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SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt H4-21 (2 copies)

COMMENTS:

SDG K1168 SAF-RC-075

Waste Site: 100-D-56

RECEIVED
JUN 12 2008
EDMC

Date: 27 May 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds and Remaining Sites – Soil Full Protocol - Waste Site 100-D-56
Subject: Inorganic - Data Package No. K1168-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1168 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
J16DM1	3/25/08	Soil	C	See note 1
J16DM2	3/25/08	Soil	C	See note 1
J16DM3	3/25/08	Soil	C	See note 1
J16DM4	3/25/08	Soil	C	See note 1
J16DM5	3/25/08	Soil	C	See note 1
J16DM8	3/25/08	Soil	C	See note 1
J16DM9	3/25/08	Soil	C	See note 1
J16DN0	3/25/08	Soil	C	See note 1
J16DN1	3/25/08	Soil	C	See note 1
J16DN2	3/25/08	Soil	C	See note 1
J16DN1	3/25/08	Soil	C	See note 1
J16DN3	3/25/08	Soil	C	See note 1
J16DN4	3/25/08	Soil	C	See note 1
J16DP4	3/25/08	Soil	C	See note 1
J16DP6	3/25/08	Soil	C	See note 1
J16DR2	3/25/08	Soil	C	See note 1
J16DR3	3/25/08	Soil	C	See note 1
J16DR4	3/25/08	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, Rev. 0, December 2001). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY 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 mercury and 6 months 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

One field blank (J16DM1) was submitted for analysis. Barium, beryllium, chromium, manganese, nickel, lead and zinc were detected in the equipment blank. 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 75% to 125%. 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 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits, all antimony (59%) results were qualified as estimates and flagged "J".

All other 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 35%, 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 Duplicates

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K1168 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

The following minor deficiency was noted:

- Due to a matrix spike recovery outside QC limits, all antimony (59%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH 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: K1168	REVIEWER: ELR	Project: 100-D-56	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery

* - 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

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

(ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
01	J16DM1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	0.43 u	MG/KG	0.43	1.0
		Boron, Total	0.43 u	MG/KG	0.43	1.0
		Barium, Total	1.1	MG/KG	0.09	1.0
		Beryllium, Total	0.11	MG/KG	0.04	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.17 u	MG/KG	0.17	1.0
		Chromium, Total	0.18	MG/KG	0.17	1.0
		Copper, Total	0.17 u	MG/KG	0.17	1.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	3.8	MG/KG	0.03	1.0
		Molybdenum, Total	0.26 u	MG/KG	0.26	1.0
		Nickel, Total	0.23	MG/KG	0.17	1.0
		Lead, Total	0.50	MG/KG	0.26	1.0
		Antimony, Total	0.26 uJ	MG/KG	0.26	1.0
		Selenium, Total	0.51 u	MG/KG	0.51	1.0
		Vanadium, Total	0.12 u	MG/KG	0.12	1.0
		Zinc, Total	2.6	MG/KG	0.51	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
02	J16DM2	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Arsenic, Total	2.6	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	58.6	MG/KG	0.26	3.0
		Beryllium, Total	0.41	MG/KG	0.13	3.0
		Cadmium, Total	0.13 u	MG/KG	0.13	3.0
		Cobalt, Total	5.9	MG/KG	0.52	3.0
		Chromium, Total	11.2	MG/KG	0.52	3.0
		Copper, Total	12.2	MG/KG	0.52	3.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Manganese, Total	258	MG/KG	0.10	3.0
		Molybdenum, Total	0.79 u	MG/KG	0.79	3.0
		Nickel, Total	11.4	MG/KG	0.52	3.0
		Lead, Total	5.5	MG/KG	0.79	3.0
		Antimony, Total	0.79 uJ	MG/KG	0.79	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	37.1	MG/KG	0.37	3.0
		Zinc, Total	36.0	MG/KG	1.6	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

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

PLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
03	J16DM3	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Arsenic, Total	2.7	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	53.4	MG/KG	0.27	3.0
		Beryllium, Total	0.44	MG/KG	0.14	3.0
		Cadmium, Total	0.14 u	MG/KG	0.14	3.0
		Cobalt, Total	6.2	MG/KG	0.54	3.0
		Chromium, Total	10.2	MG/KG	0.54	3.0
		Copper, Total	12.4	MG/KG	0.54	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	287	MG/KG	0.11	3.0
		Molybdenum, Total	0.81 u	MG/KG	0.81	3.0
		Nickel, Total	10.6	MG/KG	0.54	3.0
		Lead, Total	2.9	MG/KG	0.81	3.0
		Antimony, Total	0.81 uJ	MG/KG	0.81	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	41.4	MG/KG	0.38	3.0
		Zinc, Total	34.7	MG/KG	1.6	3.0

5/27/08

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MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
04	J16DM4	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Arsenic, Total	1.8	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	57.2	MG/KG	0.27	3.0
		Beryllium, Total	0.52	MG/KG	0.13	3.0
		Cadmium, Total	0.13 u	MG/KG	0.13	3.0
		Cobalt, Total	7.6	MG/KG	0.53	3.0
		Chromium, Total	7.3	MG/KG	0.53	3.0
		Copper, Total	12.4	MG/KG	0.53	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	291	MG/KG	0.11	3.0
		Molybdenum, Total	0.80 u	MG/KG	0.80	3.0
		Nickel, Total	9.3	MG/KG	0.53	3.0
		Lead, Total	2.6	MG/KG	0.80	3.0
		Antimony, Total	0.80 uJ	MG/KG	0.80	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	51.9	MG/KG	0.37	3.0
		Zinc, Total	36.4	MG/KG	1.6	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

IPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
)5	J16DM5	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Arsenic, Total	2.7	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	55.4	MG/KG	0.27	3.0
		Beryllium, Total	0.39	MG/KG	0.13	3.0
		Cadmium, Total	0.14	MG/KG	0.13	3.0
		Cobalt, Total	6.4	MG/KG	0.54	3.0
		Chromium, Total	10.3	MG/KG	0.54	3.0
		Copper, Total	13.6	MG/KG	0.54	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	267	MG/KG	0.11	3.0
		Molybdenum, Total	0.81 u	MG/KG	0.81	3.0
		Nickel, Total	11.8	MG/KG	0.54	3.0
		Lead, Total	2.7	MG/KG	0.81	3.0
		Antimony, Total	0.81 uJ	MG/KG	0.81	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	39.1	MG/KG	0.38	3.0
		Zinc, Total	32.9	MG/KG	1.6	3.0

5/22/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
06	J16DM8	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Arsenic, Total	1.4	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	62.1	MG/KG	0.27	3.0
		Beryllium, Total	0.48	MG/KG	0.14	3.0
		Cadmium, Total	0.14 u	MG/KG	0.14	3.0
		Cobalt, Total	7.2	MG/KG	0.54	3.0
		Chromium, Total	9.0	MG/KG	0.54	3.0
		Copper, Total	13.4	MG/KG	0.54	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	284	MG/KG	0.11	3.0
		Molybdenum, Total	0.81 u	MG/KG	0.81	3.0
		Nickel, Total	10.0	MG/KG	0.54	3.0
		Lead, Total	5.1	MG/KG	0.81	3.0
		Antimony, Total	0.81 uJ	MG/KG	0.81	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	47.0	MG/KG	0.38	3.0
		Zinc, Total	41.2	MG/KG	1.6	3.0

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Lionville Laboratory, Inc.

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MPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
07	J16DM9	Silver, Total	0.26	u	MG/KG	0.26	3.0
		Arsenic, Total	1.7		MG/KG	1.3	3.0
		Boron, Total	1.3	u	MG/KG	1.3	3.0
		Barium, Total	49.0		MG/KG	0.26	3.0
		Beryllium, Total	0.43		MG/KG	0.13	3.0
		Cadmium, Total	0.13	u	MG/KG	0.13	3.0
		Cobalt, Total	6.5		MG/KG	0.51	3.0
		Chromium, Total	8.8		MG/KG	0.51	3.0
		Copper, Total	13.6		MG/KG	0.51	3.0
		Mercury, Total	0.01	u	MG/KG	0.01	1.0
		Manganese, Total	256		MG/KG	0.10	3.0
		Molybdenum, Total	0.77	u	MG/KG	0.77	3.0
		Nickel, Total	9.5		MG/KG	0.51	3.0
		Lead, Total	3.3		MG/KG	0.77	3.0
		Antimony, Total	0.77	u J	MG/KG	0.77	3.0
		Selenium, Total	1.5	u	MG/KG	1.5	3.0
		Vanadium, Total	40.6		MG/KG	0.36	3.0
		Zinc, Total	37.2		MG/KG	1.5	3.0

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
08	J16DN0	Silver, Total	0.28 u	MG/KG	0.28	3.0
		Arsenic, Total	1.6	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	53.5	MG/KG	0.28	3.0
		Beryllium, Total	0.55	MG/KG	0.14	3.0
		Cadmium, Total	0.17	MG/KG	0.14	3.0
		Cobalt, Total	8.0	MG/KG	0.56	3.0
		Chromium, Total	7.9	MG/KG	0.56	3.0
		Copper, Total	13.7	MG/KG	0.56	3.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Manganese, Total	283	MG/KG	0.11	3.0
		Molybdenum, Total	0.84 u	MG/KG	0.84	3.0
		Nickel, Total	9.3	MG/KG	0.56	3.0
		Lead, Total	2.4	MG/KG	0.84	3.0
		Antimony, Total	0.84 uJ	MG/KG	0.84	3.0
		Selenium, Total	1.7	MG/KG	1.7	3.0
		Vanadium, Total	56.8	MG/KG	0.39	3.0
		Zinc, Total	40.2	MG/KG	1.7	3.0

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MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
09	J16DN1	Silver, Total	0.25 u	MG/KG	0.25	3.0
		Arsenic, Total	2.6	MG/KG	1.3	3.0
		Boron, Total	1.5	MG/KG	1.3	3.0
		Barium, Total	59.6	MG/KG	0.25	3.0
		Beryllium, Total	0.53	MG/KG	0.13	3.0
		Cadmium, Total	0.20	MG/KG	0.13	3.0
		Cobalt, Total	7.4	MG/KG	0.51	3.0
		Chromium, Total	8.4	MG/KG	0.51	3.0
		Copper, Total	14.0	MG/KG	0.51	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	278	MG/KG	0.10	3.0
		Molybdenum, Total	0.76 u	MG/KG	0.76	3.0
		Nickel, Total	9.5	MG/KG	0.51	3.0
		Lead, Total	3.7	MG/KG	0.76	3.0
		Antimony, Total	0.76 uJ	MG/KG	0.76	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Vanadium, Total	50.6	MG/KG	0.36	3.0
		Zinc, Total	43.1	MG/KG	1.5	3.0

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
10	J16DN2	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Arsenic, Total	2.8	MG/KG	1.3	3.0
		Boron, Total	1.6	MG/KG	1.3	3.0
		Barium, Total	62.8	MG/KG	0.26	3.0
		Beryllium, Total	0.51	MG/KG	0.13	3.0
		Cadmium, Total	0.18	MG/KG	0.13	3.0
		Cobalt, Total	7.2	MG/KG	0.52	3.0
		Chromium, Total	8.8	MG/KG	0.52	3.0
		Copper, Total	16.5	MG/KG	0.52	3.0
		Mercury, Total	0.01	MG/KG	0.009	1.0
		Manganese, Total	282	MG/KG	0.10	3.0
		Molybdenum, Total	0.78 u	MG/KG	0.78	3.0
		Nickel, Total	10.8	MG/KG	0.52	3.0
		Lead, Total	4.5	MG/KG	0.78	3.0
		Antimony, Total	0.78 uJ	MG/KG	0.78	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	45.3	MG/KG	0.36	3.0
		Zinc, Total	44.2	MG/KG	1.6	3.0

5/27/08

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
11	J16DN3	Silver, Total	0.28 u	MG/KG	0.28	3.0
		Arsenic, Total	2.5	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	63.4	MG/KG	0.28	3.0
		Beryllium, Total	0.50	MG/KG	0.14	3.0
		Cadmium, Total	0.26	MG/KG	0.14	3.0
		Cobalt, Total	7.5	MG/KG	0.56	3.0
		Chromium, Total	9.8	MG/KG	0.56	3.0
		Copper, Total	14.8	MG/KG	0.56	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	307	MG/KG	0.11	3.0
		Molybdenum, Total	0.83 u	MG/KG	0.83	3.0
		Nickel, Total	10.0	MG/KG	0.56	3.0
		Lead, Total	4.0	MG/KG	0.83	3.0
		Antimony, Total	0.83 u J	MG/KG	0.83	3.0
		Selenium, Total	1.7 u	MG/KG	1.7	3.0
		Vanadium, Total	49.6	MG/KG	0.39	3.0
		Zinc, Total	85.7	MG/KG	1.7	3.0

K 5/22/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
12	J16DN4	Silver, Total	0.25 u	MG/KG	0.25	3.0
		Arsenic, Total	2.3	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	56.6	MG/KG	0.25	3.0
		Beryllium, Total	0.42	MG/KG	0.13	3.0
		Cadmium, Total	0.18	MG/KG	0.13	3.0
		Cobalt, Total	6.2	MG/KG	0.50	3.0
		Chromium, Total	13.5	MG/KG	0.50	3.0
		Copper, Total	13.2	MG/KG	0.50	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	266	MG/KG	0.10	3.0
		Molybdenum, Total	0.75 u	MG/KG	0.75	3.0
		Nickel, Total	11.2	MG/KG	0.50	3.0
		Lead, Total	2.9	MG/KG	0.75	3.0
		Antimony, Total	0.75 uJ	MG/KG	0.75	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Vanadium, Total	41.4	MG/KG	0.35	3.0
		Zinc, Total	61.6	MG/KG	1.5	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168

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

LVL LOT #: 0803L834

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
13	J16DP4	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Arsenic, Total	3.4	MG/KG	1.3	3.0
		Boron, Total	5.1	MG/KG	1.3	3.0
		Barium, Total	67.0	MG/KG	0.26	3.0
		Beryllium, Total	0.52	MG/KG	0.13	3.0
		Cadmium, Total	0.14	MG/KG	0.13	3.0
		Cobalt, Total	7.0	MG/KG	0.52	3.0
		Chromium, Total	8.7	MG/KG	0.52	3.0
		Copper, Total	15.2	MG/KG	0.52	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	270	MG/KG	0.10	3.0
		Molybdenum, Total	0.79 u	MG/KG	0.79	3.0
		Nickel, Total	9.3	MG/KG	0.52	3.0
		Lead, Total	5.2	MG/KG	0.79	3.0
		Antimony, Total	0.79 uJ	MG/KG	0.79	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	46.4	MG/KG	0.37	3.0
		Zinc, Total	57.1	MG/KG	1.6	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

LIENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
014	J16DP6	Silver, Total	0.25 u	MG/KG	0.25	3.0
		Arsenic, Total	4.6	MG/KG	1.2	3.0
		Boron, Total	1.2 u	MG/KG	1.2	3.0
		Barium, Total	64.9	MG/KG	0.25	3.0
		Beryllium, Total	0.55	MG/KG	0.12	3.0
		Cadmium, Total	0.18	MG/KG	0.12	3.0
		Cobalt, Total	7.8	MG/KG	0.50	3.0
		Chromium, Total	8.8	MG/KG	0.50	3.0
		Copper, Total	15.3	MG/KG	0.50	3.0
		Mercury, Total	0.01	MG/KG	0.01	1.0
		Manganese, Total	296	MG/KG	0.1	3.0
		Molybdenum, Total	0.75 u	MG/KG	0.75	3.0
		Nickel, Total	9.7	MG/KG	0.50	3.0
		Lead, Total	8.2	MG/KG	0.75	3.0
		Antimony, Total	0.75 uJ	MG/KG	0.75	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Vanadium, Total	49.9	MG/KG	0.35	3.0
		Zinc, Total	45.7	MG/KG	1.5	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
15	J16DR2	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Arsenic, Total	3.9	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	58.3	MG/KG	0.26	3.0
		Beryllium, Total	0.50	MG/KG	0.13	3.0
		Cadmium, Total	0.18	MG/KG	0.13	3.0
		Cobalt, Total	7.6	MG/KG	0.52	3.0
		Chromium, Total	7.6	MG/KG	0.52	3.0
		Copper, Total	14.4	MG/KG	0.52	3.0
		Mercury, Total	0.01	MG/KG	0.01	1.0
		Manganese, Total	273	MG/KG	0.10	3.0
		Molybdenum, Total	0.82	MG/KG	0.78	3.0
		Nickel, Total	8.7	MG/KG	0.52	3.0
		Lead, Total	3.1	MG/KG	0.78	3.0
		Antimony, Total	0.78 u J	MG/KG	0.78	3.0
		Selenium, Total	2.1	MG/KG	1.6	3.0
		Vanadium, Total	46.1	MG/KG	0.36	3.0
		Zinc, Total	37.5	MG/KG	1.6	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

.IENT: TNUHANFORD RC-075 K1168

LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
16	J16DR3	Silver, Total	0.28 u	MG/KG	0.28	3.0
		Arsenic, Total	2.9	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	69.9	MG/KG	0.28	3.0
		Beryllium, Total	0.52	MG/KG	0.14	3.0
		Cadmium, Total	0.33	MG/KG	0.14	3.0
		Cobalt, Total	7.8	MG/KG	0.57	3.0
		Chromium, Total	9.5	MG/KG	0.57	3.0
		Copper, Total	18.3	MG/KG	0.57	3.0
		Mercury, Total	0.04	MG/KG	0.009	1.0
		Manganese, Total	315	MG/KG	0.11	3.0
		Molybdenum, Total	0.95	MG/KG	0.85	3.0
		Nickel, Total	9.8	MG/KG	0.57	3.0
		Lead, Total	7.7	MG/KG	0.85	3.0
		Antimony, Total	0.85 u J	MG/KG	0.85	3.0
		Selenium, Total	1.7 u	MG/KG	1.7	3.0
		Vanadium, Total	51.0	MG/KG	0.40	3.0
		Zinc, Total	132	MG/KG	1.7	3.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

:PLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
17	J16DR4	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Arsenic, Total	3.5	MG/KG	1.4	3.0
		Boron, Total	3.6	MG/KG	1.4	3.0
		Barium, Total	78.7	MG/KG	0.27	3.0
		Beryllium, Total	0.48	MG/KG	0.14	3.0
		Cadmium, Total	0.16	MG/KG	0.14	3.0
		Cobalt, Total	7.0	MG/KG	0.55	3.0
		Chromium, Total	10.5	MG/KG	0.55	3.0
		Copper, Total	15.0	MG/KG	0.55	3.0
		Mercury, Total	0.14	MG/KG	0.01	1.0
		Manganese, Total	257	MG/KG	0.11	3.0
		Molybdenum, Total	0.82 u	MG/KG	0.82	3.0
		Nickel, Total	9.3	MG/KG	0.55	3.0
		Lead, Total	17.7	MG/KG	0.82	3.0
		Antimony, Total	0.82 u J	MG/KG	0.82	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Vanadium, Total	40.5	MG/KG	0.38	3.0
		Zinc, Total	75.1	MG/KG	1.6	3.0

5/27/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-075
LVL#: 0803L834
SDG/SAF#: K1168/RC-075

W.O.#: 11343-606-001-9999-00
Date Received: 03-27-08

METALS CASE NARRATIVE

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

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

1. This narrative covers the analyses of 17 soil samples.

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

   All samples, with the exception of sample J16DM1, were reported with a 3-fold dilutions for all ICP analytes due to sample matrix.

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

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

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

9. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits.

The results presented in this report relate only to the analytical testing and conditions of the samples at 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 52 pages.

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Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J16DM2	Manganese	3,000	106.7
	Antimony	300	104.8

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 Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

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

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.

Judy Stern

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/22/08
Date

jjw/m03-834

Washington Closure Hanford

Collector: D.W.Shea/subcontractor — Dawn Everhart SEC	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-56, North, Ver. I, excavation		SAF No.: RC-075
Ice Chest No.: AFS-04-007	Field Logbook No.: EL-1607-3	COA: R00D562000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: ~~OPSC~~ DWS 3/26/08 A080203		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8K

Data Turnaround: 15 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	DWS 3/26/08 ~~250ml~~ 60 ml	60ml.	125ml.								

SAMPLE ANALYSIS

	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWS 3/25/08							
Sample No.	Matrix *	Sample Date	Sample Time								
J16DM1	SOIL	3-25-08	0823	✓	✓	✓					
J16DM2	SOIL		0840	✓	✓	✓					
J16DM3	SOIL		0857	✓	✓	✓					
J16DM4	SOIL		0912	✓	✓	✓					
J16DM5	SOIL		0926	✓	✓	✓					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Dawn Everhart	3-25-08 1434	Received By/Stored In: DWSHEA	3/25/08 1434
Relinquished By/Removed From: DWSHEA	3/25/08 1800	Received By/Stored In: DWS Fridge 3A	3/25/08 1800
Relinquished By/Removed From: 1460 BATELLE 3A	3/26/08 1030	Received By/Stored In: DAVID ST. JOHN	3/26/08 1030
Relinquished By/Removed From: DAVID ST. JOHN	3/26/08 1030	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	3-27-08 0935	Received By/Stored In:	3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc] DWS 3/21/08

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

WCH-EE-011

000000046

000000030

ollector D.W.Shea/subcontractor Dawn Everhart SEC	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH	Price Code 8K
Data Turnaround 15 days				
roject Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-56, North, Ver. I, excavation		SAF No. RC-075	
ce Chest No. AFS-04-007	Field Logbook No. EL-1607-3	COA R00D562000	Method of Shipment Fed EX	
hipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. ~~see OPSC~~ A080203		Bill of Lading/Air Bill No. SEE OSAC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250mL~~ 60mL	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWS 3/25/08							

Sample No.	Matrix *	Sample Date	Sample Time									
~~J16DM6~~ DWShea 3/26/08	~~SOIL~~		1008									
~~J16DM7~~	~~SOIL~~		1024									
J16DM8	SOIL	3-25-08	1040 1008	✓	✓	✓						
J16DM9	SOIL		1211024	✓	✓	✓						
J16DN0	SOIL		1225 1040	✓	✓	✓						

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: Dawn Everhart 3-25-08 1434	Received By/Stored In: DWShea DWSHEA 3-25-08 1434	(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc] DWShea 3/21/08
Relinquished By/Removed From: DWShea DWSHea 3/25/08 1800	Received By/Stored In: Fridge 3A 3/25/08 1802	
Relinquished By/Removed From: 1060 BATTELLE 3A 3/26/08 1030	Received By/Stored In: DAVID ST. JOHN 3/26/08 1030	
Relinquished By/Removed From: DAVID ST. JOHN 3/26/08 1030	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex 3-27-08 0935	Received By/Stored In: V. Neeland 3-27-08 0935	
Relinquished By/Removed From	Received By/Stored In	

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

WCH-EE-011

000000047

000031

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
D.W.Shea/subcontractor Dawn Everhart SEC	D.W.Shea	521-6014	KESSNER, JH	8K	15 days

Project Designation	Sampling Location	SAF No.
100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-56, North, Ver. I, excavation	RC-4175

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
AFS-04-007	EL-1607-3	R00D562000	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES/ LIONVILLE	~~acct OPSC~~ DAS 3/26/08 A080203	SEE OSAC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250mL~~ 60mL	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	R' Anions - 300.0; ~~pH~~ (Soil) - 9045	DWShea 3/25/08							
Sample No.	Matrix *	Sample Date	Sample Time								
J16DN1	SOIL	3-25-08	1211	✓	✓	✓					
J16DN2	SOIL		1225	✓	✓	✓					
J16DN3	SOIL		1236	✓	✓	✓					
J16DN4	SOIL		1248	✓	✓	✓					
~~J16DN5~~ DWShea 3/25/08	~~SOIL~~										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Dawn E. Everhart	3-25-08 1434	DWShea DWSHEA	3/25/08 1434
DWSHEA	3/25/08 1800	Fridge 3A	3/25/08 1800
1060 BATELLE 34	3/26/08 1030	DAVID ST JOHN	3/26/08 1030
DAVID ST JOHN	3/26/08 1030	FED EX	
Fed Ex	3-27-08 0935		3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWShea 3/21/08

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

WCH-EE-011

000000032

000000048

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
D.W.Shea/subcontractor Dawn Everhart SEC	D.W.Shea	521-6014	KESSNER, JH	8K	15 days

Project Designation	Sampling Location	SAF No.
100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-56, North, Ver. 1, stockpiles	RC-075

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
AFS-04-007	EL-1607-3	R00D562000	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES/ LIONVILLE	~~see OPSC~~ DAS 3/26/08 4080203	SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C									
Type of Container	G/P	G/P	G/P									
No. of Container(s)	1	1	1									
Volume	~~250ml.~~ 60mL	60mL	125mL.									
	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWS 3/25/08								
Sample No.	Matrix *	Sample Date	Sample Time									
~~J16DP1~~	SOIL	DWS 3/25/08										
~~J16DP2~~	~~SOIL~~											
~~J16DP3~~	~~SOIL~~											
J16DP4	SOIL	~~07~~ 3-25-08	1407	✓	✓	✓						
~~J16DP5~~	~~SOIL~~ DWS 3/25/08											

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Dawn Everhart	3-25-08 1434	Received By/Stored In: DWS HEA DWS 3/25/08	1434
Relinquished By/Removed From: DWS HEA DWS HEA	3/25/08 1800	Received By/Stored In: Fridge 3A	3/25/08 1800
Relinquished By/Removed From: 1060 BATELLE 3A	3/26/08 1030	Received By/Stored In: DAVID ST. JOHN	3/26/08 1030
Relinquished By/Removed From: DAVID ST. JOHN	3/26/08 1030	Received By/Stored In: FED EX	
Relinquished By/Removed From:	3-27-08 0935	Received By/Stored In:	3-27-08 0935
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc] DWS 3/21/08

Matrix *

S-Soil
Sb-Sediment
SD-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

WCH-EE-011

0000033

0000000049

Collector	Company Contact	Telephone No.		Price Code	Data Turnaround
D.W.Shea/subcontractor SEC	D.W.Shea	521-6014	KESSNER, JH	8K	15 days

Project Designation	Sampling Location	SAF No.
100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-56, North, Ver. I, stockpiles	RC-075

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
AFS-04-007	EL-1607-3	R00D562000	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES, LIONVILLE	~~5000 OPSC~~ DAS 3/26/08 A080203	SEE OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250mL~~ DAS 3/26/08 60 ml	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWShea 3/25/08							

Sample No.	Matrix *	Sample Date	Sample Time									
J16DP6	SOIL	3-25-08	1355	✓	✓	✓						
~~J16DP7~~	~~SOIL~~	DWShea 3/25/08										
~~J16DP8~~	~~SOIL~~											
~~J16DP9~~	~~SOIL~~											
~~J16DP0~~	~~SOIL~~											

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	Received By/Stored In	
[signature]	DWShea DWSHEA	3-25-08 1434
DWShea DWSHEA	Fedex 3A	3/25/08 1800
1060 BATTELLE 3A	DAVID ST JOHN [signature]	3/26/08 1030
DAVID ST JOHN [signature]	FED EX	3/26/08 1030
Fed Ex	[signature]	3-27-08 0935

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWShea 3/21/08

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

WCH-EE-011

000034

000000050

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
D.W.Shea/subcontractor David Everhart SEC	D.W.Shea	521-6014	KESSNER, JH	8K	15 days

Project Designation	Sampling Location	SAF No.
100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-56, North, Ver. 1, stockpiles	RC-075

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
AFS-04-007	EL-1607-3	R00D562000	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES / LIONVILLE	~~see OPSC~~ DAS 3/26/08 A080203	SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	DAS 3/26/08 ~~250ml~~ 60ml	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0 (Soil) - 9045	DWSHEA 3/25/08							

0000035

Sample No.	Matrix *	Sample Date	Sample Time										
~~J16DR1~~	SOIL DWShea 3/25/08												
J16DR2	SOIL	3-25-08	1320	✓	✓	✓							
J16DR3	SOIL		1331	✓	✓	✓							
J16DR4	SOIL		1337	✓	✓	✓							
~~J16DR5~~	SOIL DWShea 3/25/08												

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: David Everhart SEC	3-25-08 1434	Received By/Stored In: DWSHEA DWShea	3/25/08 1434
Relinquished By/Removed From: DWShea DWShea	3/25/08 1800	Received By/Stored In: Fridge 3A	3/25/08 1800
Relinquished By/Removed From: 1060 BATELLE 3A	3/26/08 1030	Received By/Stored In: DWIP SL 304W	3/26/08 1030
Relinquished By/Removed From: DWIP SL 304W	3/26/08 1030	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	3-27-08 0935	Received By/Stored In:	3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~ Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc; DWShea 3/21/08

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

WCH-EE-011

0000000051

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-54		DATA PACKAGE:	K1168	
VALIDATOR:	ELR	LAB: LLI		DATE: 5/23/08	
			SDG: K1168		

ANALYSES PERFORMED

SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX

J16DM1	J16DM2	J16DM3	J16DM4	J16DM5
J16DM8	J16DM9	J16DN0	J16DN1	J16DN2
J16DN3	J16DN4	J16DP4	J16DP6	J16DR2
J16DR3	J16DR4			
				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:

FB - barium, beryllium, chromium, manganese, nickel, lead, zinc

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: MS - antimony 59% - J all

no PAS

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 04/17/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

:PLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
ANK1	08L0140-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.10	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Manganese, Total	0.04	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
ANK1	08C0059-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/17/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

:PLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
)2	J16DM2	Silver, Total	4.7	0.26u	4.3	109.3	3.0
		Arsenic, Total	168	2.6	174	95.4	3.0
		Boron, Total	83.7	1.3 u	86.8	96.4	3.0
		Barium, Total	227	58.6	174	97.1	3.0
		Beryllium, Total	4.7	0.41	4.3	99.8	3.0
		Cadmium, Total	4.3	0.13u	4.3	100	3.0
		Cobalt, Total	48.5	5.9	43.4	98.2	3.0
		Chromium, Total	28.0	11.2	17.4	96.6	3.0
		Copper, Total	34.1	12.2	21.7	100.9	3.0
		Mercury, Total	0.22	0.02	0.16	119.1	1.0
		Manganese, Total	318	258	43.4	138.0*	3.0
		Molybdenum, Total	81.2	0.79u	86.8	93.5	3.0
		Nickel, Total	53.2	11.4	43.4	96.3	3.0
		Lead, Total	47.8	5.5	43.4	97.5	3.0
		Antimony, Total	25.6	0.79u	43.4	59.0	3.0
		Selenium, Total	143	1.6 u	174	82.5	3.0
		Vanadium, Total	82.9	37.1	43.4	105.5	3.0
		Zinc, Total	78.6	36.0	43.4	98.2	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
02REP	J16DM2	Silver, Total	0.26u	0.27u	NC	3.0
		Arsenic, Total	2.6	2.6	0.00	3.0
		Boron, Total	1.3 u	1.4 u	NC	3.0
		Barium, Total	58.6	57.0	2.8	3.0
		Beryllium, Total	0.41	0.41	0.20	3.0
		Cadmium, Total	0.13u	0.14u	NC	3.0
		Cobalt, Total	5.9	6.0	1.7	3.0
		Chromium, Total	11.2	10.7	4.6	3.0
		Copper, Total	12.2	12.5	2.4	3.0
		Mercury, Total	0.02	0.04	56.7	1.0
		Manganese, Total	258	258	0.12	3.0
		Molybdenum, Total	0.79u	0.82u	NC	3.0
		Nickel, Total	11.4	11.8	3.4	3.0
		Lead, Total	5.5	5.5	0.00	3.0
		Antimony, Total	0.79u	0.82u	NC	3.0
		Selenium, Total	1.6 u	1.6 u	NC	3.0
		Vanadium, Total	37.1	39.1	5.2	3.0
		Zinc, Total	36.0	33.8	6.3	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/17/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
31	08L0140-LC1	Silver, LCS	47.5	50.0	MG/KG	95.0
		Arsenic, LCS	913	1000	MG/KG	91.3
		Boron, LCS	465	500	MG/KG	92.9
		Barium, LCS	477	500	MG/KG	95.5
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Cadmium, LCS	23.3	25.0	MG/KG	93.2
		Cobalt, LCS	239	250	MG/KG	95.6
		Chromium, LCS	48.1	50.0	MG/KG	96.2
		Copper, LCS	121	125	MG/KG	96.8
		Manganese, LCS	72.2	75.0	MG/KG	96.3
		Molybdenum, LCS	468	500	MG/KG	93.6
		Nickel, LCS	191	200	MG/KG	95.4
		Lead, LCS	234	250	MG/KG	93.8
		Antimony, LCS	279	300	MG/KG	92.9
		Selenium, LCS	889	1000	MG/KG	88.9
		Vanadium, LCS	236	250	MG/KG	94.5
		Zinc, LCS	93.3	100	MG/KG	93.3
S1	08C0059-LC1	Mercury, LCS	5.2	4.7	MG/KG	111.1

Date: 27 May 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds and Remaining Sites – Soil Full Protocol - Waste Site 100-D-56
Subject: Wet Chemistry - Data Package No. K1168-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1168 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
J16DM1	3/25/08	Soil	C	See note 1
J16DM2	3/25/08	Soil	C	See note 1
J16DM3	3/25/08	Soil	C	See note 1
J16DM4	3/25/08	Soil	C	See note 1
J16DM5	3/25/08	Soil	C	See note 1
J16DM8	3/25/08	Soil	C	See note 1
J16DM9	3/25/08	Soil	C	See note 1
J16DN0	3/25/08	Soil	C	See note 1
J16DN1	3/25/08	Soil	C	See note 1
J16DN2	3/25/08	Soil	C	See note 1
J16DN1	3/25/08	Soil	C	See note 1
J16DN3	3/25/08	Soil	C	See note 1
J16DN4	3/25/08	Soil	C	See note 1
J16DP4	3/25/08	Soil	C	See note 1
J16DP6	3/25/08	Soil	C	See note 1
J16DR2	3/25/08	Soil	C	See note 1
J16DR3	3/25/08	Soil	C	See note 1
J16DR4	3/25/08	Soil	C	See note 1

1 – IC anions by 300.1 & chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY 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, 28 days for bromide, chloride, fluoride and sulfate; and 48 hours for nitrate, nitrite and phosphate.

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".

Due to the holding time being exceeded by greater than twice the limit, all undetected phosphate, nitrate and nitrite results were qualified as rejected and flagged "UR".

Due to the holding time being exceeded by greater than twice the limit, all detected phosphate, nitrate and nitrite results were qualified as estimates and flagged "J".

All other 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

One field blank (J16DM1) was submitted for analysis. No analytes were detected in the field blank.

- **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 65% to 135%. 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 64% 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 135% and a sample result less than the IDL, no qualification is required.

Due to the matrix spike being prepared in a separate preparation batch, all IC anion results in samples J16DM1, J16DM2, J16DM3, J16DM4, J16DM5, J16DM8, J16DM9, J16DN0, J16DN1 and J16DN2 were qualified as estimates and flagged "J".

All other 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 35%, 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.

Due to the matrix spike being prepared in a separate preparation batch, all fluoride, chloride, bromide and sulfate results in samples J16DM1, J16DM2, J16DM3, J16DM4, J16DM5, J16DM8, J16DM9, J16DN0, J16DN1 and J16DN2 were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **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 K1168 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 79%.

MAJOR DEFICIENCIES

Due to the holding time being exceeded by greater than twice the limit, all undetected phosphate, nitrate and nitrite results were qualified as rejected and flagged "UR". Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by greater than twice the limit, all detected phosphate, nitrate and nitrite results were qualified as estimates and flagged "J".

- Due to the matrix spike being prepared in a separate preparation batch, all IC anion results in samples J16DM1, J16DM2, J16DM3, J16DM4, J16DM5, J16DM8, J16DM9, J16DN0, J16DN1 and J16DN2 were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH 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

WETCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K1168	REVIEWER: TLI	Project: 100-D-56	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite	UR	All	>2X holding time
Nitrate	UR	J16DM1, J16DM2 J16DM3, J16DM4 J16DM5, J16DM9 J16DN0, J16DN1 J16DN4, J16DR3	>2X holding time
Phosphate	UR	J16DM1, J16DM2 J16DM3, J16DM4 J16DM5, J16DM8 J16DM9, J16DN0 J16DN1, J16DN2 J16DN3, J16DN4 J16DP4, J16DR2	>2X holding time
Nitrate	J	J16DM8, J16DN2 J16DN3, J16DP4 J16DP6, J16DR2 J16DR4	>2X holding time
Phosphate	J	J16DP6, J16DR3 J16DR4	>2X holding time
All (except chromium VI)	J	J16DM1, J16DM2, J16DM3, J16DM4, J16DM5, J16DM8, J16DM9, J16DN0, J16DN1, J16DN2	Matrix spike prepared in a separate preparation batch

* - 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

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

CLIENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J16DM1	% Solids	99.9	%	0.01	1.0
		Bromide by IC	2.3 uJ	MG/KG	2.3	1.0
		Chloride by IC	2.3 uJ	MG/KG	2.3	1.0
		Fluoride by IC	2.3 uJ	MG/KG	2.3	1.0
		Nitrite by IC	2.34 uR	MG/KG	2.34	1.0
		Nitrate by IC	2.34 uR	MG/KG	2.34	1.0
		Phosphate by IC	2.3 uR	MG/KG	2.3	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
		Sulfate by IC	2.3 uJ	MG/KG	2.3	1.0
-002	J16DM2	% Solids	93.7	%	0.01	1.0
		Bromide by IC	2.6 uJ	MG/KG	2.6	1.0
		Chloride by IC	2.6 uJ	MG/KG	2.6	1.0
		Fluoride by IC	2.6 uJ	MG/KG	2.6	1.0
		Nitrite by IC	2.56 uR	MG/KG	2.56	1.0
		Nitrate by IC	2.56 uR	MG/KG	2.56	1.0
		Phosphate by IC	2.6 uR	MG/KG	2.6	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Sulfate by IC	2.6 uJ	MG/KG	2.6	1.0
-003	J16DM3	% Solids	96.5	%	0.01	1.0
		Bromide by IC	2.5 uJ	MG/KG	2.5	1.0
		Chloride by IC	2.5 uJ	MG/KG	2.5	1.0
		Fluoride by IC	2.5 uJ	MG/KG	2.5	1.0
		Nitrite by IC	2.51 uR	MG/KG	2.51	1.0
		Nitrate by IC	2.51 uR	MG/KG	2.51	1.0
		Phosphate by IC	2.5 uR	MG/KG	2.5	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Sulfate by IC	2.5 uJ	MG/KG	2.5	1.0
-004	J16DM4	% Solids	96.6	%	0.01	1.0
		Bromide by IC	2.4 uJ	MG/KG	2.4	1.0
		Chloride by IC	2.4 uJ	MG/KG	2.4	1.0
		Fluoride by IC	2.4 uJ	MG/KG	2.4	1.0
		Nitrite by IC	2.38 uR	MG/KG	2.38	1.0
		Nitrate by IC	2.38 uR	MG/KG	2.38	1.0
		Phosphate by IC	2.4 uR	MG/KG	2.4	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Sulfate by IC	2.4 uJ	MG/KG	2.4	1.0
-005	J16DM5	% Solids	97.8	%	0.01	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

IENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
05	J16DM5	Bromide by IC	2.5	u J	MG/KG	2.5	1.0
		Chloride by IC	2.5	u J	MG/KG	2.5	1.0
		Fluoride by IC	2.5	u J	MG/KG	2.5	1.0
		Nitrite by IC	2.53	u R	MG/KG	2.53	1.0
		Nitrate by IC	2.53	u R	MG/KG	2.53	1.0
		Phosphate by IC	2.5	u R	MG/KG	2.5	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Sulfate by IC	2.5	u J	MG/KG	2.5	1.0
06	J16DM8	% Solids	92.4		%	0.01	1.0
		Bromide by IC	2.7	u J	MG/KG	2.7	1.0
		Chloride by IC	2.7	u J	MG/KG	2.7	1.0
		Fluoride by IC	2.7	u J	MG/KG	2.7	1.0
		Nitrite by IC	2.72	u R	MG/KG	2.72	1.0
		Nitrate by IC	3.17	J	MG/KG	2.72	1.0
		Phosphate by IC	2.7	u R	MG/KG	2.7	1.0
		Chromium VI	0.28		MG/KG	0.22	1.0
		Sulfate by IC	2.7	u J	MG/KG	2.7	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

IENT: TNUHANFORD RC-075 K1168

LVL LOT #: 0803L834

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
07	J16DM9	% Solids	90.4	%	0.01	1.0
		Bromide by IC	2.8 uJ	MG/KG	2.8	1.0
		Chloride by IC	2.8 uJ	MG/KG	2.8	1.0
		Fluoride by IC	2.8 uJ	MG/KG	2.8	1.0
		Nitrite by IC	2.75 uR	MG/KG	2.75	1.0
		Nitrate by IC	2.75 uR	MG/KG	2.75	1.0
		Phosphate by IC	2.8 uR	MG/KG	2.8	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
		Sulfate by IC	3.2 J	MG/KG	2.8	1.0
08	J16DN0	% Solids	95.3	%	0.01	1.0
		Bromide by IC	2.4 uJ	MG/KG	2.4	1.0
		Chloride by IC	2.4 uJ	MG/KG	2.4	1.0
		Fluoride by IC	2.4 uJ	MG/KG	2.4	1.0
		Nitrite by IC	2.37 uR	MG/KG	2.37	1.0
		Nitrate by IC	2.37 uR	MG/KG	2.37	1.0
		Phosphate by IC	2.4 uR	MG/KG	2.4	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Sulfate by IC	4.0 J	MG/KG	2.4	1.0
009	J16DN1	% Solids	93.7	%	0.01	1.0
		Bromide by IC	2.6 uJ	MG/KG	2.6	1.0
		Chloride by IC	2.6 uJ	MG/KG	2.6	1.0
		Fluoride by IC	2.6 uJ	MG/KG	2.6	1.0
		Nitrite by IC	2.59 uR	MG/KG	2.59	1.0
		Nitrate by IC	2.59 uR	MG/KG	2.59	1.0
		Phosphate by IC	2.6 uR	MG/KG	2.6	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Sulfate by IC	7.9	MG/KG	2.6	1.0
010	J16DN2	% Solids	97.8	%	0.01	1.0
		Bromide by IC	2.1 uJ	MG/KG	2.1	1.0
		Chloride by IC	2.1 uJ	MG/KG	2.1	1.0
		Fluoride by IC	2.1 uJ	MG/KG	2.1	1.0
		Nitrite by IC	2.07 uR	MG/KG	2.07	1.0
		Nitrate by IC	6.96 J	MG/KG	2.07	1.0
		Phosphate by IC	2.1 uR	MG/KG	2.1	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
		Sulfate by IC	19.3 J	MG/KG	2.1	1.0
011	J16DN3	% Solids	89.9	%	0.01	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
1	J16DN3	Bromide by IC	2.7	u	MG/KG	2.7	1.0
		Chloride by IC	2.7	u	MG/KG	2.7	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	2.70	uQ	MG/KG	2.70	1.0
		Nitrate by IC	29.4	J	MG/KG	2.70	1.0
		Phosphate by IC	2.7	uQ	MG/KG	2.7	1.0
		Chromium VI	0.23		MG/KG	0.22	1.0
		Sulfate by IC	7.1		MG/KG	2.7	1.0
2	J16DN4	% Solids	95.9		%	0.01	1.0
		Bromide by IC	2.4	u	MG/KG	2.4	1.0
		Chloride by IC	2.4	u	MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.42	uQ	MG/KG	2.42	1.0
		Nitrate by IC	2.42	uQ	MG/KG	2.42	1.0
		Phosphate by IC	2.4	uQ	MG/KG	2.4	1.0
		Chromium VI	0.21	u	MG/KG	0.21	1.0
		Sulfate by IC	2.4	u	MG/KG	2.4	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
3	J16DP4	% Solids	97.7		%	0.01	1.0
		Bromide by IC	2.4	u	MG/KG	2.4	1.0
		Chloride by IC	2.4	u	MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.43	uR	MG/KG	2.43	1.0
		Nitrate by IC	7.06	J	MG/KG	2.43	1.0
		Phosphate by IC	2.4	uR	MG/KG	2.4	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Sulfate by IC	131		MG/KG	4.9	2.0
4	J16DP6	% Solids	97.6		%	0.01	1.0
		Bromide by IC	2.4	u	MG/KG	2.4	1.0
		Chloride by IC	3.2		MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.42	uR	MG/KG	2.42	1.0
		Nitrate by IC	28.6	J	MG/KG	2.42	1.0
		Phosphate by IC	9.0	J	MG/KG	2.4	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Sulfate by IC	9.7		MG/KG	2.4	1.0
5	J16DR2	% Solids	99.4		%	0.01	1.0
		Bromide by IC	2.4	u	MG/KG	2.4	1.0
		Chloride by IC	8.5		MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.44	uR	MG/KG	2.44	1.0
		Nitrate by IC	3.36	J	MG/KG	2.44	1.0
		Phosphate by IC	2.4	uR	MG/KG	2.4	1.0
		Chromium VI	0.26		MG/KG	0.20	1.0
		Sulfate by IC	3.6		MG/KG	2.4	1.0
6	J16DR3	% Solids	93.8		%	0.01	1.0
		Bromide by IC	2.7	u	MG/KG	2.7	1.0
		Chloride by IC	2.7	u	MG/KG	2.7	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	2.68	uR	MG/KG	2.68	1.0
		Nitrate by IC	2.68	uR	MG/KG	2.68	1.0
		Phosphate by IC	7.9	J	MG/KG	2.7	1.0
		Chromium VI	0.31		MG/KG	0.21	1.0
		Sulfate by IC	3.0		MG/KG	2.7	1.0
7	J16DR4	% Solids	98.1		%	0.01	1.0

5/27/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

MPLE:	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
17	J16DR4	Bromide by IC	2.4	u	MG/KG	2.4	1.0
		Chloride by IC	7.6		MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.40	uJ	MG/KG	2.40	1.0
		Nitrate by IC	46.1	J	MG/KG	2.40	1.0
		Phosphate by IC	8.1	J	MG/KG	2.4	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Sulfate by IC	12.3		MG/KG	2.4	1.0

5/27/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-075 K1168
LVL#: 0803L834

W.O.#: 11343-606-001-9999-00
Date Received: 03-27-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 17 soil samples.

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

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

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blanks were within the method criteria.

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

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

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil 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.

Judy Stum
Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/14/08
Date

njp\03-834

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 28 pages.

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

Collector: D.W.Shea/subcontractor Dawn Eberhart SEC	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH	Price Code: 8K
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-56, North, Ver. I, excavation		SAF No.: RC-075	Data Turnaround: 15 days
Ice Chest No.: AFS-04-007	Field Logbook No.: EL-1607-3	COA: R00D562000	Method of Shipment: Fed EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: ~~OPSC~~ DWS 3/26/08 A080203		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250ml.~~ DWS 3/26/08 60 ml	60ml.	125ml.								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWS 3/25/08							
Sample No. / Matrix * / Sample Date / Sample Time											
16DM1 / SOIL / 3-25-08 / 0823	✓	✓	✓								
16DM2 / SOIL /	✓	✓	✓								
16DM3 / SOIL /	✓	✓	✓								
16DM4 / SOIL /	✓	✓	✓								
16DM5 / SOIL /	✓	✓	✓								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Dawn Eberhart	3-25-08 1434	DWSHEA DWSHEA	3/25/08 1434
DWSHEA DWSHEA	3/25/08 1800	DWS Fridge 3A	3/25/08 1800
660 BATELLE 3A	3/26/08 1030	DAVID ST JOHN	3/26/08 1030
DAVID ST JOHN	3/26/08 1030	FED EX	
FED EX	3-27-08 0935		3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWS 3/21/08

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

VCH-EE-011

000018

000000022

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
D.W.Shea/subcontractor Dawn Everhart SEC	D.W.Shea	521-6014	KESSNER, JH	8K	15days

Project Designation	Sampling Location	SAF No.
100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-56, North, Ver: I, excavation	RC-075

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
APS-04-007	EL-1607-3	R00D562000	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES / LIONVILLE	~~see DPSC~~ A080203 DB 3/26/08	SEE DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250mL~~ 60mL	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; pH (Soil) - 9045	DWS 3/25/08							

03/26/08

000019

Sample No.	Matrix *	Sample Date	Sample Time										
~~16DM6~~	~~SOIL~~		1008										
~~16DM7~~	~~SOIL~~		1024										
16DM8	SOIL	3-25-08	1040 1008	✓	✓	✓							
16DM9	SOIL		1211 1024	✓	✓	✓							
16DN0	SOIL		1225 1040	✓	✓	✓							

DWShea 3/25/08

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Dawn C. Everhart	3-25-08 1434	DWShea DWSHEA	3-25-08 1434
DWShea DWShea	3/25/08 1800	Fricke 3A	3/25/08 1800
260 BATELLE 3A	3/26/08 1030	PAUL ST. JOHN Paul St John	3/26/08 1030
PAUL ST. JOHN Paul St John	3/26/08 1030	FED EX	
Fedex	3-27-08 0935	J. Newland	3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum,~~ Antimony, Arsenic, Barium, Beryllium, ~~Bismuth,~~ Boron, Cadmium, ~~Calcium,~~ Chromium, Cobalt, Copper, ~~Iron,~~ Lead, ~~Lithium, Magnesium,~~ Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium,~~ Selenium, ~~Silicon,~~ Silver, Sodium, ~~Strontium, Thallium, Tin, Uranium,~~ Vanadium, Zinc] DWShea 3/21/08

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

ICH-EE-011

00000023

Collector D.W.Shea/subcontractor Dawn Everhart SEC	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH	Price Code 8K
Data Turnaround 15 days				
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-56, North, Ver. I, excavation		SAF No. RC-1175	
Ice Chest No. AFS-04-007	Field Logbook No. EL-1607-3	COA R00D562000	Method of Shipment Fed EX	
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. ~~see OPSC~~ DAS 3/26/08 A080203		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

000020

Preservation	None	Cool 4C	Cool 4C									
Type of Container	G/P	G/P	G/P									
No. of Container(s)	1	1	1									
Volume	~~250ml.~~ 60mL 03/26/08	60mL	125mL.									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	K' Anions - 300.0; ~~pH~~ (Soil) - 9045	DWShea 3/25/08								
Sample No.	Matrix *	Sample Date	Sample Time									
16DN1	SOIL	3-25-08	1211	✓	✓	✓						
16DN2	SOIL		1225	✓	✓	✓						
16DN3	SOIL		1236	✓	✓	✓						
16DN4	SOIL		1246	✓	✓	✓						
16DN5 DWShea 3/25/08	SOIL											

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Steven K Everhart	3-25-08 1434	DWSHEA DWSHEA	3/25/08 1434
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWSHEA DWSHEA	3/25/08 1800	Fridge 3A	3/25/08 1800
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
260 BATELLE 3A	3/26/08 1030	DAVID ST JOHN	3/26/08 1030
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DAVID ST JOHN	3/26/08 1030	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	3-27-08 0935		3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~ Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWShea 3/21/08

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

NCH-EE-011.

000000024

Collector D.W.Shea/subcontractor Dawn Everhart SEC	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH	Price Code 8K / Data Turnaround 15 days
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-56, North, Ver. I, stockpiles		SAF No. RC-075	
Ice Chest No. AFS-04-007	Field Logbook No. EL-1607-3	COA R00D562000	Method of Shipment Fed EX	
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. ~~see OPSC~~ DAS 3/26/08 4080203		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C									
Type of Container	G/P	G/P	G/P									
No. of Container(s)	1	1	1									
Volume	~~250mL~~ 60mL	60mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0; ~~pH~~ (Soil) - 9045	DWS 3/25/08								

0000021

Sample No.	Matrix *	Sample Date	Sample Time									
~~16DP1~~	SOIL	DWS 3/25/08										
~~16DP2~~	~~SOIL~~											
~~16DP3~~	~~SOIL~~											
16DP4	SOIL	~~DWS~~ 3-25-08	1407	✓	✓	✓						
~~16DP5~~	~~SOIL~~ DWS 3/25/08											

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From [signature]	1434 3-25-08	Received By/Stored In DWS [signature]	3/25/08 1434
Relinquished By/Removed From DWS [signature]	3/25/08 1800	Received By/Stored In Fridge 3A	3/25/08 1800
Relinquished By/Removed From D60 BATELLE 3A	3/26/08 1030	Received By/Stored In DAVID ST. JOHN [signature]	3/26/08 1030
Relinquished By/Removed From DAVID ST. JOHN [signature]	3/26/08 1030	Received By/Stored In FED EX	
Relinquished By/Removed From [signature]	3-27-08 0935	Received By/Stored In [signature]	3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWS [signature] 3/21/08

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

VCH-EE-011

0000000025

Collector: D.W.Shea/subcontractor SEC	Company Contact: D.W.Shea	Telephone No.: 521-6014	KESSNER, JH
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-56, North, Ver. I, stockpiles	SAF No.: RC-075	Price Code: 8K
Ice Chest No.: AFS-04-007	Field Logbook No.: EL-1607-3	COA: R00D562000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: ~~see OPSC~~ A080203 DAS 3/26/08		Bill of Lading/Air Bill No.: SEE OSPC

Data Turnaround: 15 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	~~250ml~~ 60 ml DAS 3/26/08	60mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0 ~~pH~~ (Soil) - 9045	DWSHEA 3/25/08							

220000

Sample No.	Matrix *	Sample Date	Sample Time										
16DP6	SOIL	3-25-08	1355	✓	✓	✓							
~~16DP7~~	~~SOIL~~	DWShea 3/25/08											
~~16DP8~~	~~SOIL~~												
~~16DP9~~	~~SOIL~~												
~~16DP0~~	~~SOIL~~												

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time 1434	Received By/Stored In	Date/Time
Fawn R. Eberhart	3-25-08	DWShea DWSHEA	3/25/08 1434
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWShea DWSHEA	3/25/08 1800	Fridge 3A	3/25/08 1800
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1060 BATTELLE 3A	3/26/08 1030	DAVID ST. JOHN	3/26/08 1030
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DAVID ST. JOHN	3/26/08 1030	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	3-27-08 0935		3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] DWShea 3/21/08

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

VCH-EE-011

000000026

Collector D.W.Shea/subcontractor Dawn Eweleit SEC	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH	Price Code 8K
Data Turnaround 15 days				
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-56, North, Ver. I, stockpiles		SAF No. RC-075	
Ice Chest No. AFS-04-007	Field Logbook No. EL-1607-3	COA R00D562000	Method of Shipment Fed EX	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. ~~see OPSC~~ DAS 3/26/08 A080203		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	DAS 3/26/08 ~~230ml.~~ 60ml	60ml.	125ml.								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	IC Anions - 300.0 (Soil) - 9056	DWShea 3/25/08							
Sample No.	Matrix *	Sample Date	Sample Time								
~~16DR1~~	~~SOIL~~ DWShea 3/25/08										
16DR2	SOIL	3-25-08	1320	✓	✓	✓					
16DR3	SOIL		1331	✓	✓	✓					
16DR4	SOIL		1339	✓	✓	✓					
~~16DR5~~	~~SOIL~~ DWShea 3/25/08										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Dawn Eweleit	3-25-08 1434	DWSHEA DWShea	3/25/08 1434
DWShea DWShea	3/25/08 1800	Fridge 3A	3/25/08 1800
260 BATELLE 3A	3/26/08 1030	DAVID STOWE	3/26/08 1030
DAVID STOWE	3/26/08 1030	FED EX	
FED EX	3-27-08 0935		3-27-08 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~ Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc DWShea 3/21/08

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

VCH-EE-011

000000027

RECEIVED
MAY 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

ATE RECEIVED: 03/27/08 LVL LOT # :0803L834

IENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
.6DM1						
SOLIDS	001	S	08L%S028	03/25/08	03/28/08	03/31/08
SOLIDS	001 REP	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	001	S	08LVIA30	03/25/08	04/02/08	04/02/08
JLFATE BY IC	001	S	08LICS24	03/25/08	03/31/08	03/31/08
L6DM2						
SOLIDS	002	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	002	S	08LVIA30	03/25/08	04/02/08	04/02/08
JLFATE BY IC	002	S	08LICS24	03/25/08	03/31/08	03/31/08
L6DM3						
SOLIDS	003	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	003	S	08LVIA30	03/25/08	04/02/08	04/02/08
JLFATE BY IC	003	S	08LICS24	03/25/08	03/31/08	03/31/08
L6DM4						
SOLIDS	004	S	08L%S028	03/25/08	03/28/08	03/31/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

ATE RECEIVED: 03/27/08 LVL LOT # :0803L834

LIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ROMIDE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	004	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	004	S	08LICS24	03/25/08	03/31/08	03/31/08
16DM5						
SOLIDS	005	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	005	S	08LVIA30	03/25/08	04/02/08	04/02/08
HROMIUM VI	005 REP	S	08LVIA30	03/25/08	04/02/08	04/02/08
HROMIUM VI	005 MS	S	08LVIA30	03/25/08	04/02/08	04/02/08
HROMIUM VI	005 MSD	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	005	S	08LICS24	03/25/08	03/31/08	03/31/08
16DM8						
SOLIDS	006	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	006	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	006	S	08LICS24	03/25/08	03/31/08	03/31/08
16DM9						
SOLIDS	007	S	08L%S028	03/25/08	03/28/08	03/31/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

ATE RECEIVED: 03/27/08 LVL LOT # :0803L834

LIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ROMIDE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	007	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	007	S	08LICS24	03/25/08	03/31/08	03/31/08
16DN0						
SOLIDS	008	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	008	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	008	S	08LICS24	03/25/08	03/31/08	03/31/08
16DN1						
SOLIDS	009	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
LUORIDE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRITE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
ITRATE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
HOSPHATE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
HROMIUM VI	009	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	009	S	08LICS24	03/25/08	03/31/08	03/31/08
16DN2						
SOLIDS	010	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
HLORIDE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

TE RECEIVED: 03/27/08 LVL LOT # :0803L834

IENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
UORIDE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
TRITE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
TRATE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
OSPHATE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
ROMIUM VI	010	S	08LVIA30	03/25/08	04/02/08	04/02/08
LFATE BY IC	010	S	08LICS24	03/25/08	03/31/08	03/31/08
6DN3						
SOLIDS	011	S	08L%S028	03/25/08	03/28/08	03/31/08
OMIDE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
OMIDE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
OMIDE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
LORIDE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
LORIDE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
LORIDE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
UORIDE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
UORIDE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
UORIDE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
TRITE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
TRITE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
TRITE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
TRATE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
TRATE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
TRATE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
OSPHATE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
OSPHATE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
OSPHATE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
ROMIUM VI	011	S	08LVIA30	03/25/08	04/02/08	04/02/08
LFATE BY IC	011	S	08LICS25	03/25/08	04/03/08	04/03/08
LFATE BY IC	011 REP	S	08LICS25	03/25/08	04/03/08	04/03/08
LFATE BY IC	011 MS	S	08LICS25	03/25/08	04/03/08	04/03/08
6DN4						
SOLIDS	012	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
LORIDE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

ATE RECEIVED: 03/27/08 LVL LOT # :0803L834

LIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LUORIDE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRATE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	012	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	012	S	08LICS25	03/25/08	04/03/08	04/03/08
16DP4						
SOLIDS	013	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
HLORIDE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
LUORIDE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRATE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	013	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	013	S	08LICS25	03/25/08	04/03/08	04/04/08
16DP6						
SOLIDS	014	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
HLORIDE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
LUORIDE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRATE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	014	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	014	S	08LICS25	03/25/08	04/03/08	04/03/08
16DR2						
SOLIDS	015	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
HLORIDE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
LUORIDE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

ATE RECEIVED: 03/27/08 LVL LOT # :0803L834

LIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ITRATE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	015	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	015	S	08LICS25	03/25/08	04/03/08	04/03/08
16DR3						
SOLIDS	016	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
HLORIDE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
LUORIDE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRATE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	016	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	016	S	08LICS25	03/25/08	04/03/08	04/03/08
16DR4						
SOLIDS	017	S	08L%S028	03/25/08	03/28/08	03/31/08
ROMIDE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
HLORIDE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
LUORIDE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRITE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
ITRATE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
HOSPHATE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
HROMIUM VI	017	S	08LVIA30	03/25/08	04/02/08	04/02/08
ULFATE BY IC	017	S	08LICS25	03/25/08	04/03/08	04/03/08
QC:						
ROMIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
ROMIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
HLORIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
HLORIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
LUORIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
LUORIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
ITRITE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1168

.TE RECEIVED: 03/27/08 LVL LOT # :0803L834

.IENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
:TRITE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
:TRATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
:TRATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
IOSPHATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
IOSPHATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
IROMIUM VI	MB1	S	08LVIA30	N/A	04/02/08	04/02/08
IROMIUM VI	MB1 BS	S	08LVIA30	N/A	04/02/08	04/02/08
IROMIUM VI	MB1 BSD	S	08LVIA30	N/A	04/02/08	04/02/08
JLFATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
JLFATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
ROMIDE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
ROMIDE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
ILORIDE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
ILORIDE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
LUORIDE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
LUORIDE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
ITRITE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
ITRITE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
ITRATE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
ITRATE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
HOSPHATE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
HOSPHATE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08
JLFATE BY IC	MB1	S	08LICS25	N/A	04/03/08	04/03/08
JLFATE BY IC	MB1 BS	S	08LICS25	N/A	04/03/08	04/03/08

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-56			DATA PACKAGE: K1168		
VALIDATOR: ELR		LAB: LLI		DATE: 5/23/08	
			SDG: K1168		

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				
J16DM1	J16DM2	J16DM3	J16DM4	J16DM5
J16DM8	J16DM9	J16DN0	J16DN1	J16DN2
J16DN3	J16DN4	J16DP4	J16DP6	J16DR2
J16DR3	J16DR4			
				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:

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: MS in seperate prep batch (IC) — M1, M2, M3, M4, M5, M8, M9, N0, N1, N2 > J all

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: MS in sep prep hold M1, M2, M3, M4, M5, M8, M9, N0, N1, N2 (IC) J all

6. HOLDING TIMES (all levels)

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

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

Comments:

nitrite – UR – all

nitrate – UR – M1, M2, M3, M4, M5, M8, M9, N0, N1, N2 N4, R3

phosphate – UR – M1, M2, M3, M4, M5, M8, M9, N0, N1, N2 N3, N4, P4, R2

nitrate – J – M8, N2, N3, P4, P6, R2, R4

phosphate – J – P6, R3, R4

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 04/08/08

ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834
K ORDER: 11343-606-001-9999-00

PLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
NK10	08LICS24-MB1	Bromide by IC	2.5	u	MG/KG	2.5	1.0
		Chloride by IC	2.5	u	MG/KG	2.5	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	2.52	u	MG/KG	2.52	1.0
		Nitrate by IC	2.52	u	MG/KG	2.52	1.0
		Phosphate by IC	2.5	u	MG/KG	2.5	1.0
		Sulfate by IC	2.5	u	MG/KG	2.5	1.0
NK10	08LVIA30-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
NK10	08LICS25-MB1	Bromide by IC	2.3	u	MG/KG	2.3	1.0
		Chloride by IC	2.3	u	MG/KG	2.3	1.0
		Fluoride by IC	2.3	u	MG/KG	2.3	1.0
		Nitrite by IC	2.34	u	MG/KG	2.34	1.0
		Nitrate by IC	2.34	u	MG/KG	2.34	1.0
		Phosphate by IC	2.3	u	MG/KG	2.3	1.0
		Sulfate by IC	2.3	u	MG/KG	2.3	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/08/08

:ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
)5	J16DM5	Soluble Chromium VI	4.0	0.20u	4.1	93.6	1.0
		Insoluble Chromium VI	1140	0.20u	1160	97.9	100
1	J16DN3	Bromide by IC	104	0.0	106	97.7	2.0
		Chloride by IC	107	0.0	106	100.4	2.0
		Fluoride by IC	105	0.12	106	98.5	2.0
		Nitrite by IC	105	2.70u	106	99.2	2.0
		Nitrate by IC	138	29.4	106	102.1	2.0
		Phosphate by IC	115	2.7 u	106	108.3	2.0
		Sulfate by IC	117	7.1	106	103.4	2.0
ANK10	08LICS24-MB1	Bromide by IC	54.2	2.5 u	60.9	89.0	1.0
		Chloride by IC	53.7	2.5 u	60.9	88.2	1.0
		Fluoride by IC	53.3	2.5 u	60.9	87.4	1.0
		Nitrite by IC	53.8	2.52u	60.9	88.2	1.0
		Nitrate by IC	54.0	2.52u	60.9	88.7	1.0
		Phosphate by IC	54.5	2.5 u	60.9	89.4	1.0
		Sulfate by IC	56.0	2.5 u	60.9	91.8	1.0
ANK10	08LVIA30-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100.0	1.0
		Insoluble Chromium VI	1130	0.20u	1180	95.5	100
ANK10	08LICS25-MB1	Bromide by IC	61.2	2.3 u	66.4	92.3	1.0
		Chloride by IC	63.7	2.3 u	66.4	96.0	1.0
		Fluoride by IC	62.5	2.3 u	66.4	94.3	1.0
		Nitrite by IC	62.5	2.34u	66.4	94.2	1.0
		Nitrate by IC	61.9	2.34u	66.4	93.3	1.0
		Phosphate by IC	60.9	2.3 u	66.4	91.8	1.0
		Sulfate by IC	62.6	2.3 u	66.4	94.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/08/08

ENT: TNUHANFORD RC-075 K1168 LVL LOT #: 0803L834

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

PLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
1REP	J16DM1	% Solids	99.9	99.9	0.00	1.0
5REP	J16DM5	Chromium VI	0.20u	0.20u	NC	1.0
1REP	J16DN3	Bromide by IC	2.7 u	2.7 u	NC	1.0
		Chloride by IC	2.7 u	2.7 u	NC	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	2.70u	2.68u	NC	1.0
		Nitrate by IC	29.4	29.7	1.0	1.0
		Phosphate by IC	2.7 u	2.7 u	NC	1.0
		Sulfate by IC	7.1	6.4	10.7	1.0