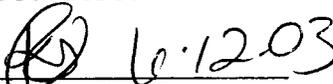


0059873

SAF-B03-015
Remaining Sites Confirmation
Sampling-Soil
FINAL VALIDATION PACKAGE

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan


INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE COVER SHEET)

SDG

H2188

SAF-B03-015

Sample Location/Waste Site: 128-F-3

RECEIVED
JUL 28 2003

EDMC

Date: 27 May 2003
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 128-F-3
Subject: Radiochemistry - Data Package No. H2188-EB (SDG No. H2188)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2188-EB which was prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00MP4	4/29/03	Soil	C	See note 1 & 2
J00MP5	4/29/03	Soil	C	See note 1 & 2
J00MP6	4/29/03	Soil	C	See note 1 & 2
J00MP7	4/29/03	Soil	C	See note 1 & 2
J00MP8	4/29/03	Soil	C	See note 1

- 1- Gamma spectroscopy.
2 -Gross alpha, gross beta.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

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

One equipment blank (J00MP8) was submitted for analysis. Potassium-40, radium-226, radium-228, thorium-228 and thorium-232 were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

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

000002

less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

All duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J00MP4/J00MP5) were submitted for analysis. Duplicates are evaluated based on the same criteria as laboratory duplicates. All 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. One analytes were reported above their RQL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2188 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

One analytes were reported above their RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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.

000006

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H2188	REVIEWER: TLI	DATE: 5/27/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-001

J00MP4

DATA SHEET

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-01</u>	Client sample id <u>J00MP4</u>	
Dept sample id <u>7501-001</u>	Location/Matrix <u>128-F-3 Burn Pit</u>	<u>SOLID</u>
Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 09:42</u>	<u>1149 g</u>
% solids <u>97.4</u>	Custody/SAF No <u>B03-015-80</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	3.29	3.0	4.4	10	U	93A
Gross Beta	12587-47-2	21.3	4.4	5.2	15		93B
Potassium 40	13966-00-2	17.7	0.79	0.20			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	0.466	0.061	0.047			GAM
Radium 228	15262-20-1	0.840	0.11	0.099			GAM
Europium 152	14683-23-9	U		0.063	0.10	U	GAM
Europium 154	15585-10-1	U		0.079	0.10	U	GAM
Europium 155	14391-16-3	U		0.087	0.10	U	GAM
Thorium 228	14274-82-9	0.630	0.034	0.028			GAM
Thorium 232	TH-232	0.840	0.11	0.099			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Americium 241	14596-10-2	U		0.16		U	GAM

Remaining Sites Confirmation Smpl.

Handwritten signature
5/23/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

000011

**EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188**

7501-002

J00MP5

DATA SHEET

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-02</u>	Client sample id <u>J00MP5</u>	
Dept sample id <u>7501-002</u>	Location/Matrix <u>128-F-3 Burn Pit</u>	<u>SOLID</u>
Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 10:02</u>	<u>1310 g</u>
‡ solids <u>97.9</u>	Custody/SAF No <u>B03-015-80</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	2.51	2.3	2.6	10	U	93A
Gross Beta	12587-47-2	16.0	4.2	5.5	15		93B
Potassium 40	13966-00-2	15.8	0.67	0.21			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Radium 226	13982-63-3	0.467	0.054	0.041			GAM
Radium 228	15262-20-1	0.774	0.10	0.096			GAM
Europium 152	14683-23-9	U		0.053	0.10	U	GAM
Europium 154	15585-10-1	U		0.071	0.10	U	GAM
Europium 155	14391-16-3	U		0.074	0.10	U	GAM
Thorium 228	14274-82-9	0.571	0.029	0.023			GAM
Thorium 232	TH-232	0.774	0.10	0.096			GAM
Uranium 235	15117-96-1	U		0.095		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

Remaining Sites Confirmation Smpl.

Handwritten signature
5/23/03

000012

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-003

J00MP6

DATA SHEET

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-03</u>	Client sample id <u>J00MP6</u>	
Dept sample id <u>7501-003</u>	Location/Matrix <u>128-F-3 Burn Pit</u>	<u>SOLID</u>
Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 11:15</u>	<u>1390 g</u>
% solids <u>97.8</u>	Custody/SAF No <u>B03-015-81</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	3.34	2.9	3.6	10	U	93A
Gross Beta	12587-47-2	19.4	4.8	6.5	15		93B
Potassium 40	13966-00-2	13.8	0.74	0.28			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.032	0.10	U	GAM
Radium 226	13982-63-3	0.449	0.058	0.058			GAM
Radium 228	15262-20-1	0.644	0.12	0.11			GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.13</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	0.530	0.038	0.039			GAM
Thorium 232	TH-232	0.644	0.12	0.11			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Americium 241	14596-10-2	U		0.29		U	GAM

Remaining Sites Confirmation Smpl.

Handwritten signature: K. Spitzer

000013

Lab id <u>EBRINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-004

J00MP7

DATA SHEET

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-04</u>	Client sample id <u>J00MP7</u>	
Dept sample id <u>7501-004</u>	Location/Matrix <u>128-F-3 Burn Pit</u>	<u>SOLID</u>
Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 11:35</u>	<u>1433 g</u>
% solids <u>97.5</u>	Custody/SAF No <u>B03-015-81</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	7.68	3.5	3.6	10		93A
Gross Beta	12587-47-2	18.4	4.3	5.4	15		93B
Potassium 40	13966-00-2	14.0	0.92	0.27			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Radium 226	13982-63-3	0.525	0.056	0.049			GAM
Radium 228	15262-20-1	0.833	0.13	0.13			GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.091	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	0.877	0.054	0.052			GAM
Thorium 232	TH-232	0.833	0.13	0.13			GAM
Uranium 235	15117-96-1	U		0.098		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.040		U	GAM

Remaining Sites Confirmation Smpl.

K
5/23/02

000014

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-005

J00MP8

DATA SHEET

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-05</u>	Client sample id <u>J00MP8</u>	
Dept sample id <u>7501-005</u>	Location/Matrix <u>128-F-3 Burn Pit</u>	<u>SOLID</u>
Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 08:18</u>	<u>1351 g</u>
‡ solids <u>100.0</u>	Custody/SAF No <u>B03-015-82</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Potassium 40	13966-00-2	4.06	0.50	0.27		U	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	0.181	0.044	0.043			GAM
Radium 228	15262-20-1	0.228	0.095	0.098			GAM
Europium 152	14683-23-9	U		0.065	0.10	U	GAM
Europium 154	15585-10-1	U		0.084	0.10	U	GAM
Europium 155	14391-16-3	U		0.063	0.10	U	GAM
Thorium 228	14274-82-9	0.157	0.024	0.027			GAM
Thorium 232	TH-232	0.228	0.095	0.098			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Americium 241	14596-10-2	U		0.091		U	GAM

Remaining Sites Confirmation Smpl.

Handwritten signature/initials
5/23/02

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

000015

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000016

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2188 was composed of five solid (soil) samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling – Soil, 128-F-3 Burn Pit.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on May 8, 2003. The electronic data deliverable (EDD) was transmitted to BHI via e-mail on May 8, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Program Manager



Date

Company Contact Renee Nielson Project Coordinator KESSNER, JH
 Telephone No. (7501) SAF No. B03-015
 Sampling Location SDG H-2188 (7500) K09 Method of Shipment Federal Express
 128-F-3 Burn Pit SDG H-2187 (7500) S-1 Bill of Lading/Air Bill No. SEE OSC
 Field Logbook No. COA C17HX671C Offsite Property No. A030 247
 EL-1577

Shipped To TMA/RECRA Method of Shipment Federal Express
 POSSIBLE SAMPLE HAZARDS/REMARKS: Samples did not originate in radiological controlled area. No total activity associated with sample/samples. Bill of Lading/Air Bill No. SEE OSC
 Special Handling and/or Storage None

SAMPLE ANALYSIS

Sample No.	Matrix	Sample Date	Sample Time	Preservation	None	Cool 4C	Matrix				
J00MP4	SOIL	4.29.07	0942	None	None	120mL	120mL	120mL	120mL	60mL	SOIL
J00MP5	SOIL	4.29.07	1002	None	None	120mL	120mL	120mL	120mL	60mL	SOIL

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Signature/Print Name
R. G. ...	4.29.07	SA 3728	4.29.07	SA 3728
R. G. ...	4.30.07	R. G. ...	4.30.07	R. G. ...
R. G. ...	4.30.07	F. G. ...	4.30.07	F. G. ...
R. G. ...	4.30.07	L. G. ...	4.30.07	L. G. ...

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Project Coordinator KESSNER, JH
 SAF No. B03-015
 Method of Shipment Federal Express
 Bill of Lading/Air Bill No. SE F 05PC
 COA C17HXF671C
 Offsite Property No. A020 247

Shipped To (TMA) RECA
 POSSIBLE SAMPLE HAZARDS/REMARKS: Samples are not analyzed in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or Storage None
 000019

Sample No.	Matrix	Sample Date	Sample Time	Note	None	Cool AC	Matrix						
J00MP8	SOIL	4.29.03	1117	See item (1) in Special Instructions.	None	120mL	120mL	120mL	120mL	60mL	60mL	60mL	X
J00MP7	SOIL	4.29.03	1135	See item (2) in Special Instructions.	None	120mL	120mL	120mL	120mL	60mL	60mL	60mL	X

CHAIN OF POSSESSION		SPECIAL INSTRUCTIONS	
Received By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahberg	4.29.03	3A 3228	4.29.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	Fed Ex	5-1-03 1000
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03
R. Fahberg	4.30.03	R. Fahberg	4.30.03

SPECIAL INSTRUCTIONS:
 (1) Gamma Spectroscopy (TCL List) (Caesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Bechtel Hanford Inc. **B03-015-82** Page 1 of 1
Collector Robert Fahberg **Price Code** 8B **Date Turnaround** 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil **Project Coordinator** KESSNER, JH
Ice Chest No. ERC 02: 101 **Field Logbook No.** EL-1577 **COA** C17HXF671C **SAF No.** B03-015 **Air Quality**
Shipped To (TMA)ECRA **Offsite Property No.** A030 247 **Method of Shipment** Federal Express **Bill of Lading/Air BHI No.** SEE OSR

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Comesay Contact Renee Nicolson **Telephone No.** (7501) 372-9658
Sampling Location 12B-F-3 Burn Pit **Field Logbook No.** EL-1577

Preservation None **Cool AC** None **Cool AC** None

Type of Container aG **Type of Container** aG **Type of Container** aG

No. of Container(s) 1 **No. of Container(s)** 1 **No. of Container(s)** 1

Volume 1000mL **Volume** 60mL **Volume** 60mL

Special Handling and/or storage: None

SPECIAL INSTRUCTIONS
 Do not use this sample to run lab QAVQC.
 (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

SAMPLE ANALYSIS

Sample No.	Matrix	Sample Date	Sample Time
J00MP8	SOIL	4.29.03	0818

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RF 000	4.29.03	JA 3728	4.29.03
RF 000	4.30.03	R. G. ...	4.30.03
RF 000	4.30.03	F. G. ...	4.30.03
RF 000	4.30.03	...	5-1-03

LABORATORY SECTION Received By _____ Date/Time _____

FINAL SAMPLE DISPOSITION Disposal Method _____ Date/Time _____

Appendix 5

Data Validation Supporting Documentation

000021

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RSCS 128-F-3		DATA PACKAGE: #2188		
VALIDATOR:	TZ1	LAB:	ER	DATE:	5/7/03
CASE:			SDG:	#2188	
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectrometry	Gamma Spectrometry	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J00MP4 J00MP5 J00MP6 J00MP7 J00MP8					
Sarl					

1. Completeness Y N/A

Technical verification forms present? Yes No N/A

Comments: _____

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

Instruments/detectors calibrated? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Appendix A – Radiochemical Data Validation Checklist

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: _____

000023

Appendix A – Radiochemical Data Validation Checklist

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 ^{5/10/01}

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: K40 Ra 226/228 Rh 228/232 - 17 Et

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

Appendix A – Radiochemical Data Validation Checklist

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) ~~Yes~~ 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)..... ~~Yes~~ 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: _____

Appendix A – Radiochemical Data Validation Checklist

10. Duplicates (Levels C, D, E) N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

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

Comments: _____

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

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

Field duplicate RPD values acceptable? Yes No N/A

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

Field split RPD values acceptable? Yes No N/A

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

Performance audit sample results acceptable? Yes No N/A

Comments: NO PS or PAS

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

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: one set over

000027

Appendix 6

Additional Documentation Requested by Client

000028

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-007

Method Blank

METHOD BLANK

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305002-07</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7501-007</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B03-015</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.049	1.1	2.4	10	U	93A
Gross Beta	12587-47-2	-2.10	3.1	5.7	15	U	93B
Potassium 40	13966-00-2	U		0.35		U	GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	U		0.049		U	GAM
Radium 228	15262-20-1	U		0.087		U	GAM
Europium 152	14683-23-9	U		0.065	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.053	0.10	U	GAM
Thorium 228	14274-82-9	U		0.046		U	GAM
Thorium 232	TH-232	U		0.087		U	GAM
Uranium 235	15117-96-1	U		0.080		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Americium 241	14596-10-2	U		0.069		U	GAM

Remaining Sites Confirmation Smpl.

QC-BLANK #44573

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-006

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7501</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R305002-06</u> Dept sample id <u>7501-006</u>	Client/Case no <u>Manford</u> <u>SDG H2188</u> Contract <u>No. 630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>B03-015</u>
---	--

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI- FIERS	TEST	ADDED	2σ ERR	REC	3σ LNTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g			pCi/g	pCi/g	%	(TOTAL)	LIMITS
Gross Alpha	210	15	3.4	10		93A	214	8.6	98	68-132	70-130
Gross Beta	244	11	6.7	15		93B	232	9.3	105	75-125	70-130
Cobalt 60	1.49	0.065	0.025	0.050		GAM	1.56	0.062	96	77-123	80-120
Cesium 137	1.54	0.057	0.034	0.10		GAM	1.50	0.060	103	75-125	80-120

Remaining Sites Confirmation Smp.

QC-LCS #44572

000030

Lab id <u>EBRLNE</u>
Protocol <u>Manford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>05/08/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2188

7501-008

J00MP5

DUPLICATE

SDG <u>7501</u>	Client/Case no <u>Hanford</u>	SDG <u>H2188</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R305002-08</u>	Lab sample id <u>R305002-02</u>	Client sample id <u>J00MP5</u>
Dept sample id <u>7501-008</u>	Dept sample id <u>7501-002</u>	Location/Matrix <u>128-F-3 Burn Pit</u> SOLID
	Received <u>05/01/03</u>	Collected/Weight <u>04/29/03 10:02</u> <u>1310 g</u>
% solids <u>97.9</u>	% solids <u>97.9</u>	Custody/SAF No <u>B03-015-80</u> <u>B03-015</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	3.14	2.9	3.5	10	U	93A	2.51	2.3	2.6	U	-		
Gross Beta	15.9	4.8	6.8	15		93B	16.0	4.2	5.5		1	68	
Potassium 40	14.9	0.64	0.21			GAM	15.8	0.67	0.21		6	33	
Cobalt 60	U		0.031	0.050	U	GAM	U		0.022	U	-		
Cesium 137	U		0.027	0.10	U	GAM	U		0.019	U	-		
Radium 226	0.411	0.051	0.050			GAM	0.467	0.054	0.041		13	41	
Radium 228	0.769	0.13	0.12			GAM	0.774	0.10	0.096		1	45	
Europium 152	U		0.063	0.10	U	GAM	U		0.053	U	-		
Europium 154	U		0.097	0.10	U	GAM	U		0.071	U	-		
Europium 155	U		0.072	0.10	U	GAM	U		0.074	U	-		
Thorium 228	0.627	0.035	0.032			GAM	0.571	0.029	0.023		9	34	
Thorium 232	0.769	0.13	0.12			GAM	0.774	0.10	0.096		1	45	
Uranium 235	U		0.096		U	GAM	U		0.095	U	-		
Uranium 238	U		3.6		U	GAM	U		2.3	U	-		
Americium 241	U		0.10		U	GAM	U		0.14	U	-		

Remaining Sites Confirmation Smpl.

QC-DUP#2 44574

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/08/03

000031

Date: 27 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil-
Waste Site 128-F-3
Subject: Inorganics - Data Package No. H2188-LLI (SDG No. H2188)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2188-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00MP4	4/29/03	Soil	C	See note 1
J00MP5	4/29/03	Soil	C	See note 1
J00MP6	4/29/03	Soil	C	See note 1
J00MP7	4/29/03	Soil	C	See note 1
J00MP8	4/29/03	Soil	C	See note 1

1 - ICP metals; mercury.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

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 preparation blank contamination, the chromium result in sample JOOMP8 was qualified as undetected and flagged "U".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (JOOMP8) was submitted for analysis. Barium, chromium and lead were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike

Matrix spike (MS) 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 recoveries must fall within the range of

000002

70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike 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 spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery 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 (J00MP4/J00MP5) were submitted for analysis. Duplicates are evaluated based on the same criteria as laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2188-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

000003

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to preparation blank contamination, the chromium result in sample J00MP8 was qualified as undetected and flagged "U".

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

000006

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H2188	REVIEWER: TLI	DATE: 5/27/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium	U	J00MP8	Blank contamination

0000C8

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

0000C9

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/14/03

CLIENT: TNUHANFORD B03-015 H2188

LVL LOT #: 0305L318

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00MP4	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.0	MG/KG	0.35	1.0
		Barium, Total	59.2	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	13.3	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.7	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
-002	J00MP5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.7	MG/KG	0.32	1.0
		Barium, Total	58.1	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	12.4	MG/KG	0.05	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	3.6	MG/KG	0.24	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
-003	J00MP6	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.6	MG/KG	0.35	1.0
		Barium, Total	60.8	MG/KG	0.01	1.0
		Cadmium, Total	0.05	MG/KG	0.04	1.0
		Chromium, Total	12.9	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.7	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
-004	J00MP7	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.9	MG/KG	0.35	1.0
		Barium, Total	90.4	MG/KG	0.01	1.0
		Cadmium, Total	0.05	MG/KG	0.04	1.0
		Chromium, Total	13.7	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.4	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0

Handwritten signature and date: 5/23/03

000011

Handwritten mark

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/14/03

CLIENT: TNUHANFORD B03-015 H2188
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J00MP8	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	1.5	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.17 U	MG/KG	0.06	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	0.90	MG/KG	0.24	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0

Handwritten:
 ✓
 5/23/03

Handwritten signature: *JK*

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000013



Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0305L318
SDG/SAF#: H2188/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 05-01-03

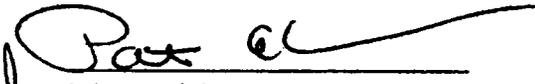
METALS CASE NARRATIVE

1. This narrative covers the analyses of 5 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of the final CCV for Cadmium and Lead in file TA0506A. All samples were surrounded by CCVs in control.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

000014

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 18 pages.

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. 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
gmb/m05-318

05-14-03
Date



000015

~~5~~

Appendix 5

Data Validation Supporting Documentation

000016

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RSCS 128-F3		DATA PACKAGE: H2188		
VALIDATOR:	ku	LAB: LLI	DATE: 5/27/03		
CASE:			SDG: H2188		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J00MP4 J00MP5 J00MP6 J00MP7 J00MP8					
Sdi					

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: Chromium - U PS
EB - Barium, Chromium & lead

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

- Duplicate RPD values acceptable? Yes No N/A
- Duplicate results acceptable? Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
- MS/MSD standards expired? (Levels D, E) Yes No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

- ICP serial dilution samples analyzed? Yes No N/A
- ICP serial dilution %D values acceptable? Yes No N/A
- ICP post digestion spike required? Yes No N/A
- ICP post digestion spike values acceptable? Yes No N/A
- Standards traceable? Yes No N/A
- Standards expired? Yes No N/A
- Transcription/calculation errors? Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

- Results reported for all requested analyses? Yes No N/A
- Results supported in the raw data? (Levels D, E) Yes No N/A
- Samples properly prepared? (Levels D, E) Yes No N/A
- Detection limits meet RDL? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

000022

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/14/03

CLIENT: TNUHANFORD B03-015 H2188

LVL LOT #: 0305L318

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK1	03L0252-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	0.04	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.11	MG/KG	0.06	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
BLANK1	03C0105-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

000023

10

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/14/03

CLIENT: TNUHANFORD B03-015 H2188

LVL LOT #: 0305L318

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-001	J00MP4	Silver, Total	4.8	0.08u	5.1	94.1	1.0
		Arsenic, Total	198	3.0	206	94.4	1.0
		Barium, Total	254	59.2	206	94.6	1.0
		Cadmium, Total	4.9	0.04u	5.1	96.1	1.0
		Chromium, Total	32.0	13.3	20.6	90.8	1.0
		Mercury, Total	0.18	0.02u	0.17	106.4	1.0
		Lead, Total	52.0	3.7	51.5	93.8	1.0
		Selenium, Total	194	0.36u	206	94.3	1.0

000024

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/14/03

CLIENT: TNUHANFORD B03-015 H2188
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		
-001REP	JOOMP4	Silver, Total	0.08u	0.08u	NC	1.0
		Arsenic, Total	3.0	2.7	10.5	1.0
		Barium, Total	59.2	60.9	2.8	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Chromium, Total	13.3	13.0	2.3	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	3.7	3.5	5.6	1.0
		Selenium, Total	0.36u	0.41	NC 200	1.0

by 5/14/03

000025

122

Date: 27 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil -
Waste Site 128-F-3
Subject: PCB - Data Package No. H2188-LLI (SDG No. H2188)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2188-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00MP4	4/29/03	Soil	C	See note 1
J00MP5	4/29/03	Soil	C	See note 1
J00MP6	4/29/03	Soil	C	See note 1
J00MP7	4/29/03	Soil	C	See note 1

1 - Pesticides by 8081A and PCBs by 8082.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

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.

000001

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 practical quantitation limit (PQL). 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 PQL, the result is qualified as undetected and elevated to the PQL.

All method blank target compound results were acceptable.

Field Blanks

No equipment blanks were submitted for analysis.

- **Accuracy**

Matrix Spike

Matrix spike 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 analyses are performed in duplicate and must be within control limits 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.

All matrix spike 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.

All 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.

All matrix spike/matrix spike duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J00MP4/J00MP5) were submitted for analysis. Field duplicate results 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 Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All reported methoxychlor and toxaphene results exceeded the analyte specific RQL. Under the BHI statement of work, no qualification is required.

000003

- **Completeness**

Data Package No. H2188-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All reported methoxychlor and toxaphene results exceeded the analyte specific RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

000007

DATA QUALIFICATION SUMMARY

SDG: H2188	REVIEWER: TLI	DATE: 5/27/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

000068

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: BECHTEL-HANFORD		J00MP4		J00MP5		J00MP6		J00MP7					
Laboratory: Lionville Laboratory Inc.		Duplicate		Duplicate		Duplicate		Duplicate					
Case: SDG: H2188		4/29/03		4/29/03		4/29/03		4/29/03					
Sample Number		5/2/03		5/2/03		5/2/03		5/2/03					
Remarks		5/6/03		5/6/03		5/6/03		5/6/03					
Sample Date		RQL		Result		Q		Result		Q			
Extraction Date		Result		Q		Result		Q		Result		Q	
Analysis Date		20		15 U		15 U		15 U		15 U		15 U	
Aroclor-1016		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1221		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1232		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1242		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1248		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1254		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1260		20	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Sample Number		J00MP4		J00MP5		J00MP6		J00MP7					
Remarks		Duplicate		Duplicate		Duplicate		Duplicate					
Sample Date		4/29/03		4/29/03		4/29/03		4/29/03					
Extraction Date		5/2/03		5/2/03		5/2/03		5/2/03					
Analysis Date		5/6/03		5/6/03		5/6/03		5/6/03					
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Beta-BHC	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Delta-BHC	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Gamma-BHC (Lindane)	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Heptachlor	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Aldrin	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Heptachlor Epoxide	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Endosulfan I	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Dieldrin	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
4,4'-DDE	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
Endrin	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
Endosulfan II	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
4,4'-DDD	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
Endosulfan Sulfate	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
4,4'-DDT	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
Methoxychlor	5	17 U	17 U	17 U	17 U	17 U	17 U						
Endrin Ketone	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
Endrin Aldehyde	5	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U						
alpha-Chlordane	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
gamma-Chlordane	5	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U						
Toxaphene	5	170 U	170 U	170 U	170 U	170 U	170 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

RFW Batch Number: 03051318

Cust ID: J00MP4 J00MP4 J00MP4 J00MP4 J00MP5 J00MP6 J00MP7

Sample Information RFW#: 001 001 MS 001 MSD 002 003 004
 Matrix: SOIL SOIL SOIL SOIL SOIL SOIL SOIL
 D.F.: 1.00 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 UG/KG

Surrogate:	Tetrachloro-m-xylene	Decachlorobiphenyl	Alpha-BHC	Beta-BHC	Delta-BHC	gamma-BHC (Lindane)	Heptachlor	Aldrin	Heptachlor epoxide	Endosulfan I	Dieldrin	4,4'-DDE	Endrin	Endosulfan II	4,4'-DDD	Endosulfan sulfate	4,4'-DDT	Methoxychlor	Endrin ketone	alpha-chloroaldehyde	gamma-Chlordane	Toxaphene
	90	115	95	130	86	92	88	1.7	1.7	1.7	3.4	3.4	3.4	3.4	3.4	3.4	3.4	17	3.4	1.7	1.7	170
	%	%	%	%	%	%	%	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl
	90	110	85	95	110	120	135	1.7	1.7	1.7	3.4	3.4	3.4	3.4	3.4	3.4	3.4	17	3.4	1.7	1.7	170
	%	%	%	%	%	%	%	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl	fl

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

Handwritten notes:
 12/23/02
 12/23/02

000011

Cust ID: PBLKSO PBLKSO BS
 RFW#: 03LE0518-NB1 03LE0518-NB1
 Matrix: SOIL SOIL
 D.F.: 1.00 1.00
 Units: UG/KG UG/KG

Surrogate:	Tetrachloro-m-xylene	105 ‡	90 ‡
Decachlorobiphenyl	130 * ‡	110 ‡	
Alpha-BHC	1.7 U	1.7 U	
Beta-BHC	1.7 U	1.7 U	
Delta-BHC	1.7 U	1.7 U	
gamma-BHC (Lindane)	1.7 U	76 ‡	
Heptachlor	1.7 U	80 ‡	
Aldrin	1.7 U	76 ‡	
Heptachlor epoxide	1.7 U	1.7 U	
Endosulfan I	1.7 U	1.7 U	
Dieldrin	3.3 U	86 ‡	
4,4'-DDE	3.3 U	3.3 U	
Endrin	3.3 U	98 ‡	
Endosulfan II	3.3 U	3.3 U	
4,4'-DDD	3.3 U	3.3 U	
Endosulfan sulfate	3.3 U	3.3 U	
4,4'-DDT	3.3 U	89 ‡	
Methoxychlor	17 U	17 U	
Endrin ketone	3.3 U	3.3 U	
Endrin aldehyde	3.3 U	3.3 U	
alpha-Chlordane	1.7 U	1.7 U	
gamma-Chlordane	1.7 U	1.7 U	
Toxaphene	170 U	170 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

Handwritten: 5/23/03

Handwritten signature: J. J. ...

000012

Cust ID: J00MP4 J00MP5 J00MP6 J00MP7
RFW#: 001 002 MS 002 MSD 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:	Decachlorobiphenyl	115	90	110	120	115	115	115	115	135
Aroclor-1016	15 U	15 U	15 U	15 U	103	15 U				
Aroclor-1221	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1232	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1242	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1248	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1254	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Aroclor-1260	15 U	15 U	15 U	110	105	15 U				

Cust ID: PBLKSO PBLKSO BS

RFW#: 03LE0518-MB1 03LE0518-MB1
Matrix: SOIL SOIL
D.F.: 1.00 1.00
Units: UG/KG UG/KG

Surrogate:	Decachlorobiphenyl	125	120
Aroclor-1016	15 U	15 U	106
Aroclor-1221	15 U	15 U	15 U
Aroclor-1232	15 U	15 U	15 U
Aroclor-1242	15 U	15 U	15 U
Aroclor-1248	15 U	15 U	15 U
Aroclor-1254	15 U	15 U	15 U
Aroclor-1260	15 U	15 U	106

Handwritten notes: 12/24/03

Handwritten signature

000013

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000014



Analytical Report

Client: TNU-HANFORD B03-015
LVL #: 0305L318
SDG/SAF #: H2188/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 05-01-03

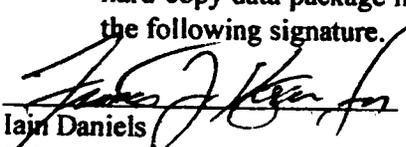
PCB

The set of samples consisted of four (4) soil samples collected on 04-29-03.

The samples and their associated QC samples were extracted on 05-02-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-06-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received Sulfuric Acid and Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Two (2) of sixteen (16) surrogate recoveries were outside QC limits; 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. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 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


Date

pefr:\group\data\pest\tnu hanford\05L-318.pcb

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 10 pages.

000015



Analytical Report

Client: TNU-HANFORD B03-015
LVL #: 0305L318
SDG/SAF #: H2188/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 05-01-03

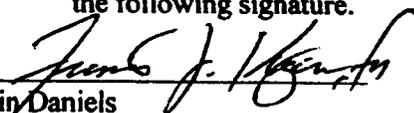
PESTICIDE

The set of samples consisted of four (4) soil samples collected on 04-29-03.

The samples and their associated QC samples were extracted on 05-02-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-06-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received a Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Three (3) of sixteen (16) surrogate recoveries were outside QC limits; 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. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 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

5/9/03
Date

pefr:\group\data\pest\tnu hanford\05L-318.pes

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 13 pages.

000016

B03-015-80
 Price Code 8B
 Data Turnaround 7 Days
 Air Quality

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 Project Coordinator
 KESSNER, JH
 SAF No.
 B03-015

Bechtel Hanford Inc.
 Collector
 Robert Fahlborg
 Project Designation
 Remaining Sites Confirmation Sampling-Soil
 Ice Chest No.
 ERC 02-406

Company Contact
 Renee Nielson
 Telephone No.
 372-9658
 Sampling Location
 128-F-3 Burn Pit
 Field Logbook No.
 EL-1577
 COA
 C17HXF671C
 Method of Shipment
 Federal Express
 Bill of Lading/Air Bill No.
 SEE QR

Shipped To
 TMA/ECRA
 POSSIBLE SAMPLE HAZARDS/REMARKS
 Samples did not originate in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or Storage
 COO 140C
 A030 219

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
J00MP4	SOIL	4.29.03	0942	Type of Container	None	None	None	None	None	None	None
J00MP5	SOIL	4.29.03	1002	No. of Container(s)	1	1	1	1	1	1	1
				Volume	100mL	60mL	120mL	120mL	120mL	60mL	60mL
					See Item (1) in Special Instructions	See Item (2) in Special Instructions	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 240A (TCL)	TRH (Tenax) - 418.1

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. G. G. R. F. G. G.	4.29.03	3A 3728	4.29.03
R. G. G. R. F. G. G.	4.30.03	R. F. G. G.	4.30.03
R. G. G. R. F. G. G.	4.30.03	F. G. G.	5/1/03
R. G. G. R. F. G. G.	4.30.03	R. F. G. G.	5/1/03

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Relinquished By/Removed From	Date/Time	Received By	Date/Time	Disposal Method
R. G. G. R. F. G. G.	4.30.03	R. F. G. G.	5/1/03	

Laboratory Section
 Received By
 Disposed By
 Title
 Date/Time

000017

B03-015-81
 Price Code 8B
 Date Turnaround 7 Days

Project Coordinator
 KESSNER, JH

SAF No.
 B03-015

Method of Shipment
 Federal Express

Bill of Lading/Air Bill No.
 SEE OSLC

Bechtel Hanford Inc.
 Collector Robert Fahberg
 Project Designation Remaining Sites Confirmation Sampling-Soil
 Ice Chest No. FRC 02 406
 Shipped To TMA/RECRD
 POSSIBLE SAMPLE HAZARDS/REMARKS: Samples are not originate in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or Storage: cool 40c

Conserv Contact: Renee Nielson, Telephone No. 372-9658
 Sampling Location: 128-F-3 Burn Pit
 Field Logbook No. EL-1577
 Office Property No. A030 406
 COA: C17HXF671C

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	No. of Containers	Volume	Cool 4C				
J00MP6	SOIL	4.29.03	1113	None	1	60mL	None	None	None	None	None
J00MP7	SOIL	4.29.03	1135	None	1	60mL	None	None	None	None	None

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Received By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahberg	4.29.03 1004	R. Fahberg	4.29.03 1430
R. Fahberg	4.30.03 1009	R. Fahberg	4.29.03 4:29:03
R. Fahberg	4.30.03 1010	R. Fahberg	4.30.03 4:30:03
R. Fahberg	4.30.03 1011	R. Fahberg	4.30.03 4:30:03
R. Fahberg	4.30.03 1012	R. Fahberg	4.30.03 4:30:03

LABORATORY SECTION Received By: [Signature] Date/Time: 5/1/03 0910

FINAL SAMPLE DISPOSITION Disposed By: [Signature] Date/Time: 5/1/03 0910

Disposal Method: [Blank]

Disposed By: [Signature] Date/Time: 5/1/03 0910

Appendix 5
Data Validation Supporting Documentation

000019

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS RSCS 128-F-3	DATA PACKAGE: H2188				
VALIDATOR: TLI	LAB: LLI		DATE: 5/27/03		
CASE:			SDG: H2188		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J00MP4 J00MP5 J00MP6 J00MP7					
Scd					

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: _____

PESTICIDE/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: _____

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: No DAS

Adk

PESTICIDE/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: _____

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: _____

PESTICIDE/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: toxaphene + methoxychlor on

9. SAMPLE CLEANUP (Levels D and E)

Fluorilicil ® (or other aborbant) 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: 27 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste
Site 128-F-3
Subject: Semivolatile - Data Package No. H2188-LLI (SDG No. H2188)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2188-LLI prepared by Lionville Laboratory Incorporated (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	Analysis
J00MP4	4/29/03	Soil	C	See note 1
J00MP5	4/29/03	Soil	C	See note 1
J00MP6	4/29/03	Soil	C	See note 1
J00MP7	4/29/03	Soil	C	See note 1
J00MP8	4/29/03	Soil	C	See note 1

1-Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

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: Water samples must be extracted within 7 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".

All method blank results were acceptable.

Field Blanks

One equipment blank (J00MP8) was submitted for analysis. Diethylphthalate and di-n-butylphthalate were detected in the equipment blank. Under the BHI statement of work, no qualification is required. All other field blank results were acceptable.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate 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 outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike/matrix spike duplicate 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".

All 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.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J00MP4/J00MP5) were submitted for analysis. Field duplicate results 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. Eight analytes exceeded the RQL in all other samples (2-nitroaniline, 2,4-dinitrophenol, 3-nitroaniline, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol). Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2188-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Eight analytes exceeded the RQL in all other samples (2-nitroaniline, 2,4-dinitrophenol, 3-nitroaniline, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol). Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

000006

Appendix 1

Glossary of Data Reporting Qualifiers

000007

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

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the 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).

000008

Appendix 2

Summary of Data Qualification

000009

DATA QUALIFICATION SUMMARY

SDG: H2188	REVIEWER: TLI	DATE: 5/27/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

000010

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD		SDG: H2188		J00MP4		J00MP5		J00MP6		J00MP7		J00MP8	
Laboratory: LLI						Duplicate						E. Blank	
Sample Number	Remarks	4/29/03	5/2/03	5/5/03	4/29/03	5/2/03	5/5/03	4/29/03	5/2/03	5/5/03	4/29/03	5/2/03	5/5/03
Extraction Date	Analysis Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semivolatiles (S270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
Acenaphthene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
2,4-Dinitrophenol*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
4-Nitrophenol*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
Dibenzofuran	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
2,4-Dinitrotoluene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Diethylphthalate	660	340 U	340 U	340 U	340 U	340 U	340 U	59	52	52	52	42	42
4-Chlorophenyl-phenyl ether	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Fluorene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
4-Nitroaniline*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
4,6-Dinitro-2-methylphenol*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
N-Nitrosodiphenylamine	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
4-Bromophenyl-phenyl ether	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Hexachlorobenzene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Pentachlorophenol*	660	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	860 U	840 U
Phenanthrene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Anthracene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Carbazole	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Di-n-butylphthalate	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Fluoranthene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	93
Pyrene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Butylbenzylphthalate	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
3,3'-Dichlorobenzidine	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Benzo(a)anthracene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Chrysene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
bis(2-Ethylhexyl)phthalate	660	23	23	340 U	340 U	340 U	340 U	18	18	340 U	340 U	340 U	330 U
Di-n-octylphthalate	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Benzo(b)fluoranthene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Benzo(k)fluoranthene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Benzo(a)pyrene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Indeno(1,2,3-cd)pyrene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Dibenz(a,h)anthracene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U
Benzo(g,h,i)perylene	660	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	340 U	330 U

000013

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. * - TDL exceeded

RFW Batch Number: 0305L318

Client: TNUHANFORD B03-015 H2188

Work Order: 11343606001

Page: 1a

Sample Information	RFW#:	Matrix:	D.F.:	Units:	J00MP4	J00MP4	J00MP4	J00MP4	J00MP5	J00MP6	J00MP7
	001	001 MS	001 MSD	002	003	004	005	006	007	008	009
	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Nitrobenzene-d5	75	70	82	67	56	78	fl	fl	fl	fl	fl
2-Fluorobiphenyl	79	74	89	70	60	83	U	U	U	U	U
Terphenyl-d14	100	94	113	88	74	104	U	U	U	U	U
Phenol-d5	71	71	83	63	53	73	U	U	U	U	U
2-Fluorophenol	74	70	84	65	55	75	U	U	U	U	U
2,4,6-Tribromophenol	76	81	95	67	56	83	U	U	U	U	U
Phenol	340	61	75	340	340	340	U	U	U	U	U
bis(2-Chloroethyl) ether	340	340	340	340	340	340	U	U	U	U	U
2-Chlorophenol	340	61	76	340	340	340	U	U	U	U	U
1,3-Dichlorobenzene	340	340	340	340	340	340	U	U	U	U	U
1,4-Dichlorobenzene	340	60	76	340	340	340	U	U	U	U	U
1,2-Dichlorobenzene	340	340	340	340	340	340	U	U	U	U	U
2-Methylphenol	340	340	340	340	340	340	U	U	U	U	U
2,2'-oxybis(1-Chloropropane)	340	340	340	340	340	340	U	U	U	U	U
3- and/or 4-Methylphenol	340	340	340	340	340	340	U	U	U	U	U
N-Nitroso-di-n-propylamine	340	50	60	340	340	340	U	U	U	U	U
Hexachloroethane	340	340	340	340	340	340	U	U	U	U	U
Nitrobenzene	340	340	340	340	340	340	U	U	U	U	U
Isophorone	340	340	340	340	340	340	U	U	U	U	U
2-Nitrophenol	340	340	340	340	340	340	U	U	U	U	U
2,4-Dimethylphenol	340	340	340	340	340	340	U	U	U	U	U
bis(2-Chloroethoxy) methane	340	340	340	340	340	340	U	U	U	U	U
2,4-Dichlorophenol	340	340	340	340	340	340	U	U	U	U	U
1,2,4-Trichlorobenzene	340	63	77	340	340	340	U	U	U	U	U
Naphthalene	340	340	340	340	340	340	U	U	U	U	U
4-Chloroaniline	340	340	340	340	340	340	U	U	U	U	U
Hexachlorobutadiene	340	340	340	340	340	340	U	U	U	U	U
4-Chloro-3-methylphenol	340	72	85	340	340	340	U	U	U	U	U
2-Methylnaphthalene	340	340	340	340	340	340	U	U	U	U	U
Hexachlorocyclopentadiene	340	340	340	340	340	340	U	U	U	U	U
2,4,6-Trichlorophenol	340	340	340	340	340	340	U	U	U	U	U
2,4,5-Trichlorophenol	860	860	860	860	860	860	U	U	U	U	U

R/S/12/02

000014

*= Outside of EPA CLP QC limits.

RFW#:

001

001 MS

001 MSD

002

003

004

RFW#	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	340 U	340 U	340 U	340 U	340 U	340 U
2-Nitroaniline	860 U	860 U	860 U	860 U	860 U	860 U
Dimethylphthalate	340 U	340 U	340 U	340 U	340 U	340 U
Acenaphthylene	340 U	340 U	340 U	340 U	340 U	340 U
2,6-Dinitrotoluene	340 U	340 U	340 U	340 U	340 U	340 U
3-Nitroaniline	860 U	860 U	860 U	860 U	860 U	860 U
Acenaphthene	340 U	66 *	80 *	340 U	340 U	340 U
2,4-Dinitrophenol	860 U	860 U	860 U	860 U	860 U	860 U
4-Nitrophenol	860 U	51 *	63 *	860 U	860 U	860 U
Dibenzofuran	340 U	340 U	340 U	340 U	340 U	340 U
2,4-Dinitrotoluene	340 U	68 *	82 *	340 U	340 U	340 U
Diethylphthalate	340 U	340 U	340 U	340 U	59 J	52 J
4-Chlorophenyl-phenylether	340 U	340 U	340 U	340 U	340 U	340 U
Fluorene	340 U	340 U	340 U	340 U	340 U	340 U
4-Nitroaniline	860 U	860 U	860 U	860 U	860 U	860 U
4,6-Dinitro-2-methylphenol	860 U	860 U	860 U	860 U	860 U	860 U
N-Nitrosodiphenylamine (1)	340 U	340 U	340 U	340 U	340 U	340 U
4-Bromophenyl-phenylether	340 U	340 U	340 U	340 U	340 U	340 U
Hexachlorobenzene	340 U	340 U	340 U	340 U	340 U	340 U
Pentachlorophenol	860 U	62 *	78 *	860 U	860 U	860 U
Phenanthrene	340 U	340 U	340 U	340 U	340 U	340 U
Anthracene	340 U	340 U	340 U	340 U	340 U	340 U
Carbazole	340 U	340 U	340 U	340 U	340 U	340 U
Di-n-butylphthalate	340 U	340 U	340 U	340 U	340 U	340 U
Fluoranthene	340 U	340 U	340 U	340 U	340 U	340 U
Pyrene	340 U	77 *	93 *	340 U	340 U	340 U
Butylbenzylphthalate	340 U	340 U	340 U	340 U	340 U	340 U
3,3'-Dichlorobenzidine	340 U	340 U	340 U	340 U	340 U	340 U
Benzo (a) anthracene	340 U	340 U	340 U	340 U	340 U	340 U
Chrysene	340 U	340 U	340 U	340 U	340 U	340 U
bis (2-Ethylhexyl) phthalate	23 J	340 U	340 U	340 U	18 J	340 U
Di-n-octyl phthalate	340 U	340 U	340 U	340 U	340 U	340 U
Benzo (b) fluoranthene	340 U	340 U	340 U	340 U	340 U	340 U
Benzo (k) fluoranthene	340 U	340 U	340 U	340 U	340 U	340 U
Benzo (a) pyrene	340 U	340 U	340 U	340 U	340 U	340 U
Indeno (1,2,3-cd) pyrene	340 U	340 U	340 U	340 U	340 U	340 U
Dibenz (a,h) anthracene	340 U	340 U	340 U	340 U	340 U	340 U
Benzo (g,h,i) perylene	340 U	340 U	340 U	340 U	340 U	340 U

R 5/23/83

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

SBLKSL BS

SBLKSL

RFW#:

005

03LE0520-MB1

03LE0520-MB1

2-Chloronaphthalene	330	U	330	U	330	U
2-Nitroaniline	840	U	840	U	840	U
Dimethylphthalate	330	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U
3-Nitroaniline	840	U	840	U	840	U
Acenaphthene	330	U	330	U	66	‡
2,4-Dinitrophenol	840	U	840	U	840	U
4-Nitrophenol	840	U	840	U	82	‡
Dibenzofuran	330	U	330	U	330	U
2,4-Dinitrotoluene	330	U	330	U	79	‡
Diethylphthalate	42	J	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U
Fluorene	330	U	330	U	330	U
4-Nitroaniline	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U
Pentachlorophenol	840	U	840	U	75	‡
Phenanthrene	330	U	330	U	330	U
Anthracene	330	U	330	U	330	U
Carbazole	330	U	330	U	330	U
Di-n-butylphthalate	93	J	330	U	330	U
Fluoranthene	330	U	330	U	330	U
Pyrene	330	U	330	U	80	‡
Butylbenzylphthalate	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	330	U
Benzo(a)anthracene	330	U	330	U	330	U
Chrysene	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	330	U	330	U	330	U
Di-n-octyl phthalate	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U	330	U
Benzo(a)pyrene	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U

Per
5/22/07

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000018



Client: TNU-HANFORD B03-015
LVL #: 0305L318
SDG/SAF # H2188/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 05-01-2003

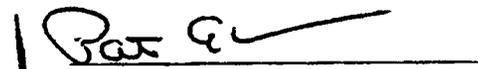
SEMIVOLATILE

Five (5) soil samples were collected on 04-29-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 05-02-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 05-05,06-2003.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. Manual integrations are performed according to OP 21-06A-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").
9. 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.



J. Michael Taylor
President
Lionville Laboratory Incorporated

05-08-03
Date

son\gonup\data\tnu-hanford-0305-318.doc
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 20 pages.

000019 

Shipped To: TM/RECR
 POSSIBLE SAMPLE HAZARDS/REMARKS: Samples did not originate in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or Storage: COOL 190C

Sample No.	Matrix *	Sample Date	Sample Time	Preservation		Cool 4C	Cool 4C
				Type of Container	No. of Container(s)		
J00MP8	SOIL	4-09-03	0818	None	None	60mL	120mL
SAMPLE ANALYSIS							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RF 000	4-29-03 1430	RF 328	4-29-03
RF 000	4-29-03 1000	R. G. [Signature]	4-30-03
RF 000	4-30-03 1000	FedEx	5/1/03 0910
RF 000	4-30-03 1000	R. G. [Signature]	5/1/03 0910
RF 000	4-30-03 1000	Received By/Stored In	Date/Time
RF 000	4-30-03 1000	Received By/Stored In	Date/Time
RF 000	4-30-03 1000	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
 Do not use this sample to run lab QAQC.
 (1) Gamma Spectroscopy (TCL List) (Caesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Appendix 5
Data Validation Supporting Documentation

000023

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RWSCS		DATA PACKAGE: H2188		
VALIDATOR:	TLI	LAB:	LLI	DATE: 5/27/05	
CASE:			SDG:	H2188	
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
JOOMP4 JOOMP5 JOOMP6 JOOMP7 JOOMP8					
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: FB - di-n-butyl phthalate
- Diethyl phthalate

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: NO PAS

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: _____

6. SYSTEM PERFORMANCE (Levels D and E)

- Internal standards analyzed? Yes No N/A
- Internal 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: 8 over in all samples

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: 27 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste
Site 128-F-3
Subject: Wet Chemistry - Data Package No. H2188-LLI (SDG No. H2188)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2188-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00MP4	4/29/03	Soil	C	See note 1
J00MP5	4/29/03	Soil	C	See note 1
J00MP6	4/29/03	Soil	C	See note 1
J00MP7	4/29/03	Soil	C	See note 1
J00MP8	4/29/03	Soil	C	See note 2

1 - Chromium VI by 7196A; petroleum hydrocarbons by 9071.

2 - No validated analysis requested.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI and 28 days for petroleum hydrocarbons.

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

The equipment blank contained no validated analytes.

- **Accuracy**

Matrix Spike

Matrix spike (MS) 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 recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike 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 spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

000002

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J00MP4/J00MP5) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All other 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 undetected chromium VI results exceeded the RQL. Under the BHI statement of work, no qualification is required. All other results met the analyte specific RQL.

- **Completeness**

Data package No. H2188-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All undetected chromium VI results exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1
Glossary of Data Reporting Qualifiers

000005

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

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H2188	REVIEWER: TLI	DATE: 5/27/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

000068

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000069

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2188
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00MP4	% Solids	97.1	%	0.01	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Petroleum Hydrocarbons	3.4	u MG/KG	3.4	1.0
-002	J00MP5	% Solids	97.7	%	0.01	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Petroleum Hydrocarbons	3.4	u MG/KG	3.4	1.0
-003	J00MP6	% Solids	97.4	%	0.01	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Petroleum Hydrocarbons	3.4	u MG/KG	3.4	1.0
-004	J00MP7	% Solids	96.9	%	0.01	1.0
		Chromium VI	0.54	u MG/KG	0.41	1.0
		Petroleum Hydrocarbons	3.4	u MG/KG	3.4	1.0
-005	J00MP8	% Solids	100	%	0.01	1.0

Handwritten signature
 5/27/03

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012



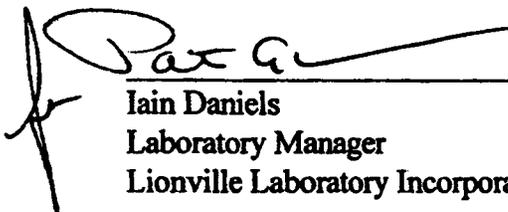
Analytical Report

Client: TNU-HANFORD B03-015 H2188
LVL#: 0305L318

W.O.#: 11343-606-001-9999-00
Date Received: 05-01-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 5 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries for Petroleum Hydrocarbon (PHC) and Chromium VI were within the 75-125% control limits. The matrix spike duplicate for PHC was within the 20% Relative Percent Difference (RPD) control limit.
8. The replicate analyses for Percent Solids and Chromium VI were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

05-08-03
Date

njpl05-318

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 15 pages.

000013

05

Bechtel Hanford Inc.
 Collector: Robert Fahberg
 Telephone No.: 372-9658
 Project Designation: Remaining Sites Confirmation Sampling-Soil
 Sampling Location: 128-F-3 Burn Pit
 SAF No.: B03-015
 Method of Shipment: Federal Express
 Ice Chest No.: FRC 02 406
 Field Logbook No.: EL-1577
 COA: C17HXF671C
 Bill of Lading/Air Bill No.: SEE OSLC

Shipped To: TMA(RECRA)
 Offsite Property No.: A030 406
 POSSIBLE SAMPLE HAZARDS/REMARKS: Samples did not originate in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or Storage: cool 40c

000015

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
J00MP6	SOIL	4.29.03	1113	aG	None	aG	aG	aG	aG	aG
J00MP7	SOIL	4.29.03	1135	1	1000mL	120mL	120mL	120mL	60mL	60mL
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 7260A (TCL)	TPH (Total) - 418.1

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Signature/Print Names	Date/Time
Received By/Stored In	Date/Time
3A 3228	4.29.03
Received By/Stored In	Date/Time
R. F. 000	4.30.03
Received By/Stored In	Date/Time
FedEx	4.30.03
Received By/Stored In	Date/Time
R. F. 000	5/1/03
Received By/Stored In	Date/Time

LABORATORY SECTION Received By Title Date/Time

FINAL SAMPLE DISPOSITION Disposal Method Disposed By Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.
 Collector: Robert Fahlborg
 Project Designation: Remaining Sites Confirmation Sampling-Soil
 Ice Chest No.: ERC 02-406
 Shipped To: ~~TM/RECREA~~

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 Company Contact: Renee Nielson
 Telephone No.: 372-9658
 Project Coordinator: KESSNER, JH
 SAF No.: B03-015
 Method of Shipment: Federal Express
 Bill of Lading/Air Bill No.: SEE OSR

COA: C17HXF671C
 Offsite Property No.: A030219

POSSIBLE SAMPLE HAZARDS/REMARKS
 Samples did not originate in radiological controlled area. No total activity associated with sample/samples.
 Special Handling and/or storage: COOL 4°C

000015A

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume
J00MP8	SOIL	4.29.03	0818	None	aG	1	100mL
				None	aG	1	60mL
				None	aG	1	120mL
				None	aG	1	60mL
				None	aG	1	60mL

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg	4.29.03	J.A. 3728	4.29.03
J.A. 3728	4.30.03	R. Fahlberg	4.30.03
R. Fahlberg	4.30.03	Fede	5/1/03
R. Fahlberg	4.30.03	R. Fahlberg	5/1/03
R. Fahlberg	4.30.03	R. Fahlberg	5/1/03

SPECIAL INSTRUCTIONS
 Do not use this sample to run lab QA/QC.
 (1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)
 (2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

LABORATORY SECTION
 Received By: _____
 Disposal Method: _____

FINAL SAMPLE DISPOSITION
 Disposed By: _____
 Date/Time: _____

Appendix 5

Data Validation Supporting Documentation

000016

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RSCS 128-F-3		DATA PACKAGE: H2188		
VALIDATOR:	TCI	LAB:	LLI	DATE:	8/27/03
CASE:			SDG:	H2188	
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	TPH	
SAMPLES/MATRIX					
J00MP4 J00MP5 J00MP6 J00MP7 J00MP8					
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 DATA VALIDATION CHECKLISTS

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 Validated analytes in FB

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

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

Comments: NO PAJ

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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 DATA VALIDATION CHECKLISTS

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: all CRTI over

Appendix 6

Additional Documentation Requested by Client

000021

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/07/03

CLIENT: TNUHANFORD B03-015 H2188
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI040-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LHC024-MB1	Petroleum Hydrocarbons	3.3 u	MG/KG	3.3	1.0

000022

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2188
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J00MP4	Petroleum Hydrocarbons	132	1.1	144	91.3	1.0
		Petroleum Hydrocarbons	135	1.1	144	93.6	1.0
-002	J00MPS	Soluble Chromium VI	5.0	0.41u	4.1	120.2	1.0
		Insoluble Chromium VI	1070	0.41u	943	113.9	100
BLANK10	03LVI040-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1210	0.40u	1080	112.2	100
LCS10	03LHC024-LC1	Petroleum Hydrocarbons	128	3.3 u	140	91.8	1.0

000023

Handwritten mark

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2188
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305LJ18

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
-001	J00MP4	Petroleum Hydrocarbons	91.3	93.6	2.5	

000024

05

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2188
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L318

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RFD	
-----	-----	-----	-----	-----	-----	
-002REP	J00MP5	Chromium VI	0.41u	0.41u	NC	1.0
-005REP	J00MP8	% Solids	100	100	0.030	1.0

000025