120mL	500mL	120mL
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				
B2FBN8 7	SOIL	JUL 2 0 2011	0939	✓	✓	✓	

Not collected
KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
FM Hall CHPRC	JUL 2 0 2011 1000	MO1109 FSU#1	JUL 2 0 2011 1000	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO1109 FSU#1	7-20-11 0930	FM Hall	7-20-11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FM Hall	7-26-11 1015	TA FMAZ12	7-26-11 1015	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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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Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-114	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C
SAMPLING LOCATION: Area AH Sample 29	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐
ICE CHEST NO.: SML-777	FIELD LOGBOOK NO.: HNF-N-807-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A	

DATA TURNAROUND: 15 Days / 15 Days

ORIGINAL

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected ky 7/20/11

PRINTED ON 6/16/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 1 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SMC-777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None	Cool-4C	None	None
HOLDING TIME	14 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	120mL	120mL	120mL	500mL	120mL
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					
B2FBN9 8	SOIL	JUL 20 2011	0925	✓	✓	✓		

Not collected KY 7/20/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 20 2011 1000	RECEIVED BY/STORED IN: HAD 1109 SSU #1	DATE/TIME: JUL 20 2011 1000	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: HAD 1109 SSU # 7-26-11	DATE/TIME: 0930 7-26-11	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 7-26-11 0930	Special Instructions (4) & (5) Not collected.
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 1015 7-26-11	RECEIVED BY/STORED IN: TA Pinazin	DATE/TIME: 1015 7-26-11	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
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

PRINTED ON 6/16/2011 — A 6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-115	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AH Sample 30	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL - 777	FIELD LOGBOOK NO.: HNF-N-507-22	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(3) Chromium Hex - 7196; pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};~~
~~(5) Americium-241; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr;~~
Not collected KY 7/20/11

PRINTED ON 6/16/2011 A-6003-618 (REV 2)

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-015		
VALIDATOR: Eyda Hergenreder		LAB: TestAmerica, WSCF		DATE: 06-05-2012	
			SDG: W06260, W06277, WSCF112775		
ANALYSES PERFORMED					
Anions/IC X	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI X	pH X	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate	Cyanide	

SAMPLES/MATRIX Soil samples

SDG W06260: B2J3L5, B2J3M1, B2J3N3

SDG W06277: B2J3L7, B2J3L9, B2J3N1

SDG WSCF112775: B2D1M1, B2D1M2, B2FBM5, B2FBN5, B2FBN6, B2FBN7, B2FBN8, B2FBN9,

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?.....(Yes) No N/A

Comments: None

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike standards NIST traceable? (Levels D, E) ..... Yes No N/A

Spike standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

SDG W06260: Cr+6 MS% 41%

SDG WSCF112775 (batch 186899): Fluoride MS/MSD%R 73%/73%

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes (No) N/A

Duplicate results acceptable? ..... (Yes) No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... (Yes) No N/A

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments:

SDG W06260: Cr+6 difference >2X RL

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes (No) N/A

Sample holding times acceptable? ..... (Yes) No N/A

Comments:

SDG W06277: Samples were received at 14.5 C

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?.....Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?.....Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client

FORM II

Date: 25-Oct-11

DUPLICATE RESULTS

Lab Name:	TestAmerica	**SDG:**	W06260	**Collection Date:**	10/6/2011 9:23:00 AM
Lot-Sample No.:	J1J100451-1	**Report No. :**	48929	**Received Date:**	10/10/2011 2:15:00 PM
Client Sample ID:	B2J3L5	**COC No. :**	F11-092-236	**Matrix:**	Soil

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			**Work Order:** MM3W61AD		**Report DB ID:** MM3W61ER			**Orig Sa DB ID:** 9MM3W610			
HEXCHROME	4.09E-01			0.0E+00	1.55E-01	mg/kg	N/A	(2.6)	10/12/11 08:45 a		2.5008	
	8.39E-01		**RPD**	**68.9**		3.50E-01		N/A			g	

No. of Results: 1 **Comments:**

RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II
BLANK RESULTS

Date: 25-Oct-11

Lab Name: TestAmerica
Matrix: Soil

SDG: W06260
Report No. : 48929

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			**Work Order:**	MM3XK1AA		**Report DB ID:**	MM3XK1AB				
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	10/12/11 08:45 a		2.5	
						1.55E-01		N/A			g	

No. of Results: 1 **Comments:**

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
LCS RESULTS

Date: 25-Oct-11

Lab Name: TestAmerica
Matrix: Soil

SDG: W06260
Report No. : 48929

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 1283204	7196_CR6			Work Order:	MM3XK1AC		Report DB ID:	MM3XK1AC					
HEXCHROME	1.96E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		98%	10/12/11 08:45 a	2.5	
							Rec Limits:	80	120	0.0		g	

No. of Results: 1 Comments:

FORM II

MATRIX SPIKE RESULTS

Date: 25-Oct-11

Lab Name: TestAmerica **SDG:** W06260

Lot-Sample No.: J1J100451-1, B2J3L5 **Report No. :** 48929 **Matrix:** Soil

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1283204	Work Order: MM3W61AC			Report DB ID: MM3W61CW			Orig Sa DB ID: 9MM3W610					
HEXCHROME	4.60E+00			0.0E+00	1.55E-01	mg/kg	N/A	41.22%	1.12E+01	10/12/11 08:45 a	2.503	7196_CR6
	8.39E-01										g	

Number of Results: 1

Comments:

TestAmerica
rptSTLRchMs
V5.2.15 A2002

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 21-Nov-11

DUPLICATE RESULTS

Lab Name:	TestAmerica	**SDG:**	W06277	**Collection Date:**	10/13/2011 12:49:00 PM
Lot-Sample No.:	J1J240406-1	**Report No. :**	49386	**Received Date:**	10/21/2011 2:00:00 PM
Client Sample ID:	B2J3L7	**COC No. :**	F11-092-238	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:** MNERH1AD		**Report DB ID:** MNERH1ER			**Orig Sa DB ID:** 9MNERH10			
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	10/31/11 08:50 a		2.5148	
	1.55E-01	U	**RPD** 0.0			3.50E-01		N/A			g	

No. of Results: 1 **Comments:**

RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 21-Nov-11

Lab Name: TestAmerica
Matrix: SOIL

SDG: W06277
Report No. : 49386

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:**	MNE5H1AA	**Report DB ID:**	MNE5H1AB					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	10/31/11 08:50 a		2.5	
						1.55E-01		N/A			g	

No. of Results: 1 **Comments:**

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 21-Nov-11

Lab Name: TestAmerica

SDG: W06277

Matrix: SOIL

Report No. : 49386

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 1297199	7196_CR6			**Work Order:**	MNE5H1AC		**Report DB ID:**	MNE5H1AS					
HEXCHROME	1.93E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		96%	10/31/11 08:50 a	2.5	
							Rec Limits:	80	120	0.0		g	

No. of Results: 1 **Comments:**

FORM II

MATRIX SPIKE RESULTS

Date: 21-Nov-11

Lab Name: TestAmerica **SDG:** W06277

Lot-Sample No.: J1J240406-1, B2J3L7 **Report No. :** 49386 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1297199	Work Order:	MNERH1AC		Report DB ID:	MNERH1CW		Orig Sa DB ID:	9MNERH10				
HEXCHROME	9.10E+00			0.0E+00	1.55E-01	mg/kg	N/A	87.97%	1.03E+01	10/31/11 08:50 a	2.5237	7196_CR6
	1.55E-01										g	

Number of Results: 1

Comments:

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
186870	186871	5	BLANK	61503	BLANK		ICP-6010 - All possible metals
186870	186871	6	LCS	61504	LCS		ICP-6010 - All possible metals
186870	186871	8	MS	61505	B2FPL7(112777001MS)	112777001	ICP-6010 - All possible metals
186870	186871	9	MSD	61506	B2FPL7(112777001MSD)	112777001	ICP-6010 - All possible metals
186870	186871	15	SAMPLE	112775001	B2D1M1		ICP-6010 - All possible metals
186870	186871	16	SAMPLE	112775002	B2D1M2		ICP-6010 - All possible metals
186870	186871	17	SAMPLE	112775003	B2FBM5		ICP-6010 - All possible metals
186870	186871	18	SAMPLE	112775004	B2FBN5		ICP-6010 - All possible metals
186870	186871	21	SAMPLE	112775005	B2FBN6		ICP-6010 - All possible metals
186870	186871	22	SAMPLE	112775006	B2FBN7		ICP-6010 - All possible metals
186870	186871	23	SAMPLE	112775007	B2FBN8		ICP-6010 - All possible metals
186870	186871	24	SAMPLE	112775008	B2FBN9		ICP-6010 - All possible metals
186899	186900	2	BLANK	61561	BLANK		Anions by Ion Chromatography (Solid)
186899	186900	3	LCS	61562	LCS		Anions by Ion Chromatography (Solid)
186899	186900	4	MS	61563	B2FJ56(112763010MS)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	5	MSD	61564	B2FJ56(112763010MSD)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	6	DUP	61565	B2FJ56(112763010DUP)	112763010	Anions by Ion Chromatography (Solid)
186899	186900	11	SAMPLE	112775001	B2D1M1		Anions by Ion Chromatography (Solid)
186899	186900	12	SAMPLE	112775002	B2D1M2		Anions by Ion Chromatography (Solid)
186899	186900	13	SAMPLE	112775003	B2FBM5		Anions by Ion Chromatography (Solid)
186899	186900	14	SAMPLE	112775004	B2FBN5		Anions by Ion Chromatography (Solid)
186899	186900	15	SAMPLE	112775005	B2FBN6		Anions by Ion Chromatography (Solid)
187061	187062	3	BLANK	61670	BLANK		Hexavalent chromium

REVISED112775 -

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187061	187062	4	LCS	61671	LCS		Hexavalent chromium
187061	187062	5	DUP	61672	B2D1M1(112775001DUP)	112775001	Hexavalent chromium
187061	187062	6	MS	61673	B2D1M1(112775001MS)	112775001	Hexavalent chromium
187061	187062	7	PSTSPK	61674	PSTSPK		Hexavalent chromium
187061	187062	8	IMS	61675	B2D1M1(112775001IMS)	112775001	Hexavalent chromium
187061	187062	9	SAMPLE	112775001	B2D1M1		Hexavalent chromium
187061	187062	10	SAMPLE	112775002	B2D1M2		Hexavalent chromium
187061	187062	11	SAMPLE	112775003	B2FBM5		Hexavalent chromium
187061	187062	12	SAMPLE	112775004	B2FBN5		Hexavalent chromium
187061	187062	13	SAMPLE	112775005	B2FBN6		Hexavalent chromium
187061	187062	14	SAMPLE	112775006	B2FBN7		Hexavalent chromium
187061	187062	15	SAMPLE	112775007	B2FBN8		Hexavalent chromium
187061	187062	16	SAMPLE	112775008	B2FBN9		Hexavalent chromium
187074	187075	4	BLANK	61703	BLANK		ICP-2008 MS All possible metal
187074	187075	5	LCS	61704	LCS		ICP-2008 MS All possible metal
187074	187075	6	MS	61770	B2FK54(112772002MS)	112772002	ICP-2008 MS All possible metal
187074	187075	7	MSD	61771	B2FK54(112772002MSD)	112772002	ICP-2008 MS All possible metal
187074	187075	10	SAMPLE	112775001	B2D1M1		ICP-2008 MS All possible metal
187074	187075	11	SAMPLE	112775002	B2D1M2		ICP-2008 MS All possible metal
187074	187075	12	SAMPLE	112775003	B2FBM5		ICP-2008 MS All possible metal
187074	187075	13	SAMPLE	112775004	B2FBN5		ICP-2008 MS All possible metal
187074	187075	14	SAMPLE	112775005	B2FBN6		ICP-2008 MS All possible metal
187074	187075	15	SAMPLE	112775006	B2FBN7		ICP-2008 MS All possible metal

REVISED112775 -

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187074	187075	18	SAMPLE	112775007	B2FBN8		ICP-2008 MS All possible metal
187074	187075	19	SAMPLE	112775008	B2FBN9		ICP-2008 MS All possible metal
187365	187366	2	BLANK	61892	BLANK		Anions by Ion Chromatography (Solid)
187365	187366	3	LCS	61893	LCS		Anions by Ion Chromatography (Solid)
187365	187366	4	MS	61894	B2FD58(112788001MS)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	5	MSD	61895	B2FD58(112788001MSD)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	6	DUP	61896	B2FD58(112788001DUP)	112788001	Anions by Ion Chromatography (Solid)
187365	187366	8	SAMPLE	112775006	B2FBN7		Anions by Ion Chromatography (Solid)
187365	187366	9	SAMPLE	112775007	B2FBN8		Anions by Ion Chromatography (Solid)
187365	187366	10	SAMPLE	112775008	B2FBN9		Anions by Ion Chromatography (Solid)

Batch QC List

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
187045	187045	10	SAMPLE	112775001	B2D1M1		Dry Weight/Percent Moisture
187045	187045	11	SAMPLE	112775002	B2D1M2		Dry Weight/Percent Moisture
187045	187045	12	SAMPLE	112775003	B2FBM5		Dry Weight/Percent Moisture
187045	187045	13	SAMPLE	112775004	B2FBN5		Dry Weight/Percent Moisture
187045	187045	14	SAMPLE	112775005	B2FBN6		Dry Weight/Percent Moisture
187045	187045	15	SAMPLE	112775006	B2FBN7		Dry Weight/Percent Moisture
187045	187045	16	SAMPLE	112775007	B2FBN8		Dry Weight/Percent Moisture
187045	187045	17	SAMPLE	112775008	B2FBN9		Dry Weight/Percent Moisture
187050	187050	1	LCS	61633	LCS		Soil And Waste pH Measurement
187050	187050	2	DUP	61634	B2D1M1(112775001DUP)	112775001	Soil And Waste pH Measurement
187050	187050	3	SAMPLE	112775001	B2D1M1		Soil And Waste pH Measurement
187050	187050	4	SAMPLE	112775002	B2D1M2		Soil And Waste pH Measurement
187050	187050	5	SAMPLE	112775003	B2FBM5		Soil And Waste pH Measurement
187050	187050	6	SAMPLE	112775004	B2FBN5		Soil And Waste pH Measurement
187050	187050	7	SAMPLE	112775005	B2FBN6		Soil And Waste pH Measurement
187050	187050	8	SAMPLE	112775006	B2FBN7		Soil And Waste pH Measurement
187050	187050	9	SAMPLE	112775007	B2FBN8		Soil And Waste pH Measurement
187050	187050	10	SAMPLE	112775008	B2FBN9		Soil And Waste pH Measurement
187050	187050	12	LCS	61635	LCS		Soil And Waste pH Measurement
187050	187050	14	DUP	61636	B2FB32(112794001DUP)	112794001	Soil And Waste pH Measurement

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch 186899 **Test** Anions by Ion Chromatography (Solid)
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61561**							
Fluoride	16984-48-8		<0.036	ug/mL					U	07/26/11
Chloride	16887-00-6		<0.062	ug/mL					U	07/26/11
Nitrite-N	NO2-N		<0.020	ug/mL					U	07/26/11
Nitrate-N	NO3-N		<0.019	ug/mL					U	07/26/11
Sulfate	14808-79-8		<0.072	ug/mL					U	07/26/11
LCS			**QC Sample #61562**							
Fluoride	16984-48-8		0.922	ug/mL	93.1	90 - 110				07/26/11
Chloride	16887-00-6		1.85	ug/mL	93.4	90 - 110				07/26/11
Nitrite-N	NO2-N		0.953	ug/mL	97.4	90 - 110				07/26/11
Nitrate-N	NO3-N		0.898	ug/mL	101.4	90 - 110				07/26/11
Sulfate	14808-79-8		3.75	ug/mL	95.6	90 - 110				07/26/11
MS			**QC Sample #61563**							
			Original 112763010							
Fluoride	16984-48-8		18.4	mg/kg	73.2	80 - 120			N	07/26/11
Chloride	16887-00-6		44.6	mg/kg	88.6	80 - 120				07/26/11
Nitrite-N	NO2-N		23.8	mg/kg	95.7	80 - 120				07/26/11
Nitrate-N	NO3-N		21.7	mg/kg	96.6	80 - 120				07/26/11
Sulfate	14808-79-8		86.2	mg/kg	86.5	80 - 120				07/26/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MSD			**QC Sample #61564**							
			Original	**112763010**				**Paired**	**61563**	
Fluoride	16984-48-8		18.3	mg/kg	72.6	80 - 120	0.80	30	N	07/26/11
Chloride	16887-00-6		43.9	mg/kg	87.3	80 - 120	1.50	30		07/26/11
Nitrite-N	NO2-N		23.5	mg/kg	94.4	80 - 120	1.40	30		07/26/11
Nitrate-N	NO3-N		21.7	mg/kg	96.5	80 - 120	0.10	30		07/26/11
Sulfate	14808-79-8		82.5	mg/kg	82.8	80 - 120	4.40	30		07/26/11
DUP			**QC Sample #61565**							
			Original	**112763010**						
Fluoride	16984-48-8		<1.9	mg/kg			0.00	30	U	07/26/11
Chloride	16887-00-6		3.77	mg/kg			11.80	30	B	07/26/11
Nitrite-N	NO2-N		<1.1	mg/kg			0.00	30	U	07/26/11
Nitrate-N	NO3-N		4.54	mg/kg			2.60	30	B	07/26/11
Sulfate	14808-79-8		56.2	mg/kg			5.90	30		07/26/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF112775

QC Batch 187050 **Test** Soil And Waste pH Measurement
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #61633**							
pH	PH		7.95	unitless	99.4	98.75 - 101.25				07/27/11
DUP			**QC Sample #61634**							
			Original 112775001							
pH	PH	8.14	8.17	unitless			0.40	30		07/27/11
LCS			**QC Sample #61635**							
pH	PH		8.01	unitless	100.1	98.75 - 101.25				07/27/11
DUP			**QC Sample #61636**							
			Original 112794001							
pH	PH		9.42	unitless			0.40	30		07/27/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch 187061 **Test** Hexavalent chromium
Associated Samples 112775001, 112775002, 112775003, 112775004, 112775005, 112775006, 112775007, 112775008

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #61670**								
Hexavalent chromium	18540-29-9		<0.10	ug/g						U	07/28/11
LCS			**QC Sample #61671**								
Hexavalent chromium	18540-29-9		4.11	ug/g	103.1	80 - 120					07/28/11
DUP			**QC Sample #61672**								
			Original 112775001								
Hexavalent chromium	18540-29-9	<0.10	<0.10	ug/g			77.20	30	*	UX	07/28/11
MS			**QC Sample #61673**								
			Original 112775001								
Hexavalent chromium	18540-29-9	<0.10	2.87	ug/g	72.1	75 - 125				N	07/28/11
PSTSPK			**QC Sample #61674**								
Hexavalent chromium	18540-29-9		0.0408	ug/g	81.6	85 - 115				N	07/28/11
IMS			**QC Sample #61675**								
			Original 112775001								
Hexavalent chromium	18540-29-9	<0.10	309	ug/g	92	75 - 125				D	07/28/11

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

QC Batch 187365
Associated Samples 112775006, 112775007, 112775008

Test Anions by Ion Chromatography (Solid)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61892**							
Fluoride	16984-48-8		<0.036	ug/mL					U	07/27/11
Chloride	16887-00-6		<0.062	ug/mL					U	07/27/11
Nitrite-N	NO2-N		<0.020	ug/mL					U	07/27/11
Nitrate-N	NO3-N		<0.019	ug/mL					U	07/27/11
Sulfate	14808-79-8		<0.072	ug/mL					U	07/27/11
LCS			**QC Sample #61893**							
Fluoride	16984-48-8		0.971	ug/mL	98.1	90 - 110				07/27/11
Chloride	16887-00-6		1.84	ug/mL	93	90 - 110				07/27/11
Nitrite-N	NO2-N		0.965	ug/mL	98.6	90 - 110				07/27/11
Nitrate-N	NO3-N		0.892	ug/mL	100.8	90 - 110				07/27/11
Sulfate	14808-79-8		3.71	ug/mL	94.6	90 - 110				07/27/11
MS			**QC Sample #61894**							
			Original	**112788001**						
Fluoride	16984-48-8		21.5	mg/kg	85.8	80 - 120				07/27/11
Chloride	16887-00-6		43.9	mg/kg	87.6	80 - 120				07/27/11
Nitrite-N	NO2-N		22.6	mg/kg	91.5	80 - 120				07/27/11
Nitrate-N	NO3-N		22.4	mg/kg	100	80 - 120				07/27/11
Sulfate	14808-79-8		89.4	mg/kg	90.2	80 - 120				07/27/11

REVISED112775 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112775

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MSD			**QC Sample #61895**							
			Original 112788001					**Paired**	**61894**	
Fluoride	16984-48-8		22.3	mg/kg	88.8	80 - 120	3.40	30		07/27/11
Chloride	16887-00-6		45.2	mg/kg	89.8	80 - 120	2.50	30		07/27/11
Nitrite-N	NO2-N		23.6	mg/kg	95	80 - 120	3.80	30		07/27/11
Nitrate-N	NO3-N		22.9	mg/kg	101.9	80 - 120	1.90	30		07/27/11
Sulfate	14808-79-8		89.8	mg/kg	90	80 - 120	0.20	30		07/27/11
DUP			**QC Sample #61896**							
			Original 112788001							
Fluoride	16984-48-8		<2.0	mg/kg			0.00	30	U	07/27/11
Chloride	16887-00-6		<3.4	mg/kg			22.60	30	U	07/27/11
Nitrite-N	NO2-N		<1.1	mg/kg			0.00	30	U	07/27/11
Nitrate-N	NO3-N		<1.0	mg/kg			12.20	30	U	07/27/11
Sulfate	14808-79-8		3.96	mg/kg			2.70	30	B	07/27/11

REVISED112775 -

Date: 05 June 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: Radiochemical - Sample Data Groups (SDGs) H4680, H4686, WSCF113325 and WSCF113366

INTRODUCTION

This memorandum presents the results of data validation for SDGs H4680 and H4686 prepared by Eberline Services, and SDGs WSCF113325 and WSCF113366 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2HR95	10/06/11	Soil	C	See note 1
B2HR98	10/06/11	Soil	C	See note 1
B2HRB4	10/06/11	Soil	C	See note 1
B2HR96	10/13/11	Soil	C	See note 1
B2HR97	10/13/11	Soil	C	See note 1
B2HRB3	10/13/11	Soil	C	See note 1
B2HRH5	10/06/11	Soil	C	Gamma
B2HRF6	10/06/11	Soil	C	Gamma
B2HRF9	10/06/11	Soil	C	Gamma
B2HRF7	10/13/11	Soil	C	Gamma
B2HRF8	10/13/11	Soil	C	Gamma
B2HRH4	10/13/11	Soil	C	Gamma

1 – H3, C-14, Total Sr, Am-241, Isotopic-U, Isotopic-Pu

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 180 days. There are no specific preservation requirements for the soil samples.

The samples were analyzed within the prescribed holding times.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable with the following exceptions. C14, U-233/234 and U-238 were detected in equipment blank sample B2HRB4. The possibility of indigenous naturally occurring radioactive materials present in the equipment blank could not be determined from documentation supplied in the data package.

- **Accuracy**

Accuracy is evaluated by reviewing laboratory control sample results, and chemical recovery factors. Chemical recovery factors are determined through use of a carrier or tracer and provide assessment of the chemical separation process that is affected by the laboratory procedure, sample matrix, and/or interference. Chemical recovery factors are used to correct sample concentration, uncertainty, and MDC results. According to the SAP, the laboratory control

sample accuracy limits are 70% to 130%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

Carrier/Tracer Recovery Factors

All carrier/tracer recovery factors were acceptable.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate, field duplicate, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The RPD limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the MDCs the precision limits are ones specified by the DV procedure.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable with the following exceptions. Samples B2HR96 and B2HRB3 had a total Sr relative percent difference (RPD) = 133% and relative error ratio (RER) = 1.0 and samples B2HRF7 and B2HRH4 had Cs-137 RPD = 32% and RER = 1.0 No sample data were qualified as a result per data validation procedure guidance.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDCs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDCs with associated non-detected sample results were below the CRDLs with the following exceptions.

The Eu-155 MDCs for samples B2HRF6 and B2HRF8 were > the CRDLs.

- **Completeness**

SDGs H4680, H4686, WSCF113325 and WSCF113366 were submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

GRP-GD-002, Rev. 0, Change 0, *Data Validation for Radiochemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for and was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the MDC. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Radiochemical Data Qualification Summary			
SDGs: H4680, H4686, WSCF113325, WSCF113366	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Radiochemical	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-001 B2HR95

DATA SHEET

SDG	7819	Client/Case no	CHPRC	SDG_H4680
Contact	Joseph Verville	Contract	No. 33677	
Lab sample id	S110046-01	Client sample id	B2HR95	
Dept sample id	7819-001	Location/Matrix	100-K-53 SAMPLE #1	SOIL
Received	10/11/11	Collected/Weight	10/06/11 09:23	296 g
% solids	89.9	Custody/SAF No	F11-092-183	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.819	2.3	3.96	10.0	U	H
Carbon 14	14762-75-5	1.61	0.42	0.664	1.00		C
Total Strontium	SR-RAD	0.065	0.14	0.244	1.00	U	SR
Americium 241	14596-10-2	0.061	0.12	0.291	1.00	U	AM
Uranium 233/234	U-233/234	0.608	0.25	0.232	1.00		U
Uranium 235	15117-96-1	0.037	0.074	0.281	1.00	U	U
Uranium 238	U-238	0.577	0.25	0.232	1.00		U
Plutonium 238	13981-16-3	0	0.071	0.273	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.071	0.272	1.00	U	PU

AREA AH IN-PROCESSING SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-002 B2HR98

DATA SHEET

SDG	7819	Client/Case no	CHPRC	SDG_H4680
Contact	Joseph Verville	Contract	No. 33677	
Lab sample id	S110046-02	Client sample id	B2HR98	
Dept sample id	7819-002	Location/Matrix	100-K-53 SAMPLE #4	SOIL
Received	10/11/11	Collected/Weight	10/06/11 10:10	363.5 g
% solids	93.2	Custody/SAF No	F11-092-192	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	1.48	2.5	4.10	10.0	U	H
Carbon 14	14762-75-5	2.29	0.42	0.651	1.00		C
Total Strontium	SR-RAD	0.166	0.14	0.241	1.00	U	SR
Americium 241	14596-10-2	0.090	0.12	0.288	1.00	U	AM
Uranium 233/234	U-233/234	0.332	0.20	0.254	1.00		U
Uranium 235	15117-96-1	0	0.080	0.307	1.00	U	U
Uranium 238	U-238	0.365	0.20	0.254	1.00		U
Plutonium 238	13981-16-3	0.067	0.13	0.256	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.067	0.256	1.00	U	PU

AREA AH IN-PROCESSING SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-003 B2HRB4

DATA SHEET

SDG	7819	Client/Case no	CHPRC	SDG H4680
Contact	Joseph Verville	Contract	No. 33677	
Lab sample id	S110046-03	Client sample id	B2HRB4	
Dept sample id	7819-003	Location/Matrix	100-K-53 SAMPLE #6	SOIL
Received	10/11/11	Collected/Weight	10/06/11 09:10	373 g
% solids	99.9	Custody/SAF No	F11-092-210	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.904	2.4	4.04	10.0	U	H
Carbon 14	14762-75-5	0.980	0.41	0.662	1.00		C
Total Strontium	SR-RAD	0.071	0.15	0.270	1.00	U	SR
Americium 241	14596-10-2	-0.074	0.074	0.352	1.00	U	AM
Uranium 233/234	U-233/234	0.278	0.21	0.266	1.00		U
Uranium 235	15117-96-1	0.042	0.084	0.322	1.00	U	U
Uranium 238	U-238	0.313	0.21	0.266	1.00		U
Plutonium 238	13981-16-3	0	0.073	0.281	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.037	0.073	0.281	1.00	U	PU

AREA AH IN-PROCESSING SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-001 B2HR96

DATA SHEET

SDG	7831	Client/Case no	CHPRC	SDG H4686
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S110128-01	Client sample id	B2HR96	
Dept sample id	7831-001	Location/Matrix	100-K-53 SAMPLE #2	SOIL
Received	10/22/11	Collected/Weight	10/13/11 12:49	322.8 g
% solids	95.3	Custody/SAF No	F11-092-186	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.789	2.1	3.70	10.0	U	H
Carbon 14	14762-75-5	1.48	0.43	0.686	1.00		C
Total Strontium	SR-RAD	2.10	0.27	0.236	1.00		SR
Americium 241	14596-10-2	0.070	0.14	0.259	1.00	U	AM
Uranium 233/234	U-233/234	0.662	0.25	0.188	1.00		U
Uranium 235	15117-96-1	0.030	0.059	0.227	1.00	U	U
Uranium 238	U-238	0.515	0.25	0.188	1.00		U
Plutonium 238	13981-16-3	0.080	0.16	0.384	1.00	U	PU
Plutonium 239/240	PU-239/240	0.240	0.16	0.307	1.00	U	PU

AREA AH IN-[ROCESS SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-002 B2HR97

DATA SHEET

SDG	7831	Client/Case no	CHPRC	SDG H4686
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S110128-02	Client sample id	B2HR97	
Dept sample id	7831-002	Location/Matrix	100-K-53 SAMPLE #3	SOIL
Received	10/22/11	Collected/Weight	10/13/11 13:05	303.1 g
% solids	93.4	Custody/SAF No	F11-092-189	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.492	2.2	3.75	10.0	U	H
Carbon 14	14762-75-5	37.8	0.77	0.725	1.00		C
Total Strontium	SR-RAD	1.03	0.23	0.270	1.00		SR
Americium 241	14596-10-2	0.346	0.17	0.239	1.00		AM
Uranium 233/234	U-233/234	0.582	0.23	0.171	1.00		U
Uranium 235	15117-96-1	0.027	0.054	0.207	1.00	U	U
Uranium 238	U-238	0.537	0.23	0.171	1.00		U
Plutonium 238	13981-16-3	0.116	0.12	0.149	1.00	U	PU
Plutonium 239/240	PU-239/240	0.660	0.24	0.148	1.00		PU

AREA AH IN-[ROCESS SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-003 B2HRB3

DATA SHEET

SDG	7831	Client/Case no	CHPRC	SDG H4686	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S110128-03	Client sample id	B2HRB3		
Dept sample id	7831-003	Location/Matrix	100-K-53 SAMPLE #5	SOIL	
Received		Collected/Weight	10/13/11 12:49	303.1 g	
% solids	95.7	Custody/SAF No	F11-092-207	F11-092	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.01	2.2	3.87	10.0	U	H
Carbon 14	14762-75-5	1.95	0.49	0.770	1.00		C
Total Strontium	SR-RAD	1.49	0.27	0.284	1.00		SR
Americium 241	14596-10-2	0.230	0.20	0.282	1.00	U	AM
Uranium 233/234	U-233/234	0.895	0.32	0.236	1.00		U
Uranium 235	15117-96-1	0	0.075	0.286	1.00	U	U
Uranium 238	U-238	0.494	0.25	0.236	1.00		U
Plutonium 238	13981-16-3	0.130	0.16	0.200	1.00	U	PU
Plutonium 239/240	PU-239/240	0.600	0.26	0.199	1.00		PU

AREA AH IN-[ROCESS SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/04/11

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113325

Sample # 113325001
SAF# F11-092
Sample ID B2HRH5

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/12/11**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	-0.0050	.0083	pCi/g	1	0.014		10/12/11
Cobalt-60	10198-40-0	LA-508-481	U	-2.5E-3	.0064	pCi/g	1	0.011		10/12/11
Europium-152	14683-23-9	LA-508-481	U	-0.018	.029	pCi/g	1	0.041		10/12/11
Europium-154	15585-10-1	LA-508-481	U	3.4E-3	.02	pCi/g	1	0.039		10/12/11
Europium-155	14391-16-3	LA-508-481	U	0.016	.033	pCi/g	1	0.061		10/12/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113325

Sample # 113325002
SAF# F11-092
Sample ID B2HRF6

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/12/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.22	.041	pCi/g	1	0.035		10/12/11
Cobalt-60	10198-40-0	LA-508-481	U	5.4E-3	.018	pCi/g	1	0.036		10/12/11
Europium-152	14683-23-9	LA-508-481	U	0.037	.063	pCi/g	1	0.11		10/12/11
Europium-154	15585-10-1	LA-508-481	U	0.021	.057	pCi/g	1	0.12		10/12/11
Europium-155	14391-16-3	LA-508-481	U	-0.019	.082	pCi/g	1	0.16		10/12/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113325

Sample # 113325003
SAF# F11-092
Sample ID B2HRF9

Matrix SOIL
Sampled 10/06/11
Received 10/06/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/12/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.26	.047	pCi/g	1	0.026		10/12/11
Cobalt-60	10198-40-0	LA-508-481	U	7.2E-3	.014	pCi/g	1	0.029		10/12/11
Europium-152	14683-23-9	LA-508-481	U	-1.2E-3	.044	pCi/g	1	0.078		10/12/11
Europium-154	15585-10-1	LA-508-481	U	0.016	.044	pCi/g	1	0.089		10/12/11
Europium-155	14391-16-3	LA-508-481	U	0.020	.06	pCi/g	1	0.11		10/12/11

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

REVISED113325 -

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113366

Sample # 113366001
SAF# F11-092
Sample ID B2HRF7

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/17/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.37	.058	pCi/g	1	0.023		10/17/11
Cobalt-60	10198-40-0	LA-508-481	U	<-4.1E-3	.011	pCi/g	1	0.020		10/17/11
Europium-152	14683-23-9	LA-508-481	U	<-9.3E-3	.041	pCi/g	1	0.071		10/17/11
Europium-154	15585-10-1	LA-508-481	U	<0.041	.039	pCi/g	1	0.078		10/17/11
Europium-155	14391-16-3	LA-508-481	U	<0.070	.056	pCi/g	1	0.11		10/17/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113366

Sample # 113366002
SAF# F11-092
Sample ID B2HRF8

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/17/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		1.3	.17	pCi/g	1	0.040		10/17/11
Cobalt-60	10198-40-0	LA-508-481	U	<2.2E-3	.019	pCi/g	1	0.038		10/17/11
Europium-152	14683-23-9	LA-508-481	U	<0.032	.11	pCi/g	1	0.13		10/17/11
Europium-154	15585-10-1	LA-508-481	U	<-2.2E-4	.063	pCi/g	1	0.12		10/17/11
Europium-155	14391-16-3	LA-508-481	U	<0.030	.087	pCi/g	1	0.16		10/17/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113366

Sample # 113366003
SAF# F11-092
Sample ID B2HRH4

Matrix SOIL
Sampled 10/13/11
Received 10/13/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**10/17/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.51	.076	pCi/g	1	0.028		10/17/11
Cobalt-60	10198-40-0	LA-508-481	U	<9.6E-3	.014	pCi/g	1	0.029		10/17/11
Europium-152	14683-23-9	LA-508-481	U	<-7.3E-3	.055	pCi/g	1	0.088		10/17/11
Europium-154	15585-10-1	LA-508-481	U	<0.026	.056	pCi/g	1	0.097		10/17/11
Europium-155	14391-16-3	LA-508-481	U	<0.019	.073	pCi/g	1	0.13		10/17/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4680 was composed of three soil samples designated under SAF No. F11-092 with a Project Designation of: Area AH In-Processing Sampling - Soil.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analysis

The tracer recovery for the QC blank sample was 5% less than the lower control limit, as a consequence of the low yield the sample MDA was 2.51 pCi/g greater than the required detection limit of 1.0 pCi/g. No other problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

The relative percent difference in the original and duplicate results was 48%, however the DER was1.3. No other problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

N. Joseph Verville
Client Services Manager

10/22/11
Date

CH2M HILL Hanford Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-183

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ H4680	TELEPHONE NO.: 373-5869 7819	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-53 Sample #1	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil	SAF NO.: F11-092	
ICE CHEST NO.: GWS. 248	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10
METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL		
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR	BILL OF LADING/AIR BILL NO.: SEE PTR 7976-0830-0729	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC5

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HR95	SOIL	OCT 06 2011	0923	✓	✓

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CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 / 1135	MO1109SSU#1	OCT 06 2011 / 1135
MO1109SSU#1	10/10/11 1200	K.J. Young	10/10/11 1200
K.J. Young	10/10/11 1330	FED EX	
FED EX		RF. MATTHAMAN	10/11/11 0830

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-192

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ H4680	TELEPHONE NO.: 373-5869 7819	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-53 Sample #4	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil	SAF NO.: F11-092	
ICE CHEST NO.: GWS - 248	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10
METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL		
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR	BILL OF LADING/AIR BILL NO.: SEE PTR 7976-0830-0729	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC8

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HR98	SOIL	OCT 06 2011	1010	✓	✓

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CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 / 1135	MO1109 SSU #1	OCT 06 2011 / 1135
MO1109 SSU #1	10/10/11	K.J. Young	10/10/11 1200
K.J. Young	10/10/11 1330	FED EX	
FED EX		F. LEATHERMAN	10/11/11 0930

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-210

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ H4680	TELEPHONE NO.: 373-5869 7819	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 100-K-53 Sample #6	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: GWS-248	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: N/A	COA: 302718ES10
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR 715 7976-0830-0729

PRICE CODE: 8C

AIR QUALITY: ☐

DATA TURNAROUND: 15 Days / 15 Days

METHOD OF SHIPMENT: FEDERAL EXPRESS

ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
EPHRB4	SOIL	OCT 06 2011	0910	✓	✓

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CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1130	MO1109SSU#1	OCT 06 2011 1130
MO1109SSU#1	10/10/11 1200	K.J. Young	10/10/11 1200
K.J. Young	10/10/11 1330	FED EX	
FED EX		M.E. WATANABE	10/11/11 0930

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4686 was composed of three soil samples designated under SAF No. F11-092 with a Project Designation of: Area AH In-Processing Sampling - Soil.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's therefore no RPD or statistical control limit is calculated.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's therefore no RPD or statistical control limit is calculated.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses. The U-233/234 and U-238 results for both the original and duplicate analyses were less than their respective MDA's therefore no RPD or statistical control limit is calculated.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses. The results for both the original and duplicate analyses were less than their respective MDA's therefore no RPD or statistical control limit is calculated.

3.0 Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

N. Joseph Verville
Client Services Manager

11/4/11
Date

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-092-186	PAGE 1 OF 1
COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ H4G86	TELEPHONE NO.: 373-5869 (7831)	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8C
SAMPLING LOCATION: 100-K-53 Sample #2	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐
ICE CHEST NO.: GWS-252	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR 7976-5138-2912	

DATA TURNAROUND: 15 Days / 15 Days

ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRC6

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HR96	SOIL	OCT 13 2011	1249	✓	✓

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: K.J. Young CHPRC	DATE/TIME: OCT 13 2011 / 1430	RECEIVED BY/STORED IN: SSU-1 M01109	DATE/TIME: OCT 13 2011 / 1430
RELINQUISHED BY/REMOVED FROM: SSU-1 M01109	DATE/TIME: OCT 21 2011 / 0900	RECEIVED BY/STORED IN: K.J. Young CHPRC	DATE/TIME: OCT 21 2011 / 0900
RELINQUISHED BY/REMOVED FROM: K.J. Young CHPRC	DATE/TIME: OCT 21 2011 / 1400	RECEIVED BY/STORED IN: FED EX	DATE/TIME: OCT 21 2011 / 1400
RELINQUISHED BY/REMOVED FROM: FED EX	DATE/TIME:	RECEIVED BY/STORED IN: T.F. Heatherman	DATE/TIME: 10/22/11 1000
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-189 | PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ H4686	TELEPHONE NO.: 373-5869 (7831)	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 100-K-53 Sample #3	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: GWS-252	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR 7976-5138-2912

PRICE CODE: 8C | DATA TURNAROUND: 15 Days / 15 Days | AIR QUALITY: ☐

METHOD OF SHIPMENT: FEDERAL EXPRESS | ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2HRC7

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HR97	SOIL	OCT 13 2011	1305	✓	✓

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CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011 / 1430	SSU-1 M01109	OCT 13 2011 / 1430
SSU-1 M01109	OCT 21 2011 / 0900	K.J. Young CHPRC	OCT 21 2011 / 0900
K.J. Young CHPRC	OCT 21 2011 / 1400	FED EX	OCT 21 2011 / 1400
FED EX		M. Heathman	10/22/11 0800

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-207 | PAGE 1 OF 1

COLLECTOR K.J. Young CHPRC	**COMPANY CONTACT** TRENT, SJ 44686	**TELEPHONE NO.** 373-5869 (7831)	**PROJECT COORDINATOR** TRENT, SJ
SAMPLING LOCATION 100-K-53 Sample #5	**PROJECT DESIGNATION** Area AH In-Process Sampling - Soil		**SAF NO.** F11-092
ICE CHEST NO. GWS-252	**FIELD LOGBOOK NO.** HNF-N-507-24.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302718ES10
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SEE PTR		**BILL OF LADING/AIR BILL NO.** SEE PTR 7976-5138-2912

PRICE CODE 8C | **DATA TURNAROUND** 15 Days / 15 Days | **AIR QUALITY** ☐ | **METHOD OF SHIPMENT** FEDERAL EXPRESS | **ORIGINAL**

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B2HRD3

PRESERVATION	None	None
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRB3	SOIL	OCT 13 2011	1249	✓	✓

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CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011 / 1430	SSU-1 M01109	OCT 13 2011 / 1430
SSU-1 M01109	OCT 21 2011 / 0900	K.J. Young CHPRC	OCT 21 2011 / 0900
K.J. Young CHPRC	OCT 21 2011 / 1400	FED EX	OCT 21 2011 / 1400
FED EX		[illegible]	10/22/11 1000

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) C14 - LOW LEVEL {Carbon-14}; Tritium - H3 {Tritium};
(2) Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Strontium-89,90 -- Total Sr; Americium-241 {Americium-241};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Attachment 2
Narrative REV1
WSCF113325

Revision 1 Report: Revision to Remove the < sign from Rad Chem Data – Case Narrative Replaces the Prior Submittal in its Entirety

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Attachment 2
Narrative REV1
WSCF113325

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gamma Energy Analysis:
    - All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-211 PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC

SAMPLING LOCATION: 100-K-53 Sample #6

ICE CHEST NO.: GWS-257

SHIPPED TO: Waste Sampling & Characterization

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT DESIGNATION: Area AH In-Process Sampling - Soil

FIELD LOGBOOK NO.: HNF-N-507-24

ACTUAL SAMPLE DEPTH: N/A

OFFSITE PROPERTY NO.: N/A

PROJECT COORDINATOR: TRENT, SJ

SAF NO.: F11-092

COA: 302718ES10

BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01

AIR QUALITY:

DATA TURNAROUND: 12 Days / 12 Days

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

113325

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRH5	SOIL	OCT 06 2011	0910	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1335	Received	OCT 06 2011 1335
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20..□** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

REVISED113325 -

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-184

PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT COORDINATOR: TRENT, SJ

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-53 Sample #1

PROJECT DESIGNATION: Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: GWS-257

FIELD LOGBOOK NO.: HNF-N-807-24.

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302718ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF6	SOIL	OCT 06 2011	0923	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1335		OCT 06 2011 1335
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023E520.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD | DISPOSED BY | DATE/TIME

PRINTED ON 10/5/2011

A-6003-61B (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-193 — PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days	SAMPLING LOCATION: 100-K-53 Sample #4	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil
SAF NO.: F11-092	AIR QUALITY:	ICE CHEST NO.: GWS-257	FIELD LOGBOOK NO.: HNF-N-507-24.
ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF9	3	SOIL	OCT 06 2011	1010	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 06 2011 1133	M01109SSU#1	OCT 06 2011 1133
M01109SSU#1	OCT 06 2011 1200	K.J. Young CHPRC	OCT 06 2011 1200
K.J. Young CHPRC	OCT 06 2011 1335	Vbazan	OCT 06 2011 1336

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20..☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Attachment 2
Narrative
WSCF113366

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Attachment 2
Narrative
WSCF113366

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gamma Energy Analysis:
    - All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-187

PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT COORDINATOR: TRENT, SJ

PRICE CODE: C01

DATA TURNAROUND: ~~12~~ Days / ~~12~~ Days 15 15 54

AIR QUALITY: ☐

SAMPLING LOCATION: 100-K-53 Sample #2

PROJECT DESIGNATION: Area AH In-Process Sampling - Soil

SAF NO.: F11-092

ICE CHEST NO.: 645-107

FIELD LOGBOOK NO.: HNF-N-507-24

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302718ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL 10/13/11

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

113366

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF7	1	SOIL	OCT 13 2011	1249	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young	OCT 13 2011 / 1505	TARMAZIN	OCT 13 2011 / 1505

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD | DISPOSED BY | DATE/TIME

PRINTED ON 10/5/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-190 — PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: C01	DATA TURNAROUND: ~~12~~ Days / ~~12~~ 15 Days 15 KY		
SAMPLING LOCATION: 100-K-53 Sample #3	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
AIR QUALITY: ☐			
ICE CHEST NO.: GWS-107	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302/18E510
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRF8	SOIL	OCT 13 2011	1305	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011/1505	TA Frazier	OCT 13 2011/1505

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-208 — PAGE 1 OF 1

COLLECTOR: K.J. Young CHPRC	COMPANY CONTACT: TRENT, SJ	TELEPHONE NO.: 373-5869	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 100-K-53 Sample #5	PROJECT DESIGNATION: Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: GWS-107	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302718ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01 — AIR QUALITY: ☐ — METHOD OF SHIPMENT: GOVERNMENT VEHICLE

DATA TURNAROUND: ~~22~~ Days / ~~22~~ Days 15 15 15

ORIGINAL 10/13/11

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

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool-4C	None
HOLDING TIME	14 Days	6 Months
TYPE OF CONTAINER	G	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2HRH4	3	SOIL	OCT 13 2011	1249	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K.J. Young CHPRC	OCT 13 2011 1505	TA Fazim	OCT 13 2011 1505

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 403023ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Alcohols, Glycols, & Ketones - 8015 {Ethylene glycol};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};

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

PRINTED ON 10/5/2011 — A-6003-618 (REV 2)

Appendix 5

Data Validation Supporting Documentation

Appendix B - Radiochemical Data Validation Checklist

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-015		
VALIDATOR: Eyda Hergenreder		LAB: Eberline, WSCF		DATE: 06-05-2012	
			SDG: H4680, H4686, WSCF113325, WSCF113366		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90 X	Technetium-99	Alpha Spectroscopy X	Gamma Spectroscopy X	
Total Uranium	Radium-22	Tritium X	C-14 X	I-129	

SAMPLES/MATRIX Soil samples

SDG H4680: B2HR95, B2HR98, B2HRB4

SDG H4686: B2HR96, B2HR97, B2HRB3

SDG WSCF113325: B2HRH5, B2HRF6, B2HRF9

SDG WSCF113366: B2HRF7, B2HRF8, B2HRH4

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes (No) N/A

Comments: None

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. Continuing Calibration (Levels D, E)..... ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable?..... Yes No N/A

Comments:

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable?..... Yes No N/A

Comments:

5. Blanks (Levels B, C, D, E) ☐ N/A

Method blank analyzed within required frequency? (Yes) No N/A

Method blank results acceptable? (Yes) No N/A

Analytes detected in method blank? Yes (No) N/A

Field blank(s) analyzed? (Yes) No N/A

Field blank results acceptable? Yes (No) N/A

Analytes detected in field blank(s)? Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) Yes No (N/A)

Comments:

EB sample B2HRB4: C14 0.98 pCi/g; U 233/234 0.278 pCu/g; U 238 0.313 pCi/g

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ☐ N/A

LCS /BSS analyzed within required frequency? (Yes) No N/A

LCS/BSS recoveries acceptable? (Yes) No N/A

LCS/BSS traceable? (Levels D,E) Yes No (N/A)

LCS/BSS expired? (Levels D,E) Yes No (N/A)

LCS/BSS levels correct? (Levels D,E) Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) Yes No (N/A)

Comments: None

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☐ N/A

Chemical carrier added? ..... (Yes) No N/A

Chemical recovery acceptable? ..... (Yes) No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No (N/A)

Chemical carrier expired? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: None

More

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... (Yes) No N/A

Tracer recovery acceptable? ..... Yes (No) N/A

Tracer traceable? (Levels D, E) ..... Yes No (N/A)

Tracer expired? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments:

SDG H4680: For the MB, tracer recovery for Am-241 was 5%

9. Matrix Spikes (Levels C, D, E)..... ☐ N/A

Matrix spike analyzed?..... Yes No (N/A)

Spike recoveries acceptable? ..... Yes No (N/A)

Spike source traceable? (Levels D, E) ..... Yes No (N/A)

Spike source expired? Levels D, E) ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E)..... Yes No (N/A)

Comments: None

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... (Yes) No N/A

RPD Values Acceptable?..... (Yes) No N/A

Transcription/Calculation Errors? (Levels D, E)..... Yes No (N/A)

Comments: None

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... (Yes) No N/A

Field duplicate RPD values acceptable? ..... Yes (No) N/A

Field split sample(s) analyzed? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Performance audit sample(s) analyzed? ..... Yes No (N/A)

Performance audit sample results acceptable? ..... Yes No (N/A)

Comments:

Samples B2HR96/B2HRB3: Total Sr RPD 33%
Samples B2HRF7/B2HRH4: Cs-137 RPD 32%

12. Holding Times (All levels)

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: None

More

13. Results and Detection Limits (All Levels) ..... ☐ N/A

Results reported for all required sample analyses? ..... (Yes) No N/A

Results supported in raw data?(Levels D, E) ..... Yes No (N/A)

Results Acceptable? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

MDA's meet required detection limits? ..... Yes (No) N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: None

MDCs > CRDLs for associated non-detect sample results
WSCF113325: Eu-155 CRDL = 0.1 pCi/g, B2HRF6 MDC = 0.16 pCi/g
WSCF113366: Eu-155 CRDL = 0.1 pCi/g, B2HRF8 MDC = 0.16 pCi/g

Appendix 6

Additional Documentation Requested By Client

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-005 Method Blank

METHOD BLANK

SDG	7819	Client/Case no	CHPRC SDG H4680
Contact	Joseph Verville	Contract	No. 33677
Lab sample id	S110046-05	Client sample id	Method Blank
Dept sample id	7819-005	Material/Matrix	SOIL
		SAF No	F11-092

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.579	2.0	3.52	10.0	U	H
Carbon 14	14762-75-5	0.250	0.39	0.648	1.00	U	C
Total Strontium	SR-RAD	-0.057	0.13	0.294	1.00	U	SR
Americium 241	14596-10-2	-0.329	0.66	2.51	1.00	U	AM
Uranium 233/234	U-233/234	0.030	0.061	0.231	1.00	U	U
Uranium 235	15117-96-1	0.037	0.073	0.280	1.00	U	U
Uranium 238	U-238	0	0.061	0.231	1.00	U	U
Plutonium 238	13981-16-3	0	0.11	0.291	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.053	0.201	1.00	U	PU

QC-BLANK #80252

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-004 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7819
Contact Joseph Verville
Client/Case no CHPRC SDG H4680
Contract No. 33677

Lab sample id S110046-04
Dept sample id 7819-004
Client sample id Lab Control Sample
Material/Matrix SOIL
SAF No F11-092

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	309	8.2	3.07	10.0		H	323	13	96	84-116	80-120
Carbon 14	1130	23	4.82	1.00		C	1010	40	112	82-118	80-120
Total Strontium	9.90	0.56	0.256	1.00		SR	9.46	0.38	105	80-120	80-120
Americium 241	11.0	1.4	0.266	1.00		AM	10.1	0.40	109	75-125	80-120
Uranium 233/234	11.5	1.6	0.344	1.00		U	10.7	0.43	108	73-127	80-120
Uranium 238	11.6	1.6	0.298	1.00		U	10.7	0.43	108	73-127	80-120
Plutonium 238	10.3	1.4	0.232	1.00		PU	11.4	0.46	90	78-122	80-120
Plutonium 239/240	12.5	1.6	0.232	1.00		PU	13.2	0.53	95	78-122	80-120

QC-LCS #80251

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

7819-006 B2HR95

DUPLICATE

SDG	7819			Client/Case no	CHPRC SDG H4680
Contact	Joseph Verville			Contract	No. 33677
	DUPLICATE		ORIGINAL		
Lab sample id	S110046-06	Lab sample id	S110046-01	Client sample id	B2HR95
Dept sample id	7819-006	Dept sample id	7819-001	Location/Matrix	100-K-53 SAMPLE #1 SOIL
		Received	10/11/11	Collected/Weight	10/06/11 09:23 296 g
% solids	89.9	% solids	89.9	Custody/SAF No	F11-092-183 F11-092

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Tritium	0.405	2.3	3.91	10.0	U	H	0.819	2.3	3.96	U	-		0.3
Carbon 14	1.67	0.43	0.681	1.00		C	1.61	0.42	0.664		4	59	0.2
Total Strontium	0.078	0.16	0.300	1.00	U	SR	0.065	0.14	0.244	U	-		0.1
Americium 241	0	0.14	0.338	1.00	U	AM	0.061	0.12	0.291	U	-		0.7
Uranium 233/234	0.518	0.22	0.208	1.00		U	0.608	0.25	0.232		16	90	0.5
Uranium 235	0.066	0.066	0.252	1.00	U	U	0.037	0.074	0.281	U	-		0.6
Uranium 238	0.354	0.22	0.208	1.00		U	0.577	0.25	0.232		48	109	1.3
Plutonium 238	-0.026	0.052	0.198	1.00	U	PU	0	0.071	0.273	U	-		0.6
Plutonium 239/240	0	0.052	0.198	1.00	U	PU	0	0.071	0.272	U	-		0

QC-DUP#1 80253

AREA AH IN-PROCESSING SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test AM Matrix SOIL	Client CHPRC
SDG 7819	Contract No. 33677
Contact Joseph Verville	Contract SDG H4680

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	
Preparation batch 7311-198						
S110046-01			7819-001	B2HR95	U	
S110046-02			7819-002	B2HR98	U	
S110046-03			7819-003	B2HRB4	U	
S110046-04			7819-004	Lab Control Sample	ok	
S110046-05			7819-005	Method Blank	U	
S110046-06			7819-006	Duplicate (S110046-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.00	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 8.0 % Reference Lab Notebook 7311 pg. 196													
S110046-01			B2HR95	0.291	0.500			64		120			11	10/17/11	10/17	SS-030
S110046-02			B2HR98	0.288	0.500			73		121			11	10/17/11	10/17	SS-032
S110046-03			B2HRB4	0.352	0.500			64		121			11	10/17/11	10/17	SS-034
S110046-04			Lab Control Sample	0.266	0.500			76		120				10/17/11	10/17	SS-036
S110046-05			Method Blank	2.51	0.500			5		144				10/17/11	10/19	SS-040
S110046-06			Duplicate (S110046-01)	0.338	0.500			65		121			11	10/17/11	10/17	SS-038
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_EIE_PLT_AEA
	SPP-060	Soil Preparation, rev 0
	CP-965	Americium & Curium in Water & Dissolved Samples by Extraction Chromatography & Microprecipitation, rev 3
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD	MDA	0.674	± 1.80
FOR 6 SAMPLES	YIELD	58	± 53

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test PU Matrix SOIL
SDG 7819
Contact Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4680

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7311-198						
S110046-01			7819-001	B2HR95	U	U
S110046-02			7819-002	B2HR98	U	U
S110046-03			7819-003	B2HRB4	U	U
S110046-04			7819-004	Lab Control Sample	ok	ok
S110046-05			7819-005	Method Blank	U	U
S110046-06			7819-006	Duplicate (S110046-01)	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 8.0 %	Reference Lab Notebook 7311 pg. 196												
S110046-01			B2HR95	0.273	0.500			71		105			11	10/17/11	10/17	SS-051
S110046-02			B2HR98	0.256	0.500			71		106			11	10/17/11	10/17	SS-052
S110046-03			B2HRB4	0.281	0.500			70		106			11	10/17/11	10/17	SS-053
S110046-04			Lab Control Sample	0.232	0.500			84		106				10/17/11	10/17	SS-054
S110046-05			Method Blank	0.291	0.500			86		105				10/17/11	10/17	SS-063
S110046-06			Duplicate (S110046-01)	0.198	0.500			85		106			11	10/17/11	10/17	SS-064
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.255 ± 0.070
YIELD 78 ± 16

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test U Matrix SOIL
SDG 7819
Contact Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4680

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7311-198											
S110046-01			7819-001	B2HR95	0.608	U	0.577	105	63	6	13
S110046-02			7819-002	B2HR98	0.332	U	0.365	91	74	0	22
S110046-03			7819-003	B2HRB4	0.278	U	0.313	89	90	13	28
S110046-04			7819-004	Lab Control Sample	ok		ok				
S110046-05			7819-005	Method Blank	U	U	U				
S110046-06			7819-006	Duplicate (S110046-01)	ok	- U	ok	146	110	19	22
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
							Averages	108		10	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 8.0 %	Reference Lab Notebook 7311 pg. 196												
S110046-01			B2HR95	0.281	0.500			82		100			8	10/14/11	10/14	SS-052
S110046-02			B2HR98	0.307	0.500			82		100			8	10/14/11	10/14	SS-053
S110046-03			B2HRB4	0.322	0.500			80		100			8	10/14/11	10/14	SS-054
S110046-04			Lab Control Sample	0.344	0.500			85		100				10/14/11	10/14	SS-061
S110046-05			Method Blank	0.280	0.500			79		101				10/14/11	10/14	SS-063
S110046-06			Duplicate (S110046-01)	0.252	0.500			84		101			8	10/14/11	10/14	SS-064
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.298 ± 0.066
YIELD 82 ± 5

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test SR Matrix SOIL
SDG 7819
Contact Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4680

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7311-198					
S110046-01			7819-001	B2HR95	U
S110046-02			7819-002	B2HR98	U
S110046-03			7819-003	B2HRB4	U
S110046-04			7819-004	Lab Control Sample	ok
S110046-05			7819-005	Method Blank	U
S110046-06			7819-006	Duplicate (S110046-01)	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 10.4 % Reference Lab Notebook 7311 pg. 196													
S110046-01			B2HR95	0.244	1.00			89		160			11	10/17/11	10/17	GRB-228
S110046-02			B2HR98	0.241	1.00			90		120			11	10/17/11	10/17	GRB-223
S110046-03			B2HRB4	0.270	1.00			90		120			11	10/17/11	10/17	GRB-224
S110046-04			Lab Control Sample	0.256	1.00			96		100				10/17/11	10/17	GRB-221
S110046-05			Method Blank	0.294	1.00			95		100				10/17/11	10/17	GRB-222
S110046-06			Duplicate (S110046-01)	0.300	1.00			94		100			11	10/17/11	10/17	GRB-223
Nominal values and limits from method				1.00	1.00			40-110		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-060	Soil Preparation, rev 0
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 4

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.268 ± 0.050
YIELD 92 ± 6

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test C Matrix SOIL
SDG 7819
Contact Joseph Verville

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4680

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7311-198					
S110046-01			7819-001	B2HR95	1.61
S110046-02			7819-002	B2HR98	2.29
S110046-03			7819-003	B2HRB4	0.980
S110046-04			7819-004	Lab Control Sample	ok
S110046-05			7819-005	Method Blank	U
S110046-06			7819-006	Duplicate (S110046-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 10.0 % Reference Lab Notebook 7311 pg. 196													
S110046-01			B2HR95	0.664	0.631			100		400			8	10/13/11	10/14	LSC-007
S110046-02			B2HR98	0.651	0.632			100		400			8	10/13/11	10/14	LSC-007
S110046-03			B2HRB4	0.662	0.631			100		400			8	10/13/11	10/14	LSC-007
S110046-04			Lab Control Sample	4.82	0.631			100		9				10/13/11	10/15	LSC-007
S110046-05			Method Blank	0.648	0.631			100		400				10/13/11	10/14	LSC-007
S110046-06			Duplicate (S110046-01)	0.681	0.633			100		400			8	10/13/11	10/14	LSC-007
Nominal values and limits from method				1.00	0.631					10			180			

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 1.35 ± 3.40
YIELD 100 ± 0

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL-RICHMOND

SAMPLE DELIVERY GROUP H4680

Test H Matrix SOIL
SDG 7819
Contact Joseph Verville

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4680

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7311-198						
S110046-01			7819-001	B2HR95	U	
S110046-02			7819-002	B2HR98	U	
S110046-03			7819-003	B2HRB4	U	
S110046-04			7819-004	Lab Control Sample	ok	
S110046-05			7819-005	Method Blank	U	
S110046-06			7819-006	Duplicate (S110046-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	10.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7311-198			2σ prep error 10.0 % Reference Lab Notebook 7311 pg. 196													
S110046-01			B2HR95	3.96	0.631			100		50			7	10/13/11	10/13	LSC-006
S110046-02			B2HR98	4.10	0.632			100		50			7	10/13/11	10/13	LSC-006
S110046-03			B2HRB4	4.04	0.631			100		50			7	10/13/11	10/13	LSC-006
S110046-04			Lab Control Sample	3.07	0.631			100		50				10/13/11	10/13	LSC-006
S110046-05			Method Blank	3.52	0.631			100		50				10/13/11	10/13	LSC-006
S110046-06			Duplicate (S110046-01)	3.91	0.633			100		50			7	10/13/11	10/13	LSC-006
Nominal values and limits from method				10.0	0.631					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 3.77 ± 0.795
FOR 6 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/21/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-005 Method Blank

METHOD BLANK

SDG	7831	Client/Case no	CHPRC	SDG H4686	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S110128-05	Client sample id	Method Blank		
Dept sample id	7831-005	Material/Matrix		SOIL	
		SAF No	F11-092		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-1.10	1.8	3.20	10.0	U	H
Carbon 14	14762-75-5	0.125	0.43	0.717	1.00	U	C
Total Strontium	SR-RAD	-0.119	0.17	0.326	1.00	U	SR
Americium 241	14596-10-2	-0.022	0.087	0.240	1.00	U	AM
Uranium 233/234	U-233/234	0.022	0.044	0.168	1.00	U	U
Uranium 235	15117-96-1	0	0.053	0.203	1.00	U	U
Uranium 238	U-238	0	0.044	0.168	1.00	U	U
Plutonium 238	13981-16-3	0.054	0.11	0.205	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.054	0.205	1.00	U	PU

QC-BLANK #80429

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-004 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7831
Contact N. Joseph Verville
Client/Case no CHPRC SDG H4686
Contract No. 33677

Lab sample id S110128-04
Dept sample id 7831-004
Client sample id Lab Control Sample
Material/Matrix SOIL
SAF No F11-092

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	324	8.6	3.06	10.0		H	327	13	99	84-116	80-120
Carbon 14	1080	3.4	0.730	1.00		C	1030	41	105	83-117	80-120
Total Strontium	11.2	0.58	0.235	1.00		SR	9.45	0.38	118	78-122	80-120
Americium 241	13.1	1.4	0.250	1.00		AM	12.1	0.48	108	78-122	80-120
Uranium 233/234	12.3	1.7	0.312	1.00		U	11.8	0.47	104	74-126	80-120
Uranium 238	11.4	1.6	0.312	1.00		U	11.8	0.47	97	76-124	80-120
Plutonium 238	11.7	1.5	0.214	1.00		PU	11.4	0.46	103	76-124	80-120
Plutonium 239/240	13.2	1.6	0.214	1.00		PU	13.2	0.53	100	77-123	80-120

QC-LCS #80428

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

7831-006 B2HR96

DUPLICATE

SDG	7831			Client/Case no	CHPRC SDG H4686
Contact	N. Joseph Verville			Contract	No. 33677
	DUPLICATE		ORIGINAL		
Lab sample id	S110128-06	Lab sample id	S110128-01	Client sample id	B2HR96
Dept sample id	7831-006	Dept sample id	7831-001	Location/Matrix	100-K-53 SAMPLE #2 SOIL
		Received	10/22/11	Collected/Weight	10/13/11 12:49 322.8 g
% solids	95.3	% solids	95.3	Custody/SAF No	F11-092-186 F11-092

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Tritium	-1.28	2.1	3.73	10.0	U	H	-0.789	2.1	3.70	U	-		0.3
Carbon 14	1.59	0.46	0.728	1.00		C	1.48	0.43	0.686		7	65	0.3
Total Strontium	2.30	0.33	0.307	1.00		SR	2.10	0.27	0.236		9	37	0.7
Americium 241	-0.023	0.093	0.257	1.00	U	AM	0.070	0.14	0.259	U	-		1.1
Uranium 233/234	0.838	0.41	0.305	1.00		U	0.662	0.25	0.188		23	98	0.7
Uranium 235	0.048	0.097	0.369	1.00	U	U	0.030	0.059	0.227	U	-		0.3
Uranium 238	0.598	0.32	0.305	1.00		U	0.515	0.25	0.188		15	111	0.4
Plutonium 238	0.058	0.12	0.221	1.00	U	PU	0.080	0.16	0.384	U	-		0.2
Plutonium 239/240	0.116	0.12	0.221	1.00	U	PU	0.240	0.16	0.307	U	-		1.2

QC-DUP#1 80430

AREA AH IN-[ROCESS SAMPLING - SOIL

Lab id	EBRLNE
Protocol	F11-092
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test AM Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS
ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241
Preparation batch 7321-031					
S110128-01			7831-001	B2HR96	U
S110128-02			7831-002	B2HR97	0.346
S110128-03			7831-003	B2HRB3	U
S110128-04			7831-004	Lab Control Sample	ok
S110128-05			7831-005	Method Blank	U
S110128-06			7831-006	Duplicate (S110128-01)	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 8.0 %	Reference Lab Notebook 7321 pg. 015												
S110128-01			B2HR96	0.259	0.500			71		142			21	11/03/11	11/03	SS-030
S110128-02			B2HR97	0.239	0.500			88		140			21	11/03/11	11/03	SS-035
S110128-03			B2HRB3	0.282	0.500			71		141			21	11/03/11	11/03	SS-036
S110128-04			Lab Control Sample	0.250	0.500			83		141				11/03/11	11/03	SS-037
S110128-05			Method Blank	0.240	0.500			87		141				11/03/11	11/03	SS-038
S110128-06			Duplicate (S110128-01)	0.257	0.500			66		141			21	11/03/11	11/03	SS-040
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_EIE_PLT_AEA
	SPP-060	Soil Preparation, rev 0
	CP-965	Americium & Curium in Water & Dissolved Samples by Extraction Chromatography & Microprecipitation, rev 3
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.254 ± 0.032
YIELD 78 ± 19

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test PU Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 7321-031						
S110128-01			7831-001	B2HR96	U	U
S110128-02			7831-002	B2HR97	U	0.660
S110128-03			7831-003	B2HRB3	U	0.600
S110128-04			7831-004	Lab Control Sample	ok	ok
S110128-05			7831-005	Method Blank	U	U
S110128-06			7831-006	Duplicate (S110128-01)	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 8.0 % Reference Lab Notebook 7321 pg. 015													
S110128-01			B2HR96	0.384	0.500			57		112			21	11/03/11	11/03	SS-036
S110128-02			B2HR97	0.149	0.500			80		145			21	11/03/11	11/03	SS-002
S110128-03			B2HRB3	0.200	0.500			64		142			21	11/03/11	11/03	SS-010
S110128-04			Lab Control Sample	0.214	0.500			57		142				11/03/11	11/03	SS-011
S110128-05			Method Blank	0.205	0.500			88		112				11/03/11	11/03	SS-037
S110128-06			Duplicate (S110128-01)	0.221	0.500			83		112			21	11/03/11	11/03	SS-038
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.229 ± 0.160
YIELD 72 ± 28

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test U Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7321-031											
S110128-01			7831-001	B2HR96	0.662	U	0.515	129	79	6	12
S110128-02			7831-002	B2HR97	0.582	U	0.537	108	63	5	10
S110128-03			7831-003	B2HRB3	0.895	U	0.494	181	112	0	15
S110128-04			7831-004	Lab Control Sample	ok		ok				
S110128-05			7831-005	Method Blank	U	U	U				
S110128-06			7831-006	Duplicate (S110128-01)	ok	- U	ok	140	102	8	17
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
							Averages	140		5	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 8.0 %	Reference Lab Notebook 7321 pg. 015												
S110128-01			B2HR96	0.227	0.500			79		113			18	10/31/11	10/31	SS-003
S110128-02			B2HR97	0.207	0.500			87		113			18	10/31/11	10/31	SS-005
S110128-03			B2HRB3	0.286	0.500			68		113			18	10/31/11	10/31	SS-008
S110128-04			Lab Control Sample	0.312	0.500			66		112				10/31/11	10/31	SS-009
S110128-05			Method Blank	0.203	0.500			92		119				10/31/11	11/01	SS-039
S110128-06			Duplicate (S110128-01)	0.369	0.500			58		110			18	10/31/11	10/31	SS-036
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.267 ± 0.133
YIELD 75 ± 26

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test SR Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 7321-031					
S110128-01			7831-001	B2HR96	2.10
S110128-02			7831-002	B2HR97	1.03
S110128-03			7831-003	B2HRB3	1.49
S110128-04			7831-004	Lab Control Sample	ok
S110128-05			7831-005	Method Blank	U
S110128-06			7831-006	Duplicate (S110128-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 10.4 % Reference Lab Notebook 7321 pg. 015													
S110128-01			B2HR96	0.236	1.00			86		100			18	10/31/11	10/31	GRB-204
S110128-02			B2HR97	0.270	1.00			87		100			18	10/31/11	10/31	GRB-231
S110128-03			B2HRB3	0.284	1.00			77		100			18	10/31/11	10/31	GRB-232
S110128-04			Lab Control Sample	0.235	1.00			87		100				10/31/11	10/31	GRB-203
S110128-05			Method Blank	0.326	1.00			85		100				10/31/11	10/31	GRB-206
S110128-06			Duplicate (S110128-01)	0.307	1.00			82		100			18	10/31/11	10/31	GRB-221
Nominal values and limits from method				1.00	1.00			40-110		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-060	Soil Preparation, rev 0
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 4

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.276 ± 0.074
YIELD 84 ± 8

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test C Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7321-031					
S110128-01			7831-001	B2HR96	1.48
S110128-02			7831-002	B2HR97	37.8
S110128-03			7831-003	B2HRB3	1.95
S110128-04			7831-004	Lab Control Sample	ok
S110128-05			7831-005	Method Blank	U
S110128-06			7831-006	Duplicate (S110128-01)	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 10.0 % Reference Lab Notebook 7321 pg. 015													
S110128-01			B2HR96	0.686	0.630			100		400			12	10/25/11	10/25	LSC-004
S110128-02			B2HR97	0.725	0.621			100		400			12	10/25/11	10/25	LSC-004
S110128-03			B2HRB3	0.770	0.641			100		400			12	10/25/11	10/25	LSC-004
S110128-04			Lab Control Sample	0.730	0.621			100		400				10/25/11	10/28	LSC-004
S110128-05			Method Blank	0.717	0.621			100		400				10/25/11	10/25	LSC-004
S110128-06			Duplicate (S110128-01)	0.728	0.628			100		400			12	10/25/11	10/25	LSC-004
Nominal values and limits from method				1.00	0.621					10			180			

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 0.726 ± 0.054
FOR 6 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4686

Test H Matrix SOIL
SDG 7831
Contact N. Joseph Verville

LAB METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4686

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 7321-031						
S110128-01			7831-001	B2HR96	U	
S110128-02			7831-002	B2HR97	U	
S110128-03			7831-003	B2HRB3	U	
S110128-04			7831-004	Lab Control Sample	ok	
S110128-05			7831-005	Method Blank	U	
S110128-06			7831-006	Duplicate (S110128-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	10.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7321-031			2σ prep error 10.0 % Reference Lab Notebook 7321 pg. 015													
S110128-01			B2HR96	3.70	0.630			100		50			12	10/25/11	10/25	LSC-006
S110128-02			B2HR97	3.75	0.621			100		50			12	10/25/11	10/25	LSC-006
S110128-03			B2HRB3	3.87	0.641			100		50			12	10/25/11	10/25	LSC-006
S110128-04			Lab Control Sample	3.06	0.621			100		50				10/25/11	10/26	LSC-006
S110128-05			Method Blank	3.20	0.621			100		50				10/25/11	10/25	LSC-006
S110128-06			Duplicate (S110128-01)	3.73	0.628			100		50			12	10/25/11	10/25	LSC-006
Nominal values and limits from method				10.0	0.621					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 3.55 ± 0.669
YIELD 100 ± 0

Lab id EBRLNE
Protocol F11-092
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/04/11

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113325

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
191049	191051	1	IBLANK	65649	IBLANK		Gamma Energy Analysis-general
191049	191051	2	LCS	65650	LCS		Gamma Energy Analysis-general
191049	191051	3	DUP	65651	B2HRH5(113325001DUP)	113325001	Gamma Energy Analysis-general
191049	191051	4	SAMPLE	113325001	B2HRH5		Gamma Energy Analysis-general
191049	191051	5	SAMPLE	113325002	B2HRF6		Gamma Energy Analysis-general
191049	191051	6	SAMPLE	113325003	B2HRF9		Gamma Energy Analysis-general

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113325

QC Batch 191049
Associated Samples 113325001, 113325002, 113325003

Test Gamma Energy Analysis-general

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
IBLANK			**QC Sample #65649**								
Cesium-137	10045-97-3		-4.5E-3	pCi/g						U	10/12/11
Cobalt-60	10198-40-0		-0.0020	pCi/g						U	10/12/11
Europium-152	14683-23-9		8.2E-3	pCi/g						U	10/12/11
Europium-154	15585-10-1		-3.3E-3	pCi/g						U	10/12/11
Europium-155	14391-16-3		-0.030	pCi/g						U	10/12/11
LCS			**QC Sample #65650**								
Cesium-137	10045-97-3		6500	pCi/sample	108	80 - 120					10/12/11
Cobalt-60	10198-40-0		10000	pCi/sample	103.7	80 - 120					10/12/11
DUP			**QC Sample #65651**								
			Original 113325001								
Cesium-137	10045-97-3	-0.0050	-0.0050	pCi/g			0.00	30		U	10/12/11
Cobalt-60	10198-40-0	-2.5E-3	3.4E-3	pCi/g			1311.10	30	*	U	10/12/11
Europium-152	14683-23-9	-0.018	-5.8E-3	pCi/g			-102.50	30	*	U	10/12/11
Europium-154	15585-10-1	3.4E-3	0.017	pCi/g			133.30	30	*	U	10/12/11
Europium-155	14391-16-3	0.016	0.046	pCi/g			96.80	30	*	U	10/12/11

REVISED113325 -

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113366

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
191253	191257	1	IBLANK	65724	IBLANK		Gamma Energy Analysis-general
191253	191257	2	LCS	65725	LCS		Gamma Energy Analysis-general
191253	191257	3	DUP	65726	B2HRF7(113366001DUP)	113366001	Gamma Energy Analysis-general
191253	191257	4	SAMPLE	113366001	B2HRF7		Gamma Energy Analysis-general
191253	191257	5	SAMPLE	113366002	B2HRF8		Gamma Energy Analysis-general
191253	191257	6	SAMPLE	113366003	B2HRH4		Gamma Energy Analysis-general

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF113366

QC Batch 191253
Associated Samples 113366001, 113366002, 113366003

Test Gamma Energy Analysis-general

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
IBLANK			**QC Sample #65724**								
Cesium-137	10045-97-3		<-3.6E-3	pCi/g						U	10/17/11
Cobalt-60	10198-40-0		<-5.8E-4	pCi/g						U	10/17/11
Europium-152	14683-23-9		<-6.4E-3	pCi/g						U	10/17/11
Europium-154	15585-10-1		<-3.8E-3	pCi/g						U	10/17/11
Europium-155	14391-16-3		<8.8E-3	pCi/g						U	10/17/11
LCS			**QC Sample #65725**								
Cesium-137	10045-97-3		6400	pCi/sample	105.7	80 - 120					10/17/11
Cobalt-60	10198-40-0		10000	pCi/sample	103.5	80 - 120					10/17/11
DUP			**QC Sample #65726**								
			Original 113366001								
Cesium-137	10045-97-3	0.37	0.40	pCi/g			8.20	30			10/17/11
Cobalt-60	10198-40-0	<-4.1E-3	<7.5E-4	pCi/g			-289.00	30	*	U	10/17/11
Europium-152	14683-23-9	<-9.3E-3	<0.023	pCi/g			471.80	30	*	U	10/17/11
Europium-154	15585-10-1	<0.041	<-0.024	pCi/g			775.00	30	*	U	10/17/11
Europium-155	14391-16-3	<0.070	<0.010	pCi/g			150.30	30	*	U	10/17/11