0067665

SAF-B02-063
100 K Area - Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) copies MJR 11/8/05
INITIAL/DATE

SDG H3328 **SAF-B02-063**

Waste Site: 116-K-2

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Date: 27 October 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100K Area – Full Protocol – Waste Site 116-K-2
Subject: Wet Chemistry - Data Package No. H3328-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3328-LLI 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
J03JW3	8/18/05	Soil	C	See note 1
J03JW5	8/18/05	Soil	C	See note 1
J03JW7	8/18/05	Soil	C	See note 1
J03JW8	8/18/05	Soil	C	See note 1
J03JW9	8/18/05	Soil	C	See note 1
J03J34	8/18/05	Soil	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). 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 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged

"J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **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

One set of field duplicate samples (J03JW8/J03JW9) was submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. H3328-LLI 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-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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: H3328	REVIEWER: TLI	Project: 116-K-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Carbon-14 Nickel-63	J	All	No MS analysis

* - 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	SDG: H3328												
Sample Number		J03JW3		J03JW5		J03JW7		J03JW8		J03JW9		J03W34	
Remarks										Duplicate			
Sample Date		8/18/05		8/18/05		8/18/05		8/18/05		8/18/05		8/18/05	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon-14	1	2.98	J	0.514	UJ	-0.596	UJ	-1.04	UJ	0.045	UJ	-0.518	UJ
Nckel-63	30	0.356	UJ	2.24	UJ	0.875	UJ	1.09	UJ	0.341	UJ	0.499	UJ
Total Strontium	1	-0.051	U	0.12	U	0.017	U	-0.063	U	0.060	U	0.180	
Uranium-233/234	1	0.360		0.613		0.421		0.691		0.776		0.542	
Uranium-235	1	0.087	U	0.137	U	0.032	U	0.025	U	0.088	U	0	U
Uranium-238	1	0.384		0.658		0.473		0.670		0.776		0.521	
Plutonium-238	1	0	U	0.071	U	0	U	0	U	0	U	0.037	U
Plutonium-239/240	1	0	U	0.036	U	0	U	0	U	0.053	U	0.037	U
Americium-241	1	0.199	U	0.208	U	0	U	0.035	U	0.133	U	-0.031	U
Potassium-40		13.7		7.28		9.13		7.20		7.42		7.52	
Cobalt 60	0.05	U	U	U	U	U	U	U	U	U	U	U	U
Cesium 137	0.05	U	U	0.146		U	U	0.167		0.148		U	U
Radium-226		0.497		0.355		0.374		0.291		0.297		0.328	
Radium-228		0.881		0.587		0.626		0.714		0.545		0.585	
Europium 152	0.1	U	U	U	U*	U	U*	U	U*	U	U*	U	U*
Europium 154	0.1	U	U*	U	U*	U	U*	U	U	U	U	U	U
Europium 155	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Thorium-228		0.646		0.702		0.831		0.622		0.638		0.669	
Thorium-232		0.881	J	0.587		0.626		0.714		0.545		0.585	
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U

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* - 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 H3328

R508162-01 J03JW3

DATA SHEET

SDG	7704	Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R508162-01	Client sample id	J03JW3
Dept sample id	7704-001	Location/Matrix	116K2 Trnch.Shal.Zn.Ver. SOLID
Received	08/20/05	Collected/Weight	08/18/05 08:40 2165 g
% solids	99.1	Custody/SAF No	B02-063-089 B02-063

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Carbon 14	14762-75-5	2.98	1.8	2.9	50	J	C
Nickel 63	13981-37-8	0.356	2.0	3.4	30	U J	NI_L
Total Strontium	SR-RAD	-0.051	0.10	0.23	1.0	U	SR
Uranium 233/234	U-233/234	0.360	0.19	0.18	1.0		U
Uranium 235	15117-96-1	0.087	0.12	0.22	1.0	U	U
Uranium 238	U-238	0.384	0.19	0.18	1.0		U
Plutonium 238	13981-16-3	0	0.070	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.070	0.27	1.0	U	PU
Americium 241	14596-10-2	0.199	0.20	0.38	1.0	U	AM
Potassium 40	13966-00-2	13.7	0.74	0.28			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.051	0.10	U	GAM
Radium 226	13982-63-3	0.497	0.062	0.059	0.10		GAM
Radium 228	15262-20-1	0.881	0.15	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.075	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.646	0.039	0.037			GAM
Thorium 232	TH-232	0.881	0.15	0.14			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

116-K-2 Trench Shallow Zone Verif.

10/27/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	09/15/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-02 J03JW5

DATA SHEET

SDG	7704	Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R508162-02	Client sample id	J03JW5
Dept sample id	7704-002	Location/Matrix	116K2 Trnch.Shal.Zn.Ver. SOLID
Received	08/20/05	Collected/Weight	08/18/05 09:10 2018 g
% solids	99.1	Custody/SAF No	B02-063-089 B02-063

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Carbon 14	14762-75-5	0.514	1.6	2.6	50	U J	C
Nickel 63	13981-37-8	2.24	2.0	3.3	30	U J	NI_L
Total Strontium	SR-RAD	0.012	0.12	0.24	1.0	U	SR
Uranium 233/234	U-233/234	0.613	0.23	0.17	1.0		U
Uranium 235	15117-96-1	0.137	0.11	0.21	1.0	U	U
Uranium 238	U-238	0.658	0.28	0.17	1.0		U
Plutonium 238	13981-16-3	0.071	0.072	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.036	0.071	0.27	1.0	U	PU
Americium 241	14596-10-2	0.208	0.17	0.32	1.0	U	AM
Potassium 40	13966-00-2	7.28	0.49	0.28			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	0.146	0.035	0.034	0.10		GAM
Radium 226	13982-63-3	0.355	0.088	0.069	0.10		GAM
Radium 228	15262-20-1	0.587	0.14	0.12	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.702	0.070	0.059			GAM
Thorium 232	TH-232	0.587	0.14	0.12			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM

116-K-2 Trench Shallow Zone Verif.

K 10/22/05

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Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-03 J03JW7

DATA SHEET

SDG	7704	Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R508162-03	Client sample id	J03JW7
Dept sample id	7704-003	Location/Matrix	116K2 Trnch.Shal.Zn.Ver. SOLID
Received	08/20/05	Collected/Weight	08/18/05 09:30 1672 g
% solids	99.4	Custody/SAF No	B02-063-089 B02-063

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS		TEST
Carbon 14	14762-75-5	-0.596	1.5	2.6	50	U	J	C
Nickel 63	13981-37-8	0.875	1.9	3.2	30	U	J	NI_L
Total Strontium	SR-RAD	0.017	0.11	0.23	1.0	U		SR
Uranium 233/234	U-233/234	0.421	0.21	0.20	1.0			U
Uranium 235	15117-96-1	0.032	0.064	0.24	1.0	U		U
Uranium 238	U-238	0.473	0.21	0.20	1.0			U
Plutonium 238	13981-16-3	0	0.080	0.30	1.0	U		PU
Plutonium 239/240	PU-239/240	0	0.080	0.30	1.0	U		PU
Americium 241	14596-10-2	0	0.070	0.27	1.0	U		AM
Potassium 40	13966-00-2	9.13	0.54	0.31				GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U		GAM
Cesium 137	10045-97-3	U		0.038	0.10	U		GAM
Radium 226	13982-63-3	0.374	0.083	0.071	0.10			GAM
Radium 228	15262-20-1	0.626	0.19	0.15	0.20			GAM
Europium 152	14683-23-9	U		0.12	0.10	U		GAM
Europium 154	15585-10-1	U		0.11	0.10	U		GAM
Europium 155	14391-16-3	U		0.13	0.10	U		GAM
Thorium 228	14274-82-9	0.831	0.074	0.064				GAM
Thorium 232	TH-232	0.626	0.19	0.15				GAM
Uranium 235	15117-96-1	U		0.19		U		GAM
Uranium 238	U-238	U		4.0		U		GAM
Americium 241	14596-10-2	U		0.19		U		GAM

116-K-2 Trench Shallow Zone Verif.

10/27/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-04 J03JW8

DATA SHEET

SDG	7704	Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R508162-04	Client sample id	J03JW8
Dept sample id	7704-004	Location/Matrix	116K2 Trnch.Shal.Zn.Ver. SOLID
Received	08/20/05	Collected/Weight	08/18/05 09:55 2041 g
% solids	98.5	Custody/SAF No	B02-063-089 B02-063

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS		TEST
Carbon 14	14762-75-5	-1.04	1.5	2.6	50	U	J	C
Nickel 63	13981-37-8	1.09	2.0	3.3	30	U	J	NI_L
Total Strontium	SR-RAD	-0.063	0.12	0.26	1.0	U		SR
Uranium 233/234	U-233/234	0.691	0.26	0.16	1.0			U
Uranium 235	15117-96-1	0.025	0.051	0.19	1.0	U		U
Uranium 238	U-238	0.670	0.26	0.16	1.0			U
Plutonium 238	13981-16-3	0	0.080	0.31	1.0	U		PU
Plutonium 239/240	PU-239/240	0	0.080	0.31	1.0	U		PU
Americium 241	14596-10-2	0.035	0.069	0.26	1.0	U		AM
Potassium 40	13966-00-2	7.20	0.51	0.33				GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U		GAM
Cesium 137	10045-97-3	0.167	0.036	0.032	0.10			GAM
Radium 226	13982-63-3	0.291	0.065	0.060	0.10			GAM
Radium 228	15262-20-1	0.714	0.17	0.13	0.20			GAM
Europium 152	14683-23-9	U		0.11	0.10	U		GAM
Europium 154	15585-10-1	U		0.10	0.10	U		GAM
Europium 155	14391-16-3	U		0.12	0.10	U		GAM
Thorium 228	14274-82-9	0.622	0.079	0.066				GAM
Thorium 232	TH-232	0.714	0.17	0.13				GAM
Uranium 235	15117-96-1	U		0.16		U		GAM
Uranium 238	U-238	U		3.7		U		GAM
Americium 241	14596-10-2	U		0.17		U		GAM

116-K-2 Trench Shallow Zone Verif.

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SAMPLE DELIVERY GROUP H3328

R508162-05 J03JW9

DATA SHEET

SDG	7704	Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R508162-05	Client sample id	J03JW9
Dept sample id	7704-005	Location/Matrix	116K2 Trnch.Shal.Zn.Ver. SOLID
Received	08/20/05	Collected/Weight	08/18/05 09:55 1960 g
% solids	98.6	Custody/SAF No	B02-063-089 B02-063

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS		TEST
Carbon 14	14762-75-5	0.045	1.6	2.8	50	U	J	C
Nickel 63	13981-37-8	0.341	1.9	3.2	30	U	J	NI_L
Total Strontium	SR-RAD	0.060	0.14	0.28	1.0	U		SR
Uranium 233/234	U-233/234	0.776	0.30	0.19	1.0			U
Uranium 235	15117-96-1	0.088	0.12	0.22	1.0	U		U
Uranium 238	U-238	0.776	0.30	0.19	1.0			U
Plutonium 238	13981-16-3	0	0.11	0.41	1.0	U		PU
Plutonium 239/240	PU-239/240	0.053	0.11	0.41	1.0	U		PU
Americium 241	14596-10-2	0.133	0.13	0.25	1.0	U		AM
Potassium 40	13966-00-2	7.42	0.45	0.21				GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U		GAM
Cesium 137	10045-97-3	0.148	0.033	0.030	0.10			GAM
Radium 226	13982-63-3	0.297	0.055	0.050	0.10			GAM
Radium 228	15262-20-1	0.545	0.16	0.13	0.20			GAM
Europium 152	14683-23-9	U		0.11	0.10	U		GAM
Europium 154	15585-10-1	U		0.098	0.10	U		GAM
Europium 155	14391-16-3	U		0.12	0.10	U		GAM
Thorium 228	14274-82-9	0.638	0.064	0.056				GAM
Thorium 232	TH-232	0.545	0.16	0.13				GAM
Uranium 235	15117-96-1	U		0.16		U		GAM
Uranium 238	U-238	U		3.5		U		GAM
Americium 241	14596-10-2	U		0.16		U		GAM

116-K-2 Trench Shallow Zone Verif.

10/22/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	09/15/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-06 J03W34

DATA SHEET

SDG	7704	Client/Case no	Hanford	SDG H3328	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R508162-06	Client sample id	J03W34		
Dept sample id	7704-006	Location/Matrix	116K2 Trn.Sh.Zn.Vr.Resmp	SOLID	
Received	08/20/05	Collected/Weight	08/18/05 08:50	2139 g	
% solids	99.1	Custody/SAF No	B02-063-092	B02-063	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS		TEST
Carbon 14	14762-75-5	-0.518	1.1	1.8	50	U	J	C
Nickel 63	13981-37-8	0.499	1.9	3.3	30	U	J	NI_L
Total Strontium	SR-RAD	0.180	0.11	0.18	1.0			SR
Uranium 233/234	U-233/234	0.542	0.22	0.17	1.0			U
Uranium 235	15117-96-1	0	0.053	0.20	1.0	U		U
Uranium 238	U-238	0.521	0.22	0.17	1.0			U
Plutonium 238	13981-16-3	0.037	0.074	0.28	1.0	U		PU
Plutonium 239/240	PU-239/240	0.037	0.074	0.28	1.0	U		PU
Americium 241	14596-10-2	-0.031	0.062	0.24	1.0	U		AM
Potassium 40	13966-00-2	7.52	0.48	0.26				GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U		GAM
Cesium 137	10045-97-3	U		0.034	0.10	U		GAM
Radium 226	13982-63-3	0.328	0.057	0.050	0.10			GAM
Radium 228	15262-20-1	0.585	0.16	0.13	0.20			GAM
Europium 152	14683-23-9	U		0.11	0.10	U		GAM
Europium 154	15585-10-1	U		0.10	0.10	U		GAM
Europium 155	14391-16-3	U		0.12	0.10	U		GAM
Thorium 228	14274-82-9	0.669	0.066	0.056				GAM
Thorium 232	TH-232	0.585	0.16	0.13				GAM
Uranium 235	15117-96-1	U		0.16		U		GAM
Uranium 238	U-238	U		3.5		U		GAM
Americium 241	14596-10-2	U		0.17		U		GAM

116-K-2 Trench Shallow Zone Verif.

10/27/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	09/15/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H3328 was composed of seven solid (soil) sample designated under SAF No. B02-063 with a Project Designation of: 100 K Area – Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-mail on August 31, 2005 and September 15, 2005.

2.0 ANALYSIS NOTES

2.1 Carbon-14 Analyses

The RDL for C-14 was 3 pCi/g. The C-14 result reported on August 31, 2005 for sample J03W34 (7704-06) was an error. Sample J03W34 was reanalyzed in duplicate; the reanalysis is reported herein. No other problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.7 Gamma Spectroscopy

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 9/19/5

Melissa C. Mannion 000018 **Date**
Senior Program Manager

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-063-089	Page 1 of 2
Collector: Coffman	Company Contact: R Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 2D; Data Turnaround: ~~21~~ 7 Days RTS 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif. H3328 (7704)		SAF No.: B02-063	Air Quality ☐
Ice Chest No.: ERC 01 041	Field Logbook No.: EL-1572-3	COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050305		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

000019

Preservation				Cool 4C	None	None	None					
Type of Container				G/P	G/P	G/P	G/P					
No. of Container(s)				1	1	1	1					
Volume				125mL	1000mL	60mL	60mL					
SAMPLE ANALYSIS				Chromium Hex - 7196 JP 81905	See item (1) in Special Instructions	Isotopic Plutonium; Isotopic Uranium; Americium-241	Strontium-89,90 – Total Sr; Nickel-63; Carbon-14					
Sample No.	Matrix *	Sample Date	Sample Time									
~~J03JW2~~	~~SOIL~~											
J03JW3	SOIL	8/18/05	0840	X	X	X	X					
~~J03JW4~~	~~SOIL~~											
J03JW5	SOIL	8/18/05	0910	X	X	X	X					
~~J03JW6~~	~~SOIL~~											

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: RTCOFFMAN / RTCoffman	Date/Time: 1445 8/18/05	Received By/Stored In: REFER #1A, 3728	Date/Time: 1445 8/18/05
Relinquished By/Removed From: ~~SJGALE~~ REF1A 3728	Date/Time: 0800 81905	Received By/Stored In: SJGALE	Date/Time: 81905 0800
Relinquished By/Removed From: SJGALE	Date/Time: 81905 0800 ERC	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 08/20/05	Received By/Stored In: [illegible]	Date/Time: 08/20/05 12:30
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) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to Relinquish samples from 3728 Ref # 1A on 8/19/05

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-063-089	Page 2 of 2

Collector: Coffman	Company Contact: R Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 2D — Data Turnaround: ~~21~~ 7 Days RTC 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif. H3328 (7704)	SAF No.: B02-063	Air Quality ☐
Ice Chest No.: ERC 01 041	Field Logbook No.: EL-1572-3 — COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050305	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

000020

Preservation				Cool 4C	None	None	None					
Type of Container				G/P	G/P	G/P	G/P					
No. of Container(s)				1	1	1	1					
Volume				125mL	1000mL	60mL	60mL					
SAMPLE ANALYSIS				Chromium Hex 7196 8/19/05	See item (1) in Special Instructions.	Isotopic Plutonium, Isotopic Uranium, Americium-241	Strontium-89,90 – Total Sr, Nickel-63; Carbon-14					
Sample No.	Matrix *	Sample Date	Sample Time									
J03JW7	SOIL	8/18/05	0930	X	X	X	X					B6
J03JW8	SOIL	8/18/05	0955	X	X	X	X					B7
J03JW9	SOIL	8/18/05	0955	X	X	X	X				D	B8 7 RTC 8/15/05
~~J03JX0~~	~~SOIL~~											~~B8~~

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: RT COFFMAN / RT Coffman	Date/Time: 1445 8/18/05	Received By/Stored In: REFER #1A 3728	Date/Time: 1445 8/18/05
Relinquished By/Removed From: REFIA 3728	Date/Time: 81905 0800	Received By/Stored In: SJGALE	Date/Time: 81905 0800
Relinquished By/Removed From: SJGALE	Date/Time: 81905 0800 ERC	Received By/Stored In: FEDEX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 08/20/05	Received By/Stored In: RFM	Date/Time: 08/20/05 2:30
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) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to relinquish samples from 3728 Ref #1A on 8/19/05

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-063-092	Page 1 of 1

Collector: Coffman	Company Contact: R Coffman — Telephone No.: 528-6409 H3328	Project Coordinator: KESSNER, JH	Price Code: 2D — Data Turnaround: ~~21~~ Days 7 DAYS RTS 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif. Resample A3 (7704)	SAF No.: B02-063	Air Quality ☐
Ice Chest No.: ERC 01041	Field Logbook No.: EL-1572-3 — COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: AC50 305	Bill of Lading/Air Bill No.: 3EE 05PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

Preservation	Cool 4C	None	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	125mL	1000mL	60mL	60mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Isotopic Plutonium; Isotopic Uranium; Americium-241	Strontium-89,90 -- Total Sr; Nickel-63; Carbon-14							

Sample No.	Matrix *	Sample Date	Sample Time										
J03W34	SOIL	8/18/05	0850	X	X	X	X			S-	A3	Resample	

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman	1445 8/18/05	REFER 1A, 3728	1445 8/18/05
Ref 1A 3728	8/19/05 0800	SLothlerk	8/19/05 0800
SLothlerk	8/19/05 0800 ERC	FEDEX	
FEDEX	08/20/05	FEM	08/20/05 12:30

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Personnel not available to Relinquish samples from 3728 Ref # 1A on 8/19/05

Matrix *

S=Soil
SE=Sediment
SO=Solid
SJ=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 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 116-K-2			DATA PACKAGE: H3324		
VALIDATOR: JLJ		LAB:		DATE: 10/22/03	
			SDG: H3325		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium	Ely	Ni-63	
SAMPLES/MATRIX					
J03JW3	~~J03J~~	J03JW5	~~J03J~~	J03JW7	J03JW8
J03JW9	J03W34				
					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: no FB

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: _____

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: _____

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: no Ni-63 or C-14 MS - J all

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: _____

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 PAS

12. Holding Times (All levels)

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

Comments: _____

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: 14 aw

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-08 **Method Blank**

METHOD BLANK

SDG	7704	Client/Case no	Hanford		SDG H3328
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R508162-08	Client sample id	Method Blank		
Dept sample id	7704-008	Material/Matrix			SOLID
		SAF No	B02-063		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	0.263	1.7	2.9	50	U	C
Nickel 63	13981-37-8	2.40	1.9	3.0	30	U	NI_L
Total Strontium	SR-RAD	-0.065	0.11	0.24	1.0	U	SR
Uranium 233/234	U-233/234	0	0.065	0.25	1.0	U	U
Uranium 235	15117-96-1	0	0.078	0.30	1.0	U	U
Uranium 238	U-238	0.065	0.065	0.25	1.0	U	U
Plutonium 238	13981-16-3	0	0.059	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0.178	0.12	0.23	1.0	U	PU
Americium 241	14596-10-2	0.006	0.049	0.068	1.0	U	AM
Potassium 40	13966-00-2	U		0.24		U	GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.10	U	GAM
Radium 226	13982-63-3	U		0.025	0.10	U	GAM
Radium 228	15262-20-1	U		0.055	0.20	U	GAM
Europium 152	14683-23-9	U		0.028	0.10	U	GAM
Europium 154	15585-10-1	U		0.039	0.10	U	GAM
Europium 155	14391-16-3	U		0.035	0.10	U	GAM
Thorium 228	14274-82-9	U		0.017		U	GAM
Thorium 232	TH-232	U		0.055		U	GAM
Uranium 235	15117-96-1	U		0.054		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Americium 241	14596-10-2	U		0.085		U	GAM

116-K-2 Trench Shallow Zone Verif.

QC-BLANK #54129

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-11 **Method Blank**

METHOD BLANK

SDG	7704	Client/Case no	Hanford	SDG H3328	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R508162-11	Client sample id	Method Blank		
Dept sample id	7704-011	Material/Matrix		SOLID	
		SAF No	B02-063		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	-0.058	1.3	2.0	50	U	C

116-K-2 Trench Shallow Zone Verif.

QC-BLANK #54240

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7704
Contact Melissa C. Mannion

Client/Case no Hanford SDG H3328
Contract No. 630

Lab sample id R508162-07
Dept sample id 7704-007

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B02-063

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
Carbon 14	1240	11	2.7	50		C	1280	51	97	84-116	80-120
Nickel 63	272	6.9	2.7	30		NI_L	270	11	101	83-117	80-120
Total Strontium	11.5	0.51	0.19	1.0		SR	11.0	0.44	104	82-118	80-120
Uranium 233/234	19.5	2.9	1.4	1.0		U	19.3	0.77	101	75-125	80-120
Uranium 235	17.6	2.7	0.44	1.0		U	15.7	0.63	112	72-128	80-120
Uranium 238	21.3	3.0	1.4	1.0		U	21.0	0.84	101	76-124	80-120
Plutonium 238	25.6	2.8	0.26	1.0		PU	26.4	1.1	97	81-119	80-120
Plutonium 239/240	29.9	3.2	0.26	1.0		PU	29.0	1.2	103	81-119	80-120
Americium 241	23.2	1.0	0.059	1.0		AM	22.4	0.90	104	88-112	80-120
Cobalt 60	0.633	0.055	0.028	0.050		GAM	0.603	0.024	105	72-128	80-120
Cesium 137	0.602	0.047	0.037	0.10		GAM	0.601	0.024	100	74-126	80-120

116-K-2 Trench Shallow Zone Verif.

QC-LCS #54128

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 09/15/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-10

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7704

Contact Melissa C. Mannion

Client/Case no Hanford SDG H3328

Contract No. 630

Lab sample id R508162-10

Dept sample id 7704-010

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B02-063

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
Carbon 14	1300	7.7	1.9	50		C	1280	51	102	84-116	80-120

`116-K-2 Trench Shallow Zone Verif.

QC-LCS #54239

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 09/15/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-09 J03JW3

DUPLICATE

SDG 7704		Client/Case no Hanford	SDG H3328
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R508162-09	Lab sample id R508162-01	Client sample id J03JW3	
Dept sample id 7704-009	Dept sample id 7704-001	Location/Matrix 116K2 Trnch.Shal.Zn.Ver.	SOLID
	Received 08/20/05	Collected/Weight 08/18/05 08:40	2165 g
% solids 99.1	% solids 99.1	Custody/SAF No B02-063-089	B02-063

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	PROT LIMIT
Carbon 14	-0.043	1.6	2.6	50	U	C	2.98	1.8	2.9		200	241	
Nickel 63	0.812	2.0	3.3	30	U	NI_L	0.356	2.0	3.4	U	-		
Total Strontium	-0.075	0.11	0.23	1.0	U	SR	-0.051	0.10	0.23	U	-		
Uranium 233/234	0.490	0.25	0.23	1.0		U	0.360	0.19	0.18		31	111	
Uranium 235	0.037	0.074	0.28	1.0	U	U	0.087	0.12	0.22	U	-		
Uranium 238	0.552	0.25	0.23	1.0		U	0.384	0.19	0.18		36	101	
Plutonium 238	0	0.070	0.27	1.0	U	PU	0	0.070	0.27	U	-		
Plutonium 239/240	0	0.070	0.27	1.0	U	PU	0	0.070	0.27	U	-		
Americium 241	0.033	0.067	0.26	1.0	U	AM	0.199	0.20	0.38	U	-		
Potassium 40	13.1	0.65	0.27			GAM	13.7	0.74	0.28		4	34	
Cobalt 60	U		0.031	0.050	U	GAM	U		0.032	U	-		
Cesium 137	0.029	0.019	0.025	0.10		GAM	U		0.051	U	55	207	
Radium 226	0.497	0.060	0.057	0.10		GAM	0.497	0.062	0.059		0	41	
Radium 228	0.772	0.13	0.13	0.20		GAM	0.881	0.15	0.14		13	48	
Europium 152	U		0.071	0.10	U	GAM	U		0.075	U	-		
Europium 154	U		0.11	0.10	U	GAM	U		0.11	U	-		
Europium 155	U		0.098	0.10	U	GAM	U		0.11	U	-		
Thorium 228	0.801	0.055	0.056			GAM	0.646	0.039	0.037		21	35	
Thorium 232	0.772	0.13	0.13			GAM	0.881	0.15	0.14		13	48	
Uranium 235	U		0.13		U	GAM	U		0.15	U	-		
Uranium 238	U		3.7		U	GAM	U		4.1	U	-		
Americium 241	U		0.24		U	GAM	U		0.27	U	-		

116-K-2 Trench Shallow Zone Verif.

QC-DUP#1 54130

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 09/15/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3328

R508162-12 J03W34

DUPLICATE

SDG	7704			Client/Case no	Hanford SDG H3328
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R508162-12	Lab sample id	R508162-06	Client sample id	J03W34
Dept sample id	7704-012	Dept sample id	7704-006	Location/Matrix	116K2 Trn.Sh.Zn.Vr.Resmp SOLID
		Received	08/20/05	Collected/Weight	08/18/05 08:50 2139 g
% solids	99.1	% solids	99.1	Custody/SAF No	B02-063-092 B02-063

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	PROT LIMIT
Carbon 14	-0.353	1.0	1.7	50	U	C	-0.518	1.1	1.8	U	-		

116-K-2 Trench Shallow Zone Verif.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	09/15/05

Date: 27 October 2005
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100K Area – Full Protocol – Waste Site 116-K-2
Subject: Radiohemistry - Data Package No. H3328-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3328-EB 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
J03JW3	8/18/05	Soil	C	See note 1
J03JW5	8/18/05	Soil	C	See note 1
J03JW7	8/18/05	Soil	C	See note 1
J03JW8	8/18/05	Soil	C	See note 1
J03JW9	8/18/05	Soil	C	See note 1
J03J34	8/18/05	Soil	C	See note 1

1 – Carbon-14, Nickel-63, total strontium, alpha spectroscopy and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). 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

No equipment blanks were submitted for analysis.

- **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

No field duplicates were submitted for analysis.

- **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. H3328 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-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3328	REVIEWER: TLI	Project: 116-K-2	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: LLI	SDG: H3328												
Sample Number		J03JW3		J03JW5		J03JW7		J03JW8		J03JW9		J03W34	
Remarks										Duplicate			
Sample Date		8/18/05		8/18/05		8/18/05		8/18/05		8/18/05		8/18/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.25		0.20	U	0.20	U	0.20	U	0.20	U	0.22	

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 08/25/05

CLIENT: TNU-HANFORD B02-063

LVL LOT #: 0508L206

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03JW3	% Solids	99.1	%	0.01	1.0
		Chromium VI	0.25	MG/KG	0.20	1.0
-002	J03JW5	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-003	J03JW7	% Solids	99.4	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-004	J03JW8	% Solids	98.5	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-005	J03JW9	% Solids	98.5	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-006	J03W34	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.20	1.0

10/22/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-063 H3328
LVL#: 0508L206

W.O.#: 11343-606-001-9999-00
Date Received: 08-20-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

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

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 LvLI's sample acceptance policy.

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analysis for Chromium VI was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry 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.

12 Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9.1.2005
Date

njp\i08-206

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

0305L204

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-063-089	Page 1 of 2

Collector: Coffman	Company Contact: R Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 2D — Data Turnaround: ~~21~~ 7 Days RTC 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif.	SAF No.: B02-063	Air Quality ☐
Ice Chest No.: AFS04 005	Field Logbook No.: EL-1572-3 — COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050355	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	1000mL	60mL	60mL							
SAMPLE ANALYSIS SDG# H3328	Chromium Hex - 7196	See item (1) in Special Instructions	Isotopic Plutonium; Isotopic Uranium; Americium-241	Strontium-89,90 -- Total Sr; Nickel-63; Carbon-14							

Sample No.	Matrix *	Sample Date	Sample Time										
~~J03JW2~~	~~SOIL~~												
J03JW3	SOIL	8/18/05	0840	X	X	X	X						
~~J03JW4~~	~~SOIL~~												
J03JW5	SOIL	8/18/05	0910	X	X	X	X						
~~J03JW6~~	~~SOIL~~												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman	1445 8/18/05	Roger #1A, 3728	1445 8/18/05
~~SJ Gale~~ REF 1A 3728	0800 8/19/05	SJ Gale	0800 8/19/05
SJ Gale	0800 8/19/05	FED EX	
Fed Ex	8/20/05 1010		8/20/05 1010

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

SDG# H3328

Personnel not available to Relinquish samples from 3728 Ref # 1A on 8/19/05

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 (03/01/2002)

0000133878

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-063-089	Page 2 of 2
Collector: Coffman	Company Contact: R Coffman; Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 2D; Data Turnaround: ~~21~~ Days 7 RTC 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif.	SAF No.: B02-063	Air Quality ☐
Ice Chest No.: AFS04 005	Field Logbook No.: EL-1572-3; COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050 355	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

Preservation	Cool 4C	None	None	None	1/A 81905						
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	1000mL	60mL	60mL							
SAMPLE ANALYSIS SDG# H3328	Chromium Hex - 7196	See item (1) in Special Instructions.	Isotopic Plutonium, Isotopic Uranium, Americium-241	Strontium-89,90 – Total Sr, Nickel-63; Carbon-14							

Sample No.	Matrix *	Sample Date	Sample Time										
J03JW7	SOIL	8/18/05	0930	X	X	X	X						B6
J03JW8	SOIL	8/18/05	0955	X	X	X	X						B7
J03JW9	SOIL	8/18/05	0955	X	X	X	X					D	B8 7
J03JX0	SOIL												B8

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman	8/18/05 1445	REFER # 1A 3728	8/18/05 1445
REFIA 3728	81905 0800	S Gale	81905 0800
S Gale	81905 0800	FEDEX	
FedEx	8/22/05 1010	V. Hernandez	8/22/05 1010

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

SDG# H3328

Personnel not available to relinquish samples from 3728 Ref #1A on 8/19/05

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 (03/01/2002)

000017

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-063-092	Page 1 of 1

Collector: Coffman	Company Contact: R Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 2D — Data Turnaround: ~~21~~ Days 7 DAYS RTC 8/18/05
Project Designation: 100 K Area - Full Protocol	Sampling Location: 116-K-2 Trench Shallow Zone Verif. Resample A3	SAF No.: B02-063	Air Quality ☐
Ice Chest No.: AFS 04 005	Field Logbook No.: EL-1572-3 — COA: R116K22000	Method of Shipment: FEDEX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050 355	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

4 DEGREES COOL

Preservation	Cool 4C	None	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	125mL	1000mL	60mL	60mL							
SAMPLE ANALYSIS SDG# H3328	Chromium Hex - 7196	See item (1) in Special Instructions.	Isotopic Plutonium, Isotopic Uranium, Americium-241	Strontium-89,90 – Total Sr; Nickel-63; Carbon-14							
Sample No.	Matrix *	Sample Date	Sample Time								
J03W34	SOIL	8/18/05	0850	X	X	X	X			S-A3	RESAMPLE

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: R Coffman / R Coffman 8/18/05	Date/Time 1445	Received By/Stored In: REFER 1A, 3728 8/18/05	Date/Time 1445
Relinquished By/Removed From: REF 1A 3728 8/19/05 0800	Date/Time	Received By/Stored In: S Gallegos 8/19/05 0800	Date/Time
Relinquished By/Removed From: S Gallegos 8/19/05 0800	Date/Time ERC	Received By/Stored In: FED EX	Date/Time
Relinquished By/Removed From: FED EX 5/20/05 1010	Date/Time	Received By/Stored In: [illegible] 5/20/05 1010	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

SDG# H3328

Personnel not available to Relinquish samples from 3728 Ref # 1A on 8/18/05

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 (03/01/2002)

000045

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	116-K-2		DATA PACKAGE:	H3328	
VALIDATOR:	TLI	LAB: EP		DATE: 10/25/05	
			SDG:	H3328	

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX			
J03JW3	J03JW5	J03JW7	J03JW8
J03JW9	J03W34		
			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)

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:

GENERAL CHEMISTRY 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: no FB

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

Spike samples analyzed? ..... Yes No N/A

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

Sike 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: no PAS

GENERAL CHEMISTRY 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. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/25/05

CLIENT: TNU-HANFORD B02-063

LVL LOT #: 0508L206

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI056-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/25/05

CLIENT: TNU-HANFORD B02-063 LVL LOT #: 0508L206

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J03JW3	Soluble Chromium VI	4.1	0.25	4.0	94.5	1.0
		Insoluble Chromium VI	1340	0.25	1160	115.5	100
BLANK10	05LVI056-MB1	Soluble Chromium VI	4.0	0.20u	4.0	99.3	1.0
		Insoluble Chromium VI	1380	0.20u	1220	113.6	100