SAF-RC-059
Verification Sampling at 618-3 and 618-8
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (3) H9-02 MJP 05/03/06
INITIAL/DATE

COMMENTS:

SDG K0204 **SAF-RC-059** **EDMC**

Waste Site: 618-3 and 618-8

Date: 24 April 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Verification Sampling at 618-3 and 618-8
Subject: Inorganics - Data Package No. K0204-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0204 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11264	1/31/06	Soil	C	See note 1
J11265	1/31/06	Soil	C	See note 1
J11266	1/31/06	Soil	C	See note 1
J11267	1/31/06	Soil	C	See note 1
J11268	1/31/06	Soil	C	See note 1
J11269	1/31/06	Soil	C	See note 1
J11271	1/31/06	Soil	C	See note 1
J11272	1/31/06	Soil	C	See note 1
J11273	1/31/06	Soil	C	See note 1
J11274	1/31/06	Soil	C	See note 1
J11274	1/31/06	Soil	C	See note 1
J11276	1/31/06	Soil	C	See note 1

1 - ICP metals (6010B).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, June 2004). 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. Qualified Data Summary and 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 PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are

as follows: Soil samples must be analyzed within 28 days for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

Two equipment blanks (J11269 & J11276) were submitted for analysis. Barium and lead were detected in both equipment blanks. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are

qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

Two sets of field duplicates (J11264/J11265 & J11271/J11272) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicates were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K0204 was 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

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-2001-48, Rev. 1, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, June 2004.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0204	REVIEWER: TLI	PROJECT: 618-3 & 618-8	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0204																		
Sample Numbe		J11264		J11265		J11266		J11267		J11268		J11269		J11271		J11272			
Remarks				Duplicate								E. Blank				Duplicate			
Sample Date		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06			
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Silver	0.2	0.15	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U	0.15	U		
Arsenic	10	2.7		2.4		2.8		2.5		2.6		0.33	U	3.4		4.1			
Barium	2	76.5		75.5		64.3		71.3		62.7		1.3		81.3		79.4			
Cadmium	0.2	0.07	U	0.08	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U		
Chromium	1	8.9		8.4		8.4		9.7		8.9		0.16	U	10.4		11.7			
Lead	5	3.7		3.6		3.4		3.9		2.7		0.45		4.5		4.2			
Selenium	1	0.65		0.46		0.66		0.44		0.46		0.35	U	0.81		0.76			

Sample Number		J11273		J11274		J11275		J11276	
Remarks								E. Blank	
Sample Date		1/31/06		1/31/06		1/31/06		1/31/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.15	U	0.15	U	0.15	U	0.14	U
Arsenic	10	3.8		2.4		2.4		0.33	U
Barium	2	97.6		87.0		69.1		1.8	
Cadmium	0.2	0.07	U	0.07	U	0.07	U	0.07	U
Chromium	1	12.4		10.2		9.4		0.16	U
Lead	5	5.1		4.4		3.9		0.72	
Selenium	1	0.51		0.85		0.69		0.35	U

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11264	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	2.7	MG/KG	0.36	1.0
		Barium, Total	76.5	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	8.9	MG/KG	0.17	1.0
		Lead, Total	3.7	MG/KG	0.33	1.0
		Selenium, Total	0.65	MG/KG	0.38	1.0
-002	J11265	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	2.4	MG/KG	0.36	1.0
		Barium, Total	75.5	MG/KG	0.02	1.0
		Cadmium, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	8.4	MG/KG	0.17	1.0
		Lead, Total	3.6	MG/KG	0.33	1.0
		Selenium, Total	0.46	MG/KG	0.39	1.0
-003	J11266	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	2.8	MG/KG	0.35	1.0
		Barium, Total	64.3	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	8.4	MG/KG	0.16	1.0
		Lead, Total	3.4	MG/KG	0.32	1.0
		Selenium, Total	0.66	MG/KG	0.37	1.0
-004	J11267	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	2.5	MG/KG	0.35	1.0
		Barium, Total	71.3	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	9.7	MG/KG	0.17	1.0
		Lead, Total	3.9	MG/KG	0.32	1.0
		Selenium, Total	0.44	MG/KG	0.38	1.0

4/24/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J11268	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	2.6	MG/KG	0.35	1.0
		Barium, Total	62.7	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	8.9	MG/KG	0.16	1.0
		Lead, Total	2.7	MG/KG	0.32	1.0
		Selenium, Total	0.46	MG/KG	0.37	1.0
-006	J11269	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	1.3	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Lead, Total	0.45	MG/KG	0.30	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
-007	J11271	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	3.4	MG/KG	0.36	1.0
		Barium, Total	81.3	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	10.4	MG/KG	0.17	1.0
		Lead, Total	4.5	MG/KG	0.33	1.0
		Selenium, Total	0.81	MG/KG	0.38	1.0
-008	J11272	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	4.1	MG/KG	0.36	1.0
		Barium, Total	79.4	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	11.7	MG/KG	0.17	1.0
		Lead, Total	4.2	MG/KG	0.33	1.0
		Selenium, Total	0.76	MG/KG	0.38	1.0

4/24/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J11273	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	3.8	MG/KG	0.35	1.0
		Barium, Total	97.6	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	12.4	MG/KG	0.17	1.0
		Lead, Total	5.1	MG/KG	0.32	1.0
		Selenium, Total	0.51	MG/KG	0.37	1.0
-010	J11274	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	2.4	MG/KG	0.36	1.0
		Barium, Total	87.0	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	10.2	MG/KG	0.17	1.0
		Lead, Total	4.4	MG/KG	0.33	1.0
		Selenium, Total	0.85	MG/KG	0.38	1.0
-011	J11275	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	2.4	MG/KG	0.36	1.0
		Barium, Total	69.1	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	9.4	MG/KG	0.17	1.0
		Lead, Total	3.9	MG/KG	0.32	1.0
		Selenium, Total	0.69	MG/KG	0.38	1.0
-012	J11276	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	1.8	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Lead, Total	0.72	MG/KG	0.30	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0

2/24/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-059
LVL#: 0602L205
SDG/SAF#: K0204/RC-059

W.O.#: 11343-606-001-9999-00
Date Received: 02-02-06

METALS CASE NARRATIVE

1. This narrative covers the analyses of 12 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of CCV3 for Cadmium at 110.9%. There should be no significant impact to sample data as all sample results between CCV2 and CCV3 were less than the IDL for Cadmium.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Barium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and samples J11269 and J11276 read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

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10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

14. 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 Incorporated

2/14/06
Date

jjw/m02-205

LVLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-059-001	Page 1 of 1
Collector R Fahlberg/R Kerkow	Company Contact R Kerkow	Telephone No. 373-9985	Project Coordinator KESSNER, JH	Price Code 8K Air Quality ☐	Data Turnaround 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	Sampling Location 300-FF-2 618-3 Burial Ground		SAF No. RC-059		
Ice Chest No. SAWS-103	Field Logbook No. EL 1395-11	COA RG61832000	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060277		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Contaminated
Tie To 101XM6 < DOT Limits

Special Handling and/or Storage
None

SAMPLE ANALYSIS
SOG: K0204

Preservation	None	None											
Type of Container	aG	aG											
No. of Container(s)	1	1											
Volume	250mL	60mL											
	See item (1) in Special Instructions.	Isotopic Uranium, Total Uranium U23 2-1-06											
Sample No.	Matrix *	Sample Date	Sample Time										
J11264	SOIL	1-31-06	1230	X	X								
J11265	SOIL	1-31-06	1230	X	X								
J11266	SOIL	1-31-06	1240	X	X								
J11267	SOIL	1-31-06	1245	X	X								
J11268	SOIL	1-31-06	1250	X	X								

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1-31-06 1430	IB 3728	1-31-06 1430
IB, 3728	2-1-06 1000	R2 Stettler R.J. Stettler	2-1-06 1000
R2 Stettler R.J. Stettler	2-1-06 1500	Fed Ex	
Fed Ex	2-2-06 1010	D Smith	2-2-06 1010

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver)

Personnel not available to Relinquish samples from 3728
Ref # IB on 2/1/06

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-059-002	Page 1 of 1
Collector R Fahlberg/R Kerkow	Company Contact R Kerkow	Telephone No. 373-9985	Project Coordinator KESSNER, JH	Price Code 8 K Air Quality ☐	Data Turnaround 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	Sampling Location 300-FF-2 618-3 Burial Ground		SAF No. RC-059		
Ice Chest No. SAWS - 103	Field Logbook No. EL 1395-11	COA RG61832000	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060277		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially contaminated
Tie To J01xm6 < DOT Limits

Special Handling and/or Storage
None

Preservation	None	None								
Type of Container	aG	aG								
No. of Container(s)	1	1								
Volume	250mL	60mL								
SAMPLE ANALYSIS SDG K0204	See item (1) in Special Instructions.	Isotopic Uranium, Total Uranium RLS 2-1-06								

Sample No.	Matrix *	Sample Date	Sample Time									
J11269	SOIL	1-31-06	1010	X	X							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1-31-06 1430	IB 3728	1-31-06 1430
IB, 3728	2-1-06 1000	RZ Stoffer R.P. Stoffer	2-1-06 1000
RZ Stoffer R.P. Stoffer	2-1-06 1500	Fed EX	
Fed EX	2.2.06 0910	D.J. Smith	2.2.06 0910

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver)

Personnel not available to relinquish samples from 3728 Ref # IB on 2 / 1 / 06

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

LABORATORY SECTION	Received By	Title	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

0000078

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-059-004	Page 1 of 1
Collector R Fahlberg/R Kerkow	Company Contact R Kerkow	Telephone No. 373-9985	Project Coordinator KESSNER, JH	Price Code 8K Air Quality ☐	Data Turnaround 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	Sampling Location 300-FF-2 618-8 Burial Ground		SAF No. RC-059		
Ice Chest No. SAWS-103	Field Logbook No. EL 1395-11	COA RG61832000	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060277		Bill of Lading/Air Bill No.	See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOLOGICAL CONTAMINATION RL 1/31/06 < DOT Limits

Special Handling and/or Storage
NONE RL 1/31/06

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	250mL	60mL									
SAMPLE ANALYSIS SOG.K0204	See item (1) in Special Instructions.	Isotopic Uranium, Total Uranium RL 2-1-06									

Sample No.	Matrix *	Sample Date	Sample Time									
J11271	SOIL	1-31-06	1310	X	X							A1
J11272	SOIL	1-31-06	1310	X	X							A1
J11273	SOIL	1-31-06	1315	X	X							A2
J11274	SOIL	1-31-06	1320	X	X							A3
J11275	SOIL	1-31-06	1325	X	X							A4

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1430	Received By/Stored In	Date/Time 1430
K Fahlberg K Fahlberg	1-31-06	REF 1B, 3728	1-31-06
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time 1000
Ref 1B 3728	2-1-06 1000	R2 Steffler R2 Steffler	2-1-06
Relinquished By/Removed From	Date/Time 1500	Received By/Stored In	Date/Time
R2 Steffler R2 Steffler	2-1-06	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	2-2-06 1010	D Smith	2-2-06 1010
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]

Personnel not available to Relinquish samples from 3728 Ref # 1B on 2/1/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000019

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-059-005	Page 1 of 1
Collector R Fahlberg/R Kerkow	Company Contact R Kerkow	Telephone No. 373-9985	Project Coordinator KESSNER, JH	Price Code 8K Air Quality ☐	Data Turnaround 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	Sampling Location 300-FF-2 618-8 Burial Ground		SAF No. RC-059		
Ice Chest No. SAWS-103	Field Logbook No. EL 1395-11	COA RG61832000	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060277		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOLOGICAL CONTAMINATION per 1/31/06 < DOT Limits

Special Handling and/or Storage
NONE per 1/31/06

Preservation	None	None									
Type of Container	aG	G									
No. of Container(s)	1	1									
Volume	250mL	60mL									
SAMPLE ANALYSIS SDG: K0204	See item (1) in Special Instructions	Isotopic Uranium, Total Uranium R25 2-1-06									
Sample No.	Matrix *	Sample Date	Sample Time								
J11276	SOIL	1-31-06	1000	X	X						A-1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R Fahlberg	1-31-06 1430	REF 18, 3728	1-31-06 1430
Ref 18, 3728	2-1-06 1000	RZ Stettler RZ Stettler	2-1-06 1000
RZ Stettler RZ Stettler	2-1-06 1500	Fed Ex	
Fed Ex	6-2-06 1090	[illegible]	2-2-06 10910
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}

Personnel not available to relinquish samples from 3728 Ref # 18 on 2/1/06

Matrix *
S=Soil
SD=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

0200100

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 618-3 618-8			DATA PACKAGE: K0204		
VALIDATOR: TCJ		LAB: CLF		DATE: 4/22/06	
			SDG: K0204		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J11264	J11265	J11266	J11267	J11268	J11269
J11271	J11272	J11273	J11274	J11275	J11276
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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: Barium in eb

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: no PTs

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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:_____

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:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. 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: _____

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0083-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Barium, Total	0.09	MG/KG	0.02	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J11264	Silver, Total	5.0	0.15u	5.3	94.3	1.0
		Arsenic, Total	203	2.7	210	95.3	1.0
		Barium, Total	273	76.5	210	93.4	1.0
		Cadmium, Total	5.1	0.07u	5.3	96.2	1.0
		Chromium, Total	30.9	8.9	21.0	104.8	1.0
		Lead, Total	55.0	3.7	52.6	97.5	1.0
		Selenium, Total	194	0.65	210	91.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J11264	Silver, Total	0.15u	0.15u	NC	1.0
		Arsenic, Total	2.7	2.9	7.1	1.0
		Barium, Total	76.5	74.3	2.9	1.0
		Cadmium, Total	0.07u	0.07u	NC	1.0
		Chromium, Total	8.9	9.4	5.5	1.0
		Lead, Total	3.7	3.8	2.7	1.0
		Selenium, Total	0.65	0.49	27.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/13/06

CLIENT: TNUHANFORD RC-059 K0204 LVL LOT #: 0602L205

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0083-LC1	Silver, LCS	49.5	50.0	MG/KG	99.0
		Arsenic, LCS	972	1000	MG/KG	97.2
		Barium, LCS	496	500	MG/KG	99.2
		Cadmium, LCS	25.7	25.0	MG/KG	102.8
		Chromium, LCS	51.9	50.0	MG/KG	103.8
		Lead, LCS	256	250	MG/KG	102.6
		Selenium, LCS	932	1000	MG/KG	93.2

Date: 24 April 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Verication Sampling at 618-3 and 618-8
Subject: Radiochemistry - Data Package No. K0204-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0204 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11264	1/31/06	Soil	C	See note 1
J11265	1/31/06	Soil	C	See note 1
J11266	1/31/06	Soil	C	See note 1
J11267	1/31/06	Soil	C	See note 1
J11268	1/31/06	Soil	C	See note 1
J11269	1/31/06	Soil	C	See note 1
J11271	1/31/06	Soil	C	See note 1
J11272	1/31/06	Soil	C	See note 1
J11273	1/31/06	Soil	C	See note 1
J11274	1/31/06	Soil	C	See note 1
J11274	1/31/06	Soil	C	See note 1
J11276	1/31/06	Soil	C	See note 1

1 – Total uranium and isotopic uranium by alpha spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, June 2004). 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. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

Two equipment blanks (J11269 & J11276) were submitted for analysis. Total uranium was detected in both equipment blanks. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

Two sets of field duplicates (J11264/J11265 & J11271/J11272) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicates were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K0204 was 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

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-2001-48, Rev. 1, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, June 2004.

Appendix 1

Glossary of Data Reporting Qualifiers

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

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0204	REVIEWER: TLI	PROJECT: 618-3 & 618-8	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																	
Laboratory: EB																	
Case	SDG: K0204																
Sample Number		J11264		J11265		J11266		J11267		J11268		J11269		J11271		J11272	
Remarks				Duplicate								E. Blank				Duplicate	
Sample Date		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Uranium (ug/g)	1	1.21		1.34		1.61		1.33		1.51		0.449		1.28		1.13	
Uranium-233/234	1	0.447		0.612		0.523		0.677		0.523		0.190	U	0.540		0.736	
Uranium-235	1	0.036	U	0	U	0	U	0.039	U	0.090	U	0	U	0	U	0.081	U
Uranium-238	1	0.745		0.504		0.747		0.548		0.448		0.190	U	0.439		0.401	
Sample Number		J11273		J11274		J11275		J11276									
Remarks								E. Blank									
Sample Date		1/31/06		1/31/06		1/31/06		1/31/06									
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q								
Total Uranium (ug/g)	1	1.67		1.72		1.35		0.496									
Uranium-233/234	1	0.780		1.19		0.778		0.242	U								
Uranium-235	1	0.056	U	0.314	U	0.078	U	0.084	U								
Uranium-238	1	0.734		0.363	U	0.518		0.173	U								

0000140

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-001 J11264

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-01	Client sample id	J11264
Dept sample id	7721-001	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 12:30 81.1 g
% solids	92.3	Custody/SAF No	RC-059-001 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.21	0.14	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.447	0.24	0.23	1.0		U
Uranium 235	15117-96-1	0.036	0.072	0.28	1.0	U	U
Uranium 238	U-238	0.745	0.30	0.23	1.0		U

Verification Smplg. 618-3 & 618-8

4/26/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-002 J11265

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-02	Client sample id	J11265
Dept sample id	7721-002	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 12:30 93.1 g
% solids	93.5	Custody/SAF No	RC-059-001 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.34	0.15	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.612	0.29	0.28	1.0		U
Uranium 235	15117-96-1	0	0.087	0.33	1.0	U	U
Uranium 238	U-238	0.504	0.29	0.28	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-003 J11266

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-03	Client sample id	J11266
Dept sample id	7721-003	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 12:40 77.3 g
% solids	89.2	Custody/SAF No	RC-059-001 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.61	0.19	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.523	0.25	0.19	1.0		U
Uranium 235	15117-96-1	0	0.060	0.23	1.0	U	U
Uranium 238	U-238	0.747	0.26	0.19	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-004 J11267

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-04	Client sample id	J11267
Dept sample id	7721-004	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 12:45 99.3 g
% solids	93.4	Custody/SAF No	RC-059-001 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.33	0.15	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.677	0.33	0.25	1.0		U
Uranium 235	15117-96-1	0.039	0.078	0.30	1.0	U	U
Uranium 238	U-238	0.548	0.26	0.25	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-005 J11268

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-05	Client sample id	J11268
Dept sample id	7721-005	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 12:50 91.3 g
% solids	92.8	Custody/SAF No	RC-059-001 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.51	0.17	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.523	0.30	0.29	1.0		U
Uranium 235	15117-96-1	0.090	0.091	0.35	1.0	U	U
Uranium 238	U-238	0.448	0.23	0.29	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-006 J11269

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-06	Client sample id	J11269
Dept sample id	7721-006	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 10:10 106.3 g
% solids	99.5	Custody/SAF No	RC-059-002 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.449	0.051	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.190	0.15	0.29	1.0	U	U
Uranium 235	15117-96-1	0	0.092	0.35	1.0	U	U
Uranium 238	U-238	0.190	0.15	0.29	1.0	U	U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-007 J11271

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-07	Client sample id	J11271
Dept sample id	7721-007	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 13:10 77.9 g
% solids	90.2	Custody/SAF No	RC-059-004 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.28	0.15	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.540	0.27	0.26	1.0		U
Uranium 235	15117-96-1	0	0.082	0.31	1.0	U	U
Uranium 238	U-238	0.439	0.27	0.26	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-008 J11272

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-08	Client sample id	J11272
Dept sample id	7721-008	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 13:10 66.2 g
% solids	91.0	Custody/SAF No	RC-059-004 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.13	0.13	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.736	0.34	0.26	1.0		U
Uranium 235	15117-96-1	0.081	0.081	0.31	1.0	U	U
Uranium 238	U-238	0.401	0.20	0.26	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-009 J11273

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-09	Client sample id	J11273
Dept sample id	7721-009	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 13:15 99.0 g
% solids	92.1	Custody/SAF No	RC-059-004 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.67	0.19	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.780	0.38	0.35	1.0		U
Uranium 235	15117-96-1	0.056	0.11	0.42	1.0	U	U
Uranium 238	U-238	0.734	0.37	0.35	1.0		U

Verification Smplg. 618-3 & 618-8

4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-010 J11274

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-10	Client sample id	J11274
Dept sample id	7721-010	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 13:20 92.6 g
% solids	92.3	Custody/SAF No	RC-059-004 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.72	0.20	0.017	1.0		U_T
Uranium 233/234	U-233/234	1.19	0.53	0.40	1.0		U
Uranium 235	15117-96-1	0.314	0.25	0.48	1.0	U	U
Uranium 238	U-238	0.363	0.31	0.40	1.0	U	U

Verification Smplg. 618-3 & 618-8

R 4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-011 J11275

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-11	Client sample id	J11275
Dept sample id	7721-011	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 13:25 68.0 g
% solids	92.9	Custody/SAF No	RC-059-004 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.35	0.15	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.778	0.33	0.25	1.0		U
Uranium 235	15117-96-1	0.078	0.079	0.30	1.0	U	U
Uranium 238	U-238	0.518	0.26	0.25	1.0		U

Verification Smplg. 618-3 & 618-8

R 4/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-012 J11276

DATA SHEET

SDG	7721	Client/Case no	Hanford SDG K0204
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602009-12	Client sample id	J11276
Dept sample id	7721-012	Location/Matrix	300-FF-2 618-8 Burial Gr SOLID
Received	02/02/06	Collected/Weight	01/31/06 10:00 92.7 g
% solids	99.8	Custody/SAF No	RC-059-005 RC-059

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.496	0.057	0.017	1.0		U_T
Uranium 233/234	U-233/234	0.242	0.21	0.26	1.0	U	U
Uranium 235	15117-96-1	0.084	0.084	0.32	1.0	U	U
Uranium 238	U-238	0.173	0.14	0.26	1.0	U	U

Verification Smplg. 618-3 & 618-8

2/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0204 was composed of twelve soil samples designated under SAF No. RC-059 with a Project Designation of: Verification Sampling at 618-3 and 618-8. The Sampling Locations were 300-FF-2 618-3 Burial Ground, and 300-FF-2 618-8 Burial Ground.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on February 22, 2006.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

No problems were encountered during the course of the analyses.

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."

Mel Mann — 3/1/06

Melissa C. Mannion
Senior Program Manager

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-059-001	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
R Fahlberg/R Kerkow	R Kerkow 373-9985	KESSNER, JH	8K / 15 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
Verification Sampling at 618-3 and 618-8	300-FF-2 618-3 Burial Ground K0204 (7721)	RC-059	
Ice Chest No. ERC-96-069	**Field Logbook No.** EL 1395-11 / **COA** RG61832000	**Method of Shipment** Fed EX	
Shipped To EBERLINE SERVICES/LIONVILLE	**Offsite Property No.** A060241	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Contaminated < DOT limits
Tie To J01XM6

Special Handling and/or Storage
None

S2000025

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	250mL	60mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions. 125 2-1-06	Isotopic Uranium, Total Uranium									
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J11264	SOIL	1-31-06	1230	X	X						
J11265	SOIL	1-31-06	1230	X	X						
J11266	SOIL	1-31-06	1240	X	X						
J11267	SOIL	1-31-06	1245	X	X						
J11268	SOIL	1-31-06	1250	X	X						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1430 1-31-06	IB 3728	1430 1-31-06
IB 3728	2-1-06 1100	RZ Steffler R.J. Steffler	1100 2-1-06
RZ Steffler R.J. Steffler	1500 2-1-06	Fed Ex	
FED EX		Alex Kelleuy	2/2/06 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver)

Personnel not available to relinquish samples from 3728
Ref # IB on 2/1/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-059-002	Page 1 of 1

Collector R Fahlberg/R Kerkow	**Company Contact** R Kerkow **Telephone No.** 373-9985	**Project Coordinator** KESSNER, JH	**Price Code** 8K **Data Turnaround** 15 Days **Air Quality** ☐
Project Designation Verification Sampling at 618-3 and 618-8	**Sampling Location** 300-FF-2 618-3 Burial Ground KO204 (7721)	**SAF No.** RC-059	
Ice Chest No. ERC-96-069	**Field Logbook No.** EL 1395-11 **COA** RG61832000	**Method of Shipment** Fed EX	
Shipped To EBERLINE SERVICES/LIONVILLE	**Offsite Property No.** A060241	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially contaminated
Tie To J01xm6 < DOT Limits

Special Handling and/or Storage
None

920000

Preservation	None	None										
Type of Container	aG	aG										
No. of Container(s)	1	1										
Volume	250mL	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions. RLS 2-1-06	Isotopic Uranium; Total Uranium										
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**									
J11269	SOIL	1-31-06	1010	*	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1430	Received By/Stored In	Date/Time 1430
R. Fahlberg R. Fahlberg	1-31-06	IB 3728	1-31-06
Relinquished By/Removed From	Date/Time 1100	Received By/Stored In	Date/Time 1100
IB, 3728	2-1-06	RZ Stettler R.Z. Stettler	2-1-06
Relinquished By/Removed From	Date/Time 1500	Received By/Stored In	Date/Time
RZ Stettler R.Z. Stettler WCH	2-1-06	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FEDEX		Alex Kilkenny	2/2/06 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}

Personnel not available to relinquish samples from 3728
Ref # IB on 2 1 06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-059-004	Page 1 of 1
Collector R Fahlberg/R Kerkow	**Company Contact** R Kerkow **Telephone No.** 373-9985		**Project Coordinator** KESSNER, JH	**Price Code** 8K **Air Quality** ☐	**Data Turnaround** 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	**Sampling Location** 300-FF-2 618-8 Burial Ground K0204 (7721)		**SAF No.** RC-059		
Ice Chest No. ERC-96-069	**Field Logbook No.** EL 1395-11	**COA** RG61832000	**Method of Shipment** Fed EX		
Shipped To EBERLINE SERVICES, LIONVILLE	**Offsite Property No.** A060241		**Bill of Lading/Air Bill No.** See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOLOGICAL CONTAMINATION RL 1/31/06 < DOT Limits

Special Handling and/or Storage
NONE RL 1/31/06

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	250mL	60mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions	Isotopic Uranium, Total Uranium									

Sample No.	Matrix *	Sample Date	Sample Time									
✓ J11271	SOIL	1-31-06	1310	X	X							A1
✓ J11272	SOIL	1-31-06	1310	X	X							A1
✓ J11273	SOIL	1-31-06	1315	X	X							A2
✓ J11274	SOIL	1-31-06	1320	X	X							A3
✓ J11275	SOIL	1-31-06	1325	X	X							A4

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
K Fahlberg K Fahlberg	1430 1-31-06	REF IB, 3728	1430 1-31-06
Ref IB, 3728	2-1-06 1100	R2 Steffler R2 Steffler	1100 2-1-06
R2 Steffler R2 Steffler	1500 2-1-06	Fed Ex	
FEDEX		Alex Kellerhal	2/2/06 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver)

Personnel not available to relinquish samples from 3728 Ref # IB on 2/1/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-059-005	Page 1 of 1

Collector R Fahlberg/R Kerkow	**Company Contact** R Kerkow **Telephone No.** 373-9985	**Project Coordinator** KESSNER, JH	**Price Code** 8K **Data Turnaround** 15 Days
Project Designation Verification Sampling at 618-3 and 618-8	**Sampling Location** 300-FF-2 618-8 Burial Ground K0204 (7721)	**SAF No.** RC-059	**Air Quality** ☐
Ice Chest No. ERC-96-069	**Field Logbook No.** EL 1395-11 **COA** RG61832000	**Method of Shipment** Fed EX	
Shipped To SEBERLINE SERVICES DIONVILLE	**Offsite Property No.** A060241	**Bill of Lading/Air Bill No.** See OSPC.	

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOLOGICAL CONTAMINATION per 1/31/06 < DOT Limits

Special Handling and/or Storage
NONE per 1/31/06

Preservation	None	None										
Type of Container	G	G										
No. of Container(s)	1	1										
Volume	250mL	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Isotopic Uranium, Total Uranium										

Sample No.	Matrix *	Sample Date	Sample Time									
✓ J11276	SOIL	1-31-06	1000	X	X							A1
				R2S 2-1-06								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1-31-06 1430	REF 1B, 3728	1-31-06 1430
Ref 1B, 3728	2-1-06 1100	R2 Steffler R.J. Steffler	2-1-06 1100
R2 Steffler R.J. Steffler	2-1-06 1500	Fed Ex	
Fed Ex		Jeff Kennedy	2/2/06 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver)

Personnel not available to relinquish samples from 3728 Ref # 1B on 2/1/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: LBK - 3 + 8			DATA PACKAGE:	KQ204	
VALIDATOR: TCP		LAB: EB		DATE: 4/12/00	
			SDG:	KQ204	

ANALYSES PERFORMED

Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX

J11264	J11265	J11266	J11267	J11268	J11269
J11271	J11272	J11273	J11274	J11275	J11276

Soil

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

2. Initial Calibration (Levels D, E) ..... ☐ N/A

Instruments/detectors calibrated? ..... Yes No N/A

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

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

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

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

Comments: _____

_____

_____

_____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

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

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

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

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

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

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: Total uranium in both FBs

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:

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: _____

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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: _____

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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: _____

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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: _____

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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: no FS or PA

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12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments: _____

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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:_____

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Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-014 **Method Blank**

METHOD BLANK

SDG 7721	Client/Case no Hanford	SDG K0204	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R602009-14	Client sample id Method Blank		
Dept sample id 7721-014	Material/Matrix	SOLID	
	SAF No RC-059		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0	0.007	0.017	1.0	U	U_T
Uranium 233/234	U-233/234	0.035	0.070	0.27	1.0	U	U
Uranium 235	15117-96-1	0	0.085	0.32	1.0	U	U
Uranium 238	U-238	0	0.070	0.27	1.0	U	U

Verification Smplg. 618-3 & 618-8

QC-BLANK #55947

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-013

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7721
Contact Melissa C. Mannion

Client/Case no Hanford SDG K0204
Contract No. 630

Lab sample id R602009-13
Dept sample id 7721-013

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-059

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	36.8	4.3	0.17	1.0		U_T	36.2	1.4	102	77-123	80-120
Uranium 233/234	18.4	2.1	0.98	1.0		U	19.3	0.77	95	81-119	80-120
Uranium 235	14.6	1.8	0.26	1.0		U	15.7	0.63	93	80-120	80-120
Uranium 238	19.3	2.2	0.93	1.0		U	21.0	0.84	92	82-118	80-120

Verification Smplg. 618-3 & 618-8

QC-LCS #55946

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/22/06

000038

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0204

7721-015 J11266

DUPLICATE

SDG 7721 Client/Case no Hanford SDG K0204

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R602009-15	Lab sample id	R602009-03	Client sample id	J11266
Dept sample id	7721-015	Dept sample id	7721-003	Location/Matrix	300-FF-2 618-3 Burial Gr SOLID
		Received	02/02/06	Collected/Weight	01/31/06 12:40 77.3 g
% solids	89.2	% solids	89.2	Custody/SAF No	RC-059-001 RC-059

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Uranium (ug/g)	1.57	0.18	0.017	1.0		U_T	1.61	0.19	0.017		3	31	0.2
Uranium 233/234	0.870	0.34	0.21	1.0		U	0.523	0.25	0.19		50	92	1.6
Uranium 235	0	0.068	0.26	1.0	U	U	0	0.060	0.23	U	-		0
Uranium 238	0.730	0.29	0.21	1.0		U	0.747	0.26	0.19		2	80	0.1

Verification Smplg. 618-3 & 618-8

QC-DUP#3 55948

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/22/06