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Data Validation Report for CH2M Hill Plateau Remediation Company

VSR12-019
183.7KE Concrete Samples
Project 100-K

Chemical & Radiochemical Validation - Level C

Validation Performed By:


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Date: 07-30-12

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Date: 07-31-12

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Date: 30 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: Inorganics - Sample Data Groups (SDGs) L0039, SL1220 and SL1224

INTRODUCTION

This memorandum presents the results of data validation for SDG L0039 prepared by Lionville Laboratory and SDGs SL1220 and SL1224 prepared by TestAmerica Laboratories, Inc. 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
B2H0V6	11/10/11	Other Solid	C	6010B & 7471A
B2H0X1	11/09/11	Other Solid	C	6020 & 7471A
B2H0X5	11/10/11	Other Solid	C	6020 & 7471A
B2H0X6	11/10/11	Other Solid	C	6020 & 7471A
B2H120	11/09/11	Other Solid	C	6020 & 7471A
B2H0X2	11/16/11	Other Solid	C	6020 & 7471A
B2H0X3	11/17/11	Other Solid	C	6020 & 7471A
B2H0X4	11/16/11	Other Solid	C	6020 & 7471A
B2H0X7	11/17/11	Other Solid	C	6020 & 7471A

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 with the following exception.

For SDG SL1224, samples temperature upon receipt at the laboratory were 18°C. All Hg sample results were detects and based on professional judgment should be qualified as estimates and flagged "J-" No other analytes should be qualified. 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 with the following exceptions.

For SDG L0039, the Sn laboratory blank result was a detect > the method detection limit but < the reporting limit (RL). The Sn result for sample B2H0V6 was above the RL but <5X the blank value and based on professional judgment, should be qualified as an estimate and flagged "J."

For SDG SL1224, the As, B, P and Sb laboratory blank results were > the MDLs but < the RLs. The B results for samples B2H0X2 and B2H0X7 were detects < the RL and should be qualified as non-detect at the RL (10.3 mg/kg and 10.4 mg/kg respectively) and qualified "U." The B results for samples B2H0X3 and B2H0X4 were detects >RL but <5X the blank value and based on professional judgment should be qualified as estimates and flagged "J." All As, P and Sb sample results were detects > the RLs and > 5X the blank values 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, Co, Cu, Mn, Pb, Sr and U were detected in equipment blank B2H120.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample 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 L0039, the MS recovery for Sb was $\leq 30\%$; however a post digestion spike (PDS) was analyzed and the recovery was $\geq 75\%$. The Sb result for sample B2H0V6 was a detect and should be qualified as an estimate and flagged "J." The MS recoveries for Mn and Hg were $>$ upper acceptance limit. The Mn and Hg results for sample B2H0V6 were detects and the PDS results were $\leq 125\%$; therefore results should be qualified as estimates and flagged "J." The MS recovery for Sn was $<$ below the lower acceptance limit and the PDS recovery was $\geq 75\%$. The Sn result for sample B2H0V6 was a detect and should be qualified as an estimate and flagged "J."

For SDG SL1224, the MS recoveries for Hg and Cr were $<$ the lower acceptance limit but $\geq 30\%$ and the MSD recovery for Hg was $< 30\%$. All Hg and Cr sample results were detects and should be qualified as estimates and flagged "J-." The MSD recovery for Mn was $>$ the upper acceptance limit. All 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.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

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, laboratory duplicate sample 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 $\pm 30\%$. 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 (or $< 5X$ the laboratory reporting limits for analytes not listed in the SAP) 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.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable with the following exceptions. Samples B2H0X3 and B2H0X7 had Ag RPD =69%, B RPD = 58%, Cd RPD = 34%, Cu RPD = 51%, Ni RPD =61% and Sn RPD = 84%.

Field Split Samples

All field split results were acceptable with the following exceptions. Samples B2H0V6 and B2H0X6 had Sb RPD = 142%, Co RPD =44%; Mn RPD =37%; Ni RPD = 40% and Pb RPD = 85%.

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 with the following exceptions. The Ag laboratory reporting limit for sample B2H0V6 was greater than the CRDL.

- **Completeness**

SDGs L0039, SL1220 and SL1224 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 elevated sample temperature for Hg, laboratory blank infractions for B and Sn and matrix spike infractions 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: L0039, SL1220, SL1224	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Hg	J-	B2H0X2, B2H0X3, B2H0X4, B2H0X7	Samples received with elevated temperature and low matrix spike recoveries
Sn	J	B2H0V6	Laboratory blank contamination and low matrix spike recovery
B	10.3U	B2H0X2	Laboratory blank contamination
B	J	B2H0X3, B2H0X4	Laboratory blank contamination
B	10.4U	B2H0X7	Laboratory blank contamination
Sb	J	B2H0V6	Very low matrix spike recovery
Mn, Hg	J	B2H0V6	High matrix spike recoveries
Cr	J-	B2H0X2, B2H0X3, B2H0X4, B2H0X7	Low matrix spike recovery
Mn	J+	B2H0X2, B2H0X3, B2H0X4, B2H0X7	High matrix spike recovery

Comments: None

Appendix 3

Annotated Laboratory Reports



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/27/2012 10:07

B2H0V6
1111065-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

Metals by SW846 6000/7000 series

Antimony	J 8.22 N	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Arsenic	48.1	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Barium	104	0.385	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Beryllium	0.191	0.154	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Boron	2.86	1.54	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Cadmium	0.405	0.192	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Chromium	98.1	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Cobalt	7.93	2.31	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Copper	46.5	1.54	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Lead	22.1	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Manganese	J 230 N	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Molybdenum	1.09	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Nickel	7.95	1.92	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Selenium	0.769 U	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Silver	0.769 U	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Strontium	81.7	0.385	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Tin	J 3.97 C, N	3.85	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Vanadium	58.2	0.769	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Zinc	184	2.31	mg/kg wet	1	L111192	11/17/2011	11/19/2011	6010B
Mercury	J 9.73 N, D	0.771	mg/kg wet	30	L111252	11/22/2011	11/23/2011	7471A

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X1

TOTAL Metals

Lot-Sample #...: F1K160474-001
 Date Sampled...: 11/09/11
 % Moisture.....: 3.4

Date Received...: 11/16/11

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...	1322026					
Silver	0.065 B	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AW
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	7.8	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AF
		Dilution Factor: 1		MDL.....: 0.21		
Barium	156	2.1	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AG
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.36	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AH
		Dilution Factor: 1		MDL.....: 0.018		
Boron	7.2 B	10.4	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AK
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.58	0.052	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AL
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	9.1	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AM
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	14.4	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1A3
		Dilution Factor: 1		MDL.....: 0.47		
Copper	30.5	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AN
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	356	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AQ
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	0.75	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AR
		Dilution Factor: 1		MDL.....: 0.080		
Nickel	14.6	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AT
		Dilution Factor: 1		MDL.....: 0.085		
Lead	29.4	0.31	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AP
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	1.3	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DG1AV
		Dilution Factor: 1		MDL.....: 0.16		

(Continued on next page)

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X1

TOTAL Metals

Lot-Sample #...: F1K160474-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Tin	1.2	0.21	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 0.10	11/18-12/07/11	MN3DG1A0
Strontium	75.6	0.52	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 0.22	11/18-12/07/11	MN3DG1AX
Uranium	0.96	0.10	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 0.021	11/18-12/07/11	MN3DG1A4
Vanadium	80.9	1.0	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 0.76	11/18-12/07/11	MN3DG1A1
Zinc	179	5.2	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 1.4	11/18-12/07/11	MN3DG1A2
Prep Batch #...: 1322027						
Antimony	2.9	0.52	mg/kg	SW846 6020 Dilution Factor: 1 MDL.....: 0.067	11/19-12/07/11	MN3DG1A5
Prep Batch #...: 1326013						
Mercury	0.20 N	0.033	mg/kg	SW846 7471A Dilution Factor: 1 MDL.....: 0.011	11/22-11/29/11	MN3DG1A6

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.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X5

TOTAL Metals

Lot-Sample #...: F1K160474-002

Matrix.....: SOLID

Date Sampled...: 11/10/11

Date Received...: 11/16/11

% Moisture.....: 1.8

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Prep Batch #...: 1322026						
Silver	0.84	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A3
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	9.3	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1N
		Dilution Factor: 1		MDL.....: 0.21		
Barium	147	2.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1P
		Dilution Factor: 1		MDL.....: 0.058		
Beryllium	0.25	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1Q
		Dilution Factor: 1		MDL.....: 0.017		
Boron	5.7 B	10.2	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1R
		Dilution Factor: 1		MDL.....: 3.4		
Cadmium	12.3	0.051	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1T
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	18.9	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1U
		Dilution Factor: 1		MDL.....: 0.044		
Chromium	102	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1E
		Dilution Factor: 1		MDL.....: 0.46		
Copper	109	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1V
		Dilution Factor: 1		MDL.....: 0.065		
Manganese	503	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1X
		Dilution Factor: 1		MDL.....: 0.078		
Molybdenum	2.3	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1O
		Dilution Factor: 1		MDL.....: 0.078		
Nickel	23.5	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A11
		Dilution Factor: 1		MDL.....: 0.084		
Lead	837	0.31	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A1W
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	3.4	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A12
		Dilution Factor: 1		MDL.....: 0.16		

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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X5

TOTAL Metals

Lot-Sample #...: F1K160474-002

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Tin	4.9	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1AA
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	48.7	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1A4
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.73	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1AF
		Dilution Factor: 1		MDL.....: 0.020		
Vanadium	85.0	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DX1AC
		Dilution Factor: 1		MDL.....: 0.75		
Zinc	2160 D	50.9	mg/kg	SW846 6020	11/18-12/08/11	MN3DX1AD
		Dilution Factor: 10		MDL.....: 13.5		
Prep Batch #...: 1322027						
Antimony	3.8	0.51	mg/kg	SW846 6020	11/19-12/07/11	MN3DX1AG
		Dilution Factor: 1		MDL.....: 0.066		
Prep Batch #...: 1326013						
Mercury	19.4 D,N	1.6	mg/kg	SW846 7471A	11/22-11/29/11	MN3DX1AH
		Dilution Factor: 50		MDL.....: 0.56		

NOTE (S) :

- Results and reporting limits have been adjusted for dry weight.
- B Estimated result. Result is less than RL.
- D Result was obtained from the analysis of a dilution.
- N Spiked analyte recovery is outside stated control limits.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X6

TOTAL Metals

Lot-Sample #...: F1K160474-003

Matrix.....: SOLID

Date Sampled...: 11/10/11

Date Received...: 11/16/11

% Moisture.....: 2.4

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Prep Batch #...: 1322026						
Silver	0.066 B	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3D11A3
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	55.2	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AN
		Dilution Factor: 1		MDL.....: 0.21		
Barium	129	2.1	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AP
		Dilution Factor: 1		MDL.....: 0.058		
Beryllium	0.27	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AQ
		Dilution Factor: 1		MDL.....: 0.017		
Boron	3.7 B	10.3	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AR
		Dilution Factor: 1		MDL.....: 3.4		
Cadmium	0.51	0.051	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AT
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	12.4	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AU
		Dilution Factor: 1		MDL.....: 0.044		
Chromium	115	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AE
		Dilution Factor: 1		MDL.....: 0.46		
Copper	53.2	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AV
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	336	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AX
		Dilution Factor: 1		MDL.....: 0.079		
Molybdenum	1.3	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3D11A0
		Dilution Factor: 1		MDL.....: 0.079		
Nickel	11.9	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3D11A1
		Dilution Factor: 1		MDL.....: 0.084		
Lead	54.9	0.31	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AW
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	1.3	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3D11A2
		Dilution Factor: 1		MDL.....: 0.16		

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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X6

TOTAL Metals

Lot-Sample #...: F1K160474-003

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Tin	5.4	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AA
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	104	0.51	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AA
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.83	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AF
		Dilution Factor: 1		MDL.....: 0.020		
Vanadium	71.3	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AC
		Dilution Factor: 1		MDL.....: 0.75		
Zinc	228	5.1	mg/kg	SW846 6020	11/18-12/07/11	MN3D11AD
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1322027						
Antimony	49.3	0.51	mg/kg	SW846 6020	11/19-12/07/11	MN3D11AG
		Dilution Factor: 1		MDL.....: 0.067		
Prep Batch #...: 1326013						
Mercury	8.7 D,N	1.6	mg/kg	SW846 7471A	11/22-11/29/11	MN3D11AH
		Dilution Factor: 50		MDL.....: 0.56		

NOTE(S) :

- Results and reporting limits have been adjusted for dry weight.
- B Estimated result. Result is less than RL.
- D Result was obtained from the analysis of a dilution.
- N Spiked analyte recovery is outside stated control limits.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H120

TOTAL Metals

Lot-Sample #...: F1K160474-004

Matrix.....: SOLID

Date Sampled...: 11/09/11

Date Received...: 11/16/11

% Moisture.....: 0.020

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...	1322026					
Silver	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3D21A3
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AN
		Dilution Factor: 1		MDL.....: 0.20		
Barium	2.4	2.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AP
		Dilution Factor: 1		MDL.....: 0.057		
Beryllium	0.026 B	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AQ
		Dilution Factor: 1		MDL.....: 0.017		
Boron	ND	10.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AR
		Dilution Factor: 1		MDL.....: 3.3		
Cadmium	ND	0.050	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AT
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	0.078 B	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AU
		Dilution Factor: 1		MDL.....: 0.043		
Chromium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AE
		Dilution Factor: 1		MDL.....: 0.45		
Copper	0.11 B	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AV
		Dilution Factor: 1		MDL.....: 0.064		
Manganese	4.9	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AX
		Dilution Factor: 1		MDL.....: 0.077		
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3D21A0
		Dilution Factor: 1		MDL.....: 0.077		
Nickel	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3D21A1
		Dilution Factor: 1		MDL.....: 0.082		
Lead	0.36	0.30	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AW
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3D21A2
		Dilution Factor: 1		MDL.....: 0.16		

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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H120

TOTAL Metals

Lot-Sample #...: F1K160474-004

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Tin	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AA
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	0.45 B	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3D21A4
		Dilution Factor: 1		MDL.....: 0.21		
Uranium	0.091 B	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AF
		Dilution Factor: 1		MDL.....: 0.020		
Vanadium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AC
		Dilution Factor: 1		MDL.....: 0.74		
Zinc	ND	5.0	mg/kg	SW846 6020	11/18-12/07/11	MN3D21AD
		Dilution Factor: 1		MDL.....: 1.3		
Prep Batch #...: 1322027						
Antimony	ND	0.50	mg/kg	SW846 6020	11/19-12/07/11	MN3D21AG
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1326013						
Mercury	ND N	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN3D21AH
		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.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X2

TOTAL Metals

Lot-Sample #...: F1K210441-001

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

% Moisture.....: 3.0

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1326040						
Mercury	J- 0.55 N	0.033	mg/kg	SW846 7471A	11/29/11	MN6JD1A3
		Dilution Factor: 1		MDL.....: 0.011		
Prep Batch #...: 1327017						
Silver	0.086 B	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AU
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	52.8	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AD
		Dilution Factor: 1		MDL.....: 0.21		
Barium	131	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AE
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.27	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AF
		Dilution Factor: 1		MDL.....: 0.018		
Bismuth	0.31 B	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AG
		Dilution Factor: 1		MDL.....: 0.16		
Boron	10.3U 9.9 B,C	10.3	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AH
		Dilution Factor: 1		MDL.....: 3.4		
Cadmium	0.40	0.052	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AJ
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	14.6	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AK
		Dilution Factor: 1		MDL.....: 0.044		
Chromium	J- 38.8 N	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1A1
		Dilution Factor: 1		MDL.....: 0.46		
Copper	64.5	1.0	mg/kg	SW846 6020	11/23-12/07/11	MN6JD1AL
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	J+ 407 N	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AN
		Dilution Factor: 1		MDL.....: 0.079		
Molybdenum	1.8	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AP
		Dilution Factor: 1		MDL.....: 0.079		

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EH
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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X2

TOTAL Metals

Lot-Sample #...: F1K210441-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Nickel	19.1	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JD1AQ
		Dilution Factor: 1		MDL.....: 0.085		
Lead	736 N	0.31	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AM
		Dilution Factor: 1		MDL.....: 0.10		
Phosphorus	817 N	51.5	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AR
		Dilution Factor: 1		MDL.....: 1.4		
Selenium	1.1	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JD1AT
		Dilution Factor: 1		MDL.....: 0.16		
Tin	6.2	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AW
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	68.8	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AV
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.87	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1A2
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	75.7	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JD1AX
		Dilution Factor: 1		MDL.....: 0.76		
Zinc	516 N	5.2	mg/kg	SW846 6020	11/23-12/07/11	MN6JD1A0
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1333024						
Antimony	35.7	0.52	mg/kg	SW846 6020	11/29-12/07/11	MN6JD1DR
		Dilution Factor: 1		MDL.....: 0.067		

NOTE(S) :

- N Spiked analyte recovery is outside stated control limits.
 Results and reporting limits have been adjusted for dry weight.
 B Estimated result. Result is less than RL.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X3

TOTAL Metals

Lot-Sample #...: F1K210441-002

Matrix.....: SOLID

Date Sampled...: 11/17/11

Date Received...: 11/21/11

% Moisture.....: 4.5

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...:	1326040					
Mercury	J- 0.37 N	0.033	mg/kg	SW846 7471A	11/29/11	MN6JR1AE
		Dilution Factor: 1		MDL.....: 0.011		
Prep Batch #...:	1327017					
Silver	1.7	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1A2
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	8.7	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AK
		Dilution Factor: 1		MDL.....: 0.21		
Barium	119	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AL
		Dilution Factor: 1		MDL.....: 0.060		
Beryllium	0.29	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AM
		Dilution Factor: 1		MDL.....: 0.018		
Bismuth	ND	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AN
		Dilution Factor: 1		MDL.....: 0.16		
Boron	J 14.8	10.5	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AP
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.57	0.052	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AQ
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	25.4	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AR
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	J- 49.8 N	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AC
		Dilution Factor: 1		MDL.....: 0.47		
Copper	64.1	1.0	mg/kg	SW846 6020	11/23-12/07/11	MN6JR1AT
		Dilution Factor: 1		MDL.....: 0.067		
Manganese	453 N	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AV
		Dilution Factor: 1		MDL.....: 0.081		
Molybdenum	J+ 1.6	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AW
		Dilution Factor: 1		MDL.....: 0.081		

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EH
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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X3

TOTAL Metals

Lot-Sample #...: F1K210441-002

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Nickel	31.2	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JR1AX
		Dilution Factor: 1		MDL.....: 0.086		
Lead	334 N	0.31	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AU
		Dilution Factor: 1		MDL.....: 0.10		
Phosphorus	988 N	52.4	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1A0
		Dilution Factor: 1		MDL.....: 1.4		
Selenium	1.1	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JR1A1
		Dilution Factor: 1		MDL.....: 0.17		
Tin	6.1	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1A4
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	47.2	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1A3
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.67	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1AD
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	72.0	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JR1A5
		Dilution Factor: 1		MDL.....: 0.77		
Zinc	456 N	5.2	mg/kg	SW846 6020	11/23-12/07/11	MN6JR1AA
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1333024						
Antimony	2.9	0.52	mg/kg	SW846 6020	11/29-12/07/11	MN6JR1A6
		Dilution Factor: 1		MDL.....: 0.068		

NOTE(S) :

N Spiked analyte recovery is outside stated control limits.
Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X4

TOTAL Metals

Lot-Sample #...: F1K210441-003

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

% Moisture.....: 3.5

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...:	1326040					
Mercury	J- 0.70 N	0.033	mg/kg	SW846 7471A	11/29/11	MN6JT1AE
		Dilution Factor: 1		MDL.....: 0.011		
Prep Batch #...:	1327017					
Silver	0.068 B	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1A2
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	46.5	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AK
		Dilution Factor: 1		MDL.....: 0.21		
Barium	146	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AL
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.30	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AM
		Dilution Factor: 1		MDL.....: 0.018		
Bismuth	ND	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AN
		Dilution Factor: 1		MDL.....: 0.16		
Boron	J 12.4 C	10.4	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AP
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	1.5	0.052	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AQ
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	12.7	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AR
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	J- 30.0 N	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AC
		Dilution Factor: 1		MDL.....: 0.47		
Copper	55.4	1.0	mg/kg	SW846 6020	11/23-12/07/11	MN6JT1AT
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	J+ 357 N	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AV
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	1.1	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AW
		Dilution Factor: 1		MDL.....: 0.080		

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EH
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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X4

TOTAL Metals

Lot-Sample #...: F1K210441-003

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Nickel	14.1	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JT1AX
		Dilution Factor: 1		MDL.....: 0.085		
Lead	259 N	0.31	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AU
		Dilution Factor: 1		MDL.....: 0.10		
Phosphorus	843 N	51.8	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1A0
		Dilution Factor: 1		MDL.....: 1.4		
Selenium	1.1	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JT1A1
		Dilution Factor: 1		MDL.....: 0.16		
Tin	5.2	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1A4
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	71.6	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1A3
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.86	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1AD
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	83.6	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JT1A5
		Dilution Factor: 1		MDL.....: 0.76		
Zinc	731 N	5.2	mg/kg	SW846 6020	11/23-12/07/11	MN6JT1AA
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1333024						
Antimony	30.0	0.52	mg/kg	SW846 6020	11/29-12/07/11	MN6JT1A6
		Dilution Factor: 1		MDL.....: 0.067		

NOTE(S):

N Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X7

TOTAL Metals

Lot-Sample #...: F1K210441-004

Matrix.....: SOLID

Date Sampled...: 11/17/11

Date Received...: 11/21/11

% Moisture.....: 4.2

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1326040						
Mercury	J- 0.31 N	0.033	mg/kg	SW846 7471A	11/29/11	MN6JW1AE
		Dilution Factor: 1		MDL.....: 0.011		
Prep Batch #...: 1327017						
Silver	3.5	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1A2
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	6.4	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AK
		Dilution Factor: 1		MDL.....: 0.21		
Barium	115	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AL
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.31	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AM
		Dilution Factor: 1		MDL.....: 0.018		
Bismuth	ND	2.1	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AN
		Dilution Factor: 1		MDL.....: 0.16		
Boron	10.4U 8.1 B,C	10.4	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AP
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.80	0.052	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AQ
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	30.4	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AR
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	J- 37.2 N	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AC
		Dilution Factor: 1		MDL.....: 0.47		
Copper	38.1	1.0	mg/kg	SW846 6020	11/23-12/07/11	MN6JW1AT
		Dilution Factor: 1		MDL.....: 0.067		
Manganese	J+ 375 N	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AV
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	0.95	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AW
		Dilution Factor: 1		MDL.....: 0.080		

(Continued on next page)

EH
07/30/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X7

TOTAL Metals

Lot-Sample #...: F1K210441-004

Matrix.....: SOLID

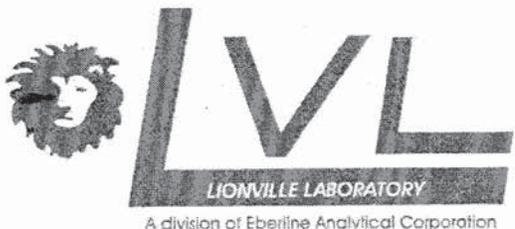
PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Nickel	16.6	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JW1AX
		Dilution Factor: 1		MDL.....: 0.086		
Lead	326 N	0.31	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AU
		Dilution Factor: 1		MDL.....: 0.10		
Phosphorus	947 N	52.2	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1A0
		Dilution Factor: 1		MDL.....: 1.4		
Selenium	0.98	0.52	mg/kg	SW846 6020	11/23-12/07/11	MN6JW1A1
		Dilution Factor: 1		MDL.....: 0.16		
Tin	2.5	0.21	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1A4
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	52.0	0.52	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1A3
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.73	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1AD
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	79.4	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN6JW1A5
		Dilution Factor: 1		MDL.....: 0.77		
Zinc	441 N	5.2	mg/kg	SW846 6020	11/23-12/07/11	MN6JW1AA
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1333024						
Antimony	2.2	0.52	mg/kg	SW846 6020	11/29-12/07/11	MN6JW1A6
		Dilution Factor: 1		MDL.....: 0.068		

NOTE (S) :

- N Spiked analyte recovery is outside stated control limits.
 Results and reporting limits have been adjusted for dry weight.
 B Estimated result. Result is less than RL.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



264 Welsh Pool Road
 Exton, Pennsylvania 19341
 Phone (610) 280-3000
 Fax (610) 280-3041

Case Narrative

Client: CHPRC-HANFORD L0039
LVL#: 1111065
SDG/SAF#: F11-146/L0039

W.O.#: 60049-001-001-0001-00
Date Received: 11-16-11

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

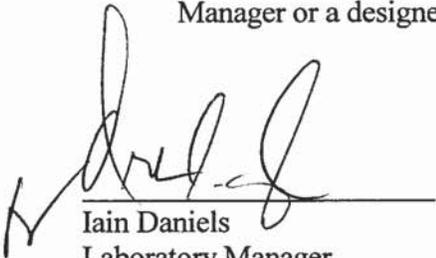
1. This narrative covers the analyses of 1 other solid sample.
2. The sample was prepared and analyzed in accordance with methods listed on the data report forms. The sample was reported on a wet weight, 'as-received' basis.

 The sample was analyzed with a 30-fold dilution for Mercury due to high concentration of Mercury in the sample.
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, samples were greater than 20X MB value}.
8. All ICP Interference Check Standards were within control limits.
9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.
10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B2H0V6	Antimony	100	98.4
	Manganese	1,000	87.7
	Tin	100	75.1
	Mercury	1.0	107.5

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit criteria. The $\pm 20\%$ RPD control limit applies to sample results greater than ten times the MDL.
13. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.
14. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, 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.



Iain Daniels
Laboratory Manager
Lionville Laboratory

alm/1-065hg%.doc

11/28/11
Date



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/27/2012 10:07

Notes and Definitions

U Analyte included in the analysis, but not detected

J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

D Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.

N Spike and/or spike duplicate sample recovery is outside control limits.

C The analyte was detected in both the sample and the associated QC blank, and the sample concentration was $\leq 5X$ the blank concentration.

B Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)

* Value outside QC acceptance criteria

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

wet Sample results reported on a wet weight basis

RPD Relative Percent Difference

17

02/23/2012

Problem and Discrepancy Report

Lionville

SDG L0039

1. The data package has the following issues:

- a) Wet Chemistry, page 10, sample B2H0V6, sulfate and hexavalent chromium missing D qualifier in both electronic and hard copy data.
- b) Metals, page 18, sample B2H0V6, mercury missing D qualifier, antimony, manganese, tin, and mercury missing N qualifier. Affects both electronic and hard copy data.
- c) Metals, page 18, sample B2H0V6, antimony, manganese, and tin, MS failure. N qualifier missing.
- d) Metals, page 19, sample B2H0V6, mercury MS failure. N qualifier missing.
- e) Metals, Quality Control, page 19, tin detected in blank. Not discussed in narrative. Data not qualified. Metals, Quality Control, page 12, manganese and iron detected in blank. Not discussed in narrative. Data not flagged.

Resolution: *Provide appropriate correction.*

Lab Response:

- a) The wet chemistry electronic and hardcopy data have been corrected.
- b) The D qualifier is not applicable to metals/mercury analyses. The N qualifier has been applied to the MS samples on pages 20 and 21.
- c) The N qualifier has been applied to the MS sample on page 20.
- d) The N qualifier has been applied to the MS sample on page 21.
- e) Data are not flagged as Tin was detected below the limit of quantitation (see narrative item 7). Page 12 provides wet chemistry data and does not include metals data, further for the metals data included on page 19, manganese and iron were not found in the blank.

SMR Response:

Items a), c), and d) have been resolved

- b) SMR disagrees. The D qualifier is applicable to any and all samples that have been diluted and must be applied. Antimony, manganese, tin, and mercury must have the N qualifier applied to the sample results.
- e) SMR disagrees. Tin in the blank was not below the LOQ as the laboratory B qualified the blank result indicating that it is above the LOQ and below the RL. The tin result for sample B2H0V6 must be C qualified.

Please correct the issues and resubmit the electronic **and** hard copy data packages.

Lab Response: Issues are corrected for the electronic and hard copy data packages.

Provide a resolution to each issue noted on the report

la

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-146	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Concrete Sample 8		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete				PRICE CODE 9C DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. WTS-001		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"		SAF NO. F11-146	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		COA 302548ES10		METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
BILL OF LADING/AIR BILL NO. SEE PTR 7954 0870 3514		PRESERVATION		Cool~4C	Cool~4C	Cool~4C	
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		HOLDING TIME		6 Months	30 Days	28 Days/48 Hours	
		TYPE OF CONTAINER		G/P	G/P	G/P	
		NO. OF CONTAINER(S)		1	1	1	
		VOLUME		250mL	60mL	60mL	
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0V6	OTHER SOLID	NOV 10 2011	1020	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) ICP Metals - 6010 (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010 (Supertrace Add-On) {Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Molybdenum, Nickel, Strontium, Tin, Vanadium, Zinc}; Mercury - 7471 - (CV);	
K.J. Young CHPRC	NOV 10 2011 / 1050	MOLIO9SSU #1	NOV 10 2011 / 1050		
MOLIO9SSU #1	NOV 15 2011 / 1040	K.J. Young CHPRC	NOV 15 2011 / 1040		
K.J. Young CHPRC	NOV 15 2011 / 1230	FED EX			
FED EX	11-16-11 / 1020	VICTOR HERNANDEZ	11-16-11 / 1020		
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	

11/16/11

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 December 9, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1220
Number of Samples	: four samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 16, 2011

II. Introduction

On November 16, 2011, four 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: F11-146

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

December 9, 2011

SDG: SL1220

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.

ICPMS Metals

Batch: 1322026

The ICV recovery was outside the upper QC limit (greater than 110%) for boron indicating a potential high bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.

Affected Samples:

F1K160474 (1): B2H0X1
 F1K160474 (2): B2H0X5
 F1K160474 (3): B2H0X6
 F1K160474 (4): B2H120

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K160474 (1): B2H0X1
 F1K160474 (2): B2H0X5
 F1K160474 (3): B2H0X6
 F1K160474 (4): B2H120

The sample was analyzed at a dilution due to high concentrations of target analytes. The reporting limit has been adjusted only for those targets reported from the dilution run. These analytes have been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (2): B2H0X5

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1220

TestAmerica Laboratories, Inc.

Mercury

Batch: 1326013

The MSD recovery for mercury is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. This analyte has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K160474 (1): B2H0X1

F1K160474 (2): B2H0X5

F1K160474 (3): B2H0X6

F1K160474 (4): B2H120

The samples were analyzed at a dilution due to high concentrations of mercury. The reporting limit has been adjusted only for these targets reported from the dilution run. Mercury has been qualified with a "D" flag in the associated samples.

Affected Samples:

F1K160474 (2): B2H0X5

F1K160474 (3): B2H0X6

Ion Chromatography

Batch: 1332073

The sample was analyzed at a dilution for sulfate due to high concentrations of this analyte. This analyte has been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (1): B2H0X1

Batch: 1327106

The sample was analyzed at a dilution for sulfate due to high concentrations of this analyte. This analyte has been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (3): B2H0X6

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1220

TestAmerica Laboratories, Inc.

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:

Handwritten signature of Jayna Awalt in cursive script.

Michael Franks

St. Louis Project Manager

SL1220 *CH*
444

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-147	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 1	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. 605-254	FIELD LOGBOOK NO. PNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR	BILL OF LADING/AIR BILL NO. SEE PTR 7954-0995-4105			

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	PRESERVATION	Cool~4C/Cool ~4C	Cool~4C
	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)	HOLDING TIME	6 Months	28 Days/48 Hours
	SPECIAL HANDLING AND/OR STORAGE	TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X1	OTHER SOLID	NOV 09 2011	1305	✓	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 09 2011 / 1500	RECEIVED BY/STORED IN MOLLO9SSU #1
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN CHPRC
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Fed Ex.
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN ABunson
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN

Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);

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

CH2MHill Plateau Remediation Company <i>SL1220</i>			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-151	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KE Concrete Sample 5	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL		
ICE CHEST NO. <i>6WS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-4105</i>			
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY 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)	PRESERVATION	Cool~4C/Cool ~4C	Cool~4C	
		HOLDING TIME	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	250mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 -(Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X5	OTHER SOLID	NOV 10 2011	0922	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1430	RECEIVED BY/STORED IN M01109 SSU #1	DATE/TIME NOV 10 2011 / 1430	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109 SSU #1 CHPRC	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FBO EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN HBurson Aug 2011	DATE/TIME 11/16/11		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME 0950		
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	

SDG #SL1220

9 of 40

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TestAmerica - St. Louis

CH2M Hill Plateau Remediation Company SL1220		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-146-152	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 6	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. CWS-254	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 7954-0995-4105	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR				

MATRIX* A=Air DL=Drum L=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)	PRESERVATION	Cool~4C/Cool~4C	Cool~4C
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X6	OTHER SOLID	NOV 10 2011	1020	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1430	RECEIVED BY/STORED IN MOLLORESSU #1	DATE/TIME NOV 10 2011 / 1430	
RELINQUISHED BY/REMOVED FROM MOLLORESSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FED EX	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Aburson	DATE/TIME 11/16/11 1030	
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

SDG #SL1220

CH2M Hill Plateau Remediation Company <i>SL1220</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-165	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 9		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GWS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>		COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A <i>7954-0995-4105</i>		

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)	PRESERVATION Cool~4C/Cool ~4C	Cool~4C
	HOLDING TIME	6 Months	28 Days/48 Hours
	TYPE OF CONTAINER	G/P	G/P
	NO. OF CONTAINER(S)	1	1
	VOLUME	250mL	60mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2H120	OTHER SOLID	NOV 09 2011	0830

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 09 2011 / 0900</i>	RECEIVED BY/STORED IN <i>MO1109 Ssu #1</i>	DATE/TIME <i>NOV 09 2011 / 0900</i>	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM <i>MO1109 Ssu #1</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>	RECEIVED BY/STORED IN <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>		
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	RECEIVED BY/STORED IN <i>FedEx</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	DATE/TIME	RECEIVED BY/STORED IN <i>MBryson</i>	DATE/TIME <i>11/16/11</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME <i>0950</i>		
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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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
 December 13, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1224
Number of Samples	: four samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 21, 2011

II. Introduction

On November 21, 2011, four samples were received by TestAmerica - St. Louis for chemical analysis. **The samples were not received within temperature criteria. Samples were received at 18 degrees. Sample issue resolution SDR12-058 accepted proposed resolution to proceed with analyses and report results.** 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: F11-146

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

December 13, 2011

SDG: SL1224

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.

ICPMS Total Metals

Batch: 1327017

Boron was detected in the method blank above the method detection limit but below the reporting limit. This analyte has been qualified according with a "C" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

Arsenic, phosphorous and boron were detected in the method blank above the method detection limit but below the reporting limit. If the analyte concentration in the sample is 4 times the concentration of that observed in the method blank a qualifier is not necessary.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

The MS (MSD) recoveries for zinc, lead and phosphorus are 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. Method performance is demonstrated by acceptable LCS recoveries. These analytes have been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

The MS (MSD) recoveries for chromium and manganese are outside the established QC limits. The RPD values are within method acceptance criteria indicating possible matrix interference. Method performance is

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 13, 2011

SDG: SL1224

TestAmerica Laboratories, Inc.

demonstrated by acceptable LCS recoveries. These analytes have been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Batch: 1333024

Antimony was detected in the method blank above the method detection limit but below the reporting limit. If the analyte concentration in the sample is 4 times the concentration of that observed in the method blank a qualifier is not necessary.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Mercury

Batch: 1326040

The MS (MSD) recoveries for mercury are outside the established QC limits. Matrix interference is physically evident in the sample. Samples were a mix of rock and soil. Method performance is demonstrated by acceptable LCS recovery. Mercury has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 13, 2011

SDG: SL1224

TestAmerica Laboratories, Inc.

Ion Chromatography

Batches: 1333223-1333224

Chloride was detected in the method blank above the method detection limit but below the reporting limit. The analyte concentration in the samples is 4 times the amount detected in the method blank making a qualifier unnecessary.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

The samples were analyzed at a dilution for Sulfate due to high concentrations of target analytes. This analyte has been qualified with a "D" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

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

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR12-058
REV NUM	0
DATE INITIATED	11/21/2011

SAMPLE EVENT INFORMATION

SAF NUM(S)	F11-146
OPERABLE UNIT(S)	100-KR-2
PROJECT(S)	183 KE/KW
SAMPLE EVENT TITLE(S)	183 KE/KW WTP
LABORATORY	TestAmerica St. Louis

SAMPLING INFORMATION

NUMBER OF SAMPLES	4
SAMPLE NUMBERS	B2H0X2, B2H0X3, B2H0X4, B2H0X7
SAMPLE MATRIX	OTHER SOLID
COLLECTION DATE	11/16/2011 - 11/17/2011
SDG NUM	SL1224

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 18°C. Sample analyses include ICP-MS metals and chloride/sulfate.

DISPOSITION

DESCRIPTION	Proposed Disposition: Proceed with requested analyses, report results, and note elevated sample preservation temperature in the case narrative.
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JUSTIFICATION	Accepted Disposition: Accept Proposed Disposition
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Submitted by:	Jayna K. Awalt / TASL	Date:	11/14/2011
Accepted by:	Steve Trent / CHPRC	Date:	11/22/2011
Accepted by:	Jennifer Hammons / CHPRC	Date:	11/28/2011

CH2M Hill Plateau Remediation Company SL1204		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-146-148	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 2	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. GWS-018	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-14	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 12 lbs Fed Ex 7954-2282-3968	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY 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)	PRESERVATION	Cool~4C/Cool~4C	Cool~4C
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X2	OTHER SOLID	NOV 16 2011	1247	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 16 2011 / 1410	RECEIVED BY/STORED IN M01109SSU*1	DATE/TIME NOV 16 2011 / 1410	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM M01109SSU*1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 0900	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1410	RECEIVED BY/STORED IN FED Ex	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Brian Danity	DATE/TIME 11/21/11 0920	
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

CH2MHill Plateau Remediation Company <i>SL1224</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-149	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Concrete Sample 3		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146	PRICE CODE 9C AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. <i>GWS-018</i>		FIELD LOGBOOK NO. <i>HNF-N-507-24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>		COA 302548ES10	DATA TURNAROUND 15 Days / 15 Days
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>12lbs FedEx 7954-2282-3968</i>		
MATRIX* A=Air DL=Drum 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		
		HOLDING TIME	6 Months	28 Days/48 Hours		
		TYPE OF CONTAINER	G/P	G/P		
		NO. OF CONTAINER(S)	1	1		
		VOLUME	250mL	60mL		
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 900.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H0X3	OTHER SOLID	NOV 17 2011	1134	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
<i>K.J. Young CHPRC</i>	<i>NOV 17 2011 / 1440</i>	<i>Molloassu #1</i>	<i>NOV 17 2011 / 1440</i>		
<i>Molloassu #1</i>	<i>NOV 18 2011 / 0900</i>	<i>K.J. Young CHPRC</i>	<i>NOV 18 2011 / 0900</i>		
<i>K.J. Young CHPRC</i>	<i>NOV 18 2011 / 1410</i>	<i>FedEx</i>			
<i>FedEx</i>		<i>Brian Roberts</i>	<i>11/21/11 0900</i>		
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	

CH2M Hill Plateau Remediation Company SL1224		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-150	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
CHEST NO. GWS-018	FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 12lbs FED Ex 7934-2282-3968		
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=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
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X4	OTHER SOLID	NOV 16 2011	1114	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 16 2011 1140	RECEIVED BY/STORED IN Mou09SSU*1	DATE/TIME NOV 16 2011 1140	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM Mou09SSU*1	DATE/TIME NOV 18 2011 10900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 10900	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 18 2011 11410	RECEIVED BY/STORED IN FED Ex	DATE/TIME	
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 11/24/11 0920	
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

CH2M Hill Plateau Remediation Company <i>SL1224</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-153	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 7	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>6WS-018</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>12lbs FED EX 7954-2282-3968</i>		

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)	PRESERVATION	Cool~4C/Cool~4C	Cool~4C	
		HOLDING TIME	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	250mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X7	OTHER SOLID	NOV 17 2011	1134	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 17 2011 / 1440	RECEIVED BY/STORED IN M01109SSU #1	DATE/TIME NOV 17 2011 / 1440	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109SSU #1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 / 0900		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1410	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN B-1 Brian Daniels	DATE/TIME 11/24/11 0920		
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	

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-019		
VALIDATOR: Eyda Hergenreder		LAB: Lionville Lab, TestAmerica,		DATE: 07-30-2012	
			SDG: L0039, SL1220, SL1224		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg X		EPA 200.8 X	
<p>SAMPLES/MATRIX Other Solid Samples</p> <p>SDG L0039: B2H0V6</p> <p>SDG SL1220: B2H0X1, B2H0X5, B2H0X6, B2H120</p> <p>SDG SL1224: B2H0X2, B2H0X3, B2H0X4, B2H0X7</p>					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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 L0039: MB Sn 1.35 mg/kg

SDG SL1224: MB As 0.29 mg/kg; B 3.5 mg/kg; P 3.1 mg/kg; Sb 0.19 mg/kg

EB sample B2H120: Ba 2.4 mg/kg; Be 0.026 mg/kg; Co 0.078 mg/kg; Cu 0.11 mg/kg; Mn 4.9 mg/kg;
Pb 0.36 mg/kg; Sr 0.45 mg/kg; U 0.091 mg/kg

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

SDG L0039: MS%Rs: Sb 29%; Mn 128%; Sn 64%; Hg 1080%
 SDG SL1224: Hg MS 67%/MSD 0%; Cr MS 69%; Mn MSD 129%

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

Field Duplicate: Samples B2H0X3/B2H0X7: Ag 69%; B 58%; Cd 34%; Cu 51%; Ni 61%; Sn 84%;

Field Split: Samples B2H0V6/B2H0X6: Sb 142%; Co 44%; Mn 37%; Ni 40%; Pb 85%;

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

SL1224: Samples were received at 18 degrees

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

L0039: Ag

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/27/2012 10:07

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L111192 - SW 3050B										
Blank (L111192-BLK1)					Prepared: 11/17/2011 Analyzed: 11/19/2011					
Antimony	0.847	U	0.847	mg/kg wet						
Arsenic	0.847	U	0.847	mg/kg wet						
Barium	0.424	U	0.424	mg/kg wet						
Beryllium	0.169	U	0.169	mg/kg wet						
Boron	1.69	U	1.69	mg/kg wet						
Cadmium	0.212	U	0.212	mg/kg wet						
Chromium	0.847	U	0.847	mg/kg wet						
Cobalt	2.54	U	2.54	mg/kg wet						
Copper	1.69	U	1.69	mg/kg wet						
Lead	0.847	U	0.847	mg/kg wet						
Manganese	0.847	U	0.847	mg/kg wet						
Molybdenum	0.847	U	0.847	mg/kg wet						
Nickel	2.12	U	2.12	mg/kg wet						
Selenium	0.847	U	0.847	mg/kg wet						
Silver	0.847	U	0.847	mg/kg wet						
Strontium	0.424	U	0.424	mg/kg wet						
Tin	1.35	B	4.24	mg/kg wet						
Vanadium	0.847	U	0.847	mg/kg wet						
Zinc	2.54	U	2.54	mg/kg wet						
Duplicate (L111192-DUP1)										
			Source: 1111065-01		Prepared: 11/17/2011 Analyzed: 11/19/2011					
Antimony	8.32		0.781	mg/kg wet		8.22			1.27	20
Arsenic	47.1		0.781	mg/kg wet		48.1			2.18	20
Barium	102		0.391	mg/kg wet		104			1.99	20
Beryllium	0.205		0.156	mg/kg wet		0.191			7.38	20
Boron	2.87		1.56	mg/kg wet		2.86			0.441	20
Cadmium	0.413		0.195	mg/kg wet		0.405			1.85	20
Chromium	96.6		0.781	mg/kg wet		98.1			1.48	20
Cobalt	8.27		2.34	mg/kg wet		7.93			4.13	20
Copper	47.9		1.56	mg/kg wet		46.5			2.96	20
Lead	22.3		0.781	mg/kg wet		22.1			0.747	20
Manganese	239		0.781	mg/kg wet		230			4.10	20
Molybdenum	1.08		0.781	mg/kg wet		1.09			0.734	20
Nickel	8.46		1.95	mg/kg wet		7.95			6.18	20
Selenium	0.510	B	0.781	mg/kg wet		0.769 U				20
Silver	0.781	U	0.781	mg/kg wet		0.769 U				20
Strontium	83.2		0.391	mg/kg wet		81.7			1.83	20



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: F11-146
Project Number: L0039
Project Manager: Scot Fitzgerald

Reported:
02/27/2012 10:07

Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L111192 - SW 3050B										
Duplicate (L111192-DUP1)		Source: 1111065-01			Prepared: 11/17/2011		Analyzed: 11/19/2011			
Tin	4.04		3.91	mg/kg wet		3.97			1.69	20
Vanadium	60.7		0.781	mg/kg wet		58.2			4.13	20
Zinc	179		2.34	mg/kg wet		184			2.67	20
Matrix Spike (L111192-MS1)		Source: 1111065-01			Prepared: 11/17/2011		Analyzed: 11/19/2011			
Antimony	21.3	N	0.909	mg/kg wet	45.455	8.22	28.9*	75-125		
Arsenic	208		0.909	mg/kg wet	181.82	48.1	88.1	75-125		
Barium	267		0.455	mg/kg wet	181.82	104	89.6	75-125		
Beryllium	3.69		0.182	mg/kg wet	4.5455	0.191	76.9	75-125		
Boron	77.8		1.82	mg/kg wet	90.909	2.86	82.4	75-125		
Cadmium	4.40		0.227	mg/kg wet	4.5455	0.405	88.0	75-125		
Chromium	120		0.909	mg/kg wet	18.182	98.1	123	75-125		
Cobalt	42.9		2.73	mg/kg wet	45.455	7.93	76.9	75-125		
Copper	72.6		1.82	mg/kg wet	22.727	46.5	115	75-125		
Lead	69.4		0.909	mg/kg wet	45.455	22.1	104	75-125		
Manganese	288	N	0.909	mg/kg wet	45.455	230	128*	75-125		
Molybdenum	76.2		0.909	mg/kg wet	90.909	1.09	82.6	75-125		
Nickel	42.6		2.27	mg/kg wet	45.455	7.95	76.3	75-125		
Selenium	149		0.909	mg/kg wet	181.82	0.769 U	82.2	75-125		
Silver	3.88		0.909	mg/kg wet	4.5455	0.769 U	85.3	75-125		
Strontium	172		0.455	mg/kg wet	90.909	81.7	98.9	75-125		
Tin	62.6	N	4.55	mg/kg wet	90.909	3.97	64.5*	75-125		
Vanadium	103		0.909	mg/kg wet	45.455	58.2	99.5	75-125		
Zinc	237		2.73	mg/kg wet	45.455	184	115	75-125		
Reference (L111192-SRM1)					Prepared: 11/17/2011		Analyzed: 11/19/2011			
Antimony	40.4		2.31	mg/kg wet	53.000		76.2	0-235.8		
Arsenic	109		2.31	mg/kg wet	114.00		95.5	82.8-117.54		
Barium	280		1.15	mg/kg wet	307.00		91.1	79.8-120.2		
Beryllium	93.8		0.462	mg/kg wet	108.00		86.9	82.8-117.6		
Boron	83.6		4.62	mg/kg wet	85.100		98.3	67.5-132.8		
Cadmium	219		0.577	mg/kg wet	225.00		97.3	83.6-116.4		
Chromium	71.7		2.31	mg/kg wet	77.200		92.8	73.3-126.4		
Cobalt	149		6.92	mg/kg wet	166.00		89.5	80.7-118.7		
Copper	263		4.62	mg/kg wet	271.00		96.9	80.8-119.2		
Lead	171		2.31	mg/kg wet	190.00		90.2	81.6-118.4		
Manganese	821		2.31	mg/kg wet	965.00		85.1	69.3-130.5		
Molybdenum	229		2.31	mg/kg wet	235.00		97.4	76.2-123.8		

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264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/27/2012 10:07

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L111192 - SW 3050B									
Reference (L111192-SRM1)				Prepared: 11/17/2011 Analyzed: 11/19/2011					
Nickel	206	5.77	mg/kg wet	221.00		93.0	79.6-120.8		
Selenium	179	2.31	mg/kg wet	187.00		95.7	75.9-124.6		
Silver	81.3	2.31	mg/kg wet	83.500		97.4	82.7-117.1		
Strontium	169	1.15	mg/kg wet	175.00		96.3	69.7-130.3		
Tin	88.5	11.5	mg/kg wet	101.00		87.6	77.3-122.8		
Vanadium	95.1	2.31	mg/kg wet	98.700		96.3	75.9-123.6		
Zinc	194	6.92	mg/kg wet	199.00		97.7	78.4-121.6		
Batch L111252 - SW 7471A Prep									
Blank (L111252-BLK1)				Prepared & Analyzed: 11/22/2011					
Mercury	0.0281 U	0.0281	mg/kg wet						
Duplicate (L111252-DUP3)				Source: 1111065-01 Prepared: 11/22/2011 Analyzed: 11/23/2011					
Mercury	11.0 D	0.730	mg/kg wet		9.73			12.1	20
Matrix Spike (L111252-MS3)				Source: 1111065-01 Prepared: 11/22/2011 Analyzed: 11/23/2011					
Mercury	11.2 N, D	0.730	mg/kg wet	0.13514	9.73	1080*	75-125		
Reference (L111252-SRM1)				Prepared & Analyzed: 11/22/2011					
Mercury	1.30	0.0281	mg/kg wet	1.2900		101	62.6-138		

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1220

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K180000-026 Prep Batch #...: 1322026						
Arsenic	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AD
		Dilution Factor: 1				
Boron	ND	10.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AE
		Dilution Factor: 1				
Cadmium	ND	0.050	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AV
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AG
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AH
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AJ
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AK
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AL
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AM
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AN
		Dilution Factor: 1				
Silver	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AP
		Dilution Factor: 1				
Strontium	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AQ
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1220

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Tin	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AR
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AW
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AT
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1K180000-027 Prep Batch #...: 1322027

Antimony	ND	0.50	mg/kg	SW846 6020	11/19-12/07/11	MN4KK1AA
		Dilution Factor: 1				

MB Lot-Sample #: F1K220000-013 Prep Batch #...: 1326013

Mercury	ND	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN61W1AA
		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 #...: SL1220

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #	
LCS Lot-Sample#: F1K180000-026 Prep Batch #...: 1322026								
Arsenic	109	116	mg/kg	107	SW846 6020	11/18-12/07/11	MN4KH1AX	
			Dilution Factor: 2.5					
Barium	325	337	mg/kg	104	SW846 6020	11/18-12/07/11	MN4KH1A0	
			Dilution Factor: 2.5					
Beryllium	92.0	90.0	mg/kg	98	SW846 6020	11/18-12/07/11	MN4KH1A1	
			Dilution Factor: 2.5					
Boron	142	160	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1A2	
			Dilution Factor: 2.5					
Cadmium	110	114	mg/kg	103	SW846 6020	11/18-12/07/11	MN4KH1A3	
			Dilution Factor: 2.5					
Cobalt	133	152	mg/kg	114	SW846 6020	11/18-12/07/11	MN4KH1A4	
			Dilution Factor: 2.5					
Copper	74.7	78.0	mg/kg	104	SW846 6020	11/18-12/07/11	MN4KH1A5	
			Dilution Factor: 2.5					
Lead	152	163	mg/kg	107	SW846 6020	11/18-12/07/11	MN4KH1A6	
			Dilution Factor: 2.5					
Manganese	443	496	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1A7	
			Dilution Factor: 2.5					
Molybdenum	82.5	90.7	mg/kg	110	SW846 6020	11/18-12/07/11	MN4KH1A8	
			Dilution Factor: 2.5					
Nickel	109	122	mg/kg	111	SW846 6020	11/18-12/07/11	MN4KH1A9	
			Dilution Factor: 2.5					
Selenium	207	241	mg/kg	116	SW846 6020	11/18-12/07/11	MN4KH1CA	
			Dilution Factor: 2.5					
Silver	52.0	52.5	mg/kg	101	SW846 6020	11/18-12/07/11	MN4KH1CC	
			Dilution Factor: 2.5					
Strontium	111	121	mg/kg	109	SW846 6020	11/18-12/07/11	MN4KH1CD	
			Dilution Factor: 2.5					

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1220

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #	
Tin	135	132	mg/kg	98	SW846 6020	11/18-12/07/11	MN4KH1CE	
			Dilution Factor: 2.5					
Vanadium	110	119	mg/kg	108	SW846 6020	11/18-12/07/11	MN4KH1CF	
			Dilution Factor: 2.5					
Zinc	299	334	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1CG	
			Dilution Factor: 2.5					
Chromium	93.4	96.1	mg/kg	103	SW846 6020	11/18-12/07/11	MN4KH1CH	
			Dilution Factor: 2.5					
Uranium	100	105	mg/kg	105	SW846 6020	11/18-12/07/11	MN4KH1CJ	
			Dilution Factor: 1					
LCS Lot-Sample#: F1K180000-027 Prep Batch #...: 1322027								
Antimony	50.0	48.1	mg/kg	96	SW846 6020	11/19-12/07/11	MN4KK1AC	
			Dilution Factor: 1					
LCS Lot-Sample#: F1K220000-013 Prep Batch #...: 1326013								
Mercury	16.3	20.7	mg/kg	127	SW846 7471A	11/22-11/29/11	MN61W1AC	
			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 #...: SL1220

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1322026

% Moisture.....: 3.6

Arsenic

1.9	104	93.8	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1CP
1.9	104	93.3	mg/kg	88	0.52	SW846 6020	11/18-12/07/11	MN3CC1CQ

Dilution Factor: 1

Barium

74.0	104	182	mg/kg	104		SW846 6020	11/18-12/07/11	MN3CC1CR
74.0	104	180	mg/kg	102	1.2	SW846 6020	11/18-12/07/11	MN3CC1CT

Dilution Factor: 1

Beryllium

0.28	104	111	mg/kg	107		SW846 6020	11/18-12/07/11	MN3CC1CU
0.28	104	110	mg/kg	105	1.0	SW846 6020	11/18-12/07/11	MN3CC1CV

Dilution Factor: 1

Boron

6.6	104	119	mg/kg	109		SW846 6020	11/18-12/07/11	MN3CC1CW
6.6	104	123	mg/kg	112	3.1	SW846 6020	11/18-12/07/11	MN3CC1CX

Dilution Factor: 1

Cadmium

0.19	104	104	mg/kg	100		SW846 6020	11/18-12/07/11	MN3CC1C0
0.19	104	102	mg/kg	98	1.5	SW846 6020	11/18-12/07/11	MN3CC1C1

Dilution Factor: 1

Chromium

4.2	104	87.9	mg/kg	81		SW846 6020	11/18-12/07/11	MN3CC1CA
4.2	104	87.9	mg/kg	81	0.04	SW846 6020	11/18-12/07/11	MN3CC1CC

Dilution Factor: 1

Cobalt

32.2	104	120	mg/kg	84		SW846 6020	11/18-12/07/11	MN3CC1C2
32.2	104	116	mg/kg	81	3.4	SW846 6020	11/18-12/07/11	MN3CC1C3

Dilution Factor: 1

Copper

16.7	104	111	mg/kg	91		SW846 6020	11/18-12/07/11	MN3CC1C4
16.7	104	109	mg/kg	88	2.3	SW846 6020	11/18-12/07/11	MN3CC1C5

Dilution Factor: 1

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1220

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Lead									
	3.7	104	105	mg/kg	97		SW846 6020	11/18-12/07/11	MN3CC1C6
	3.7	104	107	mg/kg	99	2.1	SW846 6020	11/18-12/07/11	MN3CC1C7
Dilution Factor: 1									
Manganese									
	479	104	601	mg/kg	118		SW846 6020	11/18-12/07/11	MN3CC1C8
	479	104	594	mg/kg	111	1.2	SW846 6020	11/18-12/07/11	MN3CC1C9
Dilution Factor: 1									
Molybdenum									
	0.54	104	93.2	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1DA
	0.54	104	93.4	mg/kg	89	0.18	SW846 6020	11/18-12/07/11	MN3CC1DC
Dilution Factor: 1									
Nickel									
	7.1	104	104	mg/kg	93		SW846 6020	11/18-12/07/11	MN3CC1DD
	7.1	104	102	mg/kg	91	2.2	SW846 6020	11/18-12/07/11	MN3CC1DE
Dilution Factor: 1									
Selenium									
	2.0	104	93.6	mg/kg	88		SW846 6020	11/18-12/07/11	MN3CC1DF
	2.0	104	91.3	mg/kg	86	2.4	SW846 6020	11/18-12/07/11	MN3CC1DG
Dilution Factor: 1									
Silver									
	2.8	10.4	12.0	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1DH
	2.8	10.4	12.0	mg/kg	89	0.37	SW846 6020	11/18-12/07/11	MN3CC1DJ
Dilution Factor: 1									
Strontium									
	30.9	104	140	mg/kg	106		SW846 6020	11/18-12/07/11	MN3CC1DK
	30.9	104	134	mg/kg	99	4.8	SW846 6020	11/18-12/07/11	MN3CC1DL
Dilution Factor: 1									
Tin									
	0.84	104	100	mg/kg	96		SW846 6020	11/18-12/07/11	MN3CC1DM
	0.84	104	101	mg/kg	97	0.73	SW846 6020	11/18-12/07/11	MN3CC1DN
Dilution Factor: 1									
Uranium									
	0.45	104	108	mg/kg	103		SW846 6020	11/18-12/07/11	MN3CC1CD
	0.45	104	111	mg/kg	106	2.6	SW846 6020	11/18-12/07/11	MN3CC1CE
Dilution Factor: 1									

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1220
 Date Sampled...: 11/08/11

Date Received...: 11/16/11

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Vanadium	96.1	104	184	mg/kg	85		SW846 6020	11/18-12/07/11	MN3CC1A6
	96.1	104	187	mg/kg	87	1.3	SW846 6020	11/18-12/07/11	MN3CC1A7
Dilution Factor: 1									

Zinc	61.6	104	157	mg/kg	92		SW846 6020	11/18-12/07/11	MN3CC1A8
	61.6	104	153	mg/kg	88	2.7	SW846 6020	11/18-12/07/11	MN3CC1A9
Dilution Factor: 1									

MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1322027

% Moisture.....: 3.6

Antimony	0.24	51.9	49.2	mg/kg	94		SW846 6020	11/19-12/07/11	MN3CC1CF
	0.24	51.9	49.6	mg/kg	95	0.76	SW846 6020	11/19-12/07/11	MN3CC1CG
Dilution Factor: 1									

MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1326013

% Moisture.....: 3.6

Mercury	ND	0.167	0.195	mg/kg	117		SW846 7471A	11/22-11/29/11	MN3CC1CH
	ND	0.167	0.202	N mg/kg	121	3.2	SW846 7471A	11/22-11/29/11	MN3CC1CJ
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.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K230000-017 Prep Batch #...: 1327017						
Arsenic	0.29 B	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AD
		Dilution Factor: 1				
Bismuth	ND	2.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AE
		Dilution Factor: 1				
Boron	3.5 B	10.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AF
		Dilution Factor: 1				
Cadmium	ND	0.050	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AG
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AX
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AH
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	11/23-12/07/11	MN8LW1AJ
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AK
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AL
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AM
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	11/23-12/07/11	MN8LW1AN
		Dilution Factor: 1				
Phosphorus	3.1 B	50.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AP
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	11/23-12/07/11	MN8LW1AQ
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Silver	ND	0.20	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AR
		Dilution Factor: 1				
Strontium	ND	0.50	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AT
		Dilution Factor: 1				
Tin	ND	0.20	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AU
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1A0
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	11/23-12/06/11	MN8LW1AV
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	11/23-12/07/11	MN8LW1AW
		Dilution Factor: 1				

MB Lot-Sample #: F1K290000-024 Prep Batch #...: 1333024

Antimony	0.19 B	0.50	mg/kg	SW846 6020	11/29-12/07/11	MPAE61AA
		Dilution Factor: 1				

MB Lot-Sample #: F1K220000-040 Prep Batch #...: 1326040

Mercury	ND	0.033	mg/kg	SW846 7471A	11/29/11	MPAQC1AA
		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 #...: SL1224

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #	
LCS Lot-Sample#: F1K220000-040 Prep Batch #...: 1326040								
Mercury	16.3	16.3	mg/kg	100	SW846 7471A	11/29/11	MPAQC1AC	
			Dilution Factor: 50					
LCS Lot-Sample#: F1K230000-017 Prep Batch #...: 1327017								
Arsenic	109	118	mg/kg	108	SW846 6020	11/23-12/06/11	MN8LW1A1	
			Dilution Factor: 2.5					
Barium	325	327	mg/kg	101	SW846 6020	11/23-12/06/11	MN8LW1A2	
			Dilution Factor: 2.5					
Beryllium	92.0	88.5	mg/kg	96	SW846 6020	11/23-12/06/11	MN8LW1A3	
			Dilution Factor: 2.5					
Bismuth	100	98.2	mg/kg	98	SW846 6020	11/23-12/06/11	MN8LW1A4	
			Dilution Factor: 1					
Boron	142	155	mg/kg	109	SW846 6020	11/23-12/06/11	MN8LW1A5	
			Dilution Factor: 2.5					
Cadmium	110	116	mg/kg	106	SW846 6020	11/23-12/06/11	MN8LW1A6	
			Dilution Factor: 2.5					
Cobalt	133	159	mg/kg	120	SW846 6020	11/23-12/06/11	MN8LW1A7	
			Dilution Factor: 2.5					
Copper	74.7	80.5	mg/kg	108	SW846 6020	11/23-12/07/11	MN8LW1A8	
			Dilution Factor: 2.5					
Lead	152	170	mg/kg	112	SW846 6020	11/23-12/06/11	MN8LW1A9	
			Dilution Factor: 2.5					
Manganese	443	503	mg/kg	114	SW846 6020	11/23-12/06/11	MN8LW1CA	
			Dilution Factor: 2.5					
Molybdenum	82.5	91.9	mg/kg	111	SW846 6020	11/23-12/06/11	MN8LW1CC	
			Dilution Factor: 2.5					
Nickel	109	123	mg/kg	113	SW846 6020	11/23-12/07/11	MN8LW1CD	
			Dilution Factor: 2.5					

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #	
Phosphorus	500	516	mg/kg	103	SW846 6020	11/23-12/06/11	MN8LW1CE	
			Dilution Factor: 2.5					
Selenium	207	236	mg/kg	114	SW846 6020	11/23-12/07/11	MN8LW1CF	
			Dilution Factor: 2.5					
Silver	52.0	53.2	mg/kg	102	SW846 6020	11/23-12/06/11	MN8LW1CG	
			Dilution Factor: 2.5					
Strontium	111	123	mg/kg	111	SW846 6020	11/23-12/06/11	MN8LW1CH	
			Dilution Factor: 2.5					
Tin	135	136	mg/kg	101	SW846 6020	11/23-12/06/11	MN8LW1CJ	
			Dilution Factor: 2.5					
Vanadium	110	114	mg/kg	104	SW846 6020	11/23-12/06/11	MN8LW1CK	
			Dilution Factor: 2.5					
Zinc	299	335	mg/kg	112	SW846 6020	11/23-12/07/11	MN8LW1CL	
			Dilution Factor: 2.5					
Chromium	93.4	96.6	mg/kg	103	SW846 6020	11/23-12/06/11	MN8LW1CM	
			Dilution Factor: 2.5					
Uranium	100	116	mg/kg	116	SW846 6020	11/23-12/06/11	MN8LW1CN	
			Dilution Factor: 1					
LCS Lot-Sample#: F1K290000-024 Prep Batch #...: 1333024								
Antimony	50.0	48.0	mg/kg	96	SW846 6020	11/29-12/07/11	MPAE61AC	
			Dilution Factor: 1					

NOTE(S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F1K210441-001 Prep Batch #...: 1326040

% Moisture.....: 3.0

Mercury

0.55	0.167	0.667	N mg/kg	67			SW846 7471A	11/29/11	MN6JD1CD
0.55	0.167	0.544	N mg/kg	0.0	0.0		SW846 7471A	11/29/11	MN6JD1CE

Dilution Factor: 1

MS Lot-Sample #: F1K210441-001 Prep Batch #...: 1327017

% Moisture.....: 3.0

Arsenic

52.8	103	153	mg/kg	97			SW846 6020	11/23-12/06/11	MN6JD1CH
52.8	103	148	mg/kg	92	3.0		SW846 6020	11/23-12/06/11	MN6JD1CJ

Dilution Factor: 1

Barium

131	103	229	mg/kg	96			SW846 6020	11/23-12/06/11	MN6JD1CK
131	103	238	mg/kg	104	3.6		SW846 6020	11/23-12/06/11	MN6JD1CL

Dilution Factor: 1

Beryllium

0.27	103	109	mg/kg	106			SW846 6020	11/23-12/06/11	MN6JD1CM
0.27	103	111	mg/kg	108	1.5		SW846 6020	11/23-12/06/11	MN6JD1CN

Dilution Factor: 1

Bismuth

0.31	103	99.5	mg/kg	96			SW846 6020	11/23-12/06/11	MN6JD1CP
0.31	103	102	mg/kg	98	2.2		SW846 6020	11/23-12/06/11	MN6JD1CQ

Dilution Factor: 1

Boron

9.9	103	120	mg/kg	107			SW846 6020	11/23-12/06/11	MN6JD1CR
9.9	103	129	mg/kg	115	7.2		SW846 6020	11/23-12/06/11	MN6JD1CT

Dilution Factor: 1

Cadmium

0.40	103	99.6	mg/kg	96			SW846 6020	11/23-12/06/11	MN6JD1CU
0.40	103	101	mg/kg	98	1.5		SW846 6020	11/23-12/06/11	MN6JD1CV

Dilution Factor: 1

Chromium

38.8	103	110	N mg/kg	69			SW846 6020	11/23-12/06/11	MN6JD1A8
38.8	103	118	mg/kg	77	7.1		SW846 6020	11/23-12/06/11	MN6JD1A9

Dilution Factor: 1

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Cobalt									
	14.6	103	113	mg/kg	96		SW846 6020	11/23-12/06/11	MN6JD1CW
	14.6	103	113	mg/kg	95	0.56	SW846 6020	11/23-12/06/11	MN6JD1CX
Dilution Factor: 1									
Copper									
	64.5	103	147	mg/kg	80		SW846 6020	11/23-12/07/11	MN6JD1C0
	64.5	103	153	mg/kg	86	4.0	SW846 6020	11/23-12/07/11	MN6JD1C1
Dilution Factor: 1									
Lead									
	736	103	428 N	mg/kg	0.0		SW846 6020	11/23-12/06/11	MN6JD1C2
	736	103	499 N	mg/kg	0.0	0.0	SW846 6020	11/23-12/06/11	MN6JD1C3
Dilution Factor: 1									
Manganese									
	407	103	502	mg/kg	92		SW846 6020	11/23-12/06/11	MN6JD1C4
	407	103	540 N	mg/kg	129	7.3	SW846 6020	11/23-12/06/11	MN6JD1C5
Dilution Factor: 1									
Molybdenum									
	1.8	103	100	mg/kg	96		SW846 6020	11/23-12/06/11	MN6JD1C6
	1.8	103	99.8	mg/kg	95	0.42	SW846 6020	11/23-12/06/11	MN6JD1C7
Dilution Factor: 1									
Nickel									
	19.1	103	112	mg/kg	91		SW846 6020	11/23-12/07/11	MN6JD1C8
	19.1	103	117	mg/kg	95	4.4	SW846 6020	11/23-12/07/11	MN6JD1C9
Dilution Factor: 1									
Phosphorus									
	817	103	864 N	mg/kg	46		SW846 6020	11/23-12/06/11	MN6JD1DA
	817	103	910	mg/kg	90	5.1	SW846 6020	11/23-12/06/11	MN6JD1DC
Dilution Factor: 1									
Selenium									
	1.1	103	101	mg/kg	97		SW846 6020	11/23-12/07/11	MN6JD1DD
	1.1	103	97.5	mg/kg	94	3.9	SW846 6020	11/23-12/07/11	MN6JD1DE
Dilution Factor: 1									
Silver									
	0.086	10.3	9.75	mg/kg	94		SW846 6020	11/23-12/06/11	MN6JD1DF
	0.086	10.3	9.93	mg/kg	95	1.8	SW846 6020	11/23-12/06/11	MN6JD1DG
Dilution Factor: 1									

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1224

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Strontium									
	68.8	103	175	mg/kg	103		SW846 6020	11/23-12/06/11	MN6JD1DH
	68.8	103	169	mg/kg	97	3.6	SW846 6020	11/23-12/06/11	MN6JD1DJ
	Dilution Factor: 1								
Tin									
	6.2	103	98.5	mg/kg	90		SW846 6020	11/23-12/06/11	MN6JD1DK
	6.2	103	104	mg/kg	95	5.1	SW846 6020	11/23-12/06/11	MN6JD1DL
	Dilution Factor: 1								
Uranium									
	0.87	103	113	mg/kg	109		SW846 6020	11/23-12/06/11	MN6JD1CA
	0.87	103	115	mg/kg	111	1.7	SW846 6020	11/23-12/06/11	MN6JD1CC
	Dilution Factor: 1								
Vanadium									
	75.7	103	166	mg/kg	87		SW846 6020	11/23-12/06/11	MN6JD1DM
	75.7	103	165	mg/kg	87	0.17	SW846 6020	11/23-12/06/11	MN6JD1DN
	Dilution Factor: 1								
Zinc									
	516	103	516 N	mg/kg	0.0		SW846 6020	11/23-12/07/11	MN6JD1A6
	516	103	530 N	mg/kg	14	0.0	SW846 6020	11/23-12/07/11	MN6JD1A7
	Dilution Factor: 1								

MS Lot-Sample #: F1K210441-001 Prep Batch #...: 1333024

% Moisture.....: 3.0

Antimony									
	35.7	51.5	79.5	mg/kg	85		SW846 6020	11/29-12/07/11	MN6JD1DT
	35.7	51.5	81.9	mg/kg	90	2.9	SW846 6020	11/29-12/07/11	MN6JD1DU
	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.

Date: 30 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: General Chemistry - Sample Data Groups (SDGs) L0039, SL1220, SL1224, W06370 and W06379

INTRODUCTION

This memorandum presents the results of data validation for SDG L0039 prepared by Lionville Laboratory and SDGs SL1220, SL1224, W06370 and W06379 prepared by TestAmerica Laboratories, Inc. 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
B2H0V6	11/10/11	Other Solids	C	300.0 & 7196A
B2H0X1	11/09/11	Other Solids	C	300.0A
B2H0X5	11/10/11	Other Solids	C	300.0A
B2H0X6	11/10/11	Other Solids	C	300.0A
B2H120	11/09/11	Other Solids	C	300.0A
B2H0X2	11/16/11	Other Solids	C	300.0A
B2H0X3	11/17/11	Other Solids	C	300.0A
B2H0X4	11/16/11	Other Solids	C	300.0A
B2H0X7	11/17/11	Other Solids	C	300.0A
B2H0T9	11/09/11	Other Solids	C	7196
B2H0V3	11/09/11	Other Solids	C	7196
B2H0V4	11/09/11	Other Solids	C	7196
B2H0X9	11/09/11	Other Solids	C	7196
B2H0V0	11/16/11	Other Solids	C	7196
B2H0V1	11/17/11	Other Solids	C	7196
B2H0V2	11/16/11	Other Solids	C	7196
B2H0V5	11/17/11	Other Solids	C	7196

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 for chloride and sulfate are extraction within 28 days of sample collection and analysis within 48 hours after extraction. The holding time requirement for hexavalent chromium is extraction within 30 days of sample collection and analysis within 24 hours after 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 exception.

For SDG SL1224, samples temperature upon receipt at the laboratory were 18°C. All chloride and sulfate sample results were detects and based on professional judgment should be qualified as estimates and flagged “J.” 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 with the following exceptions.

For SDG L0039, the sulfate laboratory blank result was > the method detection limit (MDL) but < the reporting limit (RL). The sulfate result for sample B2H0V6 was a detect well above the RL and should not be qualified.

For SDG SL1224, the chloride laboratory blank result was > the MDL but < the RL. All sample results were detects above the RL 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 exception. Chloride and sulfate were detected in equipment blank B2H120.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results and laboratory control sample results. According to the SAP, the matrix spike sample 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 W06379, the MS recovery for hexavalent chromium 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.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing 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 $\pm 30\%$. 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 with difference <2X the required detection limits no precision infraction occurred

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split sample results were acceptable with the following exception. Samples B2H0V6 and B2H0X6 had chloride RPD = 81%.

- **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.

- **Completeness**

SDGs L0039, SL1220, SL1224, W06370 and W06379 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 chloride and sulfate due to elevated sample temperature and for hexavalent chromium due matrix spike recovery infraction. 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.

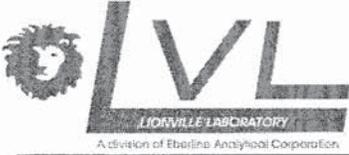
Appendix 2
Summary of Data Qualification

General Chemistry Data Qualification Summary			
SDGs: L0039, SL1220, SL1224, W06370, W06379	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Chloride Sulfate	J	B2H0X2, B2H0X3, B2H0X4, B2H0X7	Samples received with elevated temperature
Hexavalent Chromium	J	B2H0V0, B2H0V1, B2H0V2, B2H0V5	High matrix spike recovery

Comments: None

Appendix 3

Annotated Laboratory Reports



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: F11-146
Project Number: L0039
Project Manager: Scot Fitzgerald

Reported:
02/07/2012 14:59

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
B2H0V6 (1111065-01) Other Solid									
Chloride	41.2	1.0	5.0	mg/kg wet	1	L111309	11/28/2011	11/28/2011	EPA 300.0 (1993)
Sulfate	236 D	5.0	24.9	mg/kg wet	5	L111309	11/28/2011	11/28/2011	EPA 300.0 (1993)
Hexavalent Chromium	25.1 D	4.00	10.0	mg/kg wet	20	L111184	11/17/2011	11/18/2011	ISW846 7196A

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X1

General Chemistry

Lot-Sample #...: F1K160474-001 Work Order #...: MN3DG Matrix.....: SOLID
 Date Sampled...: 11/09/11 Date Received...: 11/16/11
 % Moisture.....: 3.4

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	4.5	2.1	mg/kg	MCAWW 300.0A MDL.....: 0.21	11/23/11	1327107
				Dilution Factor: 1		
Percent Moisture	3.4	0.10	%	MCAWW 160.3 MOD MDL.....:	11/18-11/19/11	1322034
				Dilution Factor: 1		
Sulfate	802 D	51.8	mg/kg	MCAWW 300.0A MDL.....: 5.2	11/28/11	1332073
				Dilution Factor: 10		

NOTE(S) :

- RL Reporting Limit
- Results and reporting limits have been adjusted for dry weight.
- D Result was obtained from the analysis of a dilution.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X5

General Chemistry

Lot-Sample #...: F1K160474-002 Work Order #...: MN3DX Matrix.....: SOLID
 Date Sampled...: 11/10/11 Date Received..: 11/16/11
 % Moisture.....: 1.8

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	8.0	2.0	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.20	11/23/11	1327107
Percent Moisture	1.8	0.10	%	MCAWW 160.3 MOD Dilution Factor: 1 MDL.....:	11/18-11/19/11	1322034
Sulfate	149	5.1	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.51	11/23/11	1327106

NOTE(S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X6

General Chemistry

Lot-Sample #...: F1K160474-003 Work Order #...: MN3D1 Matrix.....: SOLID
 Date Sampled...: 11/10/11 Date Received...: 11/16/11
 % Moisture.....: 2.4

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	17.5	2.1	mg/kg	MCAWW 300.0A MDL.....: 0.21	11/23/11	1327107
				Dilution Factor: 1		
Percent Moisture	2.4	0.10	%	MCAWW 160.3 MOD MDL.....:	11/18-11/19/11	1322034
				Dilution Factor: 1		
Sulfate	253 D	51.3	mg/kg	MCAWW 300.0A MDL.....: 5.1	11/23/11	1327106
				Dilution Factor: 10		

NOTE(S) :

- RL Reporting Limit
- Results and reporting limits have been adjusted for dry weight.
- D Result was obtained from the analysis of a dilution.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H120

General Chemistry

Lot-Sample #...: F1K160474-004 Work Order #...: MN3D2 Matrix.....: SOLID
 Date Sampled...: 11/09/11 Date Received...: 11/16/11
 % Moisture.....: 0.020

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	1.8 B	2.0	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.20	11/23/11	1327107
Percent Moisture	0.020 B	0.10	%	MCAWW 160.3 MOD Dilution Factor: 1 MDL.....:	11/18-11/19/11	1322034
Sulfate	1.8 B	5.0	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.50	11/23/11	1327106

NOTE(S) :

RL Reporting Limit
 Results and reporting limits have been adjusted for dry weight.
 B Estimated result. Result is less than RL.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X2

General Chemistry

Lot-Sample #....: F1K210441-001 Work Order #....: MN6JD Matrix.....: SOLID
 Date Sampled...: 11/16/11 Date Received...: 11/21/11
 % Moisture.....: 3.0

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	J 3.0	2.1	mg/kg	MCAWW 300.0A	11/30-12/01/11	1333223
				Dilution Factor: 1		
				MDL.....: 0.21		
Percent Moisture	3.0	0.10	%	MCAWW 160.3 MOD	11/28-11/29/11	1332015
				Dilution Factor: 1		
				MDL.....:		
Sulfate	J 379 D	103	mg/kg	MCAWW 300.0A	11/30-12/01/11	1333224
				Dilution Factor: 20		
				MDL.....: 10.3		

NOTE(S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

D Result was obtained from the analysis of a dilution.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X3

General Chemistry

Lot-Sample #...: F1K210441-002 Work Order #...: MN6JR Matrix.....: SOLID
 Date Sampled...: 11/17/11 Date Received...: 11/21/11
 % Moisture.....: 4.5

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	J 5.0	2.1	mg/kg	MCAWW 300.0A MDL.....: 0.21	11/30-12/01/11	1333223
		Dilution Factor: 1				
Percent Moisture	4.5	0.10	%	MCAWW 160.3 MOD MDL.....:	11/28-11/29/11	1332015
		Dilution Factor: 1				
Sulfate	J 202 D	105	mg/kg	MCAWW 300.0A MDL.....: 10.5	11/30-12/01/11	1333224
		Dilution Factor: 20				

NOTE(S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

D Result was obtained from the analysis of a dilution.

EH
07/30/12

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X4

General Chemistry

Lot-Sample #...: F1K210441-003 Work Order #...: MN6JT Matrix.....: SOLID
 Date Sampled...: 11/16/11 Date Received...: 11/21/11
 % Moisture.....: 3.5

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	J 3.9	2.1	mg/kg	MCAWW 300.0A MDL.....: 0.21	11/30-12/01/11	1333223
		Dilution Factor: 1				
Percent Moisture	3.5	0.10	%	MCAWW 160.3 MOD MDL.....:	11/28-11/29/11	1332015
		Dilution Factor: 1				
Sulfate	J 493 D	104	mg/kg	MCAWW 300.0A MDL.....: 10.4	11/30-12/01/11	1333224
		Dilution Factor: 20				

NOTE (S) :

- RL Reporting Limit
- Results and reporting limits have been adjusted for dry weight.
- D Result was obtained from the analysis of a dilution.

EH
07/30/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H0X7

General Chemistry

Lot-Sample #...: F1K210441-004 Work Order #...: MN6JW Matrix.....: SOLID
 Date Sampled...: 11/17/11 Date Received...: 11/21/11
 % Moisture.....: 4.2

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	J 5.0	2.1	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.21	11/30-12/01/11	1333223
Percent Moisture	4.2	0.10	%	MCAWW 160.3 MOD Dilution Factor: 1 MDL.....:	11/28-11/29/11	1332015
Sulfate	J 197	5.2	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.52	11/30-12/01/11	1333224

NOTE(S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

EH
07/30/12

TestAmerica Laboratories, Inc.

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150510-1
 Client Sample ID: B2H0T9

SDG: W06370
 Report No.: 49622
 COC No.: F11-146-139

Collection Date: 11/9/2011 1:05:00 PM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JG1AA		Report DB ID: 9MN2JG10					
HEXCHROME	1.97E+00			0.0E+00	1.55E-01	mg/kg	N/A	(12.7)	11/15/11 07:00 p		2.5036	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JG2AC		Report DB ID: 9MN2JG20					
ALPHA	2.59E-01	U	4.4E+00	4.4E+00	8.32E+00	pCi/g	100%	0.03	11/29/11 02:23 p		0.0508	GPC21A
							3.81E+00	1.00E+01			g	
								0.12				
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JG1AD		Report DB ID: 9MN2JG10					
BETA	1.00E+01		2.9E+00	3.2E+00	4.60E+00	pCi/g	100%	(2.2)	11/28/11 06:27 a		0.2005	GPC31B
							2.14E+00	1.50E+01			g	
								(6.3)				

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample 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.
 V5.2.18.1 A2002

EH
 07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 9:22:00 AM

Lot-Sample No.: J1K150510-2

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0V3

COC No.: F11-146-143

Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JH1AA		Report DB ID: 9MN2JH10					
HEXCHROME	1.71E+00			0.0E+00	1.55E-01	mg/kg	N/A	(11.)	11/15/11 07:00 p		2.4996	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JH2AC		Report DB ID: 9MN2JH20					
ALPHA	-5.39E-02	U	4.5E+00	4.5E+00	8.57E+00	pCi/g	100%	-0.01	11/29/11 02:23 p		0.0508	GPC21C
							3.92E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JH1AD		Report DB ID: 9MN2JH10					
BETA	1.81E+01		3.6E+00	4.3E+00	4.59E+00	pCi/g	100%	(3.9)	11/28/11 06:27 a		0.2007	GPC32A
							2.13E+00	1.50E+01			g	

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample V5.2.18.1 A2002 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
07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 10:20:00 AM

Lot-Sample No.: J1K150510-3

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0V4

COC No.: F11-146-144

Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JJ1AA		Report DB ID: 9MN2JJ10					
HEXCHROME	3.97E+01			0.0E+00	1.55E-01	mg/kg	N/A	(256.3)	11/15/11 07:00 p		2.5027	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JJ2AC		Report DB ID: 9MN2JJ20					
ALPHA	3.36E+00	U	4.3E+00	4.4E+00	7.50E+00	pCi/g	100%	0.45	11/29/11 02:23 p		0.0509	GPC21D
							3.40E+00	1.00E+01			g	
								(1.5)				
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JJ1AD		Report DB ID: 9MN2JJ10					
BETA	1.19E+01		3.1E+00	3.5E+00	4.53E+00	pCi/g	100%	(2.6)	11/28/11 06:27 a		0.2007	GPC32C
							2.10E+00	1.50E+01			g	
								(6.8)				
No. of Results: 3	Comments:											

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 8:30:00 AM

Lot-Sample No.: J1K150510-4

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0X9

COC No.: F11-146-155

Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JK1AA		Report DB ID: 9MN2JK10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/15/11 07:00 p		2.5084	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JK2AC		Report DB ID: 9MN2JK20					
ALPHA	6.39E+00	U	4.8E+00	5.1E+00	7.79E+00	pCi/g	100%	0.82	11/29/11 02:23 p		0.0502	GPC22A
							3.54E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JK1AD		Report DB ID: 9MN2JK10					
BETA	1.66E+01	U	3.6E+00	4.2E+00	5.20E+00	pCi/g	100%	(3.2)	11/28/11 06:27 a		0.2004	GPC32D
							2.43E+00	1.50E+01			g	

No. of Results: 3

Comments:

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002MDC|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
07/30/12

FORM I

Date: 08-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K180451-1
 Client Sample ID: B2H0V0

SDG: W06379
 Report No.: 49681
 COC No.: F11-146-140
 Matrix: OTHERSOLI

Collection Date: 11/16/2011 12:47:00 PM
 Received Date: 11/18/2011 11:35:00 AM

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: 1322178	7196_CR6											
HEXCHROME	J				1.55E-01	mg/kg	N/A	(72.)	11/18/11 02:45 p		2.513	
							1.55E-01	N/A			g	
Work Order:	MN46D1AA											
Report DB ID:	9MN46D10											
Batch: 1325073	9310_ALPHABETA_GPC											
ALPHA	6.63E+00	U	4.4E+00	4.7E+00	6.89E+00	pCi/g	100%	0.96	11/28/11 02:41 p		0.0508	GPC21A
							3.10E+00	1.00E+01	(2.8)		g	
Work Order:	MN46D2AC											
Report DB ID:	9MN46D20											
Batch: 1325076	9310_ALPHABETA_GPC											
BETA	1.44E+01		3.3E+00	3.8E+00	4.54E+00	pCi/g	100%	(3.2)	11/28/11 08:19 a		0.2002	GPC32C
							2.10E+00	1.50E+01	(7.5)		g	
Work Order:	MN46D1AD											
Report DB ID:	9MN46D10											

No. of Results: 3 Comments:

TestAmerica 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.
 rpt|STLRchSample V5.2.18.1 A2002

FORM I

Date: 08-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K180451-2
 Client Sample ID: B2H0V1

SDG: W06379
 Report No.: 49681
 COC No.: F11-146-141
 Matrix: OTHERSOLI

Collection Date: 11/17/2011 11:34:00 AM
 Received Date: 11/18/2011 11:35:00 AM
 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: 1322178	7196_CR6											
HEXCHROME	J 3.33E+01			0.0E+00	1.55E-01	mg/kg	N/A	(215.1)	11/18/11 02:45 p		2.5021	
Work Order: MN46F1AA Report DB ID: 9MN46F10 1.55E-01 N/A												
Batch: 1325073	9310_ALPHABETA_GPC											
ALPHA	6.36E+00	U	4.3E+00	4.6E+00	6.66E+00	pCi/g	100%	0.95	11/28/11 02:41 p		0.0508	GPC21C
Work Order: MN46F2AC Report DB ID: 9MN46F20 2.97E+00 1.00E+01 (2.8) g												
Batch: 1325076	9310_ALPHABETA_GPC											
BETA	1.69E+01		3.4E+00	4.0E+00	4.39E+00	pCi/g	100%	(3.9)	11/28/11 08:15 a		0.2008	GPC27A
Work Order: MN46F1AD Report DB ID: 9MN46F10 2.03E+00 1.50E+01 (8.4) g												

No. of Results: 3 Comments:

TestAmerica MDC:jMDA_Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rpt\$TLRchSample 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.
 V5.2.18.1 A2002

EH
 07/30/12

FORM I SAMPLE RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica **SDG:** W06379 **Collection Date:** 11/16/2011 11:14:00 AM
Lot-Sample No.: J1K180451-3 **Report No.:** 49681 **Received Date:** 11/18/2011 11:35:00 AM
Client Sample ID: B2H0V2 **COC No.:** F11-146-142 **Matrix:** OTHERSOLI

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/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1322178 7196_CR6 Work Order: MN46M1AA Report DB ID: 9MN46M10												
HEXCHROME	J	4.99E+00		0.0E+00	1.55E-01	mg/kg	N/A	(32.2)	11/18/11 02:45 p		2.5029	
Batch: 1325073 9310_ALPHABETA_GPC Work Order: MN46M2AC Report DB ID: 9MN46M20												
ALPHA		3.68E+00	U	3.7E+00	6.20E+00	pCi/g	100%	0.59	11/28/11 02:41 p		0.0506	GPC21D
								(1.9)			g	
Batch: 1325076 9310_ALPHABETA_GPC Work Order: MN46M1AD Report DB ID: 9MN46M10												
BETA		1.41E+01		3.9E+00	5.21E+00	pCi/g	100%	(2.7)	11/28/11 08:19 a		0.2008	GPC32D
								(7.2)			g	

No. of Results: 3 Comments:

TestAmerica 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.
 V5.2.18.1 A2002

EH
07/30/12

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



264 Welsh Pool Road
 Exton, Pennsylvania 19341
 Phone (610) 280-3000
 Fax (610) 280-3041

Case Narrative

Client: CHPRC HANFORD F11-146 L0039

LVL#: 1111065

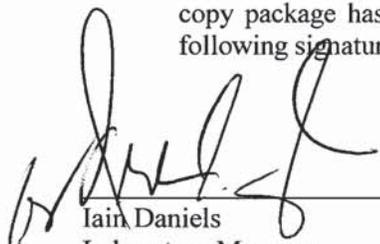
Date Received: 11-16-11

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 other solid sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the data summary report.

Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries were within the 75-125% control limits with the exception of L111184-MS5 for Soluble Hexavalent Chromium that was above the control limits at 172% that may be attributed to high background concentration and low spike level of the target analyte.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on an "as-received" weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 Iain Daniels
 Laboratory Manager
 Lionville Laboratory
 njp\i11-065


 Date



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/07/2012 14:59

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
N	Spike and/or spike duplicate sample recovery is outside control limits.
B	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
Dry	Sample results reported on a dry weight basis
Wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

02/23/2012

Problem and Discrepancy Report
Lionville
SDG L0039

1. The data package has the following issues:

- a) Wet Chemistry, page 10, sample B2H0V6, sulfate and hexavalent chromium missing D qualifier in both electronic and hard copy data.
- b) Metals, page 18, sample B2H0V6, mercury missing D qualifier, antimony, manganese, tin, and mercury missing N qualifier. Affects both electronic and hard copy data.
- c) Metals, page 18, sample B2H0V6, antimony, manganese, and tin, MS failure. N qualifier missing.
- d) Metals, page 19, sample B2H0V6, mercury MS failure. N qualifier missing.
- e) Metals, Quality Control, page 19, tin detected in blank. Not discussed in narrative. Data not qualified. Metals, Quality Control, page 12, manganese and iron detected in blank. Not discussed in narrative. Data not flagged.

Resolution: *Provide appropriate correction.*

Lab Response:

- a) The wet chemistry electronic and hardcopy data have been corrected.
- b) The D qualifier is not applicable to metals/mercury analyses. The N qualifier has been applied to the MS samples on pages 20 and 21.
- c) The N qualifier has been applied to the MS sample on page 20.
- d) The N qualifier has been applied to the MS sample on page 21.
- e) Data are not flagged as Tin was detected below the limit of quantitation (see narrative item 7). Page 12 provides wet chemistry data and does not include metals data, further for the metals data included on page 19, manganese and iron were not found in the blank.

SMR Response:

Items a), c), and d) have been resolved

- b) SMR disagrees. The D qualifier is applicable to any and all samples that have been diluted and must be applied. Antimony, manganese, tin, and mercury must have the N qualifier applied to the sample results.
- e) SMR disagrees. Tin in the blank was not below the LOQ as the laboratory B qualified the blank result indicating that it is above the LOQ and below the RL. The tin result for sample B2H0V6 must be C qualified.

Please correct the issues and resubmit the electronic **and** hard copy data packages.

Lab Response: Issues are corrected for the electronic and hard copy data packages.

Provide a resolution to each issue noted on the report

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-146	PAGE 1 OF 1	
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		
SAMPLING LOCATION 183.7KE Concrete Sample 8		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete				PRICE CODE 9C		
ICE CHEST NO. WTS-001		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"		DATA TURNAROUND 15 Days / 15 Days		
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		COA 302548ES10		METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL		
BILL OF LADING/AIR BILL NO. SEE PTR 7954 0870 3514		PRESERVATION		Cool~4C	Cool~4C	Cool~4C		
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)		HOLDING TIME		6 Months	30 Days	28 Days/48 Hours
SPECIAL HANDLING AND/OR STORAGE		TYPE OF CONTAINER		G/P	G/P	G/P		
		NO. OF CONTAINER(S)		1	1	1		
		VOLUME		250mL	60mL	60mL		
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	IC Anions - 300.0 (Chloride, Sulfate);		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2H0V6	OTHER SOLID	NOV 10 2011	1020	✓	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1050	RECEIVED BY/STORED IN MOLLORESSO K1	DATE/TIME NOV 10 2011 / 1050	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) ICP Metals - 6010 (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010 (Supertrace Add-On) {Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Molybdenum, Nickel, Strontium, Tin, Vanadium, Zinc}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MOLLORESSO #1	DATE/TIME NOV 15 2011 / 1040	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 15 2011 / 1040		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1230	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME 11-16-11 / 1020	RECEIVED BY/STORED IN VICTOR HERNANDEZ	DATE/TIME 11-16-11 / 1020		
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	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 December 9, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1220
Number of Samples	: four samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 16, 2011

II. Introduction

On November 16, 2011, four 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: F11-146

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

December 9, 2011

SDG: SL1220

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.

ICPMS Metals

Batch: 1322026

The ICV recovery was outside the upper QC limit (greater than 110%) for boron indicating a potential high bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.

Affected Samples:

F1K160474 (1): B2H0X1
 F1K160474 (2): B2H0X5
 F1K160474 (3): B2H0X6
 F1K160474 (4): B2H120

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K160474 (1): B2H0X1
 F1K160474 (2): B2H0X5
 F1K160474 (3): B2H0X6
 F1K160474 (4): B2H120

The sample was analyzed at a dilution due to high concentrations of target analytes. The reporting limit has been adjusted only for those targets reported from the dilution run. These analytes have been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (2): B2H0X5

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1220

TestAmerica Laboratories, Inc.

Mercury**Batch: 1326013**

The MSD recovery for mercury is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. This analyte has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K160474 (1): B2H0X1

F1K160474 (2): B2H0X5

F1K160474 (3): B2H0X6

F1K160474 (4): B2H120

The samples were analyzed at a dilution due to high concentrations of mercury. The reporting limit has been adjusted only for these targets reported from the dilution run. Mercury has been qualified with a "D" flag in the associated samples.

Affected Samples:

F1K160474 (2): B2H0X5

F1K160474 (3): B2H0X6

Ion Chromatography**Batch: 1332073**

The sample was analyzed at a dilution for sulfate due to high concentrations of this analyte. This analyte has been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (1): B2H0X1

Batch: 1327106

The sample was analyzed at a dilution for sulfate due to high concentrations of this analyte. This analyte has been qualified accordingly with a "D" flag in the associated sample.

Affected Samples:

F1K160474 (3): B2H0X6

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1220

TestAmerica Laboratories, Inc.

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:

Handwritten signature of Jayna Awalt in cursive script.

Michael Franks

St. Louis Project Manager

SL1220
[Handwritten signature]

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-147	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 1	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. 603-254	FIELD LOGBOOK NO. INF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR	BILL OF LADING/AIR BILL NO. SEE PTR 7984-0998-4105			

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)	PRESERVATION	Cool~4C/Cool~4C	Cool~4C
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X1	OTHER SOLID	NOV 09 2011	1305	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 09 2011 / 1500	RECEIVED BY/STORED IN MOLLO9SSU #1	DATE/TIME NOV 09 2011 / 1500	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN Fed Ex.	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN H. Brunson	DATE/TIME 11/16/11	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME

CH2MHill Plateau Remediation Company <i>SL1220</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-151	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 5	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>CWS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-4105</i>		

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)	PRESERVATION		Cool~4C/Cool ~4C	Cool~4C
		HOLDING TIME		6 Months	28 Days/48 Hours
		TYPE OF CONTAINER		G/P	G/P
		NO. OF CONTAINER(S)		1	1
		VOLUME		250mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X5	OTHER SOLID	NOV 10 2011	0922	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 10 2011 / 1430</i>	RECEIVED BY/STORED IN <i>M01109 SSU #1</i>	DATE/TIME <i>NOV 10 2011 / 1430</i>	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM <i>CHPRC</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>	RECEIVED BY/STORED IN <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>		
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	RECEIVED BY/STORED IN <i>FBO EX</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>Fed Ex</i>	DATE/TIME	RECEIVED BY/STORED IN <i>HB... Aug 2011</i>	DATE/TIME <i>11/16/11</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME <i>0950</i>		
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	

SDG #SL1220

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CH2M Hill Plateau Remediation Company SL1220		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-146-152	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 6	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. CWS-254	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 7954-0995-4105	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR				

MATRIX* A=Air DL=Drum L=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
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X6	OTHER SOLID	NOV 10 2011	1020	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1430	RECEIVED BY/STORED IN MOLIC9SSU#1	DATE/TIME NOV 10 2011 / 1430	
RELINQUISHED BY/REMOVED FROM MOLIC9SSU#1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FED EX	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Aburson	DATE/TIME 11/16/11 10:50	
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

SDG #SL1220

CH2M Hill Plateau Remediation Company <i>SL1220</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-165	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 9		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GWS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>		COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A <i>7954-0995-4105</i>		

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)	PRESERVATION Cool~4C/Cool~4C	Cool~4C
	HOLDING TIME	6 Months	28 Days/48 Hours
	TYPE OF CONTAINER	G/P	G/P
	NO. OF CONTAINER(S)	1	1
	VOLUME	250mL	60mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2H120	OTHER SOLID	NOV 09 2011	0830

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 09 2011 / 0900</i>	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RECEIVED BY/STORED IN <i>MG1109 Ssu</i>	DATE/TIME <i>NOV 09 2011 / 0900</i>	
RELINQUISHED BY/REMOVED FROM <i>MG1109 Ssu</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>	
RECEIVED BY/STORED IN <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>	
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	
RECEIVED BY/STORED IN <i>FedEx</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY
		DATE/TIME

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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
 December 13, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1224
Number of Samples	: four samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 21, 2011

II. Introduction

On November 21, 2011, four samples were received by TestAmerica - St. Louis for chemical analysis. **The samples were not received within temperature criteria. Samples were received at 18 degrees. Sample issue resolution SDR12-058 accepted proposed resolution to proceed with analyses and report results.** 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: F11-146

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

December 13, 2011

SDG: SL1224

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.

ICPMS Total Metals

Batch: 1327017

Boron was detected in the method blank above the method detection limit but below the reporting limit. This analyte has been qualified according with a "C" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

Arsenic, phosphorous and boron were detected in the method blank above the method detection limit but below the reporting limit. If the analyte concentration in the sample is 4 times the concentration of that observed in the method blank a qualifier is not necessary.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

The MS (MSD) recoveries for zinc, lead and phosphorus are 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. Method performance is demonstrated by acceptable LCS recoveries. These analytes have been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2
 F1K210441 (2): B2H0X3
 F1K210441 (3): B2H0X4
 F1K210441 (4): B2H0X7

The MS (MSD) recoveries for chromium and manganese are outside the established QC limits. The RPD values are within method acceptance criteria indicating possible matrix interference. Method performance is

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 13, 2011

SDG: SL1224

TestAmerica Laboratories, Inc.

demonstrated by acceptable LCS recoveries. These analytes have been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Batch: 1333024

Antimony was detected in the method blank above the method detection limit but below the reporting limit. If the analyte concentration in the sample is 4 times the concentration of that observed in the method blank a qualifier is not necessary.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

Mercury

Batch: 1326040

The MS (MSD) recoveries for mercury are outside the established QC limits. Matrix interference is physically evident in the sample. Samples were a mix of rock and soil. Method performance is demonstrated by acceptable LCS recovery. Mercury has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 13, 2011

SDG: SL1224

TestAmerica Laboratories, Inc.

Ion Chromatography

Batches: 1333223-1333224

Chloride was detected in the method blank above the method detection limit but below the reporting limit. The analyte concentration in the samples is 4 times the amount detected in the method blank making a qualifier unnecessary.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

F1K210441 (4): B2H0X7

The samples were analyzed at a dilution for Sulfate due to high concentrations of target analytes. This analyte has been qualified with a "D" flag in the associated samples.

Affected Samples:

F1K210441 (1): B2H0X2

F1K210441 (2): B2H0X3

F1K210441 (3): B2H0X4

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

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR12-058
REV NUM	0
DATE INITIATED	11/21/2011

SAMPLE EVENT INFORMATION

SAF NUM(S)	F11-146
OPERABLE UNIT(S)	100-KR-2
PROJECT(S)	183 KE/KW
SAMPLE EVENT TITLE(S)	183 KE/KW WTP
LABORATORY	TestAmerica St. Louis

SAMPLING INFORMATION

NUMBER OF SAMPLES	4
SAMPLE NUMBERS	B2H0X2, B2H0X3, B2H0X4, B2H0X7
SAMPLE MATRIX	OTHER SOLID
COLLECTION DATE	11/16/2011 - 11/17/2011
SDG NUM	SL1224

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 18°C. Sample analyses include ICP-MS metals and chloride/sulfate.

DISPOSITION

DESCRIPTION Proposed Disposition: Proceed with requested analyses, report results, and note elevated sample preservation temperature in the case narrative.

JUSTIFICATION Accepted Disposition: Accept Proposed Disposition

Submitted by:	Jayna K. Awalt / TASL	Date:	11/14/2011
Accepted by:	Steve Trent / CHPRC	Date:	11/22/2011
Accepted by:	Jennifer Hammons / CHPRC	Date:	11/28/2011

CH2M Hill Plateau Remediation Company SL1224		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-146-148	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 2	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. GWS-018	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-14	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 12 lbs Fed Ex 7954-2282-3968	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY 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)	PRESERVATION	Cool~4C/Cool~4C	Cool~4C
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X2	OTHER SOLID	NOV 16 2011	1247	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 16 2011 / 1410	RECEIVED BY/STORED IN M01109SSU#1	DATE/TIME NOV 16 2011 / 1410	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM M01109SSU#1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 0900	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1410	RECEIVED BY/STORED IN FED Ex	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Brian Danity	DATE/TIME 11/21/11 0920	
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

CH2MHill Plateau Remediation Company <i>SL1224</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-149	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Concrete Sample 3		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146	PRICE CODE 9C AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. <i>GWS-018</i>		FIELD LOGBOOK NO. <i>HNF-N-507-24.1</i>		ACTUAL SAMPLE DEPTH <i>0-1"</i>	COA 302548ES10	DATA TURNAROUND 15 Days / 15 Days
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR <i>12lbs FedEx 7954-2282-3968</i>	
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)	PRESERVATION		Cool~4C/Cool~4C	Cool~4C	
		HOLDING TIME		6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER		G/P	G/P	
		NO. OF CONTAINER(S)		1	1	
		VOLUME		250mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	IC Anions - 900.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H0X3	OTHER SOLID	NOV 17 2011	1134	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
<i>K.J. Young CHPRC</i>	<i>NOV 17 2011 / 1440</i>	<i>Molloassu #1</i>	<i>NOV 17 2011 / 1440</i>		
<i>Molloassu #1</i>	<i>NOV 18 2011 / 0900</i>	<i>K.J. Young CHPRC</i>	<i>NOV 18 2011 / 0900</i>		
<i>K.J. Young CHPRC</i>	<i>NOV 18 2011 / 1410</i>	<i>FedEx</i>			
<i>FedEx</i>		<i>Brian Roberts</i>	<i>11/21/11 0900</i>		
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	

CH2M Hill Plateau Remediation Company SL1224		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-150	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete	SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. GWS-018	FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 12lbs FED Ex 7934-2282-3968		
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=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
		HOLDING TIME	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2H0X4	OTHER SOLID	NOV 16 2011	1114	✓ ✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 16 2011 11410	RECEIVED BY/STORED IN Mou09SSU*1	DATE/TIME NOV 16 2011 11410	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM Mou09SSU*1	DATE/TIME NOV 18 2011 10900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 10900	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 18 2011 11410	RECEIVED BY/STORED IN FED Ex	DATE/TIME	
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Brian Daniels	DATE/TIME 11/24/11 0920	
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

CH2M Hill Plateau Remediation Company <i>SL1224</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-153	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 83.7KE Concrete Sample 7	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>6WS-018</i>	FIELD LOGBOOK NO. <i>HNF-N-507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1"</i>	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>12lbs FED EX 7954-2282-3968</i>		

MATRIX* A=Air DL=Drum 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	
		HOLDING TIME	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	250mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X7	OTHER SOLID	NOV 17 2011	1134	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 17 2011 / 1440	RECEIVED BY/STORED IN M01109SSU #1	DATE/TIME NOV 17 2011 / 1440	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (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, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109SSU #1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 / 0900		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1410	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN B-1 Brian Daniels	DATE/TIME 11/24/11 0920		
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	



Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Mail Stop – R3-60
 Richland, WA 99352

December 05, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 15, 2011
Number of Samples	:	Four (4)
Sample Type	:	Other Solid
SDG Number	:	W06370
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 15, 2011 four other solid samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H0T9	MN2JG	OTHER SOLID	11/15/11
B2H0V3	MN2JH	OTHER SOLID	11/15/11
B2H0V4	MN2JJ	OTHER SOLID	11/15/11
B2H0X9	MN2JK	OTHER SOLID	11/15/11

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
December 05, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

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

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The CRDL was not on the first count. The entire batch was re-counted for longer time and the CRDL was met. Except as noted, the LCS, batch blank, samples and sample duplicate (B2H0T9) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H0V3) results are within contractual requirements.

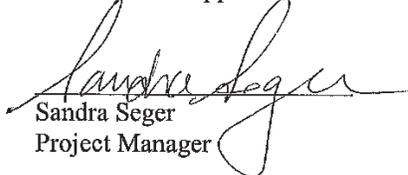
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H0T9) and sample matrix spike (B2H0T9) 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



NCM #: 10-19866 NCM Initiated By: Tom McGinnis Date Opened: 12/02/2011 Date Closed:	Classification: Deficiency Status: PMREVIEW Production Area: Environmental - Sep Tests: Alpha by GPC-Am Lot #'s (Sample #'s): J1K150510 (1,2,3,4), J1K180000 (57), QC Batches: 1322057,
Nonconformance: Batch Result Out of Limits Subcategory: MDA exceeds RDL	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Tom McGinnis	12/02/2011	The entire batch 1322057 was recounted for longer count time in order to meet the CRDL. All final batch results meet acceptance criteria.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Tom McGinnis	12/02/2011	The PM was notified of the batch deficiencies.

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
	<u>Response</u>	<u>Response Note</u>			

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-139	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		
SAMPLING LOCATION 183.7KE Concrete Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	DATA TURNAROUND 15 Days / 15 Days
ICE CHEST NO. 6WS-107		FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A		

MATRIX* A=Air DL=Drum L=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)	PRESERVATION	Cool~4C	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	60mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS Chromium Hex - 7196;		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0T9 MN2JG	OTHER SOLID	NOV 09 2011	1305	✓	✓

SDB# W06370
 LOT# J1K150510
 Report# 12/26/11 12/2/11 SES 11/17/11



CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young	NOV 09 2011 / 1500	MG1109 SSU #1	NOV 09 2011 / 1500		
MG1109 SSU #1	NOV 15 2011 / 1100	K.J. Young	NOV 15 2011 / 1100		
K.J. Young	NOV 15 2011 / 1435	Luis Velazquez	NOV 15 2011 / 1435		
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		

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-143	PAGE 1 OF 1	
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/>	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 5		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146			
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. F11-146-143-241		ACTUAL SAMPLE DEPTH 0-1"	COA 302548E510		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		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)	PRESERVATION		Cool~4C	None	SDG# W06378 LOT# JIK150510		
		HOLDING TIME		30 Days	6 Months			
		TYPE OF CONTAINER		G/P	G/P			
		NO. OF CONTAINER(S)		1	1			
		VOLUME		50mL	60mL			
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2H0V3 MWJH	OTHER SOLID	NOV 10 2011	0922	✓	✓			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young CHPRC	NOV 10 2011 / 1430	MOLINA SSO #1	NOV 10 2011 / 1430		
K.J. Young CHPRC	NOV 15 2011 / 1100	K.J. Young CHPRC	NOV 15 2011 / 1100		
K.J. Young CHPRC	NOV 15 2011 / 1435	Lucas Velazquez	NOV 15 2011 / 1435		
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	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-144	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146			
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None	SDG # W06370 LOT # JTK150 51D	
		HOLDING TIME		30 Days	6 Months		
		TYPE OF CONTAINER		G/P	G/P		
		NO. OF CONTAINER(S)		1	1		
		VOLUME		60mL	60mL		
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0V4 MWJJJ	OTHER SOLID	NOV 10 2011	1020	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1028	RECEIVED BY/STORED IN M01109SSU#1	DATE/TIME NOV 10 2011 / 1028	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSU#1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN [Signature]	DATE/TIME NOV 15 2011 / 1435		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-155	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		
SAMPLING LOCATION 183.7KE Concrete Sample 9		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
ICE CHEST NO. 6WS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	60mL	60mL	
		SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X9	MVJJK OTHER SOLID	NOV 09 2011	0830	✓	✓

SDG# WDL4370
LOT# JIK150510

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 09 2011 / 0900	RECEIVED BY/STORED IN M01109SSC #1	DATE/TIME NOV 09 2011 / 0900	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSC #1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN Lucas Velazquez	DATE/TIME NOV 15 2011 / 1435		
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	

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

December 8, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-146
Date SDG Closed	:	November 18, 2011
Number of Samples	:	Four (4)
Sample Type	:	Other Solid
SDG Number	:	W06379
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 18, 2011 four other solid samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H0V0	MN46D	OTHER SOLID	11/18/11
B2H0V1	MN46F	OTHER SOLID	11/18/11
B2H0V2	MN46M	OTHER SOLID	11/18/11
B2H0V5	MN46T	OTHER SOLID	11/18/11

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
December 8, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

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

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The analytical batch was recounted for a longer time to meet the CRDL. The LCS, batch blank, samples and sample duplicate (B2H0V0) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H0V1) results are within contractual requirements.

Chemical Analysis

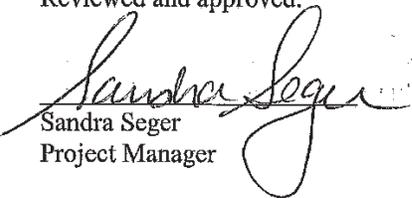
Hexavalent Chromium by EPA method 7196A

The matrix spike recovered high at 155.9%. The post digestive matrix spike recovered at 98.2% and the insoluble matrix spike recovered at 106.9%. Except as noted, the LCS, batch blank, samples, sample duplicate (B2H0V0), and sample matrix spike (B2H0V0) results are within contractual requirements.

4 + 2QC

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



NCM #: 10-19838 NCM Initiated By: Hooshang Rahavi Date Opened: 11/30/2011 Date Closed:	Classification: Anomaly Status: PMREVIEW Production Area: Classical Chemistry Tests: 7196A Lot #'s (Sample #'s): J1K180000 (178), J1K180451 (1,2,3,4), QC Batches: 1322178,
Nonconformance: QC data exceeded criteria Subcategory: MS/MSD accuracy and/or precision out of control	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Hooshang Rahavi	11/30/2011	The MS failed high at 155.9%. The insoluble MS recovered within limits at 106.9%. PDMS recovered at 98.2%.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Hooshang Rahavi	11/30/2011	Report data

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>



Clouseau Nonconformance Memo



NCM #: 10-19845 NCM Initiated By: Tom McGinnis Date Opened: 11/30/2011 Date Closed:	Classification: Deficiency Status: PMREVIEW Production Area: Environmental - Sep Tests: Alpha by GPC-Am Lot #'s (Sample #'s): J1K180451 (1,2,3,4), J1K210000 (73), QC Batches: 1325073,
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Tom McGinnis	11/30/2011	The entire batch 1325073 was recounted for a longer count time in order to meet the CRDL. Final batch results meet acceptance criteria.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Tom McGinnis	11/30/2011	The PM was notified of the batch deficiencies.

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-140	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 2		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		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)	PRESERVATION Cool~4C None			
		HOLDING TIME 30 Days 6 Months			
		TYPE OF CONTAINER G/P G/P			
		NO. OF CONTAINER(S) 1 1			
		VOLUME 60mL 60mL			
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0V0	OTHER SOLID	NOV 16 2011	1247	✓	✓

W06379
 J1K180451 M046D
 Due 12-28-11
 RW 4/11/11



CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young NOV 16 2011 / 1410	DATE/TIME	RECEIVED BY/STORED IN M01109SSU*1 NOV 16 2011 / 1410	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSU*1 NOV 18 2011 / 0900	DATE/TIME	RECEIVED BY/STORED IN K.J. Young NOV 18 2011 / 0900	DATE/TIME		
RELINQUISHED BY/REMOVED FROM K.J. Young NOV 18 2011 / 1135	DATE/TIME	RECEIVED BY/STORED IN CHPRC NOV 18 2011 / 1135	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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-141	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/>
SAMPLING LOCATION 183.7KE Concrete Sample 3		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146	DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil 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	None	
	SPECIAL HANDLING AND/OR STORAGE		HOLDING TIME		30 Days	6 Months	
			TYPE OF CONTAINER		G/P	G/P	
			NO. OF CONTAINER(S)		1	1	
			VOLUME		60mL	60mL	
			SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0V1	OTHER SOLID	NOV 17 2011	1134	✓	✓		

W06379
JIK180451 M046F

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young	NOV 17 2011 / 1440	MOLLO9SSU #1	NOV 17 2011 / 1440		
CHPRC		CHPRC			
MOLLO9SSU #1	NOV 18 2011 / 0900	K.J. Young	NOV 18 2011 / 0900		
CHPRC		CHPRC			
K.J. Young	NOV 18 2011 / 1135	Lucas Valdez	NOV 18 2011 / 1135		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-142	PAGE 1 OF 1	
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C	DATA TURNAROUND
SAMPLING LOCATION 183.7KE Concrete Sample 4		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	15 Days / 15 Days	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE		ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		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)	PRESERVATION	Cool~4C	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
	VOLUME	60mL	60mL		
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Chromium Hex - 7195;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0V2	OTHER SOLID	NOV 16 2011	1114	✓	✓

W06379
JULIS04S1
MNU46m

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young	NOV 16 2011 / 1410	MOLLO9SSU*1	NOV 16 2011 / 1410		
MOLLO9SSU*1	NOV 18 2011 / 0900	CHPRC	NOV 18 2011 / 0900		
K.J. Young	NOV 18 2011 / 1135	Lucas Velazquez	NOV 18 2011 / 1135		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-145	PAGE 1 OF 1	
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KE Concrete Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146			
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A				
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None		
			HOLDING TIME		30 Days	6 Months		
			TYPE OF CONTAINER		G/P	G/P		
			NO. OF CONTAINER(S)		1	1		
			VOLUME		60mL	60mL		
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2H0V5	OTHER SOLID	NOV 17 2011	1134	✓	✓			

W06379
JIK180451 MARKET

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 17 2011 / 1440	RECEIVED BY/STORED IN MC1109 SSU*1	DATE/TIME NOV 17 2011 / 1440	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MC1109 SSU*1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 / 0900		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1135	RECEIVED BY/STORED IN Lance Williams	DATE/TIME NOV 18 2011 / 1135		
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	

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-019		
VALIDATOR: Eyda Hergenreder		LAB: Lionville Lab, TestAmerica		DATE: 07-30-2012	
			SDG: L0039, SL1220, SL1224, W06370, W06379		
ANALYSES PERFORMED					
Anions/IC X	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI X	pH	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate	Cyanide	
<p>SAMPLES/MATRIX Other Solid samples</p> <p>SDG L0039: B2H0V6</p> <p>SDG SL1220: B2H0X1, B2H0X5, B2H0X6, B2H120</p> <p>SDG SL1224: B2H0X2, B2H0X3, B2H0X4, B2H0X7</p> <p>SDG W06370: B2H0T9, B2H0V3, B2H0V4, B2H0X9</p> <p>SDG W06379: B2H0V0, B2H0V1, B2H0V2, B2H0V5</p>					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?.....**Yes** No N/A

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

L0039: MB sulfate 2.4 mg/kg

SL1224: MB chloride 0.29 mg/kg

EB sample B2H120: chloride 1.8 mg/kg; sulfate 1.8 mg/kg

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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 W06379: Cr+6 156%

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

Split samples B2H0V6/B2H0X6: Chloride 81%

6. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A

Sample holding times acceptable? Yes No N/A

Comments:

SDG SL1224: Samples were received at 18 degree C

Data Validation for Chemical Analyses**Published Date: 08/16/10****Effective Date: 08/16/10****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

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/07/2012 14:59

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L111184 - Default Prep GenChem										
Blank (L111184-BLK1)					Prepared: 11/17/2011 Analyzed: 11/18/2011					
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L111184-BS1)					Prepared: 11/17/2011 Analyzed: 11/18/2011					
Hexavalent Chromium	3.72	0.20	0.50	mg/kg wet	4.0000		93	80-120		
LCS (L111184-BS2)					Prepared: 11/17/2011 Analyzed: 11/18/2011					
Hexavalent Chromium	928 D	20.0	50.0	mg/kg wet	1036.8		89	80-120		
Duplicate (L111184-DUP3)					Source: 1111065-01 Prepared: 11/17/2011 Analyzed: 11/18/2011					
Hexavalent Chromium	25.3 D	4.00	10.0	mg/kg wet		25.1			0.8	20
Matrix Spike (L111184-MS5)					Source: 1111065-01 Prepared: 11/17/2011 Analyzed: 11/18/2010					
Hexavalent Chromium	32.0 N, D	4.00	10.0	mg/kg wet	4.0000	25.1	172*	75-125		
Matrix Spike (L111184-MS6)					Source: 1111065-01 Prepared: 11/17/2011 Analyzed: 11/18/2011					
Hexavalent Chromium	942 D	20.0	50.0	mg/kg wet	1049.7	25.1	87	75-125		
Batch L111309 - Default Prep GenChem										
Blank (L111309-BLK1)					Prepared & Analyzed: 11/28/2011					
Chloride	1.0 U	1.0	5.0	mg/kg wet						
Sulfate	2.4 B	1.0	5.0	mg/kg wet						
LCS (L111309-BS1)					Prepared & Analyzed: 11/28/2011					
Chloride	49.7	1.0	5.0	mg/kg wet	50.000		99.4	80-120		20
Sulfate	53.9	1.0	5.0	mg/kg wet	50.000		108	80-120		20



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-146
 Project Number: L0039
 Project Manager: Scot Fitzgerald

Reported:
 02/07/2012 14:59

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	-----------------------	-----	-----	-------	-------------	---------------	------	-------------	-----	-----------

Batch L111309 - Default Prep GenChem

Duplicate (L111309-DUP1)		Source: 1111065-01		Prepared & Analyzed: 11/28/2011						
Chloride	41.8	1.0	5.0	mg/kg wet		41.2			1.45	20
Sulfate	227 D	5.0	24.8	mg/kg wet		236			4.12	20
Matrix Spike (L111309-MS1)		Source: 1111065-01		Prepared & Analyzed: 11/28/2011						
Sulfate	743 D	10.0	49.9	mg/kg wet	498.67	236	102	75-125		20
Matrix Spike (L111309-MS2)		Source: 1111065-01		Prepared & Analyzed: 11/28/2011						
Chloride	95.1	1.0	5.0	mg/kg wet	49.867	41.2	108	75-125		20

12

METHOD BLANK REPORT

General Chemistry

Client Lot #...: SL1220

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	ND	Work Order #: MPAXN1AA 2.0	mg/kg	MB Lot-Sample #: MCAWW 300.0A	F1K230000-107 11/23/11	1327107
		Dilution Factor: 1				
Sulfate	ND	Work Order #: MPAXK1AA 5.0	mg/kg	MB Lot-Sample #: MCAWW 300.0A	F1K230000-106 11/23/11	1327106
		Dilution Factor: 1				
Sulfate	ND	Work Order #: MPAT71AA 5.0	mg/kg	MB Lot-Sample #: MCAWW 300.0A	F1K280000-073 11/28/11	1332073
		Dilution Factor: 1				

NOTE(S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: SL1220

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	20.0	18.9	mg/kg	94	MCAWW 300.0A	11/23/11	1327107
Work Order #: MPAXN1AC LCS Lot-Sample#: F1K230000-107 Dilution Factor: 1							
Sulfate	80.0	76.6	mg/kg	96	MCAWW 300.0A	11/23/11	1327106
Work Order #: MPAXK1AC LCS Lot-Sample#: F1K230000-106 Dilution Factor: 1							
Sulfate	80.0	75.6	mg/kg	94	MCAWW 300.0A	11/28/11	1332073
Work Order #: MPAT71AC LCS Lot-Sample#: F1K280000-073 Dilution Factor: 1							

NOTE (S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: SL1220
 Date Sampled...: 11/09/11

Date Received...: 11/16/11

Matrix.....: SOLID

Percent Moisture: 3.6

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	10.5	20.7	30.1	mg/kg	95	MCAWW 300.0A	11/23/11	1327107
			Work Order #...: MN3CC1CM MS Lot-Sample #: F1K160470-001					
			Dilution Factor: 1					
Sulfate	42.4	41.5	81.4	mg/kg	94	MCAWW 300.0A	11/23/11	1327106
			Work Order #...: MN3CC1CN MS Lot-Sample #: F1K160470-001					
			Dilution Factor: 1					
Sulfate	802	414	1220 D	mg/kg	100	MCAWW 300.0A	11/28/11	1332073
			Work Order #...: MN3DG1CN MS Lot-Sample #: F1K160474-001					
			Dilution Factor: 10					

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.

D Result was obtained from the analysis of a dilution.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: SL1224

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	0.29 B	2.0	mg/kg	MCAWW 300.0A	F1K290000-223 11/30-12/01/11	1333223
		Work Order #: MPDQ81AA MB Lot-Sample #: F1K290000-223				
		Dilution Factor: 1				
Sulfate	ND	5.0	mg/kg	MCAWW 300.0A	F1K290000-224 11/30-12/01/11	1333224
		Work Order #: MPDRA1AA MB Lot-Sample #: F1K290000-224				
		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

General Chemistry

Client Lot #...: SL1224

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCNT</u> <u>RECVRY</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Chloride	20.0	20.2	mg/kg	101	MCAWW 300.0A	11/30-12/01/11	1333223
Work Order #: MPDQ81AC LCS Lot-Sample#: F1K290000-223							
Dilution Factor: 1							
Sulfate	80.0	76.1	mg/kg	95	MCAWW 300.0A	11/30-12/01/11	1333224
Work Order #: MPDRA1AC LCS Lot-Sample#: F1K290000-224							
Dilution Factor: 1							

NOTE (S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: SL1224
 Date Sampled...: 11/16/11

Date Received...: 11/21/11

Matrix.....: SOLID

Percent Moisture: 5.0

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	3.0	20.6	23.3	mg/kg	98	MCAWW 300.0A	11/30-12/01/11	1333223
			Work Order #...: MN6JD1CF		MS Lot-Sample #: F1K210441-001			
			Dilution Factor: 1					
Sulfate	379	824	1150 D	mg/kg	93	MCAWW 300.0A	11/30-12/01/11	1333224
			Work Order #...: MN6JD1CG		MS Lot-Sample #: F1K210441-001			
			Dilution Factor: 20					

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.
 D Result was obtained from the analysis of a dilution.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K210441

Work Order #...: MNOTK-SMP
MNOTK-DUP

Matrix.....: SOLID

Date Sampled...: 11/07/11

Date Received...: 11/12/11

% Moisture.....: 5.0

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Percent Moisture	5.0	5.2	%	5.3	(0-30)	SD Lot-Sample #: F1K140409-001 MCAWW 160.3 MOD	11/28-11/29/11	1332015

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K210441

Work Order #...: MN6JD-SMP
MN6JD-DUP

Matrix.....: SOLID

Date Sampled...: 11/16/11

Date Received...: 11/21/11

% Moisture.....: 3.0

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	3.0	3.3	mg/kg	8.7	(0-20)	SD Lot-Sample #: F1K210441-001 MCAWW 300.0A	11/30-12/01/11	1333223
			Dilution Factor: 1					
Sulfate	379 D	388 D	mg/kg	2.3	(0-20)	SD Lot-Sample #: F1K210441-001 MCAWW 300.0A	11/30-12/01/11	1333224
			Dilution Factor: 20					

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.

D Result was obtained from the analysis of a dilution.

FORM II

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150510-1
 Client Sample ID: B2H0T9

SDG: W06370
 Report No.: 49622
 COC No.: F11-146-139

Collection Date: 11/9/2011 1:05:00 PM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JG1AG			Report DB ID: MN2JG1ER		Orig Sa DB ID: 9MN2JG10		
HEXCHROME	1.75E+00			0.0E+00	1.55E-01	mg/kg	N/A	(11.3)	11/15/11 07:00 p		2.5012	
	1.97E+00		RPD	12.1		3.50E-01		N/A			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.

rptSTLRchDupV5.2 MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

.18.1 A2002

FORM II
BLANK RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06370
Report No. : 49622

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1319260	7196_CR6											
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/15/11 07:00 p		2.5	
						1.55E-01		N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC											
ALPHA	1.92E-01	U	1.5E+00	1.5E+00	2.88E+00	pCi/g	100%	0.07	11/29/11 02:23 p		0.0562	GPC22B
					1.29E+00	1.00E+01		0.25			g	
Batch: 1322058	9310_ALPHABETA_GPC											
BETA	1.62E+00	U	1.7E+00	1.7E+00	3.62E+00	pCi/g	100%	0.45	11/28/11 07:22 a		0.2043	GPC31B
					1.68E+00	1.50E+01		(1.9)			g	
No. of Results: 3			Comments:									

TestAmerica
rptSTL.RchBlank
V5.2.18.1 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.

FORM II
LCS RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06370
Report No. : 49622

Parameter	Result	Count 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: 1319260	7196_CR6													
HEXCHROME	1.95E+01			0.0E+00	1.55E-01	mg/kg		N/A	2.00E+01	98%	11/15/11 07:00 p	2.5036		
								Rec Limits:	80	120		g		
Batch: 1322057	9310_ALPHABETA_GPC													
ALPHA	8.73E+01		6.7E+00	2.3E+01	3.21E+00	pCi/g		100%	9.08E+01	9.18E-01	96%	11/29/11 02:23 p	0.05	GPC22C
								Rec Limits:	70	130	0.0		g	
Batch: 1322058	9310_ALPHABETA_GPC													
BETA	6.72E+01		5.4E+00	1.0E+01	3.71E+00	pCi/g		100%	6.73E+01	2.59E+00	100%	11/28/11 07:22 a	0.2023	GPC32A
								Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:												

FORM II

Date: 05-Dec-11

MATRIX SPIKE RESULTS

Lab Name: TestAmerica

SDG: W06370

Lot-Sample No.: J1K150510-1, B2H0T9

Report No. : 49622

Matrix: OTHERSOLI

Parameter	SpikeResult, Orig Rst	Count Qual 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: 1319260	Work Order: MN2JG1AE	Report DB ID: MN2JG1CW	Orig Sa DB ID: 9MN2JG10								
HEXCHROME	8.03E+00	0.0E+00	1.55E-01	mg/kg	N/A	77.88%	1.03E+01	11/15/11 07:00 p	2.5028	7196_CR6	
	1.97E+00								g		

Number of Results: 1

Comments:

TestAmerica RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V5.2.18.1 A2002

FORM II

Date: 08-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica

SDG: W06379

Collection Date: 11/16/2011 12:47:00 PM

Lot-Sample No.: J1K180451-1

Report No.: 49681

Received Date: 11/18/2011 11:35:00 AM

Client Sample ID: B2H0V0

COC No.: F11-146-140

Matrix: OTHERSOLI

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: 1322178	7196_CR6				Work Order: MN46D1AH	Report DB ID: MN46D1ER			Orig Sa DB ID: 9MN46D10			
HEXCHROME	1.19E+01			0.0E+00	1.55E-01	mg/kg	N/A	(76.7)	11/18/11 02:45 p		2.5018	
	1.12E+01		RPD	6.3		3.50E-01		N/A			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.

rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

.18.1 A2002

FORM II
BLANK RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06379
Report No. : 49681

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: 1322178 7196_CR6 Work Order: MN5CT1AA Report DB ID: MN5CT1AB												
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/18/11 02:45 p		2.5	
						1.55E-01		N/A			g	
Batch: 1325073 9310_ALPHABETA_GPC Work Order: MN56P2AA Report DB ID: MN56P2AB												
ALPHA	-1.88E-01	U	1.7E+00	1.7E+00	3.28E+00	pCi/g	100%	-0.06	11/28/11 02:41 p		0.0508	GPC22B
					1.48E+00	1.00E+01		-0.22			g	
Batch: 1325076 9310_ALPHABETA_GPC Work Order: MN56R1AA Report DB ID: MN56R1AB												
BETA	2.65E+00	U	1.9E+00	1.9E+00	3.79E+00	pCi/g	100%	0.7	11/28/11 09:17 a		0.2027	GPC32B
					1.76E+00	1.50E+01		(2.8)			g	

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchBlank 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.
V5.2.18.1 A2002

FORM II
LCS RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06379
Report No. : 49681

Parameter	Result	Count 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: 1322178	7196_CR6					Work Order: MN5CT1AC		Report DB ID: MN5CT1AS					
HEXCHROME	1.80E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		90%	11/18/11 02:45 p	2.5	
							Rec Limits:	80	120	-0.1		g	
Batch: 1325073	9310_ALPHABETA_GPC					Work Order: MN56P2AC		Report DB ID: MN56P2CS					
ALPHA	8.34E+01		6.7E+00	2.2E+01	4.00E+00	pCi/g	100%	9.04E+01	9.13E-01	92%	11/28/11 02:41 p	0.0505	GPC22C
							Rec Limits:	70	130	-0.1		g	
Batch: 1325076	9310_ALPHABETA_GPC					Work Order: MN56R1AC		Report DB ID: MN56R1CS					
BETA	6.95E+01		5.5E+00	1.1E+01	3.70E+00	pCi/g	100%	6.73E+01	2.59E+00	103%	11/28/11 09:17 a	0.2	GPC32C
							Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:											

FORM II
MATRIX SPIKE RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica

SDG: W06379

Lot-Sample No.: J1K180451-1, B2H0V0

Report No. : 49681

Matrix: OTHERSOLI

Parameter	SpikeResult, Orig Rst	Count Qual	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: 1322178	Work Order: MN46D1AG			Report DB ID: MN46D1CW		Orig Sa DB ID: 9MN46D10						
HEXCHROME	1.59E+01			0.0E+00	1.55E-01	mg/kg	N/A	155.98%	1.02E+01	11/18/11 02:45 p	2.5168	7196_CR6
	1.12E+01										g	

Number of Results: 1

Comments:

TestAmerica RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V5.2.18.1 A2002

Date: 30 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: Radiochemical - Sample Data Groups (SDGs) H4697, W06370 and W06379

INTRODUCTION

This memorandum presents the results of data validation for SDG H4697 prepared by Eberline Services and SDGs W06370 and W06379 prepared by TestAmerica Laboratories, Inc. 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
B2H0X8	11/10/11	Other Solids	C	Gross α , Gross β & Isotopic-Th
B2H0T9	11/09/11	Other Solids	C	Gross α & Gross β
B2H0V3	11/09/11	Other Solids	C	Gross α & Gross β
B2H0V4	11/09/11	Other Solids	C	Gross α & Gross β
B2H0X9	11/09/11	Other Solids	C	Gross α & Gross β
B2H0V0	11/16/11	Other Solids	C	Gross α & Gross β
B2H0V1	11/17/11	Other Solids	C	Gross α & Gross β
B2H0V2	11/16/11	Other Solids	C	Gross α & Gross β
B2H0V5	11/17/11	Other Solids	C	Gross α & Gross β

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 radiochemical soil/solid analysis.

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 exception. The gross beta result for equipment blank sample B2H0X9 was 16.6 pCi/g.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, 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.

Matrix Spike (MS) Samples

MS analyses are not required for the methods performed.

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 $\pm 30\%$. 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 SAP required detection limits (or $< 5X$ the MDA for analytes not listed in the SAP) with differences $< 2X$ the MDA no precision infraction occurred.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split results were acceptable.

- **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 were below the CRDLs.

- **Completeness**

SDGs H4697, W06370 and W06379 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: H4697, W06370, W06379	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 SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H4697

7845-001

B2H0X8

DATA SHEET

SDG <u>7845</u>	Client/Case no <u>MSA RICHLAND</u>	SDG <u>H4697</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 400858</u>	
Lab sample id <u>S111043-01</u>	Client sample id <u>B2H0X8</u>	
Dept sample id <u>7845-001</u>	Location/Matrix <u>183.7KE Concrete Sm 8</u> <u>SOLID</u>	
Received <u>11/16/11</u>	Collected/Weight <u>11/10/11 10:20</u> <u>122.7 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>F11-146-154</u> <u>F11-146</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	3.97	3.1	4.14	10.0	U	93A
Gross Beta	12587-47-2	8.45	3.8	5.65	15.0		93B
Thorium 228	14274-82-9	0.917	0.52	0.488	1.00		TH
Thorium 230	14269-63-7	-0.102	0.31	0.863	1.00	U	TH
Thorium 232	TH-232	0.814	0.41	0.389	1.00		TH

183 KE/KW Water Treatment Plant - Concrete

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 1:05:00 PM

Lot-Sample No.: J1K150510-1

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0T9

COC No.: F11-146-139

Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JG1AA		Report DB ID: 9MN2JG10					
HEXCHROME	1.97E+00			0.0E+00	1.55E-01	mg/kg	N/A	(12.7)	11/15/11 07:00 p		2.5036	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JG2AC		Report DB ID: 9MN2JG20					
ALPHA	2.59E-01	U	4.4E+00	4.4E+00	8.32E+00	pCi/g	100%	0.03	11/29/11 02:23 p		0.0508	GPC21A
							3.81E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JG1AD		Report DB ID: 9MN2JG10					
BETA	1.00E+01		2.9E+00	3.2E+00	4.60E+00	pCi/g	100%	(2.2)	11/28/11 06:27 a		0.2005	GPC31B
							2.14E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 9:22:00 AM

Lot-Sample No.: J1K150510-2

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0V3

COC No.: F11-146-143

Matrix: OTHERSOLI

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: 1319260	7196_CR6			Work Order: MN2JH1AA		Report DB ID: 9MN2JH10						
HEXCHROME	1.71E+00			0.0E+00	1.55E-01	mg/kg	N/A	(11.)	11/15/11 07:00 p		2.4996	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC			Work Order: MN2JH2AC		Report DB ID: 9MN2JH20						
ALPHA	-5.39E-02	U	4.5E+00	4.5E+00	8.57E+00	pCi/g	100%	-0.01	11/29/11 02:23 p		0.0508	GPC21C
							3.92E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC			Work Order: MN2JH1AD		Report DB ID: 9MN2JH10						
BETA	1.81E+01		3.6E+00	4.3E+00	4.59E+00	pCi/g	100%	(3.9)	11/28/11 06:27 a		0.2007	GPC32A
							2.13E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002MDC|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
07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 10:20:00 AM

Lot-Sample No.: J1K150510-3

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0V4

COC No.: F11-146-144

Matrix: OTHERSOLI

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: 1319260	7196_CR6				Work Order: MN2JJ1AA		Report DB ID: 9MN2JJ10					
HEXCHROME	3.97E+01			0.0E+00	1.55E-01	mg/kg	N/A	(256.3)	11/15/11 07:00 p		2.5027	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JJ2AC		Report DB ID: 9MN2JJ20					
ALPHA	3.36E+00	U	4.3E+00	4.4E+00	7.50E+00	pCi/g	100%	0.45	11/29/11 02:23 p		0.0509	GPC21D
							3.40E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JJ1AD		Report DB ID: 9MN2JJ10					
BETA	1.19E+01		3.1E+00	3.5E+00	4.53E+00	pCi/g	100%	(2.6)	11/28/11 06:27 a		0.2007	GPC32C
							2.10E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06370

Collection Date: 11/9/2011 8:30:00 AM

Lot-Sample No.: J1K150510-4

Report No.: 49622

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H0X9

COC No.: F11-146-155

Matrix: OTHERSOLI

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: 1319260	7196_CR6											
				Work Order: MN2JK1AA			Report DB ID: 9MN2JK10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/15/11 07:00 p		2.5084	
							1.55E-01	N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC											
				Work Order: MN2JK2AC			Report DB ID: 9MN2JK20					
ALPHA	6.39E+00	U	4.8E+00	5.1E+00	7.79E+00	pCi/g	100%	0.82	11/29/11 02:23 p		0.0502	GPC22A
							3.54E+00	1.00E+01			g	
Batch: 1322058	9310_ALPHABETA_GPC											
				Work Order: MN2JK1AD			Report DB ID: 9MN2JK10					
BETA	1.66E+01		3.6E+00	4.2E+00	5.20E+00	pCi/g	100%	(3.2)	11/28/11 06:27 a		0.2004	GPC32D
							2.43E+00	1.50E+01			g	

No. of Results: 3

Comments:

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002MDC|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
07/30/12

FORM I
SAMPLE RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica
Lot-Sample No.: J1K180451-1
Client Sample ID: B2H0V0

SDG: W06379
Report No. : 49681
COC No. : F11-146-140

Collection Date: 11/16/2011 12:47:00 PM
Received Date: 11/18/2011 11:35:00 AM
Matrix: OTHERSOLI

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: 1322178	7196_CR6				Work Order: MN46D1AA		Report DB ID: 9MN46D10					
HEXCHROME	1.12E+01			0.0E+00	1.55E-01	mg/kg	N/A	(72.)	11/18/11 02:45 p		2.513	
							1.55E-01	N/A			g	
Batch: 1325073	9310_ALPHABETA_GPC				Work Order: MN46D2AC		Report DB ID: 9MN46D20					
ALPHA	6.63E+00	U	4.4E+00	4.7E+00	6.89E+00	pCi/g	100%	0.96	11/28/11 02:41 p		0.0508	GPC21A
							3.10E+00	1.00E+01			g	
Batch: 1325076	9310_ALPHABETA_GPC				Work Order: MN46D1AD		Report DB ID: 9MN46D10					
BETA	1.44E+01		3.3E+00	3.8E+00	4.54E+00	pCi/g	100%	(3.2)	11/28/11 08:19 a		0.2002	GPC32C
							2.10E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I
SAMPLE RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica

SDG: W06379

Collection Date: 11/17/2011 11:34:00 AM

Lot-Sample No.: J1K180451-2

Report No.: 49681

Received Date: 11/18/2011 11:35:00 AM

Client Sample ID: B2H0V1

COC No.: F11-146-141

Matrix: OTHERSOLI

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/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1322178	7196_CR6			Work Order: MN46F1AA		Report DB ID: 9MN46F10						
HEXCHROME	3.33E+01			0.0E+00	1.55E-01	mg/kg	N/A	(215.1)	11/18/11 02:45 p		2.5021	
							1.55E-01	N/A			g	
Batch: 1325073	9310_ALPHABETA_GPC			Work Order: MN46F2AC		Report DB ID: 9MN46F20						
ALPHA	6.36E+00	U	4.3E+00	4.6E+00	6.66E+00	pCi/g	100%	0.95	11/28/11 02:41 p		0.0508	GPC21C
							2.97E+00	1.00E+01			g	
Batch: 1325076	9310_ALPHABETA_GPC			Work Order: MN46F1AD		Report DB ID: 9MN46F10						
BETA	1.69E+01		3.4E+00	4.0E+00	4.39E+00	pCi/g	100%	(3.9)	11/28/11 08:15 a		0.2008	GPC27A
							2.03E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I
SAMPLE RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica

SDG: W06379

Collection Date: 11/16/2011 11:14:00 AM

Lot-Sample No.: J1K180451-3

Report No.: 49681

Received Date: 11/18/2011 11:35:00 AM

Client Sample ID: B2H0V2

COC No.: F11-146-142

Matrix: OTHERSOLI

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: 1322178	7196_CR6				Work Order: MN46M1AA		Report DB ID: 9MN46M10					
HEXCHROME	4.99E+00			0.0E+00	1.55E-01	mg/kg	N/A	(32.2)	11/18/11 02:45 p		2.5029	
							1.55E-01	N/A			g	
Batch: 1325073	9310_ALPHABETA_GPC				Work Order: MN46M2AC		Report DB ID: 9MN46M20					
ALPHA	3.68E+00	U	3.7E+00	3.8E+00	6.20E+00	pCi/g	100%	0.59	11/28/11 02:41 p		0.0506	GPC21D
							2.75E+00	1.00E+01			g	
								(1.9)				
Batch: 1325076	9310_ALPHABETA_GPC				Work Order: MN46M1AD		Report DB ID: 9MN46M10					
BETA	1.41E+01		3.5E+00	3.9E+00	5.21E+00	pCi/g	100%	(2.7)	11/28/11 08:19 a		0.2003	GPC32D
							2.43E+00	1.50E+01			g	
								(7.2)				
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

FORM I

Date: 08-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06379

Collection Date: 11/17/2011 11:34:00 AM

Lot-Sample No.: J1K180451-4

Report No.: 49681

Received Date: 11/18/2011 11:35:00 AM

Client Sample ID: B2H0V5

COC No.: F11-146-145

Matrix: OTHERSOLI

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/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1322178	7196_CR6			Work Order: MN46T1AA		Report DB ID: 9MN46T10						
HEXCHROME	2.69E+01			0.0E+00	1.55E-01	mg/kg	N/A	(173.9)	11/18/11 02:45 p		2.5138	
							1.55E-01	N/A			g	
Batch: 1325073	9310_ALPHABETA_GPC			Work Order: MN46T2AC		Report DB ID: 9MN46T20						
ALPHA	-5.14E-01	U	4.5E+00	4.5E+00	8.63E+00	pCi/g	100%	-0.06	11/28/11 02:41 p		0.0509	GPC22A
							3.97E+00	1.00E+01			g	
								-0.23				
Batch: 1325076	9310_ALPHABETA_GPC			Work Order: MN46T1AD		Report DB ID: 9MN46T10						
BETA	1.55E+01		3.4E+00	4.0E+00	4.59E+00	pCi/g	100%	(3.4)	11/28/11 09:17 a		0.2008	GPC32A
							2.13E+00	1.50E+01			g	
								(7.8)				
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 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
07/30/12

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Eberline Analytical
Report S1-11-043-7845
December 5, 2011

CH2M Hill Plateau Remediation Company
SDG H4697

Case Narrative

Page 1 of 1

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4697 was composed of one solid sample designated under SAF No. F11-146 with a Project Designation of: 183 KE/KW Water Treatment Plant – Concrete.

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 Gross Alpha/Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Thorium 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."



Joseph Verville
Client Services Manager

12/5/11

Date

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-154	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869 (7845)	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 8		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-248		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR: 7954 0869 1296		
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)	PRESERVATION	None			
		HOLDING TIME	6 Months			
		TYPE OF CONTAINER	G/P			
		NO. OF CONTAINER(S)	1			
		VOLUME	120mL			
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H0X8	OTHER SOLID	NOV 10 2011	1030			✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1050	RECEIVED BY/STORED IN MOLLO9SSU +1	DATE/TIME NOV 10 2011 / 1050	Th-232 will only be analyzed if gross alpha comes back high; ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1040	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 15 2011 / 1040		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1230	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN P. MATAWAKAWA	DATE/TIME 11/16/11 0930		
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	



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

December 05, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 15, 2011
Number of Samples	:	Four (4)
Sample Type	:	Other Solid
SDG Number	:	W06370
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 15, 2011 four other solid samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H0T9	MN2JG	OTHER SOLID	11/15/11
B2H0V3	MN2JH	OTHER SOLID	11/15/11
B2H0V4	MN2JJ	OTHER SOLID	11/15/11
B2H0X9	MN2JK	OTHER SOLID	11/15/11

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
December 05, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

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

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The CRDL was not on the first count. The entire batch was re-counted for longer time and the CRDL was met. Except as noted, the LCS, batch blank, samples and sample duplicate (B2H0T9) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H0V3) results are within contractual requirements.

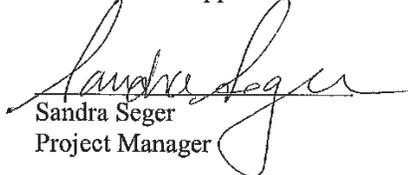
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H0T9) and sample matrix spike (B2H0T9) 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



NCM #: 10-19866 NCM Initiated By: Tom McGinnis Date Opened: 12/02/2011 Date Closed:	Classification: Deficiency Status: PMREVIEW Production Area: Environmental - Sep Tests: Alpha by GPC-Am Lot #'s (Sample #'s): J1K150510 (1,2,3,4), J1K180000 (57), QC Batches: 1322057,
Nonconformance: Batch Result Out of Limits Subcategory: MDA exceeds RDL	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Tom McGinnis	12/02/2011	The entire batch 1322057 was recounted for longer count time in order to meet the CRDL. All final batch results meet acceptance criteria.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Tom McGinnis	12/02/2011	The PM was notified of the batch deficiencies.

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
	<u>Response</u>	<u>Response Note</u>			

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
			This section not yet completed by QA.

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-139	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146		
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum L=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)	PRESERVATION		Cool~4C	None		
		HOLDING TIME		30 Days	6 Months		
		TYPE OF CONTAINER		G/P	G/P		
		NO. OF CONTAINER(S)		1	1		
		VOLUME		60mL	60mL		
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0T9 MN2JG	OTHER SOLID	NOV 09 2011	1305	✓	✓		

SDG# W06370
LOT# J1K150510
Report# 12/26/11 12/2/11 SKS 11/17/11



J1K150510

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young <i>[Signature]</i>	NOV 09 2011 / 1500	MG1109 SSU #1	NOV 09 2011 / 1500		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
MG1109 SSU #1	NOV 15 2011 / 1100	K.J. Young <i>[Signature]</i>	NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
K.J. Young <i>[Signature]</i>	NOV 15 2011 / 1435	Luis Velazquez <i>[Signature]</i>	NOV 15 2011 / 1435		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-143	PAGE 1 OF 1	
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/>	
SAMPLING LOCATION 183.7KE Concrete Sample 5		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146	DATA TURNAROUND 15 Days / 15 Days		
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. F11-146-143-241		ACTUAL SAMPLE DEPTH 0-1"	COA 302548E510		METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		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)		PRESERVATION	Cool~4C	None	SDG# W06378 LOT# JIK150510		
		HOLDING TIME	30 Days	6 Months				
		TYPE OF CONTAINER	G/P	G/P				
		NO. OF CONTAINER(S)	1	1				
		VOLUME	50mL	60mL				
		SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2H0V3 MWJH	OTHER SOLID	NOV 10 2011	0922	✓	✓			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};			
K.J. Young CHPRC	NOV 10 2011 / 1430	MOLICASSU #1	NOV 10 2011 / 1430				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
K.J. Young CHPRC	NOV 15 2011 / 1100	K.J. Young CHPRC	NOV 15 2011 / 1100				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
K.J. Young CHPRC	NOV 15 2011 / 1435	Lucas Velazquez	NOV 15 2011 / 1435				
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		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-144	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146		
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None	SDG # W06370 LOT # JTK150 SID	
SPECIAL HANDLING AND/OR STORAGE		HOLDING TIME	30 Days	6 Months			
		TYPE OF CONTAINER	G/P	G/P			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	60mL	60mL			
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
		SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0V4 MWJJJ	OTHER SOLID	NOV 10 2011	1020	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 10 2011 / 1028	RECEIVED BY/STORED IN M01109SSU#1	DATE/TIME NOV 10 2011 / 1028	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSU#1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN [Signature]	DATE/TIME NOV 15 2011 / 1435		
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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-155	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 9		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	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 L=Liquids DS=Drum S=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	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	60mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0X9 MN/JJK	OTHER SOLID	NOV 09 2011	0830	✓	✓

SDG# W04370
LOT# JIK150510

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 09 2011 / 0900	RECEIVED BY/STORED IN M01109 SSO #1	DATE/TIME NOV 09 2011 / 0900	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109 SSO #1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN Lucas Velazquez	DATE/TIME NOV 15 2011 / 1435		
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	



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

December 8, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-146
Date SDG Closed	:	November 18, 2011
Number of Samples	:	Four (4)
Sample Type	:	Other Solid
SDG Number	:	W06379
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 18, 2011 four other solid samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H0V0	MN46D	OTHER SOLID	11/18/11
B2H0V1	MN46F	OTHER SOLID	11/18/11
B2H0V2	MN46M	OTHER SOLID	11/18/11
B2H0V5	MN46T	OTHER SOLID	11/18/11

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
December 8, 2011

The requested analyses were:

- Gas Proportional Counting**
- Gross Alpha by method RL-GPC-001
- Gross Beta by method RL-GPC-001
- 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

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The analytical batch was recounted for a longer time to meet the CRDL. The LCS, batch blank, samples and sample duplicate (B2H0V0) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H0V1) results are within contractual requirements.

Chemical Analysis

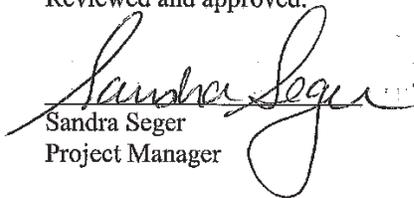
Hexavalent Chromium by EPA method 7196A

4 + 2QC

The matrix spike recovered high at 155.9%. The post digestive matrix spike recovered at 98.2% and the insoluble matrix spike recovered at 106.9%. Except as noted, the LCS, batch blank, samples, sample duplicate (B2H0V0), and sample matrix spike (B2H0V0) 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



NCM #: 10-19838 NCM Initiated By: Hooshang Rahavi Date Opened: 11/30/2011 Date Closed:	Classification: Anomaly Status: PMREVIEW Production Area: Classical Chemistry Tests: 7196A Lot #'s (Sample #'s): J1K180000 (178), J1K180451 (1,2,3,4), QC Batches: 1322178,
Nonconformance: QC data exceeded criteria Subcategory: MS/MSD accuracy and/or precision out of control	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Hooshang Rahavi	11/30/2011	The MS failed high at 155.9%. The insoluble MS recovered within limits at 106.9%. PDMS recovered at 98.2%.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Hooshang Rahavi	11/30/2011	Report data

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>



Clouseau Nonconformance Memo



NCM #: 10-19845 NCM Initiated By: Tom McGinnis Date Opened: 11/30/2011 Date Closed:	Classification: Deficiency Status: PMREVIEW Production Area: Environmental - Sep Tests: Alpha by GPC-Am Lot #'s (Sample #'s): J1K180451 (1,2,3,4), J1K210000 (73), QC Batches: 1325073,
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Tom McGinnis	11/30/2011	The entire batch 1325073 was recounted for a longer count time in order to meet the CRDL. Final batch results meet acceptance criteria.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Tom McGinnis	11/30/2011	The PM was notified of the batch deficiencies.

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-140	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 2		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		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)	PRESERVATION	Cool~4C	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	60mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0V0	OTHER SOLID	NOV 16 2011	1247	✓	✓

W06379
 J1K180451 M046D
 Due 12-28-11 RW/Vali



CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS ** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 16 2011 / 1410	RECEIVED BY/STORED IN M01109SSU*1	DATE/TIME NOV 16 2011 / 1410	
RELINQUISHED BY/REMOVED FROM M01109SSU*1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 / 0900	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 18 2011 / 1135	RECEIVED BY/STORED IN CHPRC	DATE/TIME NOV 18 2011 / 1135	
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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-141	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 3		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146		
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None		
		HOLDING TIME		30 Days	6 Months		
		TYPE OF CONTAINER		G/P	G/P		
		NO. OF CONTAINER(S)		1	1		
		VOLUME		60mL	60mL		
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0V1	OTHER SOLID	NOV 17 2011	1134	✓	✓		

W06379
JIK180451 M046F

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 17 2011 / 1440	RECEIVED BY/STORED IN MOLLOA SSO #1 CHPRC	DATE/TIME NOV 17 2011 / 1440	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLOA SSO #1 CHPRC	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 0900		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1135	RECEIVED BY/STORED IN Lucas Valenzuela CHPRC	DATE/TIME NOV 18 2011 / 1135		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-146-142	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Concrete Sample 4		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete		SAF NO. F11-146	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N507-24.1	ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		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)	PRESERVATION		Cool~4C	None
		HOLDING TIME		30 Days	6 Months
		TYPE OF CONTAINER		G/P	G/P
		NO. OF CONTAINER(S)		1	1
		VOLUME		60mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7195;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H0V2	OTHER SOLID	NOV 16 2011	1114	✓	✓

W06379
JULIS04S1
MNU46m

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young	NOV 16 2011 / 11410	MOLLO9SSU*1	NOV 16 2011 / 11410		
MOLLO9SSU*1	NOV 18 2011 / 0900	CHPRC	NOV 18 2011 / 0900		
K.J. Young	NOV 18 2011 / 1135	Lucas Velazquez	NOV 18 2011 / 1135		
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	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-146-145	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 9C AIR QUALITY <input type="checkbox"/>
SAMPLING LOCATION 183.7KE Concrete Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Concrete			SAF NO. F11-146	DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1"	COA 302548ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	None	
			HOLDING TIME		30 Days	6 Months	
			TYPE OF CONTAINER		G/P	G/P	
			NO. OF CONTAINER(S)		1	1	
			VOLUME		60mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H0V5	OTHER SOLID	NOV 17 2011	1134	✓	✓		

W06379
JIK180451 MARKET

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 17 2011 / 1440	RECEIVED BY/STORED IN M01109 SSU*1	DATE/TIME NOV 17 2011 / 1440	** In the event that there is limited sample material, the field NCOs are instructed to provide the minimum volume gram weight as listed on the Field Sampling Requirements portion of the SAF for all analyses except Special Studies. (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109 SSU*1	DATE/TIME NOV 18 2011 / 0900	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 18 2011 / 0900		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 18 2011 / 1135	RECEIVED BY/STORED IN Lance Williams	DATE/TIME NOV 18 2011 / 1135		
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	

Appendix 5

Data Validation Supporting Documentation

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Appendix B - Radiochemical Data Validation Checklist

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-019		
VALIDATOR: Eyda Hergenreder		LAB: Eberline, TestAmerica		DATE: 07-30-2012	
			SDG: H4697, W06370, W06379		
ANALYSES PERFORMED					
Gross Alpha/Beta X	Strontium-90	Technetium-99	Alpha Spectroscopy X	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium	C-14	I-129	
SAMPLES/MATRIX Other Solid samples SDG H4697: B2H0X8 SDG W06370: B2H0T9, B2H0V3, B2H0V4, B2H0X9 SDG W06379: B2H0V0, B2H0V1, B2H0V2, B2H0V5					

1. Completeness N/A
 Technical verification forms present? **Yes** No N/A
 Comments: None

2. Initial Calibration (Levels D, E) **X** 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

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments:

- 3. Continuing Calibration (Levels D, E).....~~X~~ 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)~~X~~ 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:

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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 B2H0X9: Gross beta 16.6 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

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

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: None

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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: None

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: None

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

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Appendix 6

Additional Documentation Requested By Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H4697

7845-003

Method Blank

METHOD BLANK

SDG <u>7845</u>	Client/Case no <u>MSA RICHLAND</u>	<u>SDG H4697</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>400858</u>	
Lab sample id <u>S111043-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7845-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F11-146</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.520	1.5	4.18	10.0	U	93A
Gross Beta	12587-47-2	-0.245	2.8	4.99	15.0	U	93B
Thorium 228	14274-82-9	0.124	0.17	0.317	1.00	U	TH
Thorium 230	14269-63-7	-0.207	0.33	0.702	1.00	U	TH
Thorium 232	TH-232	0	0.083	0.317	1.00	U	TH

QC-BLANK #80613

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4697

7845-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7845</u>	Client/Case no <u>MSA RICHLAND</u>	<u>SDG H4697</u>
Contact <u>N. Joseph Verville</u>	Contract <u>No. 400858</u>	
Lab sample id <u>S111043-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7845-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F11-146</u>	

ANALYTE	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2 σ ERR pCi/g	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	93.9	12	3.80	10.0	93A	101	4.0	93	66-134	80-120
Gross Beta	75.9	7.0	6.07	15.0	93B	85.8	3.4	88	69-131	80-120
Thorium 230	16.4	1.9	0.616	1.00	TH	18.9	0.76	87	81-119	80-120

QC-LCS #80612

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id <u>EBRLNE</u>
Protocol <u>F11-146</u>
Version <u>Ver 2.1</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>12/05/11</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4697

7845-004

B2HOX8

DUPLICATE

SDG <u>7845</u>	Client/Case no <u>MSA RICHLAND</u>	<u>SDG H4697</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>400858</u>	
<u>DUPLICATE</u>	<u>ORIGINAL</u>	
Lab sample id <u>S111043-04</u>	Lab sample id <u>S111043-01</u>	Client sample id <u>B2HOX8</u>
Dept sample id <u>7845-004</u>	Dept sample id <u>7845-001</u>	Location/Matrix <u>183.7KE Concrete Sm 8</u> <u>SOLID</u>
	Received <u>11/16/11</u>	Collected/Weight <u>11/10/11 10:20</u> <u>122.7 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>F11-146-154</u> <u>F11-146</u>

ANALYTE	DUPLICATE pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2 σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3 σ TOT	DER σ
Gross Alpha	10.6	4.3	3.37	10.0		93A	3.97	3.1	4.14	U	91	119	2.3
Gross Beta	11.8	3.8	5.17	15.0		93B	8.45	3.8	5.65		33	91	1.1
Thorium 228	0.353	0.21	0.270	1.00		TH	0.917	0.52	0.488		89	134	2.0
Thorium 230	-0.071	0.28	0.650	1.00	U	TH	-0.102	0.31	0.863	U	-		0.1
Thorium 232	0.458	0.28	0.270	1.00		TH	0.814	0.41	0.389		56	118	1.4

QC-DUP#1 80614

183 KE/KW Water Treatment Plant - Concrete

DUPLICATES

Page 1

SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol F11-146
 Version Ver 2.1
 Form DVD-DUP
 Version 3.06
 Report date 12/05/11

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4697

Test TH Matrix SOLID
 SDG 7845
 Contact N. Joseph Verville

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client MSA RICHLAND
 Contract No. 400858
 Contract SDG H4697

RESULTS

LAB	RAW	SUF-					
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 228	Thorium 230	Thorium 232	
Preparation batch 7321-066							
S111043-01		7845-001	B2HOX8	0.917	U	0.814	
S111043-02		7845-002	Lab Control Sample		ok		
S111043-03		7845-003	Method Blank	U	U	U	
S111043-04		7845-004	Duplicate (S111043-01)	ok	- U	ok	
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID		pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7321-066			2 σ prep error 8.0 %	Reference Lab Notebook 7321 pg. 066												
S111043-01		B2HOX8		0.863	0.250			64		159			21	11/30/11	12/01	SS-051
S111043-02		Lab Control Sample		0.616	0.250			97		159				11/30/11	12/01	SS-052
S111043-03		Method Blank		0.702	0.250			83		159				11/30/11	12/01	SS-053
S111043-04		Duplicate (S111043-01)		0.650	0.250			96		159			21	11/30/11	12/01	SS-054
Nominal values and limits from method				1.00	0.250			30-110		150						180

PROCEDURES REFERENCE THISO_IE_PLATE_AEA
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 1
 CP-900 Thorium in Water and Dissolved Solid Samples by
 Extraction Chromatography, rev 5
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES \pm 2 SD MDA 0.708 \pm 0.219
 FOR 4 SAMPLES YIELD 85 \pm 31

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol F11-146
 Version Ver 2.1
 Form DVD-LMS
 Version 3.06
 Report date 12/05/11

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4697

Test 93A Matrix SOLID
 SDG 7845
 Contact N. Joseph Verville

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
 GAS PROPORTIONAL COUNTING

Client MSA RICHLAND
 Contract No. 400858
 Contract SDG H4697

RESULTS

LAB RAW SUP-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Alpha

Preparation batch 7321-066

S111043-01	93	7845-001	B2H0X8	U
S111043-02	93	7845-002	Lab Control Sample	ok
S111043-03	93	7845-003	Method Blank	U
S111043-04	93	7845-004	Duplicate (S111043-01)	ok

Nominal values and limits from method RDLs (pCi/g) 10.0

METHOD PERFORMANCE

LAB RAW SUP- MDA ALIQ PREP DILU- RESID EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION mg % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7321-066 2σ prep error 20.6 % Reference Lab Notebook 7321 pg. 066

S111043-01	93	B2H0X8	4.14	0.100	60	100	13	11/23/11	11/23	GRB-101
S111043-02	93	Lab Control Sample	3.80	0.100	61	100		11/23/11	11/23	GRB-103
S111043-03	93	Method Blank	4.18	0.100	61	100		11/23/11	11/23	GRB-104
S111043-04	93	Duplicate (S111043-01)	3.37	0.100	60	100	13	11/23/11	11/23	GRB-109

Nominal values and limits from method 10.0 0.100 0-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
 rev 3

AVERAGES ± 2 SD MDA 3.87 ± 0.752
 FOR 4 SAMPLES RESIDUE 60 ± 1

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol F11-146
 Version Ver 2.1
 Form DVD-LMS
 Version 3.06
 Report date 12/05/11

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4697

Test 93B Matrix SOLID
 SDG 7845
 Contact N. Joseph Verville

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
 GAS PROPORTIONAL COUNTING

Client MSA RICHLAND
 Contract No. 400858
 Contract SDG H4697

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Beta

Preparation batch 7321-066

S111043-01	93	7845-001	B2H0X8	8.45
S111043-02	93	7845-002	Lab Control Sample	ok
S111043-03	93	7845-003	Method Blank	U
S111043-04	93	7845-004	Duplicate (S111043-01)	ok

Nominal values and limits from method RDLs (pCi/g) 15.0

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- RESID EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION mg % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7321-066 2σ prep error 20.6 % Reference Lab Notebook 7321 pg. 066

S111043-01	93	B2H0X8	5.65	0.100	60	100	13	11/23/11	11/23	GRB-101
S111043-02	93	Lab Control Sample	6.07	0.100	61	100	11/23/11	11/23	GRB-103	
S111043-03	93	Method Blank	4.99	0.100	61	100	11/23/11	11/23	GRB-104	
S111043-04	93	Duplicate (S111043-01)	5.17	0.100	60	100	13	11/23/11	11/23	GRB-109

Nominal values and limits from method 15.0 0.100 0-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
 rev 3

AVERAGES ± 2 SD MDA 5.47 ± 0.975
 FOR 4 SAMPLES RESIDUE 60 ± 1

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 13

Lab id EBRLNE
 Protocol F11-146
 Version Ver 2.1
 Form DVD-LMS
 Version 3.06
 Report date 12/05/11

FORM II

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150510-1
 Client Sample ID: B2H0T9 DUP

SDG: W06370
 Report No.: 49622
 COC No.: F11-146-139

Collection Date: 11/9/2011 1:05:00 PM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: OTHERSOLI

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: 1322057	9310_ALPHABETA_GPC				Work Order: MN2JG2AH	Report DB ID: MN2JG2HR			Orig Sa DB ID: 9MN2JG20			
ALPHA	3.85E+00	U	4.2E+00	4.3E+00	7.01E+00	pCi/g	100%	0.55	11/29/11 02:23 p		0.0509	GPC21B
	2.59E-01	U	RPD	174.8		1.00E+01		(1.8)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1 A2002 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

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150510-2
 Client Sample ID: B2H0V3 DUP

SDG: W06370
 Report No.: 49622
 COC No.: F11-146-143

Collection Date: 11/10/2011 9:22:00 AM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: OTHERSOLI

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: 1322058	9310_ALPHABETA_GPC				Work Order: MN2JH1AE	Report DB ID: MN2JH1ER			Orig Sa DB ID: 9MN2JH10			
BETA	1.29E+01		3.2E+00	3.6E+00	4.71E+00	pCi/g	100%	(2.7)	11/28/11 06:27 a		0.2009	GPC32B
	1.81E+01		RPD 33.3			1.50E+01		(7.2)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDCMDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1 A2002

FORM II
BLANK RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06370
Report No. : 49622

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1319260	7196_CR6											
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/15/11 07:00 p		2.5	
						1.55E-01		N/A			g	
Batch: 1322057	9310_ALPHABETA_GPC											
ALPHA	1.92E-01	U	1.5E+00	1.5E+00	2.88E+00	pCi/g	100%	0.07	11/29/11 02:23 p		0.0562	GPC22B
					1.29E+00	1.00E+01		0.25			g	
Batch: 1322058	9310_ALPHABETA_GPC											
BETA	1.62E+00	U	1.7E+00	1.7E+00	3.62E+00	pCi/g	100%	0.45	11/28/11 07:22 a		0.2043	GPC31B
					1.68E+00	1.50E+01		(1.9)			g	

No. of Results: 3 Comments:

FORM II
LCS RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06370
Report No. : 49622

Parameter	Result	Count 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: 1319260	7196_CR6					Work Order: MN2LX1AC		Report DB ID: MN2LX1AS					
HEXCHROME	1.95E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		98%	11/15/11 07:00 p	2.5036	
							Rec Limits:	80	120	0.0		g	
Batch: 1322057	9310_ALPHABETA_GPC					Work Order: MN4NM2AC		Report DB ID: MN4NM2CS					
ALPHA	8.73E+01		6.7E+00	2.3E+01	3.21E+00	pCi/g	100%	9.08E+01	9.18E-01	96%	11/29/11 02:23 p	0.05	GPC22C
							Rec Limits:	70	130	0.0		g	
Batch: 1322058	9310_ALPHABETA_GPC					Work Order: MN4NN1AC		Report DB ID: MN4NN1CS					
BETA	6.72E+01		5.4E+00	1.0E+01	3.71E+00	pCi/g	100%	6.73E+01	2.59E+00	100%	11/28/11 07:22 a	0.2023	GPC32A
							Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:											

FORM II

Date: 08-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K180451-1
 Client Sample ID: B2H0V0 DUP

SDG: W06379
 Report No. : 49681
 COC No. : F11-146-140

Collection Date: 11/16/2011 12:47:00 PM
 Received Date: 11/18/2011 11:35:00 AM
 Matrix: OTHERSOLI

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1325073	9310_ALPHABETA_GPC				Work Order: MN46D2AJ	Report DB ID: MN46D2JR			Orig Sa DB ID: 9MN46D20			
ALPHA	5.29E+00	U	4.4E+00	4.6E+00	7.15E+00	pCi/g	100%	0.74	11/28/11 02:41 p		0.0505	GPC21B
	6.63E+00	U		RPD 22.6		1.00E+01		(2.3)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1 A2002 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

Date: 08-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K180451-2
 Client Sample ID: B2H0V1 DUP

SDG: W06379
 Report No.: 49681
 COC No.: F11-146-141

Collection Date: 11/17/2011 11:34:00 AM
 Received Date: 11/18/2011 11:35:00 AM
 Matrix: OTHERSOLI

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: 1325076	9310_ALPHABETA_GPC				Work Order: MN46F1AE	Report DB ID: MN46F1ER			Orig Sa DB ID: 9MN46F10			
BETA	1.27E+01		3.3E+00	3.7E+00	5.06E+00	pCi/g	100%	(2.5)	11/28/11 08:15 a		0.2005	GPC27B
	1.69E+01		RPD 28.3			1.50E+01		(7.)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1 A2002

FORM II
BLANK RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06379
Report No. : 49681

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: 1322178												
7196_CR6	Work Order: MN5CT1AA Report DB ID: MN5CT1AB											
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/18/11 02:45 p		2.5	
						1.55E-01		N/A			g	
Batch: 1325073												
9310_ALPHABETA_GPC	Work Order: MN56P2AA Report DB ID: MN56P2AB											
ALPHA	-1.88E-01	U	1.7E+00	1.7E+00	3.28E+00	pCi/g	100%	-0.06	11/28/11 02:41 p		0.0508	GPC22B
					1.48E+00	1.00E+01		-0.22			g	
Batch: 1325076												
9310_ALPHABETA_GPC	Work Order: MN56R1AA Report DB ID: MN56R1AB											
BETA	2.65E+00	U	1.9E+00	1.9E+00	3.79E+00	pCi/g	100%	0.7	11/28/11 09:17 a		0.2027	GPC32B
					1.76E+00	1.50E+01		(2.8)			g	

No. of Results: 3 Comments:

FORM II
LCS RESULTS

Date: 08-Dec-11

Lab Name: TestAmerica
Matrix: OTHERSOLID

SDG: W06379
Report No. : 49681

Parameter	Result	Count 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: 1322178	7196_CR6					Work Order: MN5CT1AC		Report DB ID: MN5CT1AS					
HEXCHROME	1.80E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		90%	11/18/11 02:45 p	2.5	
							Rec Limits:	80	120	-0.1		g	
Batch: 1325073	9310_ALPHABETA_GPC					Work Order: MN56P2AC		Report DB ID: MN56P2CS					
ALPHA	8.34E+01		6.7E+00	2.2E+01	4.00E+00	pCi/g	100%	9.04E+01	9.13E-01	92%	11/28/11 02:41 p	0.0505	GPC22C
							Rec Limits:	70	130	-0.1		g	
Batch: 1325076	9310_ALPHABETA_GPC					Work Order: MN56R1AC		Report DB ID: MN56R1CS					
BETA	6.95E+01		5.5E+00	1.1E+01	3.70E+00	pCi/g	100%	6.73E+01	2.59E+00	103%	11/28/11 09:17 a	0.2	GPC32C
							Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:											