0071317

SAF-RC-025
100-BC Remaining Pipelines and Sewers - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 DE 07/26/06
INITIAL/DATE

COMMENTS:

SDG K0468 SAF-RC-025

Waste Site: 100-B-14:8

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OCT 24 2006
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Date: 18 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Subsite 100-B-14:2
Subject: Semivolatile - Data Package No. K0468-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0468 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
J12R02	7/6/06	Soil	C	See note 1
J12R03	7/6/06	Soil	C	See note 1
J12R04	7/6/06	Soil	C	See note 1
J12R05	7/6/06	Soil	C	See note 1
J12R06	7/6/06	Soil	C	See note 1
J12R07	7/6/06	Soil	C	See note 1
J12R08	7/6/06	Soil	C	See note 1
J12R09	7/6/06	Soil	C	See note 1
J12R10	7/6/06	Soil	C	See note 1
J12R11	7/6/06	Soil	C	See note 1
J12R12	7/6/06	Soil	C	See note 1
J12R13	7/6/06	Soil	C	See note 1
J12R14	7/6/06	Soil	C	See note 1
J12R15	7/6/06	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

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

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted 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. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all detected bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J12R15) was submitted for analysis. Di-n-butylphthalate and diethylphthalate were detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to the matrix spike and matrix spike duplicate being prepared in different preparation batches, all semivolatile results were qualified as estimates and flagged "J".

Due to a matrix spike result outside QC limits (59%), all 1,2,4-trichlorobenzene results in samples J12R02, J12R04, J12R06, J12R07, J12R08, J12R09, J12R10, J12R11, J12R12, J12R13 and J12R14 were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to a surrogate recovery outside QC limits (27%), all 2-fluorobiphenyl associated analytes (1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, 2-chloronaphthalene, hexachlorobenzene, hexachloroethane, hexachlorobutadiene, hexachlorocyclopentadiene, 4-

chloroaniline, 3,3'dichlorobenzidine) in sample J12R02 were qualified as estimates an flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the matrix spike and matrix spike duplicate being prepared in different preparation batches, all semivolatile results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J12R09/J12R14) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Four hundred sixty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0468 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 deficiencies were noted:

- Due to method blank contamination, all detected bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

- Due to the matrix spike and matrix spike duplicate being prepared in separate preparation batches, all semivolatile results were qualified as estimates and flagged "J".

- Due to a matrix spike result outside QC limits (59%), all 1,2,4-trichlorobenzene results in samples J12R02, J12R04, J12R06, J12R07, J12R08, J12R09, J12R10, J12R11, J12R12, J12R13 and J12R14 were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits (27%), all 2-fluorobiphenyl associated analytes (1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, 2-chloronaphthalene, hexachlorobenzene, hexachloroethane, hexachlorobutadiene, hexachlorocyclopentadiene, 4-chloroaniline, 3,3'dichlorobenzidine) in sample J12R02 were qualified as estimates an 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

Four hundred sixty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the 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 same 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 quantitation limit is an estimate.

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 usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0468	REVIEWER: TLI	Project: 100-B-14-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All detected	Blank contamination
All	J	All	MS & MSD prepared in different preparation batch
1,2,4-Trichlorobenzene	J	J12R02, J12R04 J12R06, J12R07 J12R08, J12R09 J12R10, J12R11 J12R12, J12R13 J12R14	Matrix spike recovery
1,3-dichlorobenzene 1,4-dichlorobenzene 1,2-dichlorobenzene 1,2,4-trichlorobenzene 2-chloronaphthalene hexachlorobenzene hexachloroethane hexachlorobutadiene, hexachlorocyclopentadiene 4-chloroaniline 3,3'dichlorobenzidine	J	J12R02	Surrogate 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

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI | SDG: K0468

Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		8/2/06		8/1/06		8/2/06		8/7/06		8/2/06		8/15/06		8/7/06		8/15/06		8/15/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	340	UJ	340	UJ	340	UJ	340	U	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
bis(2-Chloroethyl)ether	660	340	UJ	340	UJ	340	UJ	340	U	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2-Chlorophenol	660	340	UJ	340	UJ	340	UJ	340	U	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
1,3-Dichlorobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
1,4-Dichlorobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
1,2-Dichlorobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2-Methylphenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,2'-oxybis(1-chloropropane)	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
3 and/or 4-Methylphenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
N-Nitroso-di-n-propylamine	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Hexachloroethane	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Nitrobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Isophorone	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2-Nitrophenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,4-Dimethylphenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
bis(2-Chloroethoxy)methane	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,4-Dichlorophenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
1,2,4-Trichlorobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Naphthalene	660	340	UJ	340	UJ	340	UJ	27	J	340	UJ	55	J	340	UJ	1000	UJ	1000	UJ
4-Chloroaniline	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Hexachlorobutadiene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
4-Chloro-3-methylphenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2-Methylnaphthalene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Hexachlorocyclopentadiene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,4,6-Trichlorophenol	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,4,5-Trichlorophenol*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
2-Chloronaphthalene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2-Nitroaniline*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
Dimethylphthalate	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Acenaphthylene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
2,6-Dinitrotoluene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000012

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI SDG: K0468

Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		8/2/06		8/1/06		8/2/06		8/7/06		8/2/06		8/15/06		8/7/06		8/15/06		8/15/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*		840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
Acenaphthene	660	340	UJ	340	UJ	68	UJ	170	UJ	26	J	210	J	340	UJ	1000	UJ	1000	UJ
2,4-Dinitrophenol*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
4-Nitrophenol*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
Dibenzofuran	660	340	UJ	340	UJ	20	UJ	59	J	340	UJ	82	J	340	UJ	1000	UJ	1000	UJ
2,4-Dinitrotoluene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Diethylphthalate	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
4-Chlorophenyl-phenyl ether	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Fluorene	660	340	UJ	340	UJ	45	J	120	J	340	UJ	130	J	340	UJ	1000	UJ	1000	UJ
4-Nitroaniline*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
4,6-Dinitro-2-methylphenol*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
N-Nitrosodiphenylamine	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
4-Bromophenyl-phenyl ether	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Hexachlorobenzene	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Pentachlorophenol*	660	840	UJ	850	UJ	850	UJ	840	UJ	840	UJ	2500	UJ	840	UJ	2500	UJ	2500	UJ
Phenanthrene	660	340	UJ	35	J	740	J	1600	J	270	J	1900	J	340	UJ	1000	UJ	1000	UJ
Anthracene	660	340	UJ	340	UJ	160	J	330	J	49	J	390	J	340	UJ	1000	UJ	1000	UJ
Carbazole	660	340	UJ	340	UJ	70	J	150	J	37	J	250	J	340	UJ	1000	UJ	1000	UJ
Di-n-butylphthalate	660	340	UJ	30	J	24	J	340	UJ	24	J	1000	UJ	19	J	1000	UJ	1000	UJ
Fluoranthene	660	340	UJ	100	J	1200	J	1900	J	410	J	3100	J	23	J	1000	UJ	1000	UJ
Pyrene	660	340	UJ	130	J	920	J	1500	J	400	J	3400	J	20	J	1000	UJ	1000	UJ
Butylbenzylphthalate	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
3,3'-Dichlorobenzidine	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Benzo(a)anthracene	660	340	UJ	83	J	460	J	750	J	230	J	1600	J	340	UJ	1000	UJ	1000	UJ
Chrysene	660	340	UJ	150	J	550	J	880	J	310	J	1800	J	340	UJ	1000	UJ	1000	UJ
bis(2-Ethylhexyl)phthalate	660	340	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	1000	UJ	1000	UJ
Di-n-octylphthalate	660	340	UJ	340	UJ	340	UJ	340	UJ	340	UJ	1000	UJ	340	UJ	1000	UJ	1000	UJ
Benzo(b)fluoranthene	660	340	UJ	120	J	330	J	420	J	210	J	1300	J	340	UJ	1000	UJ	1000	UJ
Benzo(k)fluoranthene	660	340	UJ	110	J	360	J	540	J	200	J	1300	J	340	UJ	1000	UJ	1000	UJ
Benzo(a)pyrene	660	340	UJ	110	J	440	J	640	J	240	J	1500	J	340	UJ	1000	UJ	1000	UJ
Indeno(1,2,3-cd)pyrene	660	340	UJ	72	J	250	J	420	J	140	J	1100	J	340	UJ	1000	UJ	1000	UJ
Dibenz(a,h)anthracene	660	340	UJ	55	J	140	J	160	J	89	J	600	J	340	UJ	1000	UJ	1000	UJ
Benzo(g,h,i)perylene	660	340	UJ	81	J	280	J	430	J	170	J	1200	J	340	UJ	1000	UJ	1000	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000013

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0468																		
Sample Number		J12R11		J12R12		J12R13		J12R14		J12R15									
Remarks								Duplicate		E. Blank									
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06									
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/13/06									
Analysis Date		8/15/06		8/15/06		8/15/06		8/15/06		8/2/06									
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
bis(2-Chloroethyl)ether	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2-Chlorophenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
1,3-Dichlorobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
1,4-Dichlorobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
1,2-Dichlorobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2-Methylphenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,2'-oxybis(1-chloropropane)	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
3 and/or 4-Methylphenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
N-Nitroso-di-n-propylamine	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Hexachloroethane	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Nitrobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Isophorone	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2-Nitrophenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4-Dimethylphenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
bis(2-Chloroethoxy)methane	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4-Dichlorophenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
1,2,4-Trichlorobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Naphthalene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
4-Chloroaniline	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Hexachlorobutadiene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
4-Chloro-3-methylphenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2-Methylnaphthalene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Hexachlorocyclopentadiene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4,6-Trichlorophenol	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4,5-Trichlorophenol*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
2-Chloronaphthalene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2-Nitroaniline*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
Dimethylphthalate	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Acenaphthylene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,6-Dinitrotoluene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000014

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI | SDG: K0468

Sample Number		J12R11		J12R12		J12R13		J12R14		J12R15									
Remarks								Duplicate		E. Blank									
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06									
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/13/06									
Analysis Date		8/15/06		8/15/06		8/15/06		8/15/06		8/2/06									
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
Acenaphthene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4-Dinitrophenol*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
4-Nitrophenol*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
Dibenzofuran	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
2,4-Dinitrotoluene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Diethylphthalate	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	36	J								
4-Chlorophenyl-phenyl ether	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Fluorene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
4-Nitroaniline*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
4,6-Dinitro-2-methylphenol*	660	2500	UJ	2500	UJ	2500	UJ	2500	UJ	830	UJ								
N-Nitrosodiphenylamine	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
4-Bromophenyl-phenyl ether	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Hexachlorobenzene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Pentachlorophenol*	660	1900	J	2500	UJ	2500	UJ	2500	UJ	830	UJ								
Phenanthrene	660	1000	UJ	420	J	1000	UJ	1000	UJ	330	UJ								
Anthracene	660	1000	UJ	86	J	1000	UJ	1000	UJ	330	UJ								
Carbazole	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Di-n-butylphthalate	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	230	J								
Fluoranthene	660	68	J	440	J	1000	UJ	1000	UJ	330	UJ								
Pyrene	660	67	J	710	J	59	J	1000	UJ	330	UJ								
Butylbenzylphthalate	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
3,3'-Dichlorobenzidine	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Benzo(a)anthracene	660	89	J	210	J	1000	UJ	1000	UJ	330	UJ								
Chrysene	660	190	J	260	J	1000	UJ	1000	UJ	330	UJ								
bis(2-Ethylhexyl)phthalate	660	660	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Di-n-octylphthalate	660	95	J	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Benzo(b)fluoranthene	660	110	J	140	J	1000	UJ	1000	UJ	330	UJ								
Benzo(k)fluoranthene	660	98	J	160	J	1000	UJ	1000	UJ	330	UJ								
Benzo(a)pyrene	660	78	J	170	J	1000	UJ	1000	UJ	330	UJ								
Indeno(1,2,3-cd)pyrene	660	54	J	87	J	1000	UJ	1000	UJ	330	UJ								
Dibenz(a,h)anthracene	660	1000	UJ	1000	UJ	1000	UJ	1000	UJ	330	UJ								
Benzo(g,h,i)perylene	660	100	J	96	J	1000	UJ	1000	UJ	330	UJ								

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000015

	Cust ID:	J12R02		J12R02		J12R02		J12R03		J12R04		J12R05	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	27	%	51	%	61	%	66	%	71	%	66	%
	2-Fluorobiphenyl	27 *	%	73	%	66	%	63	%	80	%	74	%
	Terphenyl-d14	29	%	79	%	70	%	80	%	72	%	66	%
	Phenol-d5	29	%	79	%	72	%	70	%	74	%	71	%
	2-Fluorophenol	29	%	80	%	70	%	68	%	76	%	74	%
	2,4,6-Tribromophenol	27	%	105	%	75	%	60	%	82	%	89	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U J	82	%	78	%	340	U J	340	U J	340	U J
bis(2-Chloroethyl)ether		340	U	81	%	80	%	340	U	340	U	340	U
2-Chlorophenol		340	U	81	%	76	%	340	U	340	U	340	U
1,3-Dichlorobenzene		340	U	75	%	69	%	340	U	340	U	340	U
1,4-Dichlorobenzene		340	U	72	%	69	%	340	U	340	U	340	U
1,2-Dichlorobenzene		340	U	79	%	75	%	340	U	340	U	340	U
2-Methylphenol		340	U	80	%	77	%	340	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		340	U	78	%	74	%	340	U	340	U	340	U
4-Methylphenol		340	U	84	%	77	%	340	U	340	U	340	U
N-Nitroso-di-n-propylamine		340	U	81	%	84	%	340	U	340	U	340	U
Hexachloroethane		340	U	75	%	65	%	340	U	340	U	340	U
Nitrobenzene		340	U	59	%	67	%	340	U	340	U	340	U
Isophorone		340	U	64	%	76	%	340	U	340	U	340	U
2-Nitrophenol		340	U	60	%	65	%	340	U	340	U	340	U
2,4-Dimethylphenol		340	U	53	%	54	%	340	U	340	U	340	U
bis(2-Chloroethoxy)methane		340	U	62	%	68	%	340	U	340	U	340	U
2,4-Dichlorophenol		340	U	66	%	69	%	340	U	340	U	340	U
1,2,4-Trichlorobenzene		340	U	59 *	%	64	%	340	U	340	U	340	U
Naphthalene		340	U	58	%	67	%	340	U	340	U	27	J
4-Chloroaniline		340	U	69	%	72	%	340	U	340	U	340	U
Hexachlorobutadiene		340	U	63	%	69	%	340	U	340	U	340	U
4-Chloro-3-methylphenol		340	U	73	%	76	%	340	U	340	U	340	U
2-Methylnaphthalene		340	U	64	%	72	%	340	U	340	U	340	U
Hexachlorocyclopentadiene		340	U	54	%	39	%	340	U	340	U	340	U
2,4,6-Trichlorophenol		340	U	92	%	77	%	340	U	340	U	340	U
2,4,5-Trichlorophenol		840	U	98	%	80	%	850	U	850	U	840	U

*= Outside of EPA CLP QC limits.

9/17/06

000000008

000016

Cust ID:	J12R02	J12R02	J12R02	J12R03	J12R04	J12R05
RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	340 U J	84 %	74 %	340 U J	340 U J	340 U J
2-Nitroaniline	840 U	100 %	84 %	850 U	850 U	840 U
Dimethylphthalate	340 U	88 %	78 %	340 U	340 U	340 U
Acenaphthylene	340 U	88 %	80 %	340 U	340 U	340 U
2,6-Dinitrotoluene	340 U	87 %	82 %	340 U	340 U	340 U
3-Nitroaniline	840 U	102 %	91 %	850 U	850 U	840 U
Acenaphthene	340 U	88 %	74 %	340 U	68	170
2,4-Dinitrophenol	840 U	44 %	20 %	850 U	850 U	840 U
4-Nitrophenol	840 U	87 %	90 %	850 U	850 U	840 U
Dibenzofuran	340 U	87 %	77 %	340 U	20	59
2,4-Dinitrotoluene	340 U	92 %	87 %	340 U	340 U	340 U
Diethylphthalate	340 U	86 %	80 %	340 U	340 U	340 U
4-Chlorophenyl-phenylether	340 U	86 %	76 %	340 U	340 U	340 U
Fluorene	340 U	89 %	76 %	340 U	45	120
4-Nitroaniline	840 U	81 %	81 %	850 U	850 U	840 U
4,6-Dinitro-2-methylphenol	840 U	73 %	57 %	850 U	850 U	840 U
N-Nitrosodiphenylamine (1)	340 U	76 %	60 %	340 U	340 U	340 U
4-Bromophenyl-phenylether	340 U	82 %	66 %	340 U	340 U	340 U
Hexachlorobenzene	340 U	94 %	73 %	340 U	340 U	340 U
Pentachlorophenol	840 U	96 %	65 %	850 U	850 U	840 U
Phenanthrene	340 U	92 %	77 %	35	740	1600
Anthracene	340 U	91 %	79 %	340 U	160 U	330 U
Carbazole	340 U	84 %	76 %	340 U	70	150
Di-n-butylphthalate	340 U	89 %	83 %	30	24	340 U
Fluoranthene	340 U	86 %	90 %	100	1200	1900
Pyrene	340 U	80 %	72 %	130	920	1500
Butylbenzylphthalate	340 U	98 %	78 %	340 U	340 U	340 U
3,3'-Dichlorobenzidine	340 U	116 %	80 %	340 U	340 U	340 U
Benzo(a)anthracene	340 U	87 %	77 %	83	460	750
Chrysene	340 U	88 %	76 %	150	550	880
bis(2-Ethylhexyl)phthalate	660 ~~23~~ JBU	100 %	79 %	660 ~~97~~ JBU	660 ~~44~~ JBU	660 ~~28~~ JBU
Di-n-octyl phthalate	340 U	81 %	85 %	340 U	340 U	340 U
Benzo(b)fluoranthene	340 U	79 %	77 %	120	330	420
Benzo(k)fluoranthene	340 U	79 %	79 %	110	360	540
Benzo(a)pyrene	340 U	80 %	82 %	110	440	640
Indeno(1,2,3-cd)pyrene	340 U	106 %	75 %	72	250	420
Dibenz(a,h)anthracene	340 U	101 %	73 %	55	140	160
Benzo(g,h,i)perylene	340 U	100 %	74 %	81	280	430

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/17/02

000017

000000009

	Cust ID:	J12R06		J12R07		J12R08		J12R09		J12R10		J12R11	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		3.00		1.00		3.00		3.00		3.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	77	%	73	%	60	%	55	%	76	%	57	%
	2-Fluorobiphenyl	82	%	96	%	65	%	71	%	86	%	70	%
	Terphenyl-d14	70	%	92	%	71	%	82	%	93	%	54	%
	Phenol-d5	77	%	72	%	72	%	62	%	70	%	54	%
	2-Fluorophenol	74	%	65	%	71	%	60	%	75	%	53	%
	2,4,6-Tribromophenol	78	%	68	%	75	%	50	%	64	%	51	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U J	1000	U J	340	U J	1000	U J	1000	U J	1000	U J
bis(2-Chloroethyl)ether		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2-Chlorophenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
1,3-Dichlorobenzene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
1,4-Dichlorobenzene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
1,2-Dichlorobenzene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2-Methylphenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2,2'-oxybis(1-Chloropropane)		340	U	1000	U	340	U	1000	U	1000	U	1000	U
4-Methylphenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
N-Nitroso-di-n-propylamine		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Hexachloroethane		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Nitrobenzene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Isophorone		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2-Nitrophenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2,4-Dimethylphenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
bis(2-Chloroethoxy)methane		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2,4-Dichlorophenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
1,2,4-Trichlorobenzene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Naphthalene		340	U	55	J	340	U	1000	U	1000	U	1000	U
4-Chloroaniline		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Hexachlorobutadiene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
4-Chloro-3-methylphenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2-Methylnaphthalene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
Hexachlorocyclopentadiene		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2,4,6-Trichlorophenol		340	U	1000	U	340	U	1000	U	1000	U	1000	U
2,4,5-Trichlorophenol		840	U	2500	U	840	U	2500	U	2500	U	2500	U

*= Outside of EPA CLP QC limits.

9/12/06

000018
0100000008

RFW#:	005	006	007	008	009	010
2-Chloronaphthalene	340 U J	1000 U J	340 U J	1000 U J	1000 U J	1000 U J
2-Nitroaniline	840 U	2500 U	840 U	2500 U	2500 U	2500 U
Dimethylphthalate	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Acenaphthylene	340 U	1000 U	340 U	1000 U	1000 U	1000 U
2,6-Dinitrotoluene	340 U	1000 U	340 U	1000 U	1000 U	1000 U
3-Nitroaniline	840 U	2500 U	840 U	2500 U	2500 U	2500 U
Acenaphthene	26 J	210 J	340 U	1000 U	1000 U	1000 U
2,4-Dinitrophenol	840 U	2500 U	840 U	2500 U	2500 U	2500 U
4-Nitrophenol	840 U	2500 U	840 U	2500 U	2500 U	2500 U
Dibenzofuran	340 U	82 J	340 U	1000 U	1000 U	1000 U
2,4-Dinitrotoluene	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Diethylphthalate	340 U	1000 U	340 U	1000 U	1000 U	1000 U
4-Chlorophenyl-phenylether	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Fluorene	340 U	130 J	340 U	1000 U	1000 U	1000 U
4-Nitroaniline	840 U	2500 U	840 U	2500 U	2500 U	2500 U
4,6-Dinitro-2-methylphenol	840 U	2500 U	840 U	2500 U	2500 U	2500 U
N-Nitrosodiphenylamine (1)	340 U	1000 U	340 U	1000 U	1000 U	1000 U
4-Bromophenyl-phenylether	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Hexachlorobenzene	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Pentachlorophenol	840 U	2500 U	840 U	2500 U	2500 U	1900 J
Phenanthrene	270 J	1900	340 U	1000 U	1000 U	1000 U
Anthracene	49 J	390 J	340 U	1000 U	1000 U	1000 U
Carbazole	37 J	250 J	340 U	1000 U	1000 U	1000 U
Di-n-butylphthalate	24 J	1000 U	19 J	1000 U	1000 U	1000 U
Fluoranthene	410	3100	23 J	1000 U	1000 U	68 J
Pyrene	400	3400	20 J	1000 U	1000 U	67 J
Butylbenzylphthalate	340 U	1000 U	340 U	1000 U	1000 U	1000 U
3,3'-Dichlorobenzidine	340 U	1000 U	340 U	1000 U	1000 U	1000 U
Benzo(a)anthracene	230 J	1600	340 U	1000 U	1000 U	89 J
Chrysene	310 J	1800	340 U	1000 U	1000 U	190 J
bis(2-Ethylhexyl)phthalate	660 ~~49~~ JB U	660 ~~120~~ JB U	660 ~~21~~ JB U	1000 U	1000 U	660 ~~130~~ JB U
Di-n-octyl phthalate	340 U	1000 U	340 U	1000 U	1000 U	95 J
Benzo(b)fluoranthene	210 J	1300	340 U	1000 U	1000 U	110
Benzo(k)fluoranthene	200 J	1300	340 U	1000 U	1000 U	98 J
Benzo(a)pyrene	240 J	1500	340 U	1000 U	1000 U	78 J
Indeno(1,2,3-cd)pyrene	140 J	1100	340 U	1000 U	1000 U	54 J
Dibenz(a,h)anthracene	89 J	600 J	340 U	1000 U	1000 U	1000 U
Benzo(g,h,i)perylene	170 J	1200 J	340 U	1000 U	1000 U	100 J

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/17/00

000019

1100000

	Cust ID:	J12R12	J12R13	J12R14	J12R15	SBLKAF	SBLKAF BS
Sample Information	RFW#:	011	012	013	014	06LE0565-MB1	06LE0565-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	3.00	3.00	3.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	54 %	48 %	60 %	65 %	66 %	90 %
	2-Fluorobiphenyl	62 %	59 %	68 %	55 %	63 %	96 %
	Terphenyl-d14	88 %	74 %	72 %	78 %	106 %	114 %
	Phenol-d5	56 %	54 %	60 %	67 %	73 %	108 %
	2-Fluorophenol	55 %	54 %	61 %	68 %	69 %	96 %
	2,4,6-Tribromophenol	43 %	40 %	46 %	54 %	77 %	119 %
		fl	fl	fl	fl	fl	fl
Phenol		1000 U J	1000 U J	1000 U J	330 U J	330 U	109 %
bis(2-Chloroethyl)ether		1000 U	1000 U	1000 U	330 U	330 U	109 %
2-Chlorophenol		1000 U	1000 U	1000 U	330 U	330 U	100 %
1,3-Dichlorobenzene		1000 U	1000 U	1000 U	330 U	330 U	95 %
1,4-Dichlorobenzene		1000 U	1000 U	1000 U	330 U	330 U	94 %
1,2-Dichlorobenzene		1000 U	1000 U	1000 U	330 U	330 U	98 %
2-Methylphenol		1000 U	1000 U	1000 U	330 U	330 U	100 %
2,2'-oxybis(1-Chloropropane)		1000 U	1000 U	1000 U	330 U	330 U	110 %
4-Methylphenol		1000 U	1000 U	1000 U	330 U	330 U	105 %
N-Nitroso-di-n-propylamine		1000 U	1000 U	1000 U	330 U	330 U	116 %
Hexachloroethane		1000 U	1000 U	1000 U	330 U	330 U	93 %
Nitrobenzene		1000 U	1000 U	1000 U	330 U	330 U	96 %
Isophorone		1000 U	1000 U	1000 U	330 U	330 U	108 %
2-Nitrophenol		1000 U	1000 U	1000 U	330 U	330 U	95 %
2,4-Dimethylphenol		1000 U	1000 U	1000 U	330 U	330 U	77 %
bis(2-Chloroethoxy)methane		1000 U	1000 U	1000 U	330 U	330 U	102 %
2,4-Dichlorophenol		1000 U	1000 U	1000 U	330 U	330 U	99 %
1,2,4-Trichlorobenzene		1000 U	1000 U	1000 U	330 U	330 U	90 %
Naphthalene		1000 U	1000 U	1000 U	330 U	330 U	81 %
4-Chloroaniline		1000 U	1000 U	1000 U	330 U	330 U	108 %
Hexachlorobutadiene		1000 U	1000 U	1000 U	330 U	330 U	96 %
4-Chloro-3-methylphenol		1000 U	1000 U	1000 U	330 U	330 U	107 %
2-Methylnaphthalene		1000 U	1000 U	1000 U	330 U	330 U	102 * %
Hexachlorocyclopentadiene		1000 U	1000 U	1000 U	330 U	330 U	115 * %
2,4,6-Trichlorophenol		1000 U	1000 U	1000 U	330 U	330 U	107 %
2,4,5-Trichlorophenol		2500 U	2500 U	2500 U	830 U	830 U	110 %

*= Outside of EPA CLP QC limits.

JC 9/17/06

000020

000000012

Cust ID:	J12R12		J12R13		J12R14		J12R15		SBLKAF		SBLKAF BS	
RFW#:	011		012		013		014		06LE0565-MB1		06LE0565-MB1	
2-Chloronaphthalene	1000	U J	1000	U J	1000	U J	330	U J	330	U	103	%
2-Nitroaniline	2500	U	2500	U	2500	U	830	U	830	U	119	%
Dimethylphthalate	1000	U	1000	U	1000	U	330	U	330	U	103	%
Acenaphthylene	1000	U	1000	U	1000	U	330	U	330	U	108	%
2,6-Dinitrotoluene	1000	U	1000	U	1000	U	330	U	330	U	111 *	%
3-Nitroaniline	2500	U	2500	U	2500	U	830	U	830	U	125	%
Acenaphthene	1000	U	1000	U	1000	U	330	U	330	U	104	%
2,4-Dinitrophenol	2500	U	2500	U	2500	U	830	U	830	U	33	%
4-Nitrophenol	2500	U	2500	U	2500	U	830	U	830	U	115	%
Dibenzofuran	1000	U	1000	U	1000	U	330	U	330	U	108	%
2,4-Dinitrotoluene	1000	U	1000	U	1000	U	330	U	330	U	109	%
Diethylphthalate	1000	U	1000	U	1000	U	36	J	330	U	103	%
4-Chlorophenyl-phenylether	1000	U	1000	U	1000	U	330	U	330	U	105	%
Fluorene	1000	U	1000	U	1000	U	330	U	330	U	109	%
4-Nitroaniline	2500	U	2500	U	2500	U	830	U	830	U	99	%
4,6-Dinitro-2-methylphenol	2500	U	2500	U	2500	U	830	U	830	U	94	%
N-Nitrosodiphenylamine (1)	1000	U	1000	U	1000	U	330	U	330	U	84	%
4-Bromophenyl-phenylether	1000	U	1000	U	1000	U	330	U	330	U	94	%
Hexachlorobenzene	1000	U	1000	U	1000	U	330	U	330	U	110	%
Pentachlorophenol	2500	U	2500	U	2500	U	830	U	830	U	109	%
Phenanthrene	420	J	1000	U	1000	U	330	U	330	U	112	%
Anthracene	86	J	1000	U	1000	U	330	U	330	U	102	%
Carbazole	1000	U	1000	U	1000	U	330	U	330	U	97	%
Di-n-butylphthalate	1000	U	1000	U	1000	U	230	J	330	U	75	%
Fluoranthene	440	J	1000	U	1000	U	330	U	330	U	94	%
Pyrene	710	J	59	J	1000	U	330	U	330	U	104	%
Butylbenzylphthalate	1000	U	1000	U	1000	U	330	U	330	U	118	%
3,3'-Dichlorobenzidine	1000	U	1000	U	1000	U	330	U	330	U	114	%
Benzo(a)anthracene	210	J	1000	U	1000	U	330	U	330	U	109	%
Chrysene	260	J	1000	U	1000	U	330	U	330	U	109	%
bis(2-Ethylhexyl)phthalate	1000	U	1000	U	1000	U	460 ~~47~~ ~~JB~~	U	23	J	113	%
Di-n-octyl phthalate	1000	U	1000	U	1000	U	330	U	330	U	113	%
Benzo(b)fluoranthene	140	J	1000	U	1000	U	330	U	330	U	111	%
Benzo(k)fluoranthene	160	J	1000	U	1000	U	330	U	330	U	108	%
Benzo(a)pyrene	170	J	1000	U	1000	U	330	U	330	U	113	%
Indeno(1,2,3-cd)pyrene	87	J	1000	U	1000	U	330	U	330	U	103	%
Dibenz(a,h)anthracene	1000	U	1000	U	1000	U	330	U	330	U	104	%
Benzo(g,h,i)perylene	96	J	1000	U	1000	U	330	U	330	U	101	%

(1) - Cannot be separated from Diphenylamine. * = Outside of EPA CLP QC limits.

9/17/00

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	Cust ID:	SBLKAG	SBLKAG BS
Sample Information	RFW#:	06LE0568-MB1	06LE0568-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	ug/Kg	ug/Kg

Surrogate Recovery	Nitrobenzene-d5	81	%	72	%
	2-Fluorobiphenyl	69	%	77	%
	Terphenyl-d14	118	%	88	%
	Phenol-d5	95	%	76	%
	2-Fluorophenol	84	%	79	%
	2,4,6-Tribromophenol	51	%	89	%

Phenol	330	U	75	%	
bis(2-Chloroethyl)ether	330	U	80	%	
2-Chlorophenol	330	U	80	%	
1,3-Dichlorobenzene	330	U	77	%	
1,4-Dichlorobenzene	330	U	75	%	
1,2-Dichlorobenzene	330	U	79	%	
2-Methylphenol	330	U	75	%	
2,2'-oxybis(1-Chloropropane)	330	U	74	%	
4-Methylphenol	330	U	73	%	
N-Nitroso-di-n-propylamine	330	U	76	%	
Hexachloroethane	330	U	78	%	
Nitrobenzene	330	U	76	%	
Isophorone	330	U	82	%	
2-Nitrophenol	330	U	77	%	
2,4-Dimethylphenol	330	U	57	%	
bis(2-Chloroethoxy)methane	330	U	78	%	
2,4-Dichlorophenol	330	U	78	%	
1,2,4-Trichlorobenzene	330	U	76	%	
Naphthalene	330	U	78	%	
4-Chloroaniline	330	U	89	%	
Hexachlorobutadiene	330	U	88	%	
4-Chloro-3-methylphenol	330	U	77	%	
2-Methylnaphthalene	330	U	83	%	
Hexachlorocyclopentadiene	330	U	82	%	
2,4,6-Trichlorophenol	330	U	78	%	
2,4,5-Trichlorophenol	830	U	81	%	

*= Outside of EPA CLP QC limits.

9/17/06

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2-Chloronaphthalene	330	U	80	%
2-Nitroaniline	830	U	90	%
Dimethylphthalate	330	U	87	%
Acenaphthylene	330	U	86	%
2,6-Dinitrotoluene	330	U	88	%
3-Nitroaniline	830	U	106	%
Acenaphthene	330	U	83	%
2,4-Dinitrophenol	830	U	51	%
4-Nitrophenol	830	U	92	%
Dibenzofuran	330	U	84	%
2,4-Dinitrotoluene	330	U	96	%
Diethylphthalate	330	U	92	%
4-Chlorophenyl-phenylether	330	U	86	%
Fluorene	330	U	85	%
4-Nitroaniline	830	U	95	%
4,6-Dinitro-2-methylphenol	830	U	92	%
N-Nitrosodiphenylamine (1)	330	U	71	%
4-Bromophenyl-phenylether	330	U	80	%
Hexachlorobenzene	330	U	90	%
Pentachlorophenol	830	U	88	%
Phenanthrene	330	U	87	%
Anthracene	330	U	88	%
Carbazole	330	U	87	%
Di-n-butylphthalate	330	U	94	%
Fluoranthene	330	U	96	%
Pyrene	330	U	86	%
Butylbenzylphthalate	330	U	93	%
3,3'-Dichlorobenzidine	330	U	103	%
Benzo(a)anthracene	330	U	88	%
Chrysene	330	U	89	%
bis(2-Ethylhexyl)phthalate	24	J	93	%
Di-n-octyl phthalate	330	U	90	%
Benzo(b)fluoranthene	330	U	89	%
Benzo(k)fluoranthene	330	U	89	%
Benzo(a)pyrene	330	U	93	%
Indeno(1,2,3-cd)pyrene	330	U	94	%
Dibenz(a,h)anthracene	330	U	93	%
Benzo(g,h,i)perylene	330	U	93	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/17/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Kessner, Joan H

From: Christian, Bruce [BChristian@TLIsolutions.com]
Sent: Sunday, September 24, 2006 8:24 PM
To: joan.kessner@wch-rcc.com; jeanette.duncan@wch-rcc.com
Subject: k0468

Attachments: K0468-Sb.pdf

K0468-Sb.pdf (1 MB)

see attached

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0607L462
SDG/SAF # K0468/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 07-11-2006

SEMIVOLATILE

Fourteen (14) soil samples were collected on 07-06-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 07-12,13-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 07-26,27,29,30-2006 and 08-01,02,07,15-2006.

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

1. All samples were extracted and analyzed within required holding time.

2. The sample results were reported on a dry-weight basis.

3. Non-target compounds were detected in the samples.

4. Samples J12R07, J12R09, J12R10, J12R11, J12R12, J12R13 and J12R14 required a 3-fold dilution because they contained high levels of both target and non-target compounds

5. One (1) of one hundred and twenty (120) surrogate recoveries was outside acceptance criteria. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction and no recoveries less than 10%

6. One (1) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. Three (3) of one hundred and twenty-eight (128) All blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. The method blank contained the common laboratory contaminant Bis (2-Ethylhexy) phthalate.

9. Internal standard area and retention time criteria were met.

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 21 pages.

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

10. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/23/06
Date

kim\gorup\data\bna\tnu-hanford\0607-462.doc

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06MS282

Initiator: Sharon Saylor
Date: 8-15-06
Client: TMU

Batch: 06072462
Samples: 001MS
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Solid
Prep Batch: 061005GF

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

lowering of 1,2,4-trichlorobenzene in the ms but the msd & BS are ok.

2. Known or Probable Causes(s)

loss due to a difficult sample matrix

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

narrate

4. Project Manager Instructions...signature/date: 8/15/06

__ Concur with Proposed Action
✓ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
(✓)	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	(✓)	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-025 K0468

RECEIVED AUG 2006

DATE RECEIVED: 07/11/06 LVL LOT #: 0607L462

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J12R02	001	S	06LE0565	07/06/06	07/12/06	08/02/06
J12R02	001 MS	S	06LE0565	07/06/06	07/12/06	08/07/06
J12R02	001 MSD	S	06LE0568	07/06/06	07/13/06	08/01/06
J12R03	002	S	06LE0568	07/06/06	07/13/06	08/01/06
J12R04	003	S	06LE0568	07/06/06	07/13/06	08/02/06
J12R05	004	S	06LE0565	07/06/06	07/12/06	08/07/06
J12R06	005	S	06LE0568	07/06/06	07/13/06	08/02/06
J12R07	006	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R08	007	S	06LE0565	07/06/06	07/12/06	08/07/06
J12R09	008	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R10	009	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R11	010	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R12	011	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R13	012	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R14	013	S	06LE0565	07/06/06	07/12/06	08/15/06
J12R15	014	S	06LE0568	07/06/06	07/13/06	08/02/06

LAB QC:

SBLKAF	MB1	S	06LE0565	N/A	07/12/06	07/27/06
SBLKAF	MB1 BS	S	06LE0565	N/A	07/12/06	07/26/06
SBLKAG	MB1	S	06LE0568	N/A	07/13/06	07/29/06
SBLKAG	MB1 BS	S	06LE0568	N/A	07/13/06	07/30/06

Collector C. Martinez	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-B-14:8		SAF No. RC-025
Ice Chest No. SML-363	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

Price Code 8C — Air Quality

Data Turnaround 15 days

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; Chlorophenoxy Herbicides - EPA8151A				

Sample No.	Matrix *	Sample Date	Sample Time										
J12R02	SOIL	07/06/06	0747	✓	✓	✓	✓		✓				1
J12R03	SOIL		0814	✓	✓	✓	✓		✓				2
J12R04	SOIL		0750	✓	✓	✓	✓		✓				3
J12R05	SOIL		0755	✓	✓	✓	✓		✓				4
J12R06	SOIL	07/06/06	0805	✓	✓	✓	✓		✓				5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Blanchard	7-6-06 1815	3728 #34	7-6-06 1815
3728/3M	7/10/06 0930	M Stankovich	7/10/06 0930
M Stankovich	7/10/06 1000	FedEx	
FedEx	7-11-06 1010	J. Hernandez	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) [Cesium-134, Cobalt-60, Europium-152, Europium-154, Europium-155]~~

07/06/06

Personnel not available to Relinquish samples from 3728 Ref # 3A on 7/10/06

Matrix *

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

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

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

000029

810000018

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector C. Martinez	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 days		
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-B-14:8		SAF No. RC-025
Air Quality			
Ice Chest No. ERC-99-058	Field Logbook No. FL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

000000019

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000030

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				
	See Item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; ~~Chlorophenoxy Herbicides - 8151~~ 07/06/06				

Sample No.	Matrix *	Sample Date	Sample Time											
J12R07	SOIL	07/06/06	0825	✓	✓	✓	✓	07/06/06	✓					6
J12R08	SOIL		0820	✓	✓	✓	✓		✓					7
J12R09	SOIL		0825	✓	✓	✓	✓		✓					8
J12R10	SOIL		0915	✓	✓	✓	✓		✓					9
J12R11	SOIL	07/06/06	0920	✓	✓	✓	✓		✓					10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
J.R. Blandin	7-6-06 1315	3728 #3A	7-6-06 1315
3728/3A	7/10/06 0915	M Stankovich	7/10/06 0915
M Stankovich (W.C.H.)	7/10/06 1500	FED EX	
FED EX	7/11/06 1010	V. Hilliard	7/11/06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)
(2) ~~Gamma Spectroscopy (TCL GM) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~ 07/06/06

Personnel not available to relinquish samples from 3728 Rof # 3A on 7/10/06

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

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

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

Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: 8C
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8	SAF No.: RC-025	Air Quality
Ice Chest No.: FKC-02-002	Field Logbook No.: EL-1585-6	COA: R10B142000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060520	Bill of Lading/Air Bill No.: SEE 03PC	

Data Turnaround: 15 days

000000020

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	
Type of Container	G/P	G/P	aG	aG	G/P	aG	
No. of Container(s)	1	1	1	1	1	1	
Volume	250mL	125mL	120mL	120mL	500mL	250mL	

SAMPLE ANALYSIS

				See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081, Phenoxy-Herbicides - 8151A					
Sample No.	Matrix *	Sample Date	Sample Time											
J12R12	SOIL	07/06/06	0940	✓	✓	✓	✓		✓					11
J12R13	SOIL		0945	✓	✓	✓	✓		✓					12
J12R14	SOIL	0827	~~0827~~ 0801	✓	✓	✓	✓		✓					8
J12R15	SOIL		0801	✓	n/a	n/a	✓		n/a					2
		07/06/06												

07/06/06

07/06/06

000031

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Edmondson	7-6-06 1315	3728 A3A	7-6-06 1315
3728/3A 7/10/06	0900	MS Stankovich	7/10/06 0900
MS Stankovich	7/10/06 0900	Fed Ex	
Fed Ex	7-11-06 1010	V. Hernandez	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~

07/06/06

Personnel not available to relinquish samples from 3728 Ref 3A on 7/10/06

Matrix *

S - Soil
SE - Sediment
SO - Solid
Sl - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
P - Paint
RB - Rags
L - Liquid
V - Vegetation
V - Other

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

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

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-B-14:2			DATA PACKAGE: K0468		
VALIDATOR: TLI		LAB: LCI		DATE: 9/15/00	
			SDG: K0468		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J12R02	J12R03	J12R04	J12R05	J12R06	J12R07
J12R08	J12R09	J12R10	J12R11	J12R12	J12R13
J12R14					
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

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

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

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

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

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

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: bis(2-ethylhexyl)phthalate - U at RQL - all detects

FB - diethylphthalate + di-n-butylphthalate -

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

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

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

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

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

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

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

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

MS/MSD standards? (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: Surr - 2Fluorobiphenyl assoc - J all no Pts

MS + MSD - not in same prep batch - J all

1,2,4-trichlorobenzene - MS - J all assoc samples

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD RPD values 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 + MSD not in same prep batch - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A
Iinternal standard areas acceptable? ..... Yes No N/A
Internal standard retention times acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

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

Laboratory properly identified and coded all TIC? (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: [illegible] — [illegible]
462 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

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

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

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

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

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

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

Comments:

Date: 18 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Remaining Pipelines & Sewers – Soil Full Protocol – Waste Subsite 100-B-14:2
Subject: Radiochemistry - Data Package No. K0468-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0468 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Data
J12R02	7/6/06	Soil	C	See note 1
J12R03	7/6/06	Soil	C	See note 1
J12R04	7/6/06	Soil	C	See note 1
J12R05	7/6/06	Soil	C	See note 1
J12R06	7/6/06	Soil	C	See note 1
J12R07	7/6/06	Soil	C	See note 1
J12R08	7/6/06	Soil	C	See note 1
J12R09	7/6/06	Soil	C	See note 1
J12R10	7/6/06	Soil	C	See note 1
J12R11	7/6/06	Soil	C	See note 1
J12R12	7/6/06	Soil	C	See note 1
J12R13	7/6/06	Soil	C	See note 1
J12R14	7/6/06	Soil	C	See note 1

1 – Gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

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

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

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

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

Due to an RPD outside QC limits (67%), all radium-226 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J12R09/J12R14) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for thorium-232 (36%) was outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Forty-four analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0468 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 deficiencies were noted:

- Due to an RPD outside QC limits (67%), all radium-226 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.

Forty-four analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0468	REVIEWER: TLT	Project: 100-B-14.2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Radium-226	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB																			
Case	SDG: K0468																		
Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Potassium-40		10.2		9.38		9.70		10.7		9.40		9.12		7.01		7.56		8.78	
Cobalt 60	0.05	U	U*	U	U*	U	U*	U	U*	U	U	U	U*	U	U*	U	U*	U	U
Cesium 137	0.05	U	U*	U	U*	U	U*	U	U	U	U	U	U	U	U*	U	U*	U	U
Radium-226		0.364	J	0.316	J	0.300	J	0.294	J	0.320	J	0.337	J	0.277	J	0.304	J	0.320	J
Radium-228		0.796		0.342		0.678		0.407		0.576		0.531		0.372		0.346		0.429	
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*	U	U	U	U*	U	U*	U	U*	U	U
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*	U	U	U	U*	U	U*	U	U*	U	U
Europium 155	0.1	U	U*	U	U*	U	U*	U	U	U	U*	U	U*	U	U*	U	U*	U	U
Thorium-228		0.470		0.398		0.393		0.438		0.377		0.529		0.344		0.371		0.360	
Thorium-232		0.796		0.342		0.678		0.407		0.576		0.531		0.372		0.346		0.429	
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

000010

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

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB																			
Case	SDG: K0468																		
Sample Number		J12R11		J12R12		J12R13		J12R14											
Remarks								Duplicate											
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06											
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Potassium-40		10.6		8.27		8.96		9.75											
Cobalt 60	0.05	U	U*	U	U	U	U	U	U*										
Cesium 137	0.05	U	U*	U	U*	U	U	U	U*										
Radium-226		0.725	J	0.292	J	0.390	J	0.391	J										
Radium-228		U	U	0.485		0.508		0.500											
Europium 152	0.1	U	U*	U	U	U	U	U	U*										
Europium 154	0.1	U	U*	U	U	U	U	U	U*										
Europium 155	0.1	U	U*	U	U	U	U	U	U*										
Thorium-228		0.263		0.376		0.396		0.400											
Thorium-232		U	U	0.485		0.508		0.500											
Uranium-235(gea)		U	U	U	U	U	U	U	U										
Uranium-238(gea)		U	U	U	U	U	U	U	U										
Americium-241(gea)		U	U	U	U	U	U	U	U										

000011

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-01 J12R02

DATA SHEET

SDG	7826	Client/Case no	Hanford		SDG K0468
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-01	Client sample id	J12R02		
Dept sample id	7826-001	Location/Matrix	100-B-14:8		SOLID
Received	07/11/06	Collected/Weight	07/06/06 07:47	800 g	
% solids	98.4	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	10.2	2.1	0.75			GAM
Cobalt 60	10198-40-0	U		0.085	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.364	0.15	0.15	0.10	J	GAM
Radium 228	15262-20-1	0.796	0.34	0.31	0.20		GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	0.470	0.090	0.090			GAM
Thorium 232	TH-232	0.796	0.34	0.31			GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		9.7		U	GAM
Americium 241	14596-10-2	U		0.28		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

K 9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-02 J12R03

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-02	Client sample id	J12R03		
Dept sample id	7826-002	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 08:14	820 g	
% solids	97.6	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.38	1.8	0.46			GAM
Cobalt 60	10198-40-0	U		0.072	0.050	U	GAM
Cesium 137	10045-97-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	0.316	0.12	0.12	0.10	J	GAM
Radium 228	15262-20-1	0.342	0.28	0.28	0.20		GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.398	0.076	0.077			GAM
Thorium 232	TH-232	0.342	0.28	0.28			GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-03 J12R04

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-03	Client sample id	J12R04		
Dept sample id	7826-003	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 07:50	741 g	
% solids	97.5	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.70	2.2	0.63			GAM
Cobalt 60	10198-40-0	U		0.073	0.050	U	GAM
Cesium 137	10045-97-3	U		0.092	0.10	U	GAM
Radium 226	13982-63-3	0.300	0.13	0.12	0.10	J	GAM
Radium 228	15262-20-1	0.678	0.30	0.29	0.20		GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.393	0.069	0.078			GAM
Thorium 232	TH-232	0.678	0.30	0.29			GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		7.8		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-04 J12R05

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-04	Client sample id	J12R05		
Dept sample id	7826-004	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 07:55	855 g	
% solids	98.9	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	10.7	0.92	0.37			GAM
Cobalt 60	10198-40-0	U		0.053	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	0.294	0.090	0.093	0.10	J	GAM
Radium 228	15262-20-1	0.407	0.19	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Thorium 228	14274-82-9	0.438	0.051	0.051			GAM
Thorium 232	TH-232	0.407	0.19	0.19			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		5.7		U	GAM
Americium 241	14596-10-2	U		0.042		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/12/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-05 J12R06

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-05	Client sample id	J12R06		
Dept sample id	7826-005	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 08:05	835 g	
% solids	99.3	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.40	0.96	0.46			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.320	0.084	0.091	0.10	J	GAM
Radium 228	15262-20-1	0.576	0.20	0.20	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	0.377	0.052	0.055			GAM
Thorium 232	TH-232	0.576	0.20	0.20			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		6.0		U	GAM
Americium 241	14596-10-2	U		0.045		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-06 J12R07

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-06	Client sample id	J12R07		
Dept sample id	7826-006	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 08:25	771 g	
% solids	99.0	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.12	1.2	0.64			GAM
Cobalt 60	10198-40-0	U		0.065	0.050	U	GAM
Cesium 137	10045-97-3	U		0.046	0.10	U	GAM
Radium 226	13982-63-3	0.337	0.10	0.099	0.10	J	GAM
Radium 228	15262-20-1	0.531	0.23	0.23	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.529	0.086	0.092			GAM
Thorium 232	TH-232	0.531	0.23	0.23			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		7.5		U	GAM
Americium 241	14596-10-2	U		0.052		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-07 J12R08

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-07	Client sample id	J12R08		
Dept sample id	7826-007	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 08:20	821 g	
% solids	98.5	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	7.01	1.9	0.65			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.069	0.10	U	GAM
Radium 226	13982-63-3	0.277	0.15	0.14	0.10	J	GAM
Radium 228	15262-20-1	0.372	0.27	0.29	0.20		GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.344	0.079	0.081			GAM
Thorium 232	TH-232	0.372	0.27	0.29			GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		7.7		U	GAM
Americium 241	14596-10-2	U		0.25		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

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Lab id	EBRLNE
Protocol	Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-08 J12R09

DATA SHEET

SDG	7826	Client/Case no	Hanford SDG K0468
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R607037-08	Client sample id	J12R09
Dept sample id	7826-008	Location/Matrix	100-B-14:8 SOLID
Received	07/11/06	Collected/Weight	07/06/06 08:25 956 g
% solids	98.8	Custody/SAF No	RC-025-022 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	7.56	2.1	0.63			GAM
Cobalt 60	10198-40-0	U		0.079	0.050	U	GAM
Cesium 137	10045-97-3	U		0.068	0.10	U	GAM
Radium 226	13982-63-3	0.304	0.13	0.12	0.10	J	GAM
Radium 228	15262-20-1	0.346	0.28	0.26	0.20		GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.17	0.10	U	GAM
Thorium 228	14274-82-9	0.371	0.090	0.11			GAM
Thorium 232	TH-232	0.346	0.28	0.26			GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		8.2		U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM

100BC Remain:Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-09 J12R10

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-09	Client sample id	J12R10		
Dept sample id	7826-009	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 09:15	897 g	
% solids	98.7	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	8.78	1.4	0.29			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.320	0.068	0.050	0.10	J	GAM
Radium 228	15262-20-1	0.429	0.13	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.064	0.10	U	GAM
Europium 154	15585-10-1	U		0.087	0.10	U	GAM
Europium 155	14391-16-3	U		0.076	0.10	U	GAM
Thorium 228	14274-82-9	0.360	0.046	0.031			GAM
Thorium 232	TH-232	0.429	0.13	0.11			GAM
Uranium 235	15117-96-1	U		0.095		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Americium 241	14596-10-2	U		0.096		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-10 J12R11

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-10	Client sample id	J12R11		
Dept sample id	7826-010	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 09:20	778 g	
% solids	98.9	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	10.6	1.9	1.3			GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Cesium 137	10045-97-3	U		0.099	0.10	U	GAM
Radium 226	13982-63-3	0.725	0.21	0.17	0.10	J	GAM
Radium 228	15262-20-1	U		0.84	0.20	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.39	0.10	U	GAM
Europium 155	14391-16-3	U		0.095	0.10	U	GAM
Thorium 228	14274-82-9	0.263	0.081	0.084			GAM
Thorium 232	TH-232	U		0.84		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.091		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-11 J12R12

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-11	Client sample id	J12R12		
Dept sample id	7826-011	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 09:40	804 g	
% solids	99.4	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	8.27	1.9	0.31			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.059	0.10	U	GAM
Radium 226	13982-63-3	0.292	0.072	0.046	0.10	J	GAM
Radium 228	15262-20-1	0.485	0.15	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.066	0.10	U	GAM
Europium 154	15585-10-1	U		0.084	0.10	U	GAM
Europium 155	14391-16-3	U		0.073	0.10	U	GAM
Thorium 228	14274-82-9	0.376	0.039	0.032			GAM
Thorium 232	TH-232	0.485	0.15	0.11			GAM
Uranium 235	15117-96-1	U		0.093		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.093		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-12 J12R13

DATA SHEET

SDG	7826	Client/Case no	Hanford	SDG K0468	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-12	Client sample id	J12R13		
Dept sample id	7826-012	Location/Matrix	100-B-14:8	SOLID	
Received	07/11/06	Collected/Weight	07/06/06 09:45	987 g	
% solids	99.1	Custody/SAF No	RC-025-022	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	8.96	0.41	0.20			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Radium 226	13982-63-3	0.390	0.048	0.042	0.10	J	GAM
Radium 228	15262-20-1	0.508	0.087	0.081	0.20		GAM
Europium 152	14683-23-9	U		0.051	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Thorium 228	14274-82-9	0.396	0.025	0.024			GAM
Thorium 232	TH-232	0.508	0.087	0.081			GAM
Uranium 235	15117-96-1	U		0.065		U	GAM
Uranium 238	U-238	U		2.5		U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/17/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-13 J12R14

DATA SHEET

SDG	7826	Client/Case no	Hanford SDG K0468
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R607037-13	Client sample id	J12R14
Dept sample id	7826-013	Location/Matrix	100-B-14:8 SOLID
Received	07/11/06	Collected/Weight	07/06/06 08:27 845 g
% solids	98.9	Custody/SAF No	RC-025-022 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.75	1.1	0.56			GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Cesium 137	10045-97-3	U		0.053	0.10	U	GAM
Radium 226	13982-63-3	0.391	0.10	0.096	0.10	J	GAM
Radium 228	15262-20-1	0.500	0.26	0.27	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.400	0.065	0.071			GAM
Thorium 232	TH-232	0.500	0.26	0.27			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		7.8		U	GAM
Americium 241	14596-10-2	U		0.052		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

9/12/06

Lab id	EBRLNE
Protocol	Hanford
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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0468 was composed of thirteen solid (soil) samples designated under SAF No. RC-025 with a Project Designation of: 100-BC Remaining Pipelines and Sewers-Soil Full Protocol.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on July 25, 2006.

2.0 ANALYSIS NOTES

2.1 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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

Melissa Mannion — 7/25/06

Melissa C. Mannion
Senior Program Manager

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-022	Page 1 of 2

Collector: C. Martinez	Company Contact: C. Martinez; Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 DAY
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8 K0468 (7826)	SAF No.: RC-025	Air Quality
Ice Chest No.: ERC-96-004	Field Logbook No.: EL-1585-6; COA: R10B142000	Method of Shipment: fed ex	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060509	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~ TRE 7-6-06

0000027

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196 TRE 7-6-06	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; Chloro-Herbicides - EPA 8151 TRE 7-6-06				
Sample No.	Matrix *	Sample Date	Sample Time								
J12R02	SOIL	7-6-06	0747					X			1
J12R03	SOIL	7-6-06	0814					X			2
J12R04	SOIL	7-6-06	0750					X			3
J12R05	SOIL	7-6-06	0755					X			4
J12R06	SOIL	7-6-06	0805					X			5

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	[illegible]	7-6-06 1330	3728#3B	7-6-06 1330
Relinquished By/Removed From	3728/3B	7/10/06 1100	MSTankovich	7/10/06 1100
Relinquished By/Removed From	MSTankovich	7/10/06 1500	Fed. EX	
Relinquished By/Removed From	Fed EX		[illegible]	07/11/06 9:30
Relinquished By/Removed From				
Relinquished By/Removed From				

SPECIAL INSTRUCTIONS

TRE 7-6-06

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from 3728 Ref #3B on 7/10/06

Matrix *

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

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

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-022	Page 2 of 2

Collector: C. Martinez	Company Contact: C. Martinez; Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8 K0468 (7826)	SAF No.: RC-025	Air Quality: 15 DAY
Ice Chest No.: ERC - 96-006	Field Logbook No.: EL-1585-6; COA: R10B142000	Method of Shipment: fed ex	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060559	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~ TRE 7-6-06

000028

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container				G/P	G/P	aG	aG	G/P	aG			
No. of Container(s)				1	1	1	1	1	1			
Volume				250mL	125mL	120mL	120mL	500mL	250mL			
				See item (1) in Special Instructions.	Chromium Hex - 7196 TRE 7-6-06	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081 Chloro-Herbicides - EPA 8151 TRE 7-6-06			
Sample No.	Matrix *	Sample Date	Sample Time									
J12R07	SOIL	7-6-06	0825					X				6
J12R08	SOIL	7-6-06	0820					X				7
J12R09	SOIL	7-6-06	0825					X				8
J12R10	SOIL	7-6-06	0915					X				9
J12R11	SOIL	7-6-06	0920					X				10

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	TR Eberline	7-6-06 1330	3728 #3B	7-6-06 1330
Relinquished By/Removed From	3228/3B	7/10/06 1100	MSHankouch	7/10/06 1100
Relinquished By/Removed From	MSHankouch	7/10/06 1800	FCL Ex	
Relinquished By/Removed From	FCL Ex		Received By/Stored In: 07/11/06	9:30
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

TRE 7-6-06

(1) ~~ICP Metals~~ - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, ~~Beryllium, Boron~~, Cadmium, Calcium, Chromium, ~~Cobalt~~, Copper, Iron, Lead, ~~Lithium~~, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, ~~Potassium, Selenium, Silicon, Silver~~, Sodium, Strontium, Thallium, Tin, Vanadium]; ~~ICP Metals~~ - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; ~~Mercury - 7471~~ - (CV)

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

Personnel not available to relinquish samples from 3728 Ref # 3B on 7/10/06

Matrix *

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

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

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-022	Page 1 of 1

Collector: C. Martinez	Company Contact: C. Martinez — Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8 K0468 (7826)	SAF No.: RC-025	Air Quality: 15 DAY
Ice Chest No.: ERC-02-501	Field Logbook No.: EL-1585-6 — COA: R10B142000	Method of Shipment: fed ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade TRE 7-6-06

000029

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196 TRE 7-6-06	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081 Chloro-Herbicides - EPA 8151 TRE 7-6-06				

Sample No.	Matrix *	Sample Date	Sample Time										
J12R12	SOIL	7-6-06	0940					X					11
J12R13	SOIL	7-6-06	0945					X					12
J12R14	SOIL	7-6-06	0827					X					8
~~J12R15~~	~~SOIL~~	~~7-6-06~~ TRE 7-6-06	~~0801~~					~~X~~ TRE 7-6-06					

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	T.R. Bellinger	7-6-06 1330	3728 #38	7-6-06 1330
Relinquished By/Removed From	3728/38	7/10/06 1030	M. Stankovich	7/10/06 1030
Relinquished By/Removed From	M. Stankovich	7/10/06 1300	Fed Ex	7/10/06
Relinquished By/Removed From	FED EX		MM	07/11/06 9:30
Relinquished By/Removed From				
Relinquished By/Removed From				

SPECIAL INSTRUCTIONS

TRE 7-6-06

(1) ~~ICP Metals - 6010TR~~ (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, ~~Boron~~, Cadmium, Calcium, ~~Chromium, Cobalt~~, Copper, Iron, Lead, Lithium, ~~Magnesium~~, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, ~~Selenium~~, ~~Silicon, Silver~~, Sodium, Strontium, Thallium, Tin, Vanadium}; ~~ICP Metals - 6010A~~ (Add-on) {Titanium, Uranium, Zinc, Zirconium}; ~~Mercury - 7471 - (CV)~~

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

Personnel not available to relinquish samples from 3728 Ref 38 on 7/10/06

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

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

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

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-BC 100-B-14:2			DATA PACKAGE: K0468		
VALIDATOR: TLI		LAB: EB		DATE: 9/15/06	
			SDG: K046		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J12R02	J12R03	J12R04	J12R05	J12R06	J12R07
J12R08	J12R09	J12R10	J12R11	J12R12	J12R13
J12R14					
					Soil

1. Completeness ..... ☐ N/A

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

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

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

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

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

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

Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

8. Tracer Recovery (Levels C, D, E) ..... ☒ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

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

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

Spike source expired? Levels D, E) ..... Yes No N/A

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

Comments: _____

10. Duplicates (Levels C, D, E) ☐ N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

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

Comments: Radium 226 - 6770 - J all

11. Field QC Samples (Levels C, D E) ☐ N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

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

Performance audit sample results acceptable? Yes No N/A

Comments: FD - ~~RA-226~~ 3670
Th-232

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ..... ☐ N/A

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

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

Results Acceptable? (Levels D, E) ..... Yes No N/A

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

MDA's meet required detection limits? ..... Yes No N/A

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

Comments: 44 am

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-15 Method Blank

METHOD BLANK

SDG	7826	Client/Case no	Hanford	SDG	K0468
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R607037-15	Client sample id	Method Blank		
Dept sample id	7826-015	Material/Matrix		SOLID	
		SAF No	RC-025		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	U		0.32		U	GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	U		0.054	0.10	U	GAM
Radium 228	15262-20-1	U		0.13	0.20	U	GAM
Europium 152	14683-23-9	U		0.078	0.10	U	GAM
Europium 154	15585-10-1	U		0.095	0.10	U	GAM
Europium 155	14391-16-3	U		0.053	0.10	U	GAM
Thorium 228	14274-82-9	U		0.041		U	GAM
Thorium 232	TH-232	U		0.13		U	GAM
Uranium 235	15117-96-1	U		0.081		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.023		U	GAM

100BC Remain.Piplns.& Sewers-Soil FP

QC-BLANK #57789

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-14

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7826
Contact Melissa C. Mannion

Client/Case no Hanford SDG K0468
Contract No. 630

Lab sample id R607037-14
Dept sample id 7826-014

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-025

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Cobalt 60	2.05	0.14	0.061	0.050		GAM	2.12	0.085	97	75-125	80-120
Cesium 137	2.29	0.13	0.082	0.10		GAM	2.25	0.090	102	75-125	80-120

100BC Remain.Piplns.& Sewers-Soil FP

QC-LCS #57788

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/25/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0468

R607037-16 J12R11

DUPLICATE

SDG	7826			Client/Case no	Hanford SDG K0468
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R607037-16	Lab sample id	R607037-10	Client sample id	J12R11
Dept sample id	7826-016	Dept sample id	7826-010	Location/Matrix	100-B-14:8 SOLID
		Received	07/11/06	Collected/Weight	07/06/06 09:20 778 g
% solids	98.9	% solids	98.9	Custody/SAF No	RC-025-022 RC-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Potassium 40	10.1	1.6	1.3			GAM	10.6	1.9	1.3		5	48	0.3
Cobalt 60	U		0.10	0.050	U	GAM	U		0.15	U	-		0.5
Cesium 137	U		0.086	0.10	U	GAM	U		0.099	U	-		0.2
Radium 226	0.362	0.15	0.16	0.10		GAM	0.725	0.21	0.17		67	79	2.5
Radium 228	U		0.67	0.20	U	GAM	U		0.84	U	-		0.3
Europium 152	U		0.13	0.10	U	GAM	U		0.15	U	-		0.2
Europium 154	U		0.34	0.10	U	GAM	U		0.39	U	-		0.2
Europium 155	U		0.082	0.10	U	GAM	U		0.095	U	-		0.2
Thorium 228	0.306	0.070	0.068			GAM	0.263	0.081	0.084		15	65	0.7
Thorium 232	U		0.67		U	GAM	U		0.84	U	-		0.3
Uranium 235	U		0.12		U	GAM	U		0.14	U	-		0.2
Uranium 238	U		12		U	GAM	U		15	U	-		0.3
Americium 241	U		0.078		U	GAM	U		0.091	U	-		0.2

100BC Remain.Piplns.& Sewers-Soil FP

QC-DUP#10 57790

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/25/06

Date: 18 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Subsite 100-B-14:2
Subject: Wet Chemistry - Data Package No. K0468-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0468 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
J12R02	7/6/06	Soil	C	See note 1
J12R03	7/6/06	Soil	C	See note 1
J12R04	7/6/06	Soil	C	See note 1
J12R05	7/6/06	Soil	C	See note 1
J12R06	7/6/06	Soil	C	See note 1
J12R07	7/6/06	Soil	C	See note 1
J12R08	7/6/06	Soil	C	See note 1
J12R09	7/6/06	Soil	C	See note 1
J12R10	7/6/06	Soil	C	See note 1
J12R11	7/6/06	Soil	C	See note 1
J12R12	7/6/06	Soil	C	See note 1
J12R13	7/6/06	Soil	C	See note 1
J12R14	7/6/06	Soil	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

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

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J12R09/J12R14) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package K0468 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with 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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0468	REVIEWER: TU	Project: 100-B-14,2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0468																		
Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.20	U	0.20	U	0.28		0.24		0.28		0.20	U	0.20	U	0.20	U	0.74	
Sample Number		J12R11		J12R12		J12R13		J12R14											
Remarks								Duplicate											
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06											
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q										
Chromium VI	0.5	0.20	U	0.98		0.22		0.20	U										

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

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/23/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462
ORK ORDER: 11343-606-001-9999-00

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
001	J12R02	% Solids	99.1	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
002	J12R03	% Solids	98.1	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
003	J12R04	% Solids	97.6	%	0.01	1.0
		Chromium VI	0.28	MG/KG	0.20	1.0
004	J12R05	% Solids	99.0	%	0.01	1.0
		Chromium VI	0.24	MG/KG	0.20	1.0
005	J12R06	% Solids	99.5	%	0.01	1.0
		Chromium VI	0.28	MG/KG	0.20	1.0
006	J12R07	% Solids	99.4	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
007	J12R08	% Solids	98.9	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
008	J12R09	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
009	J12R10	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.74	MG/KG	0.20	1.0
010	J12R11	% Solids	99.3	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/23/06

IENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462
RK ORDER: 11343-606-001-9999-00

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
11	J12R12	% Solids	99.8	%	0.01	1.0
		Chromium VI	0.98	MG/KG	0.20	1.0
12	J12R13	% Solids	99.4	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.20	1.0
13	J12R14	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
14	J12R15	% Solids	100	%	0.01	1.0

9/12/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-025 K0468
LVL#: 0607L462

W.O.#: 11343-606-001-9999-00
Date Received: 07-11-06

INORGANIC NARRATIVE

1. This narrative covers the analyses of 14 soil samples.

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

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

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

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

8. The replicate analysis for Percent Solids was within the 20% Relative Percent Difference (RPD) control limit however replicate analysis for Chromium VI was outside the control limit that may be attributed to sample inhomogeneity.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/27/06
Date

njp\07-462

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 17 pages.

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

Collector C. Martinez	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-B-14:8		SAF No. RC-025
Ice Chest No. SML-363	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

Price Code 8C

Data Turnaround 15 days

Air Quality

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	
Type of Container	G/P	G/P	aG	aG	G/P	aG	
No. of Container(s)	1	1	1	1	1	1	
Volume	250mL	125mL	120mL	120mL	60mL	250mL	
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See Item (2) in Special Instructions.	Pesticides - 8081; Chlorinated Herbicides - EPA8151	

(00015)

Sample No.	Matrix *	Sample Date	Sample Time									
J12R02	SOIL	07/06/06	0747	✓	✓	✓	✓		✓			1
J12R03	SOIL		0814	✓	✓	✓	✓		✓			2
J12R04	SOIL		0750	✓	✓	✓	✓		✓			3
J12R05	SOIL		0755	✓	✓	✓	✓		✓			4
J12R06	SOIL	07/06/06	0805	✓	✓	✓	✓		✓			5

07/06/06

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Eberline 7-6-06	1315	3728 #34	7-6-06 1315
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728/3M	7/10/06 0930	MS Stankovich	7/10/06 0930
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MS Stankovich	7/10/06 1000	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	7-11-06 1010	V. Nemanby	7-11-06 1010
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~

07/06/06

Personnel not available to Relinquish samples from 3728 Ref # 3A on 7/10/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
BT=Biota
L=Liquid
V=Vegetation
X=Other

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

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

0000000014

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
C. Martinez	C. Martinez	509-539-2816	KESSNER, JH	8C	15 days

Project Designation	Sampling Location	SAF No.	Air Quality
100-BC Remaining Pipelines and Sewers - Soil Full Protocol	100-B-14:8	RC-025	

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
ERC-99-058	EL-1585-6	R10B142000	fed ex

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES LIONVILLE	A060520	See OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; ~~Chlorophenoxy Herbicides - 8151~~ 07/06/06					
J12R07	SOIL	07/06/06	0825	✓	✓	✓	✓		✓					6
J12R08	SOIL		0820	✓	✓	✓	✓		✓					7
J12R09	SOIL		0825	✓	✓	✓	✓		✓					8
J12R10	SOIL		0915	✓	✓	✓	✓		✓					9
J12R11	SOIL	07/06/06	0920	✓	✓	✓	✓		✓					10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
J R Shandler	7-6-06 1315	3728 #3A	7-6-06 1315
3728/3A	7/10/06 0915	M Stankovich	7/10/06 0915
M Stankovich (WCH)	7/10/06 1500	FED EX	
FED EX	7/11/06 1010	V. Hennard	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~ 07/06/06

Personnel not available to relinquish samples from 3728 Ref# 3A on 7/10/06

Matrix *

Solid
SE-Sediment
SO-Solid
Sl-Sludge
W-Water
O-Oil
A-Air
DS-Drum Solids
DL-Drum Liquids
T-Tissue
WI-Wipe
L-Liquid
V-Vegetation
X-Other

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

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

000000815

000001

Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: 8C
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8	SAF No.: RC-025	Data Turnaround: Air Quality 15 days
Ice Chest No.: ERC-02-002	Field Logbook No.: EL-1585-6	COA: R10B142000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060520	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container				G/P	G/P	aG	aG	G/P	aG			
No. of Container(s)				1	1	1	1	1	1			
Volume				250mL	125mL	120mL	120mL	500mL	250mL			
				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, Chlorinated Herbicides - 8151A			
Sample No.	Matrix *	Sample Date	Sample Time									
J12R12	SOIL	07/06/06	0940	✓	✓	✓	✓		✓			11
J12R13	SOIL		0945	✓	✓	✓	✓		✓			12
J12R14	SOIL	0827	~~0827~~ 0801	✓	✓	✓	✓		✓			8
J12R15	SOIL		0801	✓	n/A	n/A	✓		n/A			2
		07/06/06										

07/06/06

07/06/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Eberline	7-6-06 1315	3728 A3A	7-6-06 1315
3728/3A	7/10/06 0900	MB Stankovich	7/10/06 0900
MB Stankovich	7/10/06 1300	Fed Ex	
Fed Ex	7-11-06 1010	V. Hunsaker	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-154, Europium-155, Europium-156]~~

07/06/06

Personnel not available to relinquish samples from 3728 Ref 3A on 7/10/06

Matrix *

S-Soil
SL-Sediment
SO-Solid
A-Air
W-Water
O-Oil
Ao-Aqueous
DS-Drum Solids
DL-Drum Liquids
F-Foam
WI-Wipe
L-Liquid
S-Solvent
T-Other

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

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

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-B-14:2			DATA PACKAGE: K0468		
VALIDATOR: TLJ		LAB: LCL		DATE: 9/16/06	
			SDG: K0468		
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					
J12R02	J12R03	J12R04	J12R05	J12R06	J12R07
J12R08	J12R09	J12R10	J12R11	J12R12	J12R13
J12R14					
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no EB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PA

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/23/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462
ORK ORDER: 11343-606-001-9999-00

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
LANK10	06LVI073-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/23/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 06071A62
ORK ORDER: 11343-606-001-9999-00

AMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
013	J12R14	Soluble Chromium VI	4.2	0.20u	4.0	100.0	1.0
		Insoluble Chromium VI	1390	0.20u	1250	110.6	100
LANK10	06LVI073-MB1	Soluble Chromium VI	3.8	0.20u	4.0	96.0	1.0
		Insoluble Chromium VI	1110	0.20u	1060	105.1	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/23/06

JIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
12REP	J12R13	% Solids	99.4	99.5	0.050	1.0
13REP	J12R14	Chromium VI	0.20u	0.35	73.5	1.0

Date: 18 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Remaining Pipeline & Sewers – Soil Full Protocol - Waste Subsite 100-B-14:2
Subject: Pesticide/PCB - Data Package No. K0468-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0468 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	Data
J12R02	7/6/06	Soil	C	See note 1
J12R03	7/6/06	Soil	C	See note 1
J12R04	7/6/06	Soil	C	See note 1
J12R05	7/6/06	Soil	C	See note 1
J12R06	7/6/06	Soil	C	See note 1
J12R07	7/6/06	Soil	C	See note 1
J12R08	7/6/06	Soil	C	See note 1
J12R09	7/6/06	Soil	C	See note 1
J12R10	7/6/06	Soil	C	See note 1
J12R11	7/6/06	Soil	C	See note 1
J12R12	7/6/06	Soil	C	See note 1
J12R13	7/6/06	Soil	C	See note 1
J12R14	7/6/06	Soil	C	See note 1

1 – Pesticides by 8081A & PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less 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 detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are

outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits, all pesticide results (except toxaphene) were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to surrogate recoveries outside QC limits, all detected pesticide results in samples J12R05, J12R06, J12R10 and J12R14 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and

flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike or matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to RPDs outside QC limits, all pesticide results (except toxaphene) were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J12R09/J12R14) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data Package No. K0468 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 the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

- Due to matrix spike recoveries outside QC limits, all pesticide results (except toxaphene) were qualified as estimates and flagged "J".

- Due to surrogate recoveries outside QC limits, all detected pesticide results in samples J12R05, J12R06, J12R10 and J12R14 were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all pesticide results (except toxaphene) 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.

All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein 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 quantitation limit is an estimate.

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

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0468	REVIEWER: TLF	Project: 100-B-14-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All (except toxaphene)	J	All	MS recovery
All (except toxaphene)	J	All	RPD
All detected analytes		J12R05, J12R06 J12R10, J12R14	Surrogate recovery
Toxaphene	J	All	No MS/MSD/LCS analysis

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI SDG: K0468

Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	100	13	U	14	U	14	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1221	100	13	U	14	U	14	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1232	100	13	U	14	U	14	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1242	100	13	U	14	U	14	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1248	100	13	U	14	U	14	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1254	100	5.7		14	U	14	U	14		95		84		13	U	63		13	U
Aroclor-1260	100	13	U	14	U	5.3		13	U	13	U	13	U	13	U	13	U	13	U

Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06		7/21/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Gamma-BHC (Lindane)	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Beta-BHC	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Heptachlor	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Delta-BHC	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Aldrin	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	0.74	J	2.4	J	1.3	UJ	1.3	UJ	1.3	UJ
Heptachlor Epoxide	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
gamma-Chlordane	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.1	J	1.3	UJ	1.3	UJ	0.74	J	1.3	UJ
Endosulfan I	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
alpha-Chlordane	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDE	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	3.9	J	7.6	J	1.3	UJ	2.0	J	1.3	UJ
Dieldrin	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endrin	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDD	5	1.3	UJ	1.4	UJ	2.1	J	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endosulfan II	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDT	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endrin Aldehyde	5	1.3	UJ	1.4	UJ	1.8	J	0.67	J	1.8	J	2.8	J	1.3	UJ	1.3	UJ	1.5	J
Endosulfan sulfate	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	2.0	J	1.3	UJ
Methoxyclor	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endrin Ketone	5	1.3	UJ	1.4	UJ	1.4	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Toxaphene	5	13	UJ	14	UJ	14	UJ	13	UJ	13	UJ	13	UJ	13	UJ	13	UJ	13	UJ

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

000011

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: LLI	SDG: K0468								
Sample Number		J12R11		J12R12		J12R13		J12R14	
Remarks								Duplicate	
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		7/21/06		7/21/06		7/21/06		7/21/06	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	100	13	U	13	U	13	U	13	U
Aroclor-1221	100	13	U	13	U	13	U	13	U
Aroclor-1232	100	13	U	13	U	13	U	13	U
Aroclor-1242	100	13	U	13	U	13	U	13	U
Aroclor-1248	100	13	U	13	U	13	U	13	U
Aroclor-1254	100	13	U	13	U	15		78	
Aroclor-1260	100	13	U	13	U	13	U	13	U

Sample Number		J12R07		J12R08		J12R09		J12R10	
Remarks						orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06	
Extraction Date		7/12/06		7/12/06		7/12/06		7/12/06	
Analysis Date		7/21/06		7/21/06		7/21/06		7/21/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.3	UJ	1.3	UJ	2.0	J	1.3	UJ
Gamma-BHC (Lindane)	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Beta-BHC	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Heptachlor	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Delta-BHC	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Aldrin	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Heptachlor Epoxide	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
gamma-Chlordane	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	J
Endosulfan I	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
alpha-Chlordane	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDE	5	1.3	UJ	1.3	UJ	1.3	UJ	2.3	J
Dieldrin	5	1.3	UJ	1.3	UJ	0.70	J	3.6	J
Endrin	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDD	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endosulfan II	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
4,4'-DDT	5	1.3	UJ	1.3	UJ	1.3	UJ	6.7	J
Endrin Aldehyde	5	1.3	UJ	1.3	UJ	1.3	UJ	1.1	J
Endosulfan sulfate	5	1.3	UJ	1.3	UJ	1.3	UJ	3.3	J
Methoxyclor	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Endrin Ketone	5	1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ
Toxaphene	5	13	UJ	13	UJ	13	UJ	13	UJ

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

RFW Batch Number: 0607L462 Client: TNUHANFORD RC-025 K0468 Work Order: 11343606001 Page: 1

	Cust ID:	J12R02	J12R02	J12R02	J12R03	J12R04	J12R05
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	96 %	97 %	94 %	97 %	94 %	95 %
	Decachlorobiphenyl	102 %	104 %	103 %	104 %	109 %	103 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	83 %	95 %	14 U	14 U	13 U
Aroclor-1221		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1232		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1242		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1248		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1254		5.7 J	13 U	13 U	14 U	14 U	14
Aroclor-1260		13 U	89 %	101 %	14 U	5.3 J	13 U

	Cust ID:	J12R06	J12R07	J12R08	J12R09	J12R10	J12R11
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	102 %	88 %	80 %	89 %	97 %	96 %
	Decachlorobiphenyl	112 %	98 %	91 %	97 %	99 %	96 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		95	84	13 U	63	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	13 U	13 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/17/06

000000005

000013

	Cust ID:	J12R12	J12R13	J12R14	PBLKLJ	PBLKLJ BS
Sample Information	RFW#:	011	012	013	06LE0566-MB1	06LE0566-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	82 %	91 %	91 %	95 %	92 %
	Decachlorobiphenyl	85 %	92 %	93 %	103 %	100 %
		fl	fl	fl	fl	fl fl
Aroclor-1016		13 U	13 U	13 U	13 U	90 %
Aroclor-1221		13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	15	78	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	93 %

9/12/06

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000014

000000006

	Cust ID:	J12R02	J12R02	J12R02	J12R03	J12R04	J12R05
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	109 %	31 %	104 %	116 %	116 %	124 * %
	Decachlorobiphenyl	99 %	35 * %	106 %	100 %	98 %	116 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U J	23 * %	68 %	1.4 U J	1.4 U J	1.3 U J
gamma-BHC (Lindane)		1.3 U	25 * %	70 %	1.4 U	1.4 U	1.3 U
Beta-BHC		1.3 U	28 * %	68 %	1.4 U	1.4 U	1.3 U
Heptachlor		1.3 U	28 * %	71 %	1.4 U	1.4 U	1.3 U
Delta-BHC		1.3 U	18 * %	57 %	1.4 U	1.4 U	1.3 U
Aldrin		1.3 U	27 * %	71 %	1.4 U	1.4 U	1.3 U
Heptachlor epoxide		1.3 U	30 * %	73 %	1.4 U	1.4 U	1.3 U
gamma-Chlordane		1.3 U	29 * %	70 %	1.4 U	1.4 U	1.3 U
Endosulfan I		1.3 U	30 * %	73 %	1.4 U	1.4 U	1.3 U
alpha-Chlordane		1.3 U	30 * %	72 %	1.4 U	1.4 U	1.3 U
4,4'-DDE		1.3 U	27 * %	67 %	1.4 U	1.4 U	1.3 U
Dieldrin		1.3 U	28 * %	73 %	1.4 U	1.4 U	1.3 U
Endrin		1.3 U	30 * %	75 %	1.4 U	1.4 U	1.3 U
4,4'-DDD		1.3 U	24 * %	66 %	1.4 U	2.1	1.3 U
Endosulfan II		1.3 U	30 * %	71 %	1.4 U	1.4 U	1.3 U
4,4'-DDT		1.3 U	18 * %	44 %	1.4 U	1.4 U	1.3 U
Endrin aldehyde		1.3 U	31 * %	57 %	1.4 U	1.8 .I	0.67 J
Endosulfan sulfate		1.3 U	30 * %	68 %	1.4 U	1.4 U	1.3 U
Methoxychlor		1.3 U	34 * %	71 %	1.4 U	1.4 U	1.3 U
Endrin ketone		1.3 U	32 * %	70 %	1.4 U	1.4 U	1.3 U
Toxaphene		13 U	13 U	13 U	14 U	14 U	13 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/12/06

000000006

000015

	Cust ID:	J12R06	J12R07	J12R08	J12R09	J12R10	J12R11
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	122 * %	116 %	100 %	114 %	124 * %	132 * %
	Decachlorobiphenyl	98 %	101 %	84 %	85 %	77 %	93 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U J	1.3 U J	1.3 U J	1.3 U J	1.3 U J	1.3 U J
gamma-BHC (Lindane)		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Beta-BHC		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Heptachlor		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Delta-BHC		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Aldrin		0.74 ~~J~~	2.4	1.3 U	1.3 U	1.3 U	1.3 U
Heptachlor epoxide		1.3 ~~U~~	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
gamma-Chlordane		1.1 ~~J~~	1.3 U	1.3 U	0.74 ~~J~~ .I	1.3 U	1.3 U
Endosulfan I		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
alpha-Chlordane		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
4,4'-DDE		3.9	7.6	1.3 U	2.0	1.3 U	1.3 U
Dieldrin		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Endrin		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
4,4'-DDD		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Endosulfan II		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
4,4'-DDT		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Endrin aldehyde		1.8 .I	2.8	1.3 U	1.3 U	1.5 ~~J~~	1.3 U
Endosulfan sulfate		1.3 U	1.3 U	1.3 U	2.0	1.3 ~~U~~	1.3 U
Methoxychlor		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Endrin ketone		1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Toxaphene		13 U	13 U	13 U	13 U	13 U	13 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

K 9/17/06

9/28/06

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	Cust ID:	J12R12	J12R13	J12R14	PBLKLJ	PBLKLJ BS
Sample Information	RFW#:	011	012	013	06LE0566-MB1	06LE0566-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	115 %	112 %	119 * %	92 %	98 %
	Decachlorobiphenyl	74 %	80 %	80 %	90 %	92 %
Alpha-BHC		1.3 U J	2.0 J	1.3 U J	0.33 U	92 %
gamma-BHC (Lindane)		1.3 U	1.3 U	1.3 U	0.33 U	88 %
Beta-BHC		1.3 U	1.3 U	1.3 U	0.33 U	85 %
Heptachlor		1.3 U	1.3 U	1.3 U	0.33 U	99 %
Delta-BHC		1.3 U	1.3 U	1.3 U	0.33 U	87 %
Aldrin		1.3 U	1.3 U	1.3 U	0.33 U	100 %
Heptachlor epoxide		1.3 U	1.3 U	1.3 U	0.33 U	100 %
gamma-Chlordane		1.3 U	1.3 U	1.3 U.I	0.33 U	100 %
Endosulfan I		1.3 U	1.3 U	1.3 U	0.33 U	100 %
alpha-Chlordane		1.3 U	1.3 U	1.3 U	0.33 U	99 %
4,4'-DDE		1.3 U	1.3 U	2.3	0.33 U	103 %
Dieldrin		1.3 U	0.70 J	3.6	0.33 U	104 %
Endrin		1.3 U	1.3 U	1.3 U	0.33 U	106 %
4,4'-DDD		1.3 U	1.3 U	1.3 U	0.33 U	103 %
Endosulfan II		1.3 U	1.3 U	1.3 U	0.33 U	101 %
4,4'-DDT		1.3 U	1.3 U	6.7	0.33 U	105 %
Endrin aldehyde		1.3 U	1.3 U	1.1 J.I	0.33 U	95 %
Endosulfan sulfate		1.3 U	1.3 U	3.3	0.33 U	96 %
Methoxychlor		1.3 U	1.3 U	1.3 U	0.33 U	101 %
Endrin ketone		1.3 U	1.3 U	1.3 U	0.33 U	96 %
Toxaphene		13 U	13 U	13 U	3.3 U	3.3 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/17/06

9/8/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0607L462
SDG/SAF # K0468/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 07-11-2006

PCB

Thirteen (13) soil samples were collected on 07-06-2006.

The samples and their associated QC samples were extracted on 07-12-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-21-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. The samples were extracted and analyzed within required holding time.
2. The sample results were reported on a dry-weight basis.
3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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 1 2 pages.

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LIONVILLE LABORATORY INC.

10. Patterns for Aroclors 1254 and 1260 were identified in these samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.

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

12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/1/6
Date

som\r:\group\data\pest\mu hanford\0607-462.pcbs

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LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0607L462
SDG/SAF # K0468/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 07-11-2006

CHLORINATED PESTICIDES

Thirteen (13) soil samples were collected on 07-06-2006.

The samples and their associated QC samples were extracted on 07-12-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-25,26,27-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

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

1. The sample was extracted and analyzed within required holding time.

2. The sample results were reported on a dry-weight basis.

3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.

4. The method blank was below the reporting limits for the target compounds.

5. Six (6) of thirty-four (34) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).

6. All blank spike recoveries were within acceptance criteria.

7. Twenty (20) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. All samples required a 4-fold instrument dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.

9. The initial calibrations associated with this data set were within acceptance criteria.

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 8 pages.

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LIONVILLE LABORATORY INC.

10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/11/02
Date

som\r:\group\data\pest\mu hanford\0607-462.pst

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06GC373

Initiator: Eric Norton
Date: 8/2/06
Client: INV

Batch: 06G7L462
Samples: 001 - 5
Method: SW846/MCAWW/CLP/

Parameter:
Matrix: SOIL
Prep Batch: 06LE0566

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (include all relevant specific results; attach data if necessary)

MATRIX SPIKE RECOVERIES ARE LOW AND OUTSIDE QC LIMITS
EXTRACTION PROBLEM IS LIMITED TO MATRIX SPIKE AS BLANK SPIKE AND MATRIX DUP. RECOVERIES ARE WITHIN LIMITS.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: Narrate - no significant impact on final sample data [illegible] 8/2/06

4. Project Manager Instructions...signature/date: [illegible] 8/2/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [illegible]

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Collector C. Martinez	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100- B-14:8		SAF No. RC-025
Ice Chest No. SML-363	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

Price Code 8C

Data Turnaround 15 days

Air Quality

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000024

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081; Oxiraco: Pesticides - EPA8151				
J12R02	SOIL	07/06/06	0747	✓	✓	✓	✓		✓				1
J12R03	SOIL		0814	✓	✓	✓	✓		✓				2
J12R04	SOIL		0750	✓	✓	✓	✓		✓				3
J12R05	SOIL		0755	✓	✓	✓	✓		✓				4
J12R06	SOIL	07/06/06	0805	✓	✓	✓	✓		✓				5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Elmendorf	7-6-06 1315	3728 #34	7-6-06 1315
3728/34	7/10/06 0930	MS Stankovich	7/10/06 0930
WCH MS Stankovich	7/10/06 1000	Fed Ex	
Fed Ex	7-11-06 1010	J. Hernandez	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium); ICP Metals - 6010A (Add-on) (Titanium, Uranium, Zinc, Zirconium); Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-155, Europium-154, Europium-155)~~

07/06/06

Personnel not available to Relinquish samples from 3728 Ref # 34 on 7/10/06

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

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

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

000000011

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
C. Martinez	C. Martinez	509-539-2816	KESSNER, JH	8C	15 days

Project Designation	Sampling Location	SAF No.	Air Quality
100-BC Remaining Pipelines and Sewers - Soil Full Protocol	100-B-14:8	RC-025	

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
ERC-99-058	EL-1585-6	R10B142000	fed ex

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES LIONVILLE	A060520	See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				

SAMPLE ANALYSIS

	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Chloro-Pesticides - 8081~~ 07/06/06				
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**							
J12R07	SOIL	07/06/06	0825	✓	✓	✓	✓	✓	✓	6
J12R08	SOIL		0820	✓	✓	✓	✓	✓	✓	7
J12R09	SOIL		0825	✓	✓	✓	✓	✓	✓	8
J12R10	SOIL		0915	✓	✓	✓	✓	✓	✓	9
J12R11	SOIL	07/06/06	0920	✓	✓	✓	✓	✓	✓	10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	7-6-06 1315	3728 #3A	7-6-06 1315
3728/3A	7/10/06 0915	M Stankovich	7/10/06 0915
M Stankovich (WCH)	7/10/06 1500	FED EX	
FED EX	7/11/06 1010	V. Alexander	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}: ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}: Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 07/06/06

Personnel not available to relinquish samples from 3728 Ref # 3A on 7/10/06

Matrix *

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

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

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

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Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
	Sampling Location 100-B-14:8		SAF No. RC-025
Ice Chest No. ERC-02-002	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

Price Code 8C Data Turnaround 15 days Air Quality

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
cool 4 degrees centigrade

SAMPLE ANALYSIS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
	Type of Container	G/P	G/P	aG	aG	G/P	aG				
	No. of Container(s)	1	1	1	1	1	1				
	Volume	250mL	125mL	120mL	120mL	500mL	250mL				
		See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Phenoxy Herbicides - EPA 8151~~				

Sample No.	Matrix *	Sample Date	Sample Time										
J12R12	SOIL	07/06/06	0940	✓	✓	✓	✓		✓				11
J12R13	SOIL		0945	✓	✓	✓	✓		✓				12
J12R14	SOIL	0827	~~0824~~	✓	✓	✓	✓		✓				8
J12R15	SOIL		0801	✓	n/a	n/a	✓		n/a				2
		07/06/06											

07/06/06

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	JR Edmondson	7-6-06 1315	3728 #3A	7-6-06 1315
Relinquished By/Removed From 3728/3A		7/10/06 0900	Received By/Stored In MS Stankovich	7/10/06 0900
Relinquished By/Removed From WCH	MS Stankovich	7/10/06 1000	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		7-11-06 1010	Received By/Stored In V. Hernandez	7-11-06 1010
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)
(2) ~~Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~

07/06/06

Personnel not available to relinquish samples from 3728 Ref 3A on 7/10/06

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

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

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

000026

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Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-B-14:2			DATA PACKAGE: K0468		
VALIDATOR: TLR		LAB: LCI		DATE: 9/10/06	
			SDG: K0468		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J12R02	J12R03	J12R04	J12R05	J12R06	J12R07
J12R08	J12R09	J12R10	J12R11	J12R12	J12R13
J12R14					
				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 acceptable? ..... Yes No N/A

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

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

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

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

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no mB

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

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: Surr - R05, R06, R10, R14 - J detects - pest no PB
pest - all but toxaphene - MS out - J.

toxaphene - no MS/MSD/LCS - J all

PCB 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: pest - all but tox - RPD out - J all
pest - tox no ms/msd

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
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: tox - all ow

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 18 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Subsite 100-B-14:2
Subject: Inorganics - Data Package No. K0468-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0468 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	Data
J12R02	7/6/06	Soil	C	See note 1
J12R03	7/6/06	Soil	C	See note 1
J12R04	7/6/06	Soil	C	See note 1
J12R05	7/6/06	Soil	C	See note 1
J12R06	7/6/06	Soil	C	See note 1
J12R07	7/6/06	Soil	C	See note 1
J12R08	7/6/06	Soil	C	See note 1
J12R09	7/6/06	Soil	C	See note 1
J12R10	7/6/06	Soil	C	See note 1
J12R11	7/6/06	Soil	C	See note 1
J12R12	7/6/06	Soil	C	See note 1
J12R13	7/6/06	Soil	C	See note 1
J12R14	7/6/06	Soil	C	See note 1
J12R15	7/6/06	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

Due to method blank contamination, the boron results in samples J12R03, J12R04, J12R05, J12R06, J12R08, J12R09, J12R10, J12R12, J12R13, J12R14 and J12R15 were qualified as estimates and flagged "UJ".

Due to method blank contamination, the beryllium and lithium results in sample J12R15 were qualified as estimates and flagged "J".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J12R15) was submitted for analysis. Aluminum, barium, calcium, chromium, iron, potassium, magnesium, manganese, sodium, phosphorous, silicon, strontium, titanium, vanadium & 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 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (56.7%), all antimony results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (54.5%), all mercury results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (37.5%), all silicon 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 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than

or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J12R09/J12R14) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for lead (121%) was outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

- **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. K0468 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 deficiencies were noted:

- Due to method blank contamination, the boron results in samples J12R03, J12R04, J12R05, J12R06, J12R08, J12R09, J12R10, J12R12, J12R13, J12R14 and J12R15 were qualified as estimates and flagged "UJ".

- Due to method blank contamination, the beryllium and lithium results in sample J12R15 were qualified as estimates and flagged "J".

- Due to a matrix spike recovery outside QC limits (56.7%), all antimony results were qualified as estimates and flagged "J".

- Due to a matrix spike recovery outside QC limits (54.5%), all mercury results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (37.5%), all silicon 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

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with 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: K0468	REVIEWER: TLL	Project: 100-B-14:2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	J12R03, J12R04 J12R05, J12R06 J12R08, J12R09 J12R10, J12R12 J12R13, J12R14 J12R15	Method blank contamination
Beryllium Lithium	UJ	J12R15	Method blank contamination
Antimony Mercury	J	All	MS recovery
Silicon	J	All	LCS 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

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0468																		
Sample Number		J12R02		J12R03		J12R04		J12R05		J12R06		J12R07		J12R08		J12R09		J12R10	
Remarks																orig			
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U
Aluminum		6970		5520		4290		5030		4450		5650		5630		5230		5610	
Arsenic	10	4.9		3.2		2.4		2.6		2.7		4.5		3.6		3.3		3.4	
Boron		3.6		2.1	UJ	1.4	UJ	2.2	UJ	1.8	UJ	3.3		1.5	UJ	2.1	UJ	2.1	UJ
Barium	2	103		56.2		54.3		64.5		51.2		71.8		61.7		63.0		59.7	
Beryllium		0.51		0.49		0.32		0.39		0.33		0.51		0.56		0.46		0.46	
Calcium		8420		8640		5110		9200		7690		11500		6890		9810		8380	
Cadmium	0.2	0.07	U	0.07	U	0.07	U	0.07		0.26		0.28		0.07	U	0.31		0.09	
Cobalt		8.8		9.1		5.4		6.4		6.0		8.1		8.9		7.3		6.7	
Chromium	1	12.5		7.7		6.8		8.2		9.4		11.7		8.5		11.2		10.5	
Copper		19.8		17.4		14.0		17.8		26.4		30.8		20.1		18.2		19.0	
Iron		20900		21400		12400		16500		15300		25900		20800		16400		16700	
Mercury	0.2	0.02	UJ	0.02	UJ	0.08	J	0.02	J	0.04	J	0.14	J	0.01	UJ	0.09	J	0.19	J
Potassium		1190		972		812		806		710		1120		974		958		899	
Lithium		8.1		6.2		4.8		6.0		5.4		6.3		6.4		5.6		6.2	
Magnesium		4830		4710		3150		3890		3700		4140		4740		3960		4080	
Manganese		371		354		248		279		252		346		349		287		298	
Molybdenum		0.87		0.53		0.43		0.62		0.51		1.2		0.66		0.61		0.44	
Sodium		216		164		110		159		147		202		243		186		165	
Nickel		22.1		10.7		8.3		9.5		10.7		18.4		13.3		11.1		11.1	
Phosohorous		937		1140		687		806		744		861		1140		846		848	
Lead	5	11.9		5.2		6.9		11.5		11.6		20.3		27.2		17.5		9.3	
Antimony		0.42	UJ	0.43	UJ	0.43	UJ	0.42	UJ	0.42	UJ	0.64	J	0.42	UJ	0.47	J	0.52	J
Selenium	1	0.45	U	0.46	U	0.46	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Silicon		421	J	386	J	383	J	395	J	377	J	380	J	362	J	409	J	384	J
Tin		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1		1.0	U	1.0	U	1.0	U
Strontium		43.7		30.4		21.8		32.4		29.3		33.6		24.5		31.6		34.0	
Titanium		1320		1570		871		1250		1180		1430		1490		1180		1100	
Thallium		0.67	U	0.68	U	0.68	U	0.67	U	0.66	U	0.67	U	0.67	U	0.67	U	0.67	U
Uranium		0.85	U	0.85	U	0.86	U	0.85	U	0.83	U	0.84	U	0.85	U	0.84	U	0.84	U
Vanadium		45.6		50.7		29.5		41.7		40.2		45.5		48.1		39.5		39.7	
Zinc	1	43.5		42.8		34.6		48.6		138		110		46.7		46.1		44.1	
Zirconium		18.3		21.2		13.0		14.2		12.3		19.5		20.8		16.8		13.6	

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

000011

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0468																		
Sample Number		J12R11		J12R12		J12R13		J12R14		J12R15									
Remarks								Duplicate		E. Blank									
Sample Date		7/6/06		7/6/06		7/6/06		7/6/06		7/6/06									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U								
Aluminum		6320		6190		5460		5760		41.8									
Arsenic	10	4.6		3.3		3.8		3.9		0.58	U								
Boron		2.5		1.8	UJ	1.9	UJ	2.3	UJ	0.41	UJ								
Barium	2	72.2		72.1		68.6		65.7		1.1									
Beryllium		0.49		0.52		0.55		0.53		0.04	UJ								
Calcium		13700		7250		9200		10700		22.8									
Cadmium	0.2	0.09		0.07	U	0.10		0.28		0.07	U								
Cobalt		7.9		7.7		7.6		8.0		0.13	U								
Chromium	1	11.2		10.7		9.1		11.9		0.17									
Copper		20.1		16.9		18.1		24.7		0.11	U								
Iron		17700		18300		18100		19400		88.6									
Mercury	0.2	0.15	J	0.11	J	0.47	J	0.06	J	0.01	UJ								
Potassium		1130		1150		908		1030		16.4									
Lithium		7.2		7.0		5.6		6.2		0.06	UJ								
Magnesium		4740		4460		3830		4360		6.2									
Manganese		329		329		335		338		4.7									
Molybdenum		0.53		0.50		0.60		0.69		0.28	U								
Sodium		210		166		182		190		7.7									
Nickel		13.6		12.2		9.9		12.5		0.23	U								
Phosohorous		913		883		858		1050		4.5									
Lead	5	12.1		7.6		17.0		71.8		0.30	U								
Antimony		0.42	UJ	0.42	UJ	0.42	UJ	0.42	UJ	0.42	UJ								
Selenium	1	0.45	U	0.44	U	0.45	U	0.45	U	0.45	U								
Silicon		424	J	352	J	332	J	389	J	32.8	J								
Tin		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U								
Strontium		37.1		28.1		31.1		33.3		0.22									
Titanium		1230		1380		1480		1330		1.6									
Thallium		0.67	U	0.66	U	0.67	U	0.67	U	0.67	U								
Uranium		0.84	U	0.83	U	0.84	U	0.84	U	0.84	U								
Vanadium		42.0		47.4		47.4		46.1		0.1									
Zinc	1	85.6		47.6		48.8		50.4		0.58									
Zirconium		16.7		19.0		18.3		17.5		1.0	U								

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

000012

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
001	J12R02	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	6970	MG/KG	2.3	1.0
		Arsenic, Total	4.9	MG/KG	0.59	1.0
		Boron, Total	3.6	MG/KG	0.23	1.0
		Barium, Total	103	MG/KG	0.02	1.0
		Beryllium, Total	0.51	MG/KG	0.02	1.0
		Calcium, Total	8420	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	8.8	MG/KG	0.12	1.0
		Chromium, Total	12.5	MG/KG	0.12	1.0
		Copper, Total	19.8	MG/KG	0.12	1.0
		Iron, Total	20900	MG/KG	0.52	1.0
		Mercury, Total	0.02 u J	MG/KG	0.02	1.0
		Potassium, Total	1190	MG/KG	2.2	1.0
		Lithium, Total	8.1	MG/KG	0.02	1.0
		Magnesium, Total	4830	MG/KG	0.92	1.0
		Manganese, Total	371	MG/KG	0.03	1.0
		Molybdenum, Total	0.87	MG/KG	0.28	1.0
		Sodium, Total	216	MG/KG	0.73	1.0
		Nickel, Total	22.1	MG/KG	0.23	1.0
		Phosphorus, Total	937	MG/KG	0.86	1.0
		Lead, Total	11.9	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	421 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	43.7	MG/KG	0.01	1.0
		Titanium, Total	1320	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	45.6	MG/KG	0.09	1.0
		Zinc, Total	43.5	MG/KG	0.15	1.0
		Zirconium, Total	18.3	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468

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

LVL LOT #: 0607L462

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
002	J12R03	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5520	MG/KG	2.3	1.0
		Arsenic, Total	3.2	MG/KG	0.59	1.0
		Boron, Total	2.1 UJ	MG/KG	0.23	1.0
		Barium, Total	56.2	MG/KG	0.02	1.0
		Beryllium, Total	0.49	MG/KG	0.02	1.0
		Calcium, Total	8640	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	9.1	MG/KG	0.14	1.0
		Chromium, Total	7.7	MG/KG	0.13	1.0
		Copper, Total	17.4	MG/KG	0.12	1.0
		Iron, Total	21600	MG/KG	0.52	1.0
		Mercury, Total	0.02 uJ	MG/KG	0.02	1.0
		Potassium, Total	972	MG/KG	3.2	1.0
		Lithium, Total	6.2	MG/KG	0.02	1.0
		Magnesium, Total	4710	MG/KG	0.94	1.0
		Manganese, Total	354	MG/KG	0.03	1.0
		Molybdenum, Total	0.53	MG/KG	0.28	1.0
		Sodium, Total	164	MG/KG	0.74	1.0
		Nickel, Total	10.7	MG/KG	0.23	1.0
		Phosphorus, Total	1140	MG/KG	0.87	1.0
		Lead, Total	5.2	MG/KG	0.20	1.0
		Antimony, Total	0.43 uJ	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	386 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	30.4	MG/KG	0.01	1.0
		Titanium, Total	1570	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	50.7	MG/KG	0.09	1.0
		Zinc, Total	42.8	MG/KG	0.16	1.0
		Zirconium, Total	21.2	MG/KG	1.0	1.0

R 9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
003	J12R04	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4290	MG/KG	2.3	1.0
		Arsenic, Total	2.4	MG/KG	0.60	1.0
		Boron, Total	1.4 UJ	MG/KG	0.23	1.0
		Barium, Total	54.3	MG/KG	0.02	1.0
		Beryllium, Total	0.32	MG/KG	0.02	1.0
		Calcium, Total	5110	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.4	MG/KG	0.14	1.0
		Chromium, Total	6.8	MG/KG	0.13	1.0
		Copper, Total	14.0	MG/KG	0.12	1.0
		Iron, Total	12400	MG/KG	0.53	1.0
		Mercury, Total	0.08 J	MG/KG	0.02	1.0
		Potassium, Total	812	MG/KG	2.2	1.0
		Lithium, Total	4.8	MG/KG	0.03	1.0
		Magnesium, Total	3150	MG/KG	0.95	1.0
		Manganese, Total	248	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.28	1.0
		Sodium, Total	110	MG/KG	0.74	1.0
		Nickel, Total	8.3	MG/KG	0.23	1.0
		Phosphorus, Total	687	MG/KG	0.88	1.0
		Lead, Total	6.9	MG/KG	0.30	1.0
		Antimony, Total	0.43 uJ	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	383 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	21.8	MG/KG	0.01	1.0
		Titanium, Total	871	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.86 u	MG/KG	0.86	1.0
		Vanadium, Total	29.5	MG/KG	0.09	1.0
		Zinc, Total	34.6	MG/KG	0.16	1.0
		Zirconium, Total	13.0	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

ORK ORDER: 11342-606-001-9999-00

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
004	J12R05	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5030	MG/KG	2.3	1.0
		Arsenic, Total	2.6	MG/KG	0.59	1.0
		Boron, Total	2.2 UJ	MG/KG	0.23	1.0
		Barium, Total	64.5	MG/KG	0.02	1.0
		Beryllium, Total	0.39	MG/KG	0.02	1.0
		Calcium, Total	9200	MG/KG	1.6	1.0
		Cadmium, Total	0.07	MG/KG	0.07	1.0
		Cobalt, Total	6.4	MG/KG	0.13	1.0
		Chromium, Total	8.2	MG/KG	0.12	1.0
		Copper, Total	17.8	MG/KG	0.12	1.0
		Iron, Total	16500	MG/KG	0.52	1.0
		Mercury, Total	0.02 J	MG/KG	0.01	1.0
		Potassium, Total	806	MG/KG	2.2	1.0
		Lithium, Total	6.0	MG/KG	0.03	1.0
		Magnesium, Total	3890	MG/KG	0.93	1.0
		Manganese, Total	279	MG/KG	0.03	1.0
		Molybdenum, Total	0.52	MG/KG	0.28	1.0
		Sodium, Total	159	MG/KG	0.73	1.0
		Nickel, Total	9.5	MG/KG	0.23	1.0
		Phosphorus, Total	806	MG/KG	0.87	1.0
		Lead, Total	11.5	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	395 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	32.4	MG/KG	0.01	1.0
		Titanium, Total	1250	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	41.7	MG/KG	0.09	1.0
		Zinc, Total	48.6	MG/KG	0.15	1.0
		Zirconium, Total	14.2	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468

LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
05	J12R06	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4450	MG/KG	2.2	1.0
		Arsenic, Total	2.7	MG/KG	0.58	1.0
		Boron, Total	1.8 UJ	MG/KG	0.23	1.0
		Barium, Total	51.2	MG/KG	0.02	1.0
		Beryllium, Total	0.33	MG/KG	0.02	1.0
		Calcium, Total	7690	MG/KG	1.6	1.0
		Cadmium, Total	0.26	MG/KG	0.07	1.0
		Cobalt, Total	6.0	MG/KG	0.13	1.0
		Chromium, Total	9.4	MG/KG	0.12	1.0
		Copper, Total	26.4	MG/KG	0.11	1.0
		Iron, Total	15300	MG/KG	0.51	1.0
		Mercury, Total	0.04 J	MG/KG	0.01	1.0
		Potassium, Total	710	MG/KG	2.2	1.0
		Lithium, Total	5.4	MG/KG	0.03	1.0
		Magnesium, Total	3700	MG/KG	0.92	1.0
		Manganese, Total	252	MG/KG	0.03	1.0
		Molybdenum, Total	0.51	MG/KG	0.37	1.0
		Sodium, Total	147	MG/KG	0.72	1.0
		Nickel, Total	10.7	MG/KG	0.23	1.0
		Phosphorus, Total	744	MG/KG	0.85	1.0
		Lead, Total	11.6	MG/KG	0.29	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	377 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	29.3	MG/KG	0.009	1.0
		Titanium, Total	1180	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	40.2	MG/KG	0.09	1.0
		Zinc, Total	138	MG/KG	0.15	1.0
		Zirconium, Total	12.3	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
006	J12R07	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5650	MG/KG	2.3	1.0
		Arsenic, Total	6.5	MG/KG	0.58	1.0
		Boron, Total	3.3	MG/KG	0.23	1.0
		Barium, Total	71.8	MG/KG	0.02	1.0
		Beryllium, Total	0.51	MG/KG	0.02	1.0
		Calcium, Total	11500	MG/KG	1.6	1.0
		Cadmium, Total	0.28	MG/KG	0.07	1.0
		Cobalt, Total	8.1	MG/KG	0.13	1.0
		Chromium, Total	11.7	MG/KG	0.12	1.0
		Copper, Total	30.5	MG/KG	0.11	1.0
		Iron, Total	25900	MG/KG	0.52	1.0
		Mercury, Total	0.14 J	MG/KG	0.01	1.0
		Potassium, Total	1120	MG/KG	2.2	1.0
		Lithium, Total	6.3	MG/KG	0.03	1.0
		Magnesium, Total	4140	MG/KG	0.93	1.0
		Manganese, Total	346	MG/KG	0.03	1.0
		Molybdenum, Total	1.2	MG/KG	0.28	1.0
		Sodium, Total	202	MG/KG	0.73	1.0
		Nickel, Total	18.4	MG/KG	0.23	1.0
		Phosphorus, Total	861	MG/KG	0.86	1.0
		Lead, Total	20.3	MG/KG	0.30	1.0
		Antimony, Total	0.64 J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	380 J	MG/KG	2.2	1.0
		Tin, Total	1.1	MG/KG	1.0	1.0
		Strontium, Total	33.6	MG/KG	0.01	1.0
		Titanium, Total	1430	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	45.5	MG/KG	0.09	1.0
		Zinc, Total	110	MG/KG	0.18	1.0
		Zirconium, Total	39.5	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

:IENT: TNUHANFORD RC-025 K0468

LVL LOT #: 0607L462

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

:MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
)07	J12R08	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5630	MG/KG	2.3	1.0
		Arsenic, Total	3.6	MG/KG	0.59	1.0
		Boron, Total	1.5 UJ	MG/KG	0.23	1.0
		Barium, Total	61.7	MG/KG	0.02	1.0
		Beryllium, Total	0.56	MG/KG	0.02	1.0
		Calcium, Total	6890	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	8.9	MG/KG	0.13	1.0
		Chromium, Total	8.5	MG/KG	0.13	1.0
		Copper, Total	20.1	MG/KG	0.12	1.0
		Iron, Total	20800	MG/KG	0.52	1.0
		Mercury, Total	0.01 uJ	MG/KG	0.01	1.0
		Potassium, Total	974	MG/KG	2.2	1.0
		Lithium, Total	6.4	MG/KG	0.03	1.0
		Magnesium, Total	4740	MG/KG	0.93	1.0
		Manganese, Total	349	MG/KG	0.03	1.0
		Molybdenum, Total	0.66	MG/KG	0.28	1.0
		Sodium, Total	243	MG/KG	0.73	1.0
		Nickel, Total	13.3	MG/KG	0.22	1.0
		Phosphorus, Total	1140	MG/KG	0.87	1.0
		Lead, Total	27.2	MG/KG	0.30	1.0
		Antimony, Total	0.42 uJ	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	362 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	24.5	MG/KG	0.01	1.0
		Titanium, Total	1490	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	48.1	MG/KG	0.09	1.0
		Zinc, Total	46.7	MG/KG	0.15	1.0
		Zirconium, Total	20.8	MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-026 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
08	J12R09	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5230	MG/KG	2.3	1.0
		Arsenic, Total	3.3	MG/KG	0.59	1.0
		Boron, Total	2.1 UJ	MG/KG	0.23	1.0
		Barium, Total	63.0	MG/KG	0.02	1.0
		Beryllium, Total	0.46	MG/KG	0.02	1.0
		Calcium, Total	9810	MG/KG	1.6	1.0
		Cadmium, Total	0.31	MG/KG	0.07	1.0
		Cobalt, Total	7.3	MG/KG	0.13	1.0
		Chromium, Total	11.2	MG/KG	0.12	1.0
		Copper, Total	18.2	MG/KG	0.12	1.0
		Iron, Total	16400	MG/KG	0.52	1.0
		Mercury, Total	0.09 J	MG/KG	0.01	1.0
		Potassium, Total	958	MG/KG	2.2	1.0
		Lithium, Total	5.6	MG/KG	0.03	1.0
		Magnesium, Total	3960	MG/KG	0.93	1.0
		Manganese, Total	287	MG/KG	0.03	1.0
		Molybdenum, Total	0.61	MG/KG	0.28	1.0
		Sodium, Total	186	MG/KG	0.73	1.0
		Nickel, Total	11.1	MG/KG	0.23	1.0
		Phosphorus, Total	846	MG/KG	0.86	1.0
		Lead, Total	17.5	MG/KG	0.30	1.0
		Antimony, Total	0.47 J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	409 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	31.6	MG/KG	0.01	1.0
		Titanium, Total	1180	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	39.5	MG/KG	0.09	1.0
		Zinc, Total	46.1	MG/KG	0.15	1.0
		Zirconium, Total	16.8	MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
009	J12R10	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5610	MG/KG	2.3	1.0
		Arsenic, Total	3.4	MG/KG	0.59	1.0
		Boron, Total	2.1 UJ	MG/KG	0.23	1.0
		Barium, Total	59.7	MG/KG	0.02	1.0
		Beryllium, Total	0.46	MG/KG	0.02	1.0
		Calcium, Total	8380	MG/KG	1.6	1.0
		Cadmium, Total	0.09	MG/KG	0.07	1.0
		Cobalt, Total	6.7	MG/KG	0.13	1.0
		Chromium, Total	10.5	MG/KG	0.12	1.0
		Copper, Total	19.0	MG/KG	0.12	1.0
		Iron, Total	16700	MG/KG	0.52	1.0
		Mercury, Total	0.19 J	MG/KG	0.02	1.0
		Potassium, Total	899	MG/KG	2.2	1.0
		Lithium, Total	6.2	MG/KG	0.03	1.0
		Magnesium, Total	4080	MG/KG	0.93	1.0
		Manganese, Total	298	MG/KG	0.03	1.0
		Molybdenum, Total	0.44	MG/KG	0.28	1.0
		Sodium, Total	165	MG/KG	0.73	1.0
		Nickel, Total	11.1	MG/KG	0.23	1.0
		Phosphorus, Total	848	MG/KG	0.86	1.0
		Lead, Total	9.3	MG/KG	0.30	1.0
		Antimony, Total	0.52 J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	284 J	MG/KG	2.3	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	34.0	MG/KG	0.01	1.0
		Titanium, Total	1100	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	39.7	MG/KG	0.09	1.0
		Zinc, Total	44.1	MG/KG	0.15	1.0
		Zirconium, Total	13.6	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
010	J12R11	Silver, Total	0.07	u	MG/KG	0.07	1.0
		Aluminum, Total	6320		MG/KG	2.3	1.0
		Arsenic, Total	4.6		MG/KG	0.58	1.0
		Boron, Total	2.5		MG/KG	0.23	1.0
		Barium, Total	72.2		MG/KG	0.02	1.0
		Beryllium, Total	0.49		MG/KG	0.02	1.0
		Calcium, Total	13700		MG/KG	1.6	1.0
		Cadmium, Total	0.09		MG/KG	0.07	1.0
		Cobalt, Total	7.9		MG/KG	0.13	1.0
		Chromium, Total	11.2		MG/KG	0.12	1.0
		Copper, Total	20.1		MG/KG	0.12	1.0
		Iron, Total	17700		MG/KG	0.52	1.0
		Mercury, Total	0.15	J	MG/KG	0.02	1.0
		Potassium, Total	1130		MG/KG	2.2	1.0
		Lithium, Total	7.2		MG/KG	0.03	1.0
		Magnesium, Total	4740		MG/KG	0.92	1.0
		Manganese, Total	329		MG/KG	0.03	1.0
		Molybdenum, Total	0.53		MG/KG	0.28	1.0
		Sodium, Total	210		MG/KG	0.73	1.0
		Nickel, Total	13.6		MG/KG	0.23	1.0
		Phosphorus, Total	912		MG/KG	0.86	1.0
		Lead, Total	12.1		MG/KG	0.30	1.0
		Antimony, Total	0.42	u J	MG/KG	0.42	1.0
		Selenium, Total	0.45	u	MG/KG	0.45	1.0
		Silicon, Total	424	J	MG/KG	2.2	1.0
		Tin, Total	1.0	u	MG/KG	1.0	1.0
		Strontium, Total	37.1		MG/KG	0.01	1.0
		Titanium, Total	1230		MG/KG	0.03	1.0
		Thallium, Total	0.67	u	MG/KG	0.67	1.0
		Uranium, Total	0.84	u	MG/KG	0.84	1.0
		Vanadium, Total	42.0		MG/KG	0.09	1.0
		Zinc, Total	85.6		MG/KG	0.15	1.0
		Zirconium, Total	16.7		MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462
ORK ORDER: 11343-606-001-9999-00

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
011	J12R12	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	6190	MG/KG	2.2	1.0
		Arsenic, Total	3.3	MG/KG	0.58	1.0
		Boron, Total	1.8 UJ	MG/KG	0.23	1.0
		Barium, Total	72.1	MG/KG	0.02	1.0
		Beryllium, Total	0.52	MG/KG	0.02	1.0
		Calcium, Total	7250	MG/KG	1.5	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	7.7	MG/KG	0.13	1.0
		Chromium, Total	10.7	MG/KG	0.12	1.0
		Copper, Total	16.9	MG/KG	0.11	1.0
		Iron, Total	18300	MG/KG	0.51	1.0
		Mercury, Total	0.11 J	MG/KG	0.01	1.0
		Potassium, Total	1150	MG/KG	2.1	1.0
		Lithium, Total	7.0	MG/KG	0.03	1.0
		Magnesium, Total	4460	MG/KG	0.92	1.0
		Manganese, Total	329	MG/KG	0.03	1.0
		Molybdenum, Total	0.50	MG/KG	0.27	1.0
		Sodium, Total	166	MG/KG	0.72	1.0
		Nickel, Total	12.2	MG/KG	0.23	1.0
		Phosphorus, Total	883	MG/KG	0.85	1.0
		Lead, Total	7.6	MG/KG	0.29	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	352 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	28.1	MG/KG	0.009	1.0
		Titanium, Total	1380	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	47.4	MG/KG	0.09	1.0
		Zinc, Total	47.6	MG/KG	0.15	1.0
		Zirconium, Total	19.0	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
012	J12R13	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5460	MG/KG	2.3	1.0
		Arsenic, Total	3.8	MG/KG	0.58	1.0
		Boron, Total	1.9 UJ	MG/KG	0.23	1.0
		Barium, Total	68.6	MG/KG	0.02	1.0
		Beryllium, Total	0.55	MG/KG	0.02	1.0
		Calcium, Total	9200	MG/KG	1.6	1.0
		Cadmium, Total	0.10	MG/KG	0.07	1.0
		Cobalt, Total	7.6	MG/KG	0.13	1.0
		Chromium, Total	9.1	MG/KG	0.12	1.0
		Copper, Total	18.1	MG/KG	0.11	1.0
		Iron, Total	18100	MG/KG	0.52	1.0
		Mercury, Total	0.47 J	MG/KG	0.02	1.0
		Potassium, Total	908	MG/KG	2.2	1.0
		Lithium, Total	5.6	MG/KG	0.02	1.0
		Magnesium, Total	3830	MG/KG	0.93	1.0
		Manganese, Total	335	MG/KG	0.03	1.0
		Molybdenum, Total	0.60	MG/KG	0.28	1.0
		Sodium, Total	182	MG/KG	0.73	1.0
		Nickel, Total	9.9	MG/KG	0.23	1.0
		Phosphorus, Total	858	MG/KG	0.86	1.0
		Lead, Total	17.0	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	332 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	31.1	MG/KG	0.01	1.0
		Titanium, Total	1480	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	47.4	MG/KG	0.09	1.0
		Zinc, Total	48.8	MG/KG	0.15	1.0
		Zirconium, Total	18.3	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

IENT: TNUHANFORD RC-025 K0468 LVL LOT #: 06071462

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

MPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
13	J12R14	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5760	MG/KG	2.2	1.0
		Arsenic, Total	3.9	MG/KG	0.58	1.0
		Boron, Total	2.3 UJ	MG/KG	0.23	1.0
		Barium, Total	65.7	MG/KG	0.02	1.0
		Beryllium, Total	0.53	MG/KG	0.02	1.0
		Calcium, Total	10700	MG/KG	1.6	1.0
		Cadmium, Total	0.28	MG/KG	0.07	1.0
		Cobalt, Total	8.0	MG/KG	0.13	1.0
		Chromium, Total	11.9	MG/KG	0.12	1.0
		Copper, Total	24.7	MG/KG	0.11	1.0
		Iron, Total	19400	MG/KG	0.51	1.0
		Mercury, Total	0.06 J	MG/KG	0.02	1.0
		Potassium, Total	1030	MG/KG	2.2	1.0
		Lithium, Total	6.2	MG/KG	0.03	1.0
		Magnesium, Total	4360	MG/KG	0.92	1.0
		Manganese, Total	338	MG/KG	0.03	1.0
		Molybdenum, Total	0.69	MG/KG	0.28	1.0
		Sodium, Total	190	MG/KG	0.72	1.0
		Nickel, Total	12.5	MG/KG	0.23	1.0
		Phosphorus, Total	1050	MG/KG	0.86	1.0
		Lead, Total	71.8	MG/KG	0.29	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	389 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	33.3	MG/KG	0.01	1.0
		Titanium, Total	1320	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	46.1	MG/KG	0.09	1.0
		Zinc, Total	50.4	MG/KG	0.15	1.0
		Zirconium, Total	17.5	MG/KG	1.0	1.0

9/17/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
014	J12R15	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	41.8	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.41 UJ	MG/KG	0.23	1.0
		Barium, Total	1.1	MG/KG	0.02	1.0
		Beryllium, Total	0.04 UJ	MG/KG	0.02	1.0
		Calcium, Total	22.8	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.17	MG/KG	0.12	1.0
		Copper, Total	0.11 u	MG/KG	0.11	1.0
		Iron, Total	88.6	MG/KG	0.51	1.0
		Mercury, Total	0.01 uJ	MG/KG	0.01	1.0
		Potassium, Total	16.4	MG/KG	2.2	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	6.2	MG/KG	0.92	1.0
		Manganese, Total	4.7	MG/KG	0.03	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	7.7	MG/KG	0.72	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	4.5	MG/KG	0.86	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.42 uJ	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	32.8 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	0.22	MG/KG	0.01	1.0
		Titanium, Total	1.6	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	0.1	MG/KG	0.09	1.0
		Zinc, Total	0.58	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

R 9/17/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-025
LVL#: 0607L462
SDG/SAF#: K0468/RC-025

W.O.#: 11343-606-001-9999-00
Date Received: 07-11-06

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 14 soil samples.

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

   The samples were rerun for Aluminum, Beryllium, Iron, and Zirconium, along with the Phosphorous analysis, due to high concentrations and 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 PQL).

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

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

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 37.5%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

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 47 pages.

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

9. The matrix spike (MS) recoveries for 8 analytes were outside the 75-125% control limits. 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J12R02	Aluminum	44,000	86.8
	Iron	44,000	50.9
	Manganese	2,000	90.8
	Phosphorous	4,000	82.7
	Antimony	100	98.7
	Silicon	2,100	88.3
	Titanium	1,100	73.0

11. The duplicate analyses for 6 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/25/00
Date

jjw/m07-462

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: C. Martinez	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days	Air Quality	
Project Designation: 100-HC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-B-14:8	SAF No.: RC-025	
Ice Chest No.: SML-363	Field Logbook No.: EL-1585-6	COA: R10B142000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060520	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000030

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container				G/P	G/P	sG	sG	G/P	sG			
No. of Container(s)				1	1	1	1	1	1			
Volume				250mL	125mL	120mL	120mL	250mL	250mL			
				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; Chlorp. Herbicides - EPA8461.			
Sample No.	Matrix *	Sample Date	Sample Time									
J12R02	SOIL	07/06/06	0747	✓	✓	✓	✓		✓			1
J12R03	SOIL		0814	✓	✓	✓	✓		✓			2
J12R04	SOIL		0750	✓	✓	✓	✓		✓			3
J12R05	SOIL		0755	✓	✓	✓	✓		✓			4
J12R06	SOIL	07/06/06	0805	✓	✓	✓	✓		✓			5

07/06/06

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Eberlein 7-6-06	1315	3728 #34	7-6-06 1315
3728/3A	7/10/06 0830	M Stankovich	7/10/06 0830
M Stankovich	7/10/06 1000	Fed Ex	
Fed Ex	7-11-06 1010	P. Neuenschwander	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~

07/06/06

Personnel not available to Relinquish samples from 3728 Ref # 3A on 7/10/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

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

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

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector C. Martinez	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 days		
Air Quality			
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-B-14:8		SAF No. RC-025
Ice Chest No. ERC-99-058	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060520		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	
Type of Container	G/P	G/P	aG	aG	G/P	aG	
No. of Container(s)	1	1	1	1	1	1	
Volume	250mL	125mL	120mL	120mL	500mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, Chlorophenoxy Herbicides - 8151 07/06/06	

000031

Sample No.	Matrix *	Sample Date	Sample Time										
J12R07	SOIL	07/06/06	0825	✓	✓	✓	✓	07/06/06	✓				6
J12R08	SOIL		0820	✓	✓	✓	✓		✓				7
J12R09	SOIL		0825	✓	✓	✓	✓		✓				8
J12R10	SOIL		0915	✓	✓	✓	✓		✓				9
J12R11	SOIL	07/06/06	0920	✓	✓	✓	✓		✓				10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JR Eberline	7-6-06 1315	3728 #3A	7-6-06 1315
3728/3A	7/10/06 0915	MStankovich	7/10/06 0915
MSC M Stankovich	7/10/06 1500	FED EX	
FED EX	7/11/06 1010	V. Ellwood	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, ~~Europium-155~~} 07/06/06

Personnel not available to relinquish samples from 3728 Ref # 3A on 7/10/06

Matrix *

Soil
SE-Sediment
SO-Solid
SL-Sludge
W = Water
O-Oil
Air-Air
DS-Drum Solids
DL-Drum Liquids
T-Tissue
WI-Wipe
L-Liquid
V-Vegetation
V-Vitis

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

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

000000045

Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
	Sampling Location 100-B-14:8		SAF No. RC-025
Ice Chest No. ERC-02-002	Field Logbook No. EL-1585-6	COA R10B142000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060520		Bill of Lading/Air Bill No. See 03PC

Price Code 8C

Data Turnaround

Air Quality 15 days

000000846

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	125mL	120mL	120mL	500mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Phenoxy Herbicides - 8151A~~					
J12R12	SOIL	07/06/06	0940	✓	✓	✓	✓		✓					11
J12R13	SOIL		0945	✓	✓	✓	✓		✓					12
J12R14	SOIL	0827	~~0807~~	✓	✓	✓	✓		✓					8
J12R15	SOIL		0801	✓	n/a	n/a	✓		n/a					2
		07/06/06												

07/06/06

000003

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
J R Edmondson	7-6-06 1315	3728 A3A	7-6-06 1315
3728/3A	7/10/06 0900	MS Funkenbusch	7/10/06 0900
MS Funkenbusch	7/10/06 0900	Fed Ex	
Fed Ex	7-11-06 1010	V. Nissanoff	7-11-06 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

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

07/06/06

Personnel not available to relinquish samples from 3728 Ref 3A on 7/10/06

Matrix *

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

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

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-B-14:2		DATA PACKAGE:	K0468	
VALIDATOR:	TLI	LAB: LLT		DATE: 9/15/00	
			SDG: K0468		

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

SAMPLES/MATRIX					
J12R02	J12R03	J12R04	J12R05	J12R06	J12R07
J12R08	J12R09	J12R10	J12R11	J12R12	J12R13
J12R14	J12R15				
					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: Boron - 03, 04, 05, 06, 08, 09, 10, 12, 13, 14, 15 - UJ
~~beryllium~~ - 15 - beryllium, lithium, - UJ

FB - 15 detects

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

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAs

MS - antimony (56.7%) - J all
MS - Hg (54.5%) - J all

LCS - Silicon - ~~(37.5%)~~ (37%) - J all
N/A

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: lecd - 12170

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 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
LANK1	06L0440-MB1	Silver, Total	0.07	u	MG/KG	0.07	1.0
		Aluminum, Total	2.4	u	MG/KG	2.4	1.0
		Arsenic, Total	0.61	u	MG/KG	0.61	1.0
		Boron, Total	0.47		MG/KG	0.24	1.0
		Barium, Total	0.02	u	MG/KG	0.02	1.0
		Beryllium, Total	0.02		MG/KG	0.02	1.0
		Calcium, Total	2.4		MG/KG	1.6	1.0
		Cadmium, Total	0.07	u	MG/KG	0.07	1.0
		Cobalt, Total	0.14	u	MG/KG	0.14	1.0
		Chromium, Total	0.13	u	MG/KG	0.13	1.0
		Copper, Total	0.12	u	MG/KG	0.12	1.0
		Iron, Total	0.54	u	MG/KG	0.54	1.0
		Potassium, Total	2.3	u	MG/KG	2.3	1.0
		Lithium, Total	0.05		MG/KG	0.03	1.0
		Magnesium, Total	0.97	u	MG/KG	0.97	1.0
		Manganese, Total	0.03	u	MG/KG	0.02	1.0
		Molybdenum, Total	0.29	u	MG/KG	0.29	1.0
		Sodium, Total	0.76	u	MG/KG	0.76	1.0
		Nickel, Total	0.24	u	MG/KG	0.24	1.0
		Phosphorus, Total	0.90	u	MG/KG	0.90	1.0
		Lead, Total	0.31	u	MG/KG	0.31	1.0
		Antimony, Total	0.44	u	MG/KG	0.44	1.0
		Selenium, Total	0.47	u	MG/KG	0.47	1.0
		Silicon, Total	2.3	u	MG/KG	2.2	1.0
		Tin, Total	1.1	u	MG/KG	1.1	1.0
		Strontium, Total	0.01		MG/KG	0.01	1.0
		Titanium, Total	0.03	u	MG/KG	0.03	1.0
		Thallium, Total	0.70	u	MG/KG	0.70	1.0
		Uranium, Total	0.88	u	MG/KG	0.88	1.0
		Vanadium, Total	0.09	u	MG/KG	0.09	1.0
		Zinc, Total	0.16	u	MG/KG	0.16	1.0
		Zirconium, Total	1.1	u	MG/KG	1.1	1.0
ANK1	06C0140-MB1	Mercury, Total	0.02	u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
001	J12R02	Silver, Total	4.5	0.07u	4.8	93.8	1.0
		Aluminum, Total	8560	6970	192	828.3*	1.0
		Arsenic, Total	181	4.9	192	91.4	1.0
		Boron, Total	88.6	3.6	96.1	88.4	1.0
		Barium, Total	287	103	192	95.9	1.0
		Beryllium, Total	5.0	0.51	4.8	92.6	1.0
		Calcium, Total	11300	8620	2400	121.6	1.0
		Cadmium, Total	4.6	0.07u	4.8	95.8	1.0
		Cobalt, Total	53.1	8.8	48.0	92.3	1.0
		Chromium, Total	22.2	12.5	19.2	102.6	1.0
		Copper, Total	42.2	19.8	24.0	93.3	1.0
		Iron, Total	19500	20900	96.1	-1500. *	1.0
		Potassium, Total	3500	1190	2400	96.0	1.0
		Lithium, Total	111	8.1	96.1	106.9	1.0
		Magnesium, Total	7400	4830	2400	107.2	1.0
		Manganese, Total	436	371	48.0	134.2*	1.0
		Molybdenum, Total	90.1	0.87	96.1	92.9	1.0
		Sodium, Total	2470	216	2400	93.9	1.0
		Nickel, Total	58.9	22.1	48.0	76.7	1.0
		Phosphorus, Total	1060	937	96.1	132.3*	1.0
		Lead, Total	59.2	11.8	48.0	98.5	1.0
		Antimony, Total	27.2	0.42u	48.0	56.7	1.0
		Selenium, Total	166	0.45u	192	86.3	1.0
		Silicon, Total	802	421	96.1	396.8*	1.0
		Tin, Total	89.0	1.0 u	96.1	92.6	1.0
		Strontium, Total	138	43.7	96.1	97.7	1.0
		Titanium, Total	1460	1220	96.1	146.5*	1.0
		Thallium, Total	179	0.67u	192	93.1	1.0
		Uranium, Total	88.7	0.85u	96.1	92.3	1.0
		Vanadium, Total	92.2	45.6	48.0	97.1	1.0
		Zinc, Total	90.2	43.5	48.0	97.3	1.0
		Zirconium, Total	431	18.3	480	86.3	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/24/06

JENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
11	J12R12	Mercury, Total	0.18	0.11	0.13	54.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/24/06

JENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
01REP	J12R02	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	6970	6640	4.8	1.0
		Arsenic, Total	4.9	6.2	23.4	1.0
		Boron, Total	3.6	3.2	11.8	1.0
		Barium, Total	103	113	9.1	1.0
		Beryllium, Total	0.51	0.60	1.1	1.0
		Calcium, Total	8420	9280	9.8	1.0
		Cadmium, Total	0.07u	0.07u	NC	1.0
		Cobalt, Total	8.8	9.5	7.7	1.0
		Chromium, Total	12.5	10.7	15.5	1.0
		Copper, Total	19.8	19.0	4.1	1.0
		Iron, Total	20900	18500	12.5	1.0
		Potassium, Total	1190	1180	1.4	1.0
		Lithium, Total	8.1	7.8	3.8	1.0
		Magnesium, Total	4830	4660	3.6	1.0
		Manganese, Total	371	480	25.5	1.0
		Molybdenum, Total	0.87	0.61	35.1	1.0
		Sodium, Total	216	207	4.6	1.0
		Nickel, Total	22.1	15.9	22.6	1.0
		Phosphorus, Total	937	1160	21.1	1.0
		Lead, Total	11.9	14.4	19.0	1.0
		Antimony, Total	0.42u	0.42u	NC	1.0
		Selenium, Total	0.45u	0.45u	NC	1.0
		Silicon, Total	421	505	18.1	1.0
		Tin, Total	1.0 u	1.0 u	NC	1.0
		Strontium, Total	43.7	46.7	6.6	1.0
		Titanium, Total	1320	1210	9.1	1.0
		Thallium, Total	0.67u	0.67u	NC	1.0
		Uranium, Total	0.85u	0.85u	NC	1.0
		Vanadium, Total	45.6	43.3	5.2	1.0
		Zinc, Total	43.5	42.5	2.3	1.0
		Zirconium, Total	18.3	17.4	5.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/24/06

IENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

MPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
11REP	J12R12	Mercury, Total	0.11	0.05	67.5	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/24/06

LIENT: TNUHANFORD RC-025 K0468 LVL LOT #: 0607L462

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

AMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
CS1	06L0440-LC1	Silver, LCS	47.9	50.0	MG/KG	95.8
		Aluminum, LCS	473	500	MG/KG	94.6
		Arsenic, LCS	932	1000	MG/KG	93.2
		Boron, LCS	467	500	MG/KG	93.3
		Barium, LCS	488	500	MG/KG	97.5
		Beryllium, LCS	24.7	25.0	MG/KG	98.8
		Calcium, LCS	2460	2500	MG/KG	98.3
		Cadmium, LCS	24.0	25.0	MG/KG	96.0
		Cobalt, LCS	241	250	MG/KG	96.3
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	122	125	MG/KG	97.4
		Iron, LCS	464	500	MG/KG	92.9
		Potassium, LCS	2280	2500	MG/KG	91.2
		Lithium, LCS	497	500	MG/KG	99.4
		Magnesium, LCS	2380	2500	MG/KG	95.2
		Manganese, LCS	74.3	75.0	MG/KG	99.1
		Molybdenum, LCS	485	500	MG/KG	96.9
		Sodium, LCS	2300	2500	MG/KG	92.2
		Nickel, LCS	194	200	MG/KG	97.1
		Phosphorus, LCS	86.7	100	MG/KG	86.7
		Lead, LCS	241	250	MG/KG	96.4
		Antimony, LCS	284	300	MG/KG	94.5
		Selenium, LCS	886	1000	MG/KG	88.6
		Silicon, LCS	187	500	MG/KG	37.5
		Tin, LCS	486	500	MG/KG	97.2
		Strontium, LCS	489	500	MG/KG	97.8
		Titanium, LCS	487	500	MG/KG	97.5
		Thallium, LCS	963	1000	MG/KG	96.3
		Uranium, LCS	98.9	100	MG/KG	98.9
		Vanadium, LCS	243	250	MG/KG	97.2
		Zinc, LCS	94.9	100	MG/KG	94.9
		Zirconium, LCS	485	500	MG/KG	97.0
CS1	06C0140-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.9