



30 May 2006

Joan Kessner
WC-Hanford
3190 Washington Way
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0604L722
SDG #	K0290
SAF #	RC-051
Date Received	4/7/06
# Samples	5
Matrix	Soil
Volatiles	
Semivolatiles	X
Pest/PCB	X
PAH	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

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Lionville Laboratory, Inc.
 BNA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290



DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11JB9	001	S	06LE0294	04/05/06	04/17/06	04/20/06
J11JC4	002	S	06LE0294	04/05/06	04/17/06	04/20/06
J11JC4	002 MS	S	06LE0294	04/05/06	04/17/06	04/20/06
J11JC4	002 MSD	S	06LE0294	04/05/06	04/17/06	04/20/06
J11JC5	003	S	06LE0294	04/05/06	04/17/06	04/24/06
J11JC6	004	S	06LE0294	04/05/06	04/17/06	04/24/06
J11JC7	005	S	06LE0294	04/05/06	04/17/06	04/20/06

LAB QC:

SBLKWG	MB1	S	06LE0294	N/A	04/17/06	04/19/06
SBLKWG	MB1 BS	S	06LE0294	N/A	04/17/06	04/19/06



Case Narrative

Client: TNU-HANFORD RC-051
LVL #: 0604L722
SDG/SAF # K0290/RC-051

W.O. #: 11343-606-001-9999-00
Date Received: 04-07-2006

SEMIVOLATILE

Five (5) soil samples were collected on 04-05-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 04-17-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-19,20,24-2006.

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

1. Samples were extracted and analyzed within required holding time.
2. Non-target compounds were detected in the samples.
3. All surrogate recoveries were within acceptance criteria.
4. Five (5) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. All blank spike recoveries were within acceptance criteria.
6. Internal standard area and retention time criteria were met.
7. The sample results were reported on a wet-weight basis.
8. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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 25 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06M5139

Initiator: Robert Carden
 Date: 7/27/06
 Client: 4/27/06 TMU Hartford
Acoustics ALOS

Batch: 06046722
 Samples: MS/MSD
 Method: SW846/MCAWW/CLP1

Parameter: 0625H
 Matrix: Soil
 Prep Batch: 06060294

1. Reason for SDR

- a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C
 Transcription Error Wrong Test Code Other _____
- b. General Discrepancy
 Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible
 Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold
 Improper Bottle Type Not Amenable to Analysis

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

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

MS- 1,1,1-trichloro ethane spike recovery article at limits 58% (60-120%) OK in BS
 MSD- 1-sphorane spike recovery article at limits 58% (60-120%) - OK in BS/MSD
 1,1,1-trichloro ethane spike recovery article at limits 55% (60-120%) OK in BS
 4-chloro 3-methylphenol 57% (60-120%) OK in BS/MSD
 2-methyl naphthalene 52% (60-120%) OK in BS/MSD

All surrogates ok

2. Known or Probable Causes(s)

Not an extraction problem all other spk/surrogates OK. Specific

3. Discussion and Proposed Action

Other Description:

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

None

[Handwritten signature] 7/27/06

4. Project Manager Instructions...signature/date

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

5. Final Action...signature/date

Other Explanation:

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

[Handwritten signature]

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

Route Distribution of Completed SDR

- Initiator
 Lab General Manager: M. Taylor
 Project Mgr: Stone/Johnson
 Data Management: Stowell
 Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
 Inorganic: Perrone
 GC/LC: Kiger
 MS: Rychlak/Daley
 Log-in: Perry
 Admin: _____
 Other: _____

GLOSSARY

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

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GLOSSARY

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following 'flags' are used to indicate the technical reasons for quan modifications:

- MP** - **Missed Peak:** Manually added peak not found by automatic quan program.
- PA** - **Peak Assignment:** Quan report was changed to reflect correct peak assignment.
- RI** - **Routine Integration:** Routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the Dichlorobenzene isomers on the VOA packed column and Benzo (b) fluoranthene /Benzo (k) fluoranthene which are poorly resolve on the BNA column.
- SP** - **Split Peak:** The automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - **Co-elution/ Background:** Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.
- PI** - **Proper Integration:** A peak with poor or inconsistent integration (i.e., excessive tail) was properly integrated manually.

LVL-21-21-035/A-08/93



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Cust ID:		J11JB9	J11JC4	J11JC4	J11JC4	J11JC5	J11JC6
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	2.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate	Nitrobenzene-d5	61 %	65 %	59 %	50 %	68 %	58 %
Recovery	2-Fluorobiphenyl	67 %	65 %	80 %	69 %	76 %	65 %
	Terphenyl-d14	90 %	93 %	97 %	80 %	94 %	79 %
	Phenol-d5	62 %	63 %	72 %	59 %	66 %	59 %
	2-Fluorophenol	55 %	55 %	63 %	53 %	55 %	46 %
	2,4,6-Tribromophenol	63 %	63 %	81 %	71 %	65 %	60 %
-----f1-----f1-----f1-----f1-----f1-----f1-----f1-----f1-----							
Phenol		330 U	330 U	80 %	65 %	660 U	330 U
bis(2-Chloroethyl) ether		330 U	330 U	86 %	68 %	660 U	330 U
2-Chlorophenol		330 U	330 U	76 %	63 %	660 U	330 U
1,3-Dichlorobenzene		330 U	330 U	72 %	62 %	660 U	330 U
1,4-Dichlorobenzene		330 U	330 U	70 %	62 %	660 U	330 U
1,2-Dichlorobenzene		330 U	330 U	76 %	67 %	660 U	330 U
2-Methylphenol		330 U	330 U	83 %	67 %	660 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	330 U	85 %	65 %	660 U	330 U
4-Methylphenol		330 U	330 U	81 %	64 %	660 U	330 U
N-Nitroso-di-n-propylamine		330 U	330 U	87 %	71 %	660 U	330 U
Hexachloroethane		330 U	330 U	68 %	57 %	660 U	330 U
Nitrobenzene		330 U	330 U	65 %	54 %	660 U	330 U
Isophorone		330 U	330 U	70 %	58 * %	660 U	330 U
2-Nitrophenol		330 U	330 U	61 %	55 %	660 U	330 U
2,4-Dimethylphenol		330 U	330 U	65 %	53 %	660 U	330 U
bis(2-Chloroethoxy)methane		330 U	330 U	67 %	58 %	660 U	330 U
2,4-Dichlorophenol		330 U	330 U	62 %	56 %	660 U	330 U
1,2,4-Trichlorobenzene		330 U	330 U	58 * %	55 * %	660 U	330 U
Naphthalene		330 U	330 U	59 %	53 %	660 U	330 U
4-Chloroaniline		330 U	330 U	46 %	40 %	660 U	330 U
Hexachlorobutadiene		330 U	330 U	62 %	61 %	660 U	330 U
4-Chloro-3-methylphenol		330 U	330 U	68 %	57 * %	660 U	330 U
2-Methylnaphthalene		330 U	330 U	64 %	57 * %	660 U	330 U
Hexachlorocyclopentadiene		330 U	330 U	52 %	42 %	660 U	330 U
2,4,6-Trichlorophenol		330 U	330 U	76 %	67 %	660 U	330 U
2,4,5-Trichlorophenol		830 U	830 U	91 %	77 %	1700 U	830 U

*= Outside of EPA CLP QC limits.

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	Cust ID: J11JB9		J11JC4		J11JC4		J11JC4		J11JC5		J11JC6	
RFW#:	001		002		002 MS		002 MSD		003		004	
2-Chloronaphthalene	330	U	330	U	80	%	69	%	660	U	330	U
2-Nitroaniline	830	U	830	U	95	%	71	%	1700	U	830	U
Dimethylphthalate	330	U	330	U	94	%	79	%	660	U	330	U
Acenaphthylene	330	U	330	U	83	%	71	%	660	U	330	U
2,6-Dinitrotoluene	330	U	330	U	90	%	76	%	660	U	330	U
3-Nitroaniline	830	U	830	U	82	%	68	%	1700	U	830	U
Acenaphthene	330	U	330	U	82	%	69	%	660	U	330	U
2,4-Dinitrophenol	830	U	830	U	71	%	58	%	1700	U	830	U
4-Nitrophenol	830	U	830	U	100	%	79	%	1700	U	830	U
Dibenzofuran	330	U	330	U	85	%	72	%	660	U	330	U
2,4-Dinitrotoluene	330	U	330	U	92	%	78	%	660	U	330	U
Diethylphthalate	330	U	330	U	86	%	71	%	660	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	88	%	76	%	660	U	330	U
Fluorene	330	U	330	U	86	%	71	%	660	U	330	U
4-Nitroaniline	830	U	830	U	67	%	59	%	1700	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U	92	%	81	%	1700	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U	75	%	66	%	660	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	77	%	68	%	660	U	330	U
Hexachlorobenzene	330	U	330	U	84	%	75	%	660	U	330	U
Pentachlorophenol	830	U	830	U	96	%	80	%	1700	U	830	U
Phenanthrene	330	U	330	U	86	%	69	%	660	U	23	J
Anthracene	330	U	330	U	84	%	74	%	660	U	330	U
Carbazole	330	U	330	U	86	%	68	%	660	U	330	U
Di-n-butylphthalate	36	J	20	J	80	%	69	%	660	U	19	J
Fluoranthene	330	U	330	U	75	%	68	%	660	U	36	J
Pyrene	17	J	19	J	90	%	78	%	660	U	43	J
Butylbenzylphthalate	330	U	330	U	99	%	77	%	660	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	39	%	38	%	660	U	330	U
Benzo(a)anthracene	330	U	330	U	88	%	73	%	660	U	20	J
Chrysene	24	J	20	J	86	%	71	%	660	U	27	J
bis(2-Ethylhexyl)phthalate	39	J	27	J	106	%	75	%	660	U	28	J
Di-n-octyl phthalate	330	U	330	U	87	%	69	%	660	U	330	U
Benzo(b)fluoranthene	23	J	17	J	84	%	71	%	660	U	23	J
Benzo(k)fluoranthene	21	J	20	J	83	%	66	%	660	U	18	J
Benzo(a)pyrene	20	J	23	J	80	%	65	%	660	U	21	J
Indeno(1,2,3-cd)pyrene	17	J	330	U	83	%	70	%	660	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	83	%	70	%	660	U	330	U
Benzo(g,h,i)perylene	21	J	330	U	82	%	69	%	660	U	330	U

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

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Cust ID:

J11JC7

SBLKWG

SBLKWG BS

RFW#:

005

06LE0294-MB1

06LE0294-MB1

2-Chloronaphthalene	330	U	330	U	70	%
2-Nitroaniline	830	U	830	U	76	%
Dimethylphthalate	330	U	330	U	76	%
Acenaphthylene	330	U	330	U	72	%
2,6-Dinitrotoluene	330	U	330	U	74	%
3-Nitroaniline	830	U	830	U	100	%
Acenaphthene	330	U	330	U	72	%
2,4-Dinitrophenol	830	U	830	U	33	%
4-Nitrophenol	830	U	830	U	75	%
Dibenzofuran	330	U	330	U	75	%
2,4-Dinitrotoluene	330	U	330	U	80	%
Diethylphthalate	330	U	330	U	77	%
4-Chlorophenyl-phenylether	330	U	330	U	76	%
Fluorene	330	U	330	U	72	%
4-Nitroaniline	830	U	830	U	78	%
4,6-Dinitro-2-methylphenol	830	U	830	U	65	%
N-Nitrosodiphenylamine (1)	330	U	330	U	61	%
4-Bromophenyl-phenylether	330	U	330	U	66	%
Hexachlorobenzene	330	U	330	U	78	%
Pentachlorophenol	830	U	830	U	84	%
Phenanthrene	330	U	330	U	76	%
Anthracene	330	U	330	U	78	%
Carbazole	330	U	330	U	75	%
Di-n-butylphthalate	24	J	330	U	81	%
Fluoranthene	330	U	330	U	81	%
Pyrene	22	J	330	U	79	%
Butylbenzylphthalate	330	U	330	U	81	%
3,3'-Dichlorobenzidine	330	U	330	U	104	%
Benzo(a)anthracene	330	U	330	U	76	%
Chrysene	28	J	330	U	74	%
bis(2-Ethylhexyl)phthalate	70	J	330	U	82	%
Di-n-octyl phthalate	330	U	330	U	85	%
Benzo(b)fluoranthene	330	U	330	U	83	%
Benzo(k)fluoranthene	330	U	330	U	74	%
Benzo(a)pyrene	26	J	330	U	75	%
Indeno(1,2,3-cd)pyrene	19	J	330	U	70	%
Dibenz(a,h)anthracene	17	J	330	U	70	%
Benzo(g,h,i)perylene	18	J	330	U	66	%

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

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J11JB9

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 0604L722-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: N042008

Level: (low/med) LOW

Date Received: 04/07/06

% Moisture: 100 decanted: (Y/N)

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/20/06

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	23.313	500	J
2.	UNKNOWN	24.237	1000	J
3.	ALKANE	24.591	2000	J
4.	UNKNOWN	25.895	1000	J
5.	ALKANE	26.370	1000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J11JC4

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 0604L722-002

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: N042009

Level: (low/med) LOW

Date Received: 04/07/06

% Moisture: 100 decanted: (Y/N) __

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/20/06

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.235	1000	J
2.	ALKANE	24.589	2000	J
3.	UNKNOWN	24.771	1000	J
4.	UNKNOWN	25.893	1000	J
5.	ALKANE	26.360	1000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J11JC5

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 0604L722-003

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: N042415

Level: (low/med) LOW

Date Received: 04/07/06

% Moisture: 100 decanted: (Y/N) __

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/24/06

Injection Volume: 2.0 (uL)

Dilution Factor: 2.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.189	2000	J
2.	ALKANE	24.535	2000	J
3.	UNKNOWN	24.777	2000	J
4.	ALKANE	26.288	2000	J
5.	UNKNOWN	28.822	1000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J11JC6

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 0604L722-004

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: N042416

Level: (low/med) LOW

Date Received: 04/07/06

% Moisture: 100 decanted: (Y/N) __

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/24/06

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.186	900	J
2.	ALKANE	24.532	1000	J
3.	UNKNOWN	24.773	2000	J
4.	UNKNOWN	25.827	800	J
5.	ALKANE	26.285	1000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J11JC7

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 0604L722-005

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: N042012

Level: (low/med) LOW

Date Received: 04/07/06

% Moisture: 100 decanted: (Y/N) __

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 04/20/06

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.238	900	J
2.	ALKANE	24.592	2000	J
3.	UNKNOWN	24.696	2000	J
4.	UNKNOWN	25.896	1000	J
5.	ALKANE	26.371	1000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

SBLKWG

Client: TNUHANFORD RC-051 K0290

Matrix: (soil/water) SOIL

Lab Sample ID: 06LE0294-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: J041903

Level: (low/med) LOW

Date Received: 04/17/06

% Moisture: decanted: (Y/N)

Date Extracted: 04/17/06

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/19/06

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.420	400	J
2. 110-82-7	CYCLOHEXANE	5.072	1000	JN

0604L722

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

A-C DF G-I J-L M-W PF S-U

Client TNU HANFORD RC-051
 Est. Final Proj. Sampling Date _____
 Project # 11343-6016-001-9999-00
 Project Contact/Phone # _____
 Lionville Laboratory Project Manager DJ
 QC SPEC Del std TAT 30 days
 Date Rec'd 4/16/06 Date Due 5/7/06

Refrigerator #	2		2		2		2		2		2		2	
#/Type Container	Liquid													
	Solid	G	G	G	G	G	G	G	G	G	G	G	G	G
Volume	Liquid													
	Solid	309	309	309	309	309	309	309	309	309	309	309	309	309
Preservatives		-	-	-	-	-	-	-	-	-	-	-	-	-
ANALYSES REQUESTED	ORGANIC						INORG							
	VOA	BNA	Pest/POB	Herb	PCB		Metal	CN	H ₂ O Chlor	IC	IC	NO ₂ NO ₃		

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																	
			MS	MSD				0625H	0608H	DFCB	METALS	ICR4	ICN03	IN312											
	001	I11IB9	✓	✓	SOIL	4506	0833	1	1	1	3	1	1	1											
	002	C4	✓	✓			1115	3	1	1	1	3	1	1											
	003	I 5	✓	✓			1547	1	3	3	1	1	1	1											
	004	I 6	✓	✓			1056	1	1	1	1	1	3	3											
	005	I 7	✓	✓			1316	1	1	1	3	3	1	1											

Special Instructions: QC = #001 MAT
NO I% SOL
 002 BNA, 1kg other
 003 Pest Pcs
 004 IC, NO2, NO3
 005 Mat 1kg other 5/4/06 KE

DATE/REVISIONS: METALS (1) = HSL + Bi, B, Li, MA, P, Si, Sr, Sn, U (Notig)

- _____
- _____
- _____
- _____
- _____
- _____

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Red Eo</u>	<u>VAJ</u>	<u>4/16/06</u>	<u>0920</u>					<u>COMPOSITE WASTE</u>			
										<u>ORIGINAL REWRITTEN</u>	

000000018

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-051-70	Page 2 of 3
Collector STANKOVICH, M.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code 8L	Data Turnaround 45 Days	
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So	Sampling Location 100-H RIPARIAN #1	SAF No. RC-051	Air Quality <input type="checkbox"/>		45 Days		
Ice Chest No.	Field Logbook No. EL-1596	COA BESRAS6520	Method of Shipment FED EX				
Shipped To EBERLINE SERVICES <u>LIONVILLE</u>	Offsite Property No. A060151	Bill of Lading/Air Bill No.					

POSSIBLE SAMPLE HAZARDS/REMARKS NONE Special Handling and/or Storage Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.	Preservation	None	None	None	None	None	None	None	None	None	None
	Type of Container	G/P	G/P	aG	aG	aG	aG	G/P	G/P	^	^
	No. of Container(s)	9	9	7		7	7	7	7	0	0
	Volume	30g	30g	30g	30g	30g	30g	30g	30g	1^	1^

SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	Semi-VOA - 8270A (TCL)	PAHs - 8310	Pesticides - 8081	PCBs - 8082	IC Anion - 100.0 (Nitrate)	NO2/NO3 - 353.2 (Nitrogen in Nitrite and Nitrate)		

Sample No.	Matrix *	Sample Date	Sample Time									
J11JB9	SOIL	4-5-06	08:33	3	1	1		1	1	1	1	
J11JC4			11:15	1	3	3		1	1	1	1	
J11JC5			15:47	1	1	1		3	3	1	1	
J11JC6			10:56	1	1	1		1	1	3	3	
J11JC7			13:10	3	3	1		1	1	1	1	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS								Matrix *
Relinquished By/Removed From <i>Elizabeth M. Tepper</i>	Date/Time	Received By/Stored In <i>CHZM Hill</i>	Date/Time	* These marks indicate that unless lined out, analytes to be included with Strontium-89,90 -- Total Sr analysis fraction. ~ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions. (1) ICP Metals - 6010 (Full List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc)								S=Soil SB=Soil/soil SD=Soil SW=Water W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquid T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Elizabeth M. Tepper</i>	Date/Time 11:30	Received By/Stored In <i>Fed Ex</i>	Date/Time 11:30									
Relinquished By/Removed From <i>ESG</i>	Date/Time 4/16/06 0924	Received By/Stored In <i>William</i>	Date/Time 4-7-06 0930									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									

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

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JB9

Tray # 57

Tare Wt. 1445 gm.

Total Dry Wt. 3970.0 gm.

Net Dry Wt. 2525.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	08:33	400 g	401.1	KE
RAD STR	↓	30 g	30.5	↓
ICP MET		30 g	30.4	
HEX CR		30 g	30.5	
SEMI VOA		30 g	30.4	
PEST		30 g	30.3	
PCB		30 g	30.0	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.4	
RAD STR MS		30 g	30.5	
RAD STR MSD		30 g	30.4	
ICP MET MS		30 g	30.3	
ICP MET MSD		30 g	30.5	

Comments:

Name (print): Kelly Enson

Signature: Kelly Enson

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC4

Tray # 65

Tare Wt. 1456 gm.

Total Dry Wt. 4221.0 gm.

Net Dry Wt. 2765.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	11:15	400 g	400.63 g	AW
RAD STR		30 g	30.30 g	AW
ICP MET		30 g	30.11 g	AW
HEX CR		30 g	30.22 g	AW
SEMI VOA		30 g	30.11 g	AW
PEST		30 g	30.04 g	AW
PCB		30 g	30.33 g	AW
IC ANION		30 g	30.03 g	AW
NO2/NO3		30 g	30.15 g	AW
HEX CR MS		30 g	30.10 g	AW
HEX CR MSD		30 g	30.16 g	AW
SEMI VOA MS		30 g	30.11 g	AW
SEMI VOA MSD		30 g	30.07 g	AW

Comments: _____

Name (print): Ashley Wille

Signature: *[Handwritten Signature]*

Sub-Sampled Date: 4/9/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC5

Tray # 45

Tare Wt. 1955 gm.

Total Dry Wt. 4719.3 gm.

Net Dry Wt. 3264.3 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	15:47	400 g	401.7	KE
RAD STR	↓	30 g	30.0	↓
ICP MET		30 g	30.0	
HEX CR		30 g	30.2	
SEMI VOA		30 g	30.4	
PEST		30 g	30.0	
PCB		30 g	30.1	
IC ANION		30 g	30.2	
NO2/NO3		30 g	30.3	
PEST MS		30 g	30.2	
PEST MSD		30 g	30.0	
PCB MS		30 g	30.0	
PCB MSD		30 g	30.1	

Comments: _____

Name (print): Kelly Enser

Signature: Kelly Enser

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC6

Tray # 44

Tare Wt. 1457 gm.

Total Dry Wt. 5154.7 gm.

Net Dry Wt. 3697.7 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	10:51a	400 g	400.9	KE
RAD STR	↓	30 g	30.0	↓
ICP MET		30 g	30.0	
HEX CR		30 g	30.0	
SEMI VOA		30 g	30.0	
PEST		30 g	30.1	
PCB		30 g	30.3	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.5	
IC ANION MS		30 g	30.3	
IC ANION MSD		30 g	30.2	
NO2/NO3 MS		30 g	30.2	
NO2/NO3 MSD		30 g	30.2	

Comments:

Name (print): Kelly Enser

Signature: *Kelly Enser*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC7

Tray # 10

Tare Wt. 1453 gm.

Total Dry Wt. 4774.6 gm.

Net Dry Wt. 3321.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	13:10	400 g	400.79 g	AW
RAD STR		30 g	30.04 g	
ICP MET		30 g	30.14 g	
HEX CR		30 g	30.02 g	
SEMI VOA		30 g	30.11 g	
PEST		30 g	30.01 g	
PCB		30 g	30.08 g	
IC ANION		30 g	30.06 g	
NO2/NO3		30 g	30.00 g	
ICP MET MS		30 g	30.16 g	
ICP MET MSD		30 g	30.00 g	
HEX CR MS		30 g	30.03 g	
HEX CR MSD		30 g	30.00 g	

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - HANFORD*

Date: *4/7/06*

Purchase Order / Project# /
SAF# / SOW# / Release #: *RC-051*

LvLI Batch #: *0604L722*

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>Fed Ex</i> | Airbill# <i>6595 0631 3075</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or <u>ambient</u>
<i>IR</i> | Temp <i>7-9</i> °C | Cooler# <i>N/A</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B



Lionville Laboratory, Inc.
 PEST/PCB ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290



DATE RECEIVED: 04/07/06

LVL LOT # :06041722

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11JB9	001	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC4	002	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC5	003	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC5	003 MS	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC5	003 MSD	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC6	004	S	06LE0299	04/05/06	04/19/06	04/24/06
J11JC7	005	S	06LE0299	04/05/06	04/19/06	04/24/06

LAB QC:

PBLKFR	MB1	S	06LE0299	N/A	04/19/06	04/23/06
PBLKFR	MB1 BS	S	06LE0299	N/A	04/19/06	04/23/06

7/25/3/6



Case Narrative

Client: TNU-HANFORD RC-051
LVL #: 0604L694
SDG/SAF # K0285/RC-051

W.O. #: 11343-606-001-9999-00
Date Received: 04-05-2006

PCB

Five (5) soil samples were collected on 04-03-2006.

The samples and their associated QC samples were extracted on 04-10-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-20,21-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of a discrepancy, which was documented on the Sample Receipt Checklist.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. Two (2) of eighteen (18) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The results for soil samples were reported on a wet-weight basis.
9. The initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.



10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/4/16
Date

son\group\data\pest\tnu hanford\0604-694.pcb



GLOSSARY OF DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- NS** = Not Spiked.
- SP** = Indicates Spiked Compound.
- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.
- NPM** = No pattern match for multi-component target analytes.

0000000006

Sample Information	Cust ID:	J11JB9	J11JC4	J11JC5	J11JC5	J11JC5	J11JC6
RFW#:	001	002	003	003 MS	003 MSD	004	
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
D.F.:	4.00	4.00	4.00	4.00	4.00	4.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
Surrogate: Tetrachloro-m-xylene	129 * %	112 %	127 * %	122 * %	110 %	108 %	
Decachlorobiphenyl	119 %	116 %	117 %	116 %	113 %	108 %	
-----fl-----fl-----fl-----fl-----fl-----fl-----fl							
Alpha-BHC	1.3 U	1.3 U	1.3 U	105 %	92 %	1.3 U	
gamma-BHC (Lindane)	1.3 U	1.3 U	1.3 U	108 %	97 %	1.3 U	
Beta-BHC	1.3 U	1.3 U	1.3 U	118 %	100 %	1.3 U	
Heptachlor	1.3 U	1.3 U	1.3 U	109 %	100 %	1.3 U	
Delta-BHC	1.3 U	1.3 U	1.3 U	86 %	77 %	1.3 U	
Aldrin	1.3 U	1.3 U	1.3 U	102 %	95 %	1.3 U	
Heptachlor epoxide	1.3 U	1.3 U	1.3 U	106 %	99 %	1.3 U	
gamma-Chlordane	1.3 U	1.3 U	1.3 U	104 %	97 %	1.3 U	
Endosulfan I	0.50 J	1.3 U	0.40 J	103 %	96 %	1.3 U	
alpha-Chlordane	1.3 U	1.3 U	1.3 U	106 %	99 %	1.3 U	
4,4'-DDE	2.2	1.6 J	1.3 U	107 %	100 %	1.3 J	
Dieldrin	1.3 U	1.3 U	1.3 U	101 %	94 %	1.3 U	
Endrin	1.3 U	1.3 U	1.3 U	108 %	100 %	1.3 U	
4,4'-DDD	0.53 J	1.5 J	1.3 U	117 %	111 %	0.63 J	
Endosulfan II	1.3 U	1.3 U	1.3 U	104 %	98 %	1.3 U	
4,4'-DDT	1.9	13	1.0 J	85 %	74 %	0.86 J	
Endrin aldehyde	1.3 U	1.3 U	1.3 U	100 %	94 %	1.3 U	
Endosulfan sulfate	1.3 U	1.3 U	1.3 U	104 %	97 %	1.3 U	
Methoxychlor	1.3 U	1.3 U	1.3 U	109 %	96 %	1.3 U	
Endrin ketone	1.3 U	1.3 U	1.3 U	108 %	100 %	1.3 U	
Toxaphene	13 U	13 U	13 U	13 U	13 U	13 U	

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

Handwritten signature



0604L 722

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD RC-051
 Est. Final Proj. Sampling Date _____
 Project # 11343-606-001-9999-00
 Project Contact/Phone # _____
 Lionville Laboratory Project Manager OJ
 QC Spec Del Std TAT 30 days
 Date Rec'd 4/17/06 Date Due 5/17/06

Refrigerator #	AC 2F		G-I	I-L	M-O	PR	S-U
#/Type Container	Liquid	Solid	Liquid	Solid	Preservatives	ANALYSES REQUESTED	
Volume	Liquid	Solid	ORGANIC	INORG	Metal		
Preservatives	VOA	BNA	Pest/POB	Herb	IC	IC	NO2
ANALYSES REQUESTED	VOA	BNA	Pest/POB	Herb	IC	IC	NO2

- MATRIX CODES:
- S - Soil
 - SE - Sediment
 - SO - Solid
 - SL - Sludge
 - W - Water
 - O - Oil
 - A - Air
 - DS - Drum Solids
 - DL - Drum Liquids
 - L - EP/TCLP Leachate
 - WI - Wipe
 - X - Other
 - F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
		MS	MSD				H525H	H8090	OPCB	METALS	ICRG	ICUGS	INBND			
001	I11IB9	-	-	SOIL	4506	0833	1	1	1	3	1	1	1			
002	C4	-	-			1115	3	1	1	1	3	1	1			
003	I 5	-	-			1547	1	3	3	1	1	1	1			
004	I 6	-	-			1056	1	1	1	1	1	3	3			
005	I 7	-	-			1316	1	1	1	3	3	1	1			

Special Instructions: QC = #001 met
002 BNA, Hex other
003 Pest Pes
004 IC, NO2, NO3
005 Met Hex other
SP 4/17/06 EE

DATE/REVISIONS: METALS @ = HSL + Bi, B, Li, MA, P, Si, Sr, Sn, U (Not Hg)
 1. _____
 2. _____
 3. 0608H
 4. 0608R
 5. _____
 6. _____

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Red Ee</u>	<u>VAJ</u>	<u>4/17/06</u>	<u>0920</u>					<u>COMPOSITE WASTE</u>			
										<u>ORIGINAL REWRITTEN</u>	

Collector STANKOVICH, M.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8L	Data Turnaround 9
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So	Sampling Location 100-H RIPARIAN #1	SAF No. RC-051	Air Quality <input type="checkbox"/>	45 Days	
Ice Chest No.	Field Logbook No. EL-1596	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES <u>LIONVILLE</u>	Offsite Property No. A060151	Bill of Lading/Air Bill No.			

POSSIBLE SAMPLE HAZARDS/REMARKS NONE Special Handling and/or Storage Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.	Preservation	None	None	None	None	None	None	None	None	None	None
	Type of Container	G/P	G/P	aG	aG	aG	aG	G/P	G/P	^	^
	No. of Container(s)	9	9	7	7	7	7	7	7	0	0
	Volume	30g	30g	30g	30g	30g	30g	30g	30g	1^	1^

SAMPLE ANALYSIS	See Item (1) in Special Instructions	Chromium Hex - 7196	Semi-VOA - 8270A (TCL)	PAHs - 8310	Pesticides - 8081	PCBs - 8082	IC Anions - 300.0 (Nitrate)	NO2/NO3 - 353.2 (Nitrogen in Nitrite and Nitrate)		

Sample No.	Matrix *	Sample Date	Sample Time								
J11JB9	SOIL	4-5-06	08:33	3	1	1	1	1	1	1	1
J11JC4			11:15	1	3	3	1	1	1	1	1
J11JC5			15:47	1	1	1	3	3	1	1	1
J11JC6			10:56	1	1	1	1	1	3	3	1
J11JC7			13:10	3	3	1	1	1	1	1	1

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From Elizabeth M. Tepper	Date/Time 11:30	Received By/Stored In CHZM Hill	Date/Time 11:30	* These marks indicate that unless lined out, analytes to be included with Strontium-89,90 -- Total Sr analysis fraction. ^ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions. (1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc}		S=Soil SE=Seepage SO=Soil SL=Sludge W=Water OO=Oil A=Air DS=Dry Solid DL=Drum Liquid TW=Tissue WI=Wipe L=Liquid V=Vegetation N=Other
Relinquished By/Removed From Elizabeth M. Tepper	Date/Time 4-6-06	Received By/Stored In FedEx	Date/Time 4-6-06 11:30			
Relinquished By/Removed From EWS	Date/Time 4/6/06 0920	Received By/Stored In Kessner	Date/Time 4-7-06 0920			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JB9

Tray # 57

Tare Wt. 1445 gm.

Total Dry Wt. 3970.0 gm.

Net Dry Wt. 2525.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials	
GEA	08:33	400 g	401.1	lee	
RAD STR	↓	30 g	30.5	↓	
ICP MET		30 g	30.4		
HEX CR		30 g	30.5		
SEMI VOA		30 g	30.4		
PEST		30 g	20.3		
PCB		30 g	30.0		
IC ANION		30 g	30.4		
NO2/NO3		30 g	30.4		
RAD STR MS		30 g	30.5		
RAD STR MSD		30 g	30.4		
ICP MET MS		30 g	30.3		
ICP MET MSD		30 g	30.5		↓

Comments: _____

Name (print): Kelley Eison

Signature: Kelley Eison

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC4

Tray # 65

Tare Wt. 1956 gm.

Total Dry Wt. 4221.0 gm.

Net Dry Wt. 2765.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	11:15	400 g	400.63 g	AW
RAD STR		30 g	30.30 g	AW
ICP MET		30 g	30.11 g	AW
HEX CR		30 g	30.22 g	AW
SEMI VOA		30 g	30.11 g	AW
PEST		30 g	30.04 g	AW
PCB		30 g	30.33 g	AW
IC ANION		30 g	30.03 g	AW
NO2/NO3		30 g	30.15 g	AW
HEX CR MS		30 g	30.10 g	AW
HEX CR MSD		30 g	30.16 g	AW
SEMI VOA MS		30 g	30.11 g	AW
SEMI VOA MSD		30 g	30.07 g	AW

Comments: _____

Name (print): Ashley Wille

Signature: *[Handwritten Signature]*

Sub-Sampled Date: 4/9/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC5

Tray # 45

Tare Wt. 1455 gm.

Total Dry Wt. 4719.3 gm.

Net Dry Wt. 3264.3 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials		
GEA	15:47	400 g	401.7	KE		
RAD STR	↓	30 g	30.0	↓		
ICP MET		30 g	30.0			
HEX CR		30 g	30.2			
SEMI VOA		30 g	30.4			
PEST		30 g	30.0			
PCB		30 g	30.1			
IC ANION		30 g	30.2			
NO2/NO3		30 g	30.3			
PEST MS		30 g	30.2			
PEST MSD		30 g	30.0			
PCB MS		30 g	30.0			
PCB MSD		30 g	30.1			

Comments: _____

Name (print): Kelly Enson

Signature: *Kelly Enson*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC6

Tray # 44

Tare Wt. 1457 gm.

Total Dry Wt. 5154.7 gm.

Net Dry Wt. 3697.7 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	10:56	400 g	400.9	we
RAD STR	↓	30 g	30.0	↓
ICP MET		30 g	30.0	
HEX CR		30 g	30.0	
SEMI VOA		30 g	30.0	
PEST		30 g	30.1	
PCB		30 g	30.3	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.5	
IC ANION MS		30 g	30.3	
IC ANION MSD		30 g	30.2	
NO2/NO3 MS		30 g	30.2	
NO2/NO3 MSD		30 g	30.2	

Comments: _____

Name (print): Kelly Enser
 Sub-Sampled Date: 4/5/06

Signature: *Kelly Enser*

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC7

Tray # 10

Tare Wt. 1453 gm.

Total Dry Wt. 4774.0 gm.

Net Dry Wt. 3321.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	13:10	400 g	400.72 g	AW
RAD STR		30 g	30.04 g	
ICP MET		30 g	30.14 g	
HEX CR		30 g	30.02 g	
SEMI VOA		30 g	30.11 g	
PEST		30 g	30.01 g	
PCB		30 g	30.08 g	
IC ANION		30 g	30.06 g	
NO2/NO3		30 g	30.00 g	
ICP MET MS		30 g	30.16 g	
ICP MET MSD		30 g	30.00 g	
HEX CR MS		30 g	30.03 g	
HEX CR MSD		30 g	30.08 g	

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: *TNU - HANFUS*

Date: *4/7/06*

Purchase Order / Project# /

~~SAF#~~ SOW# / Release #: *RC-051*

LvLI Batch # :

0604L722

Sample Custodian:

D. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or Shipped | Carrier <i>Fed Ex</i> | Airbill# <i>6595 0631 3075</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or ambient
<i>IR</i> | Temp <i>7-9</i> °C | Cooler # <i>N/A</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B



Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-051 K0290



DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11JB9	001	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC4	002	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC5	003	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC5	003 MS	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC5	003 MSD	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC6	004	S	06LE0300	04/05/06	04/19/06	04/25/06
J11JC7	005	S	06LE0300	04/05/06	04/19/06	04/25/06

LAB QC:

PBLKFX	MB1	S	06LE0300	N/A	04/19/06	04/25/06
PBLKFX	MB1 BS	S	06LE0300	N/A	04/19/06	04/25/06

Handwritten signature
5/3/06



Case Narrative

Client: TNU-HANFORD RC-051
LVL #: 0604L722
SDG/SAF # K0290/RC-051

W.O. #: 11343-606-001-9999-00
Date Received: 04-07-2006

PCB

Five (5) soil samples were collected on 04-05-2006.

The samples and their associated QC samples were extracted on 04-19-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-25-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.



GLOSSARY OF DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.
- .I** = Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- NS** = Not Spiked.
- SP** = Indicates Spiked Compound.
- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.
- NPM** = No pattern match for multi-component target analytes.

00000005

Sample Information	Cust ID:	J11JB9	J11JC4	J11JC5	J11JC5	J11JC5	J11JC6
	RFW#:	001	002	003	003 MS	003 MSD	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	91 %	92 %	87 %	82 %	91 %
	Decachlorobiphenyl	86 %	96 %	93 %	90 %	87 %	93 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Aroclor-1016		13 U	13 U	13 U	95 %	92 %	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	95 %	94 %	13 U

Sample Information	Cust ID:	J11JC7	PBLKFX	PBLKFX BS
	RFW#:	005	06LE0300-MB1	06LE0300-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	82 %	92 %
	Decachlorobiphenyl	90 %	79 %	90 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====				
Aroclor-1016		13 U	13 U	91 %
Aroclor-1221		13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U
Aroclor-1260		13 U	13 U	88 %

Handwritten signature/initials

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

Collector STANKOVICH, M.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8L	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So	Sampling Location 100-H RIPARIAN #1	SAF No. RC-051	Air Quality <input type="checkbox"/>		
Ice Chest No.	Field Logbook No. EL-1596	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060151	Bill of Lading/Air Bill No.			

POSSIBLE SAMPLE HAZARDS/REMARKS NONE Special Handling and/or Storage Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.	Preservation	None	None	None	None	None	None	None	None	None	None
	Type of Container	G/P	G/P	aG	aG	aG	aG	G/P	G/P	^	^
	No. of Container(s)	9	9	7		7	7	7	7	0	0
	Volume	30g	30g	30g	30g	30g	30g	30g	30g	1^	1^

SAMPLE ANALYSIS				See item (1) in Special Instructions	Chromium Hex - 7196	Semi-VOA - 1270A (TCL)	PAHs - 8310	Pesticides - 8081	PCBs - 8082	IC Anions - 300.0 (Nitrate)	NO2/NO3 - 353.2 (Nitrogen in Nitrite and Nitrate)		
Sample No.	Matrix *	Sample Date	Sample Time										
J11JB9	SOIL	4-5-06	08:33	3	1	1		1	1	1	1		
J11JC4	|	|	11:15	1	3	3		1	1	1	1		
J11JC5	|	|	15:47	1	1	1		3	3	1	1		
J11JC6	|	|	10:56	1	1	1		1	1	3	3		
J11JC7	|	|	13:10	3	3	1		1	1	1	1		

CHAIN OF POSSESSION				SIGN/PRINT NAMES				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					* These marks indicate that unless lined out, analytes to be included with Strontium-89,90 -- Total Sr analysis fraction. ^ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions.				(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc] Se=Soil SE=Settlement SO=Solid SL=Sludge W=Water D=Oil A=Air DS=Drum Spills DL=Drum Leaks T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Elizabeth M. Tepper		CHZ M Hill										
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Elizabeth M. Tepper	4-6-06	Fed Ex	4-6-06									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Fed Ex	4/6/06 0920	CHZ M Hill	4-7-06 0920									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									

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

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JB9

Tray # 57

Tare Wt. 1445 gm.

Total Dry Wt. 3970.0 gm.

Net Dry Wt. 2525.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	08:33	400 g	401.1	KE
RAD STR	↓	30 g	30.5	↓
ICP MET		30 g	30.4	
HEX CR		30 g	30.5	
SEMI VOA		30 g	30.4	
PEST		30 g	29.3	
PCB		30 g	30.0	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.4	
RAD STR MS		30 g	30.5	
RAD STR MSD		30 g	30.4	
ICP MET MS		30 g	30.3	
ICP MET MSD		30 g	30.5	

Comments:

Name (print): Kelly Enson

Signature: *Kelly Enson*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC4

Tray # 65

Tare Wt. 1456 gm.

Total Dry Wt. 4221.0 gm.

Net Dry Wt. 2765.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	11:15	400 g	400.63 g	AW
RAD STR		30 g	30.30 g	AW
ICP MET		30 g	30.11 g	AW
HEX CR		30 g	30.22 g	AW
SEMI VOA		30 g	30.11 g	AW
PEST		30 g	30.04 g	AW
PCB		30 g	30.33 g	AW
IC ANION		30 g	30.03 g	AW
NO2/NO3		30 g	30.15 g	AW
HEX CR MS		30 g	30.10 g	AW
HEX CR MSD		30 g	30.16 g	AW
SEMI VOA MS		30 g	30.11 g	AW
SEMI VOA MSD		30 g	30.07 g	AW

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC5

Tray # 45

Tare Wt. 1455 gm.

Total Dry Wt. 4719.3 gm.

Net Dry Wt. 3264.3 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials		
GEA	15:47	400 g	401.7	KE		
RAD STR	↓	30 g	30.0	↓		
ICP MET		30 g	30.0			
HEX CR		30 g	30.2			
SEMI VOA		30 g	30.4			
PEST		30 g	30.0			
PCB		30 g	30.1			
IC ANION		30 g	30.2			
NO2/NO3		30 g	30.3			
PEST MS		30 g	30.2			
PEST MSD		30 g	30.0			
PCB MS		30 g	30.0			
PCB MSD		30 g	30.1			

Comments:

Name (print): Kelly Enson

Signature: Kelly Enson

Sub-Sampled Date: 4/5/06

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - HANFORD*

Date: *4/7/06*

Purchase Order / Project# /
SAF# / SOW# / Release #: *RC-051*

LvLI Batch #: *0604L722*

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>Fed Ex</i> | Airbill# <i>6595 0631 3075</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or <u>ambient?</u>
<i>IR</i> | Temp <i>7-9</i> °C | Cooler # <i>N/A</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290



DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11JB9						
SILVER, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
SILVER, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
SILVER, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL REP	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL SPIKE	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
PHOSPHORUS, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/27/06
PHOSPHORUS, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/27/06
PHOSPHORUS, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/27/06
LEAD, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
LEAD, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
LEAD, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILICON, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	001	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	001 REP	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	001 MS	S	06L0245	04/05/06	04/22/06	04/25/06

J11JC4

SILVER, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
PHOSPHORUS, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/27/06
LEAD, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	002	S	06L0245	04/05/06	04/22/06	04/25/06

J11JCS

SILVER, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
BARIIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
PHOSPHORUS, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/27/06
LEAD, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	003	S	06L0245	04/05/06	04/22/06	04/25/06

J11JC6

SILVER, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
PHOSPHORUS, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/27/06
LEAD, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06

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Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
THALLIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	004	S	06L0245	04/05/06	04/22/06	04/25/06

J11JC7

SILVER, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
ALUMINUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
ARSENIC, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
BORON, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
BARIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
BERYLLIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
BISMUTH, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
CALCIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
CADMIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
COBALT, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
CHROMIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
COPPER, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
IRON, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
POTASSIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
LITHIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
MAGNESIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
MANGANESE, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
MOLYBDENUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
SODIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
NICKEL, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
PHOSPHORUS, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/27/06
LEAD, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
ANTIMONY, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
SELENIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
SILICON, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
TIN, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
STRONTIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
URANIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
VANADIUM, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06
ZINC, TOTAL	005	S	06L0245	04/05/06	04/22/06	04/25/06

LAB QC:

SILVER LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
SILVER, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
ALUMINUM LABORTORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
ALUMINUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
ARSENIC LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
ARSENIC, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
BORON LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
BORON, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
BARIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
BARIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
BERYLLIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
BERYLLIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
BISMUTH, LCS	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
BISMUTH, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
CALCIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
CALCIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
CADMIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
CADMIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
COBALT LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
COBALT, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
CHROMIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
CHROMIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
COPPER LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
COPPER, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
IRON LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
IRON, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
POTASSIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
POTASSIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
LITHIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
LITHIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
MAGNESIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
MANGANESE LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
MANGANESE, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
MOLYBDENUM LABORATOR	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
MOLYBDENUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
SODIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
SODIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
NICKEL LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
NICKEL, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
PHOSPHORUS LCS	LC1 BS	S	06L0245	N/A	04/22/06	04/27/06
PHOSPHORUS, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/27/06
LEAD LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
LEAD, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
ANTIMONY LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
ANTIMONY, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
SELENIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
SELENIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
SILICON LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
SILICON, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
TIN LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
TIN, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
STRONTIUM LCS STANDA	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
STRONTIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
THALLIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
THALLIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
URANIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
URANIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
VANADIUM LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
VANADIUM, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06
ZINC LABORATORY	LC1 BS	S	06L0245	N/A	04/22/06	04/22/06
ZINC, TOTAL	MB1	S	06L0245	N/A	04/22/06	04/22/06



Analytical Report

Client: TNU-HANFORD RC-051
LVL#: 0604L722
SDG/SAF#: K0290/RC-051

W.O.#: 11343-606-001-9999-00
Date Received: 04-07-06

METALS CASE NARRATIVE

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

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

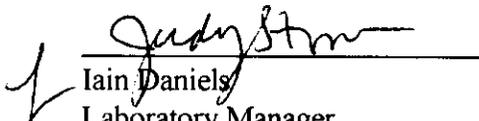
1. This narrative covers the analyses of 5 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were digested in 2 gram increments in multiple beakers until all of the metals sample aliquot was digested. The resulting digestates were composited to represent each sample for analysis, and a portion of the final digestate volume was filtered for analysis. All samples were reported with 3-fold dilutions due to high concentrations and sample matrix. The sample results are reported on a wet weight, 'as received' basis.
3. All analyses were performed within the required holding times.
4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 67.0%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 29 pages.

10. The matrix spike (MS) recoveries for 6 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J11JB9	Aluminum	66,000	97.7
	Iron	66,000	85.1
	Manganese	6,000	104.7
	Antimony	300	104.1
	Silicon	6,300	106.2
	Zinc	600	131.0

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. 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.
14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
15. 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

5/23/06
 Date

jjw:m04-722



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within Lot#:

Leaching Procedure: 1310 1311 1312 Other:

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
 Other:

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	6010B	200.7			99
Antimony	6010B 7041 ^s	200.7 204.2			99
Arsenic	6010B 7060A ^s	200.7 206.2	3113B		99
Barium	6010B	200.7			99
Beryllium	6010B	200.7			99
Bismuth	6010B ^s	200.7 ^s		1620	99
Boron	6010B	200.7			99
Cadmium	6010B 7131A ^s	200.7 213.2			99
Calcium	6010B	200.7			99
Chromium	6010B 7191 ^s	200.7 218.2			SS17
Cobalt	6010B	200.7			99
Copper	6010B 7211 ^s	200.7 220.2			99
Iron	6010B	200.7			99
Lead	6010B 7421 ^s	200.7 239.2	3113B		99
Lithium	6010B 7430 ^s	200.7		1620	99
Magnesium	6010B	200.7			99
Manganese	6010B	200.7			99
Mercury	7470A ^s 7471A ^s	245.1 ^s 245.5 ^s			99
Molybdenum	6010B	200.7			99
Nickel	6010B	200.7			99
Potassium	6010B 7610 ^s	200.7 258.1 ^s			99
Rare Earths	6010B ^s	200.7 ^s		1620	99
Selenium	6010B 7740 ^s	200.7 270.2	3113B		99
Silicon	6010B ^s	200.7		1620	99
Silica	6010B	200.7		1620	99
Silver	6010B 7761 ^s	200.7 272.2			99
Sodium	6010B 7770 ^s	200.7 273.1 ^s			99
Strontium	6010B	200.7			99
Thallium	6010B 7841 ^s	200.7 279.2 200.9			99
Tin	6010B	200.7			99
Titanium	6010B	200.7			99
Uranium	6010B ^s	200.7 ^s		1620	99
Vanadium	6010B	200.7			99
Zinc	6010B	200.7			99
Zirconium	6010B ^s	200.7 ^s		1620	99

Other:

Method:

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WJ-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290

LVL LOT #: 0604L722

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11JB9	Silver, Total	0.13	MG/KG	0.10	3.0
		Aluminum, Total	10500	MG/KG	4.3	3.0
		Arsenic, Total	11.2	MG/KG	0.90	3.0
		Boron, Total	1.2	MG/KG	0.36	3.0
		Barium, Total	93.6	MG/KG	0.03	3.0
		Beryllium, Total	0.41	MG/KG	0.03	3.0
		Bismuth, Total	0.76 u	MG/KG	0.76	3.0
		Calcium, Total	4990	MG/KG	2.4	3.0
		Cadmium, Total	2.3	MG/KG	0.10	3.0
		Cobalt, Total	7.4	MG/KG	0.21	3.0
		Chromium, Total	24.1	MG/KG	0.19	3.0
		Copper, Total	34.1	MG/KG	0.18	3.0
		Iron, Total	21100	MG/KG	5.2	3.0
		Potassium, Total	1430	MG/KG	3.4	3.0
		Lithium, Total	12.8	MG/KG	0.04	3.0
		Magnesium, Total	5480	MG/KG	1.4	3.0
		Manganese, Total	309	MG/KG	0.04	3.0
		Molybdenum, Total	0.57	MG/KG	0.43	3.0
		Sodium, Total	235	MG/KG	1.1	3.0
		Nickel, Total	19.2	MG/KG	0.36	3.0
		Phosphorus, Total	847	MG/KG	14.8	3.0
		Lead, Total	83.2	MG/KG	0.46	3.0
		Antimony, Total	0.65 u	MG/KG	0.65	3.0
		Selenium, Total	0.70 u	MG/KG	0.70	3.0
		Silicon, Total	456	MG/KG	3.4	3.0
		Tin, Total	1.6 u	MG/KG	1.6	3.0
		Strontium, Total	33.6	MG/KG	0.01	3.0
		Thallium, Total	1.0 u	MG/KG	1.0	3.0
		Uranium, Total	1.3 u	MG/KG	1.3	3.0
		Vanadium, Total	42.6	MG/KG	0.13	3.0
		Zinc, Total	390	MG/KG	0.24	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290

LVL LOT #: 0604L722

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
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-002	J11JC4	Silver, Total	0.20	MG/KG	0.11	3.0
		Aluminum, Total	10400	MG/KG	4.3	3.0
		Arsenic, Total	12.4	MG/KG	0.92	3.0
		Boron, Total	1.5	MG/KG	0.36	3.0
		Barium, Total	93.4	MG/KG	0.03	3.0
		Beryllium, Total	0.42	MG/KG	0.03	3.0
		Bismuth, Total	0.77 u	MG/KG	0.77	3.0
		Calcium, Total	5020	MG/KG	2.5	3.0
		Cadmium, Total	2.2	MG/KG	0.11	3.0
		Cobalt, Total	7.7	MG/KG	0.21	3.0
		Chromium, Total	25.3	MG/KG	0.20	3.0
		Copper, Total	35.7	MG/KG	0.18	3.0
		Iron, Total	21100	MG/KG	5.2	3.0
		Potassium, Total	1320	MG/KG	3.4	3.0
		Lithium, Total	12.7	MG/KG	0.05	3.0
		Magnesium, Total	5380	MG/KG	1.5	3.0
		Manganese, Total	307	MG/KG	0.05	3.0
		Molybdenum, Total	0.66	MG/KG	0.44	3.0
		Sodium, Total	233	MG/KG	1.1	3.0
		Nickel, Total	19.8	MG/KG	0.36	3.0
		Phosphorus, Total	850	MG/KG	15.0	3.0
		Lead, Total	85.1	MG/KG	0.47	3.0
		Antimony, Total	0.66 u	MG/KG	0.66	3.0
		Selenium, Total	0.86	MG/KG	0.71	3.0
		Silicon, Total	397	MG/KG	3.4	3.0
		Tin, Total	3.7	MG/KG	1.6	3.0
		Strontium, Total	33.7	MG/KG	0.02	3.0
		Thallium, Total	1.1 u	MG/KG	1.1	3.0
		Uranium, Total	1.3 u	MG/KG	1.3	3.0
		Vanadium, Total	42.5	MG/KG	0.14	3.0
		Zinc, Total	393	MG/KG	0.24	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290

LVL LOT #: 0604L722

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-003	J11JC5	Silver, Total	0.15	MG/KG	0.11	3.0
		Aluminum, Total	10100	MG/KG	4.3	3.0
		Arsenic, Total	13.0	MG/KG	0.92	3.0
		Boron, Total	0.96	MG/KG	0.36	3.0
		Barium, Total	92.1	MG/KG	0.03	3.0
		Beryllium, Total	0.41	MG/KG	0.03	3.0
		Bismuth, Total	0.77 u	MG/KG	0.77	3.0
		Calcium, Total	4980	MG/KG	2.5	3.0
		Cadmium, Total	2.2	MG/KG	0.11	3.0
		Cobalt, Total	7.8	MG/KG	0.21	3.0
		Chromium, Total	22.9	MG/KG	0.20	3.0
		Copper, Total	34.8	MG/KG	0.18	3.0
		Iron, Total	20700	MG/KG	5.2	3.0
		Potassium, Total	1300	MG/KG	3.4	3.0
		Lithium, Total	12.5	MG/KG	0.05	3.0
		Magnesium, Total	5300	MG/KG	1.5	3.0
		Manganese, Total	304	MG/KG	0.05	3.0
		Molybdenum, Total	0.53	MG/KG	0.44	3.0
		Sodium, Total	224	MG/KG	1.1	3.0
		Nickel, Total	19.0	MG/KG	0.36	3.0
		Phosphorus, Total	826	MG/KG	15.0	3.0
		Lead, Total	86.3	MG/KG	0.47	3.0
		Antimony, Total	0.66 u	MG/KG	0.66	3.0
		Selenium, Total	0.71 u	MG/KG	0.71	3.0
		Silicon, Total	421	MG/KG	3.4	3.0
		Tin, Total	1.8	MG/KG	1.6	3.0
		Strontium, Total	33.1	MG/KG	0.02	3.0
		Thallium, Total	1.1 u	MG/KG	1.1	3.0
		Uranium, Total	1.3 u	MG/KG	1.3	3.0
		Vanadium, Total	40.6	MG/KG	0.14	3.0
		Zinc, Total	416	MG/KG	0.24	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
-004	J11JC6	Silver, Total	0.15	MG/KG	0.11	3.0
		Aluminum, Total	10400	MG/KG	4.3	3.0
		Arsenic, Total	13.2	MG/KG	0.92	3.0
		Boron, Total	0.92	MG/KG	0.36	3.0
		Barium, Total	91.3	MG/KG	0.03	3.0
		Beryllium, Total	0.41	MG/KG	0.03	3.0
		Bismuth, Total	0.77 u	MG/KG	0.77	3.0
		Calcium, Total	4980	MG/KG	2.5	3.0
		Cadmium, Total	2.2	MG/KG	0.11	3.0
		Cobalt, Total	7.8	MG/KG	0.21	3.0
		Chromium, Total	23.8	MG/KG	0.20	3.0
		Copper, Total	35.8	MG/KG	0.18	3.0
		Iron, Total	21200	MG/KG	5.2	3.0
		Potassium, Total	1260	MG/KG	3.4	3.0
		Lithium, Total	12.7	MG/KG	0.05	3.0
		Magnesium, Total	5360	MG/KG	1.5	3.0
		Manganese, Total	294	MG/KG	0.05	3.0
		Molybdenum, Total	0.56	MG/KG	0.44	3.0
		Sodium, Total	234	MG/KG	1.1	3.0
		Nickel, Total	19.1	MG/KG	0.36	3.0
		Phosphorus, Total	824	MG/KG	15.0	3.0
		Lead, Total	87.2	MG/KG	0.47	3.0
		Antimony, Total	0.66 u	MG/KG	0.66	3.0
		Selenium, Total	0.71 u	MG/KG	0.71	3.0
		Silicon, Total	408	MG/KG	3.4	3.0
		Tin, Total	3.1	MG/KG	1.6	3.0
		Strontium, Total	33.3	MG/KG	0.02	3.0
		Thallium, Total	1.1 u	MG/KG	1.1	3.0
		Uranium, Total	1.3 u	MG/KG	1.3	3.0
		Vanadium, Total	42.7	MG/KG	0.14	3.0
		Zinc, Total	401	MG/KG	0.24	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290

LVL LOT #: 0604L722

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J11JC7	Silver, Total	0.10	u MG/KG	0.10	3.0
		Aluminum, Total	9710	MG/KG	4.3	3.0
		Arsenic, Total	11.4	MG/KG	0.91	3.0
		Boron, Total	1.1	MG/KG	0.36	3.0
		Barium, Total	90.5	MG/KG	0.03	3.0
		Beryllium, Total	0.39	MG/KG	0.03	3.0
		Bismuth, Total	0.76	u MG/KG	0.76	3.0
		Calcium, Total	4800	MG/KG	2.5	3.0
		Cadmium, Total	2.2	MG/KG	0.10	3.0
		Cobalt, Total	7.5	MG/KG	0.21	3.0
		Chromium, Total	21.8	MG/KG	0.19	3.0
		Copper, Total	31.6	MG/KG	0.18	3.0
		Iron, Total	19300	MG/KG	5.2	3.0
		Potassium, Total	1320	MG/KG	3.4	3.0
		Lithium, Total	12.0	MG/KG	0.04	3.0
		Magnesium, Total	5210	MG/KG	1.5	3.0
		Manganese, Total	297	MG/KG	0.04	3.0
		Molybdenum, Total	0.54	MG/KG	0.43	3.0
		Sodium, Total	207	MG/KG	1.1	3.0
		Nickel, Total	18.2	MG/KG	0.36	3.0
		Phosphorus, Total	820	MG/KG	15.0	3.0
		Lead, Total	75.5	MG/KG	0.46	3.0
		Antimony, Total	0.66	u MG/KG	0.66	3.0
		Selenium, Total	0.70	u MG/KG	0.70	3.0
		Silicon, Total	404	MG/KG	3.4	3.0
		Tin, Total	1.7	MG/KG	1.6	3.0
		Strontium, Total	32.1	MG/KG	0.01	3.0
		Thallium, Total	1.0	u MG/KG	1.0	3.0
		Uranium, Total	1.3	u MG/KG	1.3	3.0
		Vanadium, Total	37.6	MG/KG	0.13	3.0
		Zinc, Total	366	MG/KG	0.24	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/19/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0245-MB1	Silver, Total	0.04 u	MG/KG	0.04	1.0
		Aluminum, Total	1.4 u	MG/KG	1.4	1.0
		Arsenic, Total	0.30 u	MG/KG	0.30	1.0
		Boron, Total	0.12 u	MG/KG	0.12	1.0
		Barium, Total	0.01 u	MG/KG	0.01	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.26 u	MG/KG	0.26	1.0
		Calcium, Total	0.82 u	MG/KG	0.82	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Copper, Total	0.06 u	MG/KG	0.06	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Potassium, Total	1.1 u	MG/KG	1.1	1.0
		Lithium, Total	0.02 u	MG/KG	0.02	1.0
		Magnesium, Total	0.48 u	MG/KG	0.48	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.14 u	MG/KG	0.14	1.0
		Sodium, Total	0.38 u	MG/KG	0.38	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Phosphorus, Total	5.0 u	MG/KG	5.0	1.0
		Lead, Total	0.16 u	MG/KG	0.16	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.24 u	MG/KG	0.24	1.0
		Silicon, Total	1.1 u	MG/KG	1.1	1.0
		Tin, Total	0.54 u	MG/KG	0.54	1.0
		Strontium, Total	0.005u	MG/KG	0.005	1.0
		Thallium, Total	0.35 u	MG/KG	0.35	1.0
		Uranium, Total	0.44 u	MG/KG	0.44	1.0
		Vanadium, Total	0.04 u	MG/KG	0.04	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290

LVL LOT #: 0604L722

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J11JB9	Silver, Total	2.5	0.13	2.5	94.8	3.0
		Aluminum, Total	10800	10500	99.0	320.3*	3.0
		Arsenic, Total	106	11.2	99.0	95.3	3.0
		Boron, Total	46.8	1.2	49.5	92.1	3.0
		Barium, Total	188	93.6	99.0	95.4	3.0
		Beryllium, Total	2.8	0.41	2.5	95.7	3.0
		Bismuth, Total	50.1	0.76u	49.5	101.2	3.0
		Calcium, Total	6210	4990	1240	98.9*	3.0
		Cadmium, Total	4.6	2.3	2.5	92.0	3.0
		Cobalt, Total	31.2	7.8	24.8	94.4	3.0
		Chromium, Total	32.8	24.1	9.9	87.9	3.0
		Copper, Total	45.1	34.1	12.4	88.7	3.0
		Iron, Total	20200	21100	49.5	-1800. *	3.0
		Potassium, Total	2690	1430	1240	93.7	3.0
		Lithium, Total	65.2	12.8	49.5	105.9	3.0
		Magnesium, Total	6540	5480	1240	85.7*	3.0
		Manganese, Total	320	309	24.8	46.4*	3.0
		Molybdenum, Total	46.9	0.57	49.5	93.6	3.0
		Sodium, Total	1470	235	1240	99.7	3.0
		Nickel, Total	42.7	19.2	24.8	94.8	3.0
		Phosphorus, Total	1060	847	248	87.4	3.0
		Lead, Total	104	83.2	24.8	85.5	3.0
		Antimony, Total	7.7	0.65u	24.8	31.0	3.0
		Selenium, Total	93.8	0.70u	99.0	94.7	3.0
		Silicon, Total	795	456	49.5	683.8*	3.0
		Tin, Total	46.5	1.6 u	49.5	93.9	3.0
		Strontium, Total	82.5	33.6	49.5	98.8	3.0
		Thallium, Total	95.1	1.0 u	99.0	96.1	3.0
		Uranium, Total	48.4	1.3 u	49.5	97.8	3.0
		Vanadium, Total	64.3	42.6	24.8	87.5	3.0
		Zinc, Total	397	390	24.8	30.6*	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
-001REP	J11JB9	Silver, Total	0.13	0.11	16.4	3.0
		Aluminum, Total	10500	10500	0.16	3.0
		Arsenic, Total	11.2	11.8	5.2	3.0
		Boron, Total	1.2	0.95	23.7	3.0
		Barium, Total	93.6	93.5	0.11	3.0
		Beryllium, Total	0.41	0.42	3.3	3.0
		Bismuth, Total	0.76u	0.76u	NC	3.0
		Calcium, Total	4990	5050	1.3	3.0
		Cadmium, Total	2.3	2.4	4.3	3.0
		Cobalt, Total	7.8	7.7	1.3	3.0
		Chromium, Total	24.2	23.9	0.83	3.0
		Copper, Total	34.1	33.9	0.59	3.0
		Iron, Total	21100	21000	0.57	3.0
		Potassium, Total	1430	1430	0.27	3.0
		Lithium, Total	12.8	12.8	0.00	3.0
		Magnesium, Total	5480	5490	0.23	3.0
		Manganese, Total	309	309	0.032	3.0
		Molybdenum, Total	0.57	0.63	8.8	3.0
		Sodium, Total	235	237	0.97	3.0
		Nickel, Total	19.2	19.3	0.52	3.0
		Phosphorus, Total	847	836	1.4	3.0
		Lead, Total	83.2	83.5	0.36	3.0
		Antimony, Total	0.65u	0.66u	NC	3.0
		Selenium, Total	0.70u	0.70u	NC	3.0
		Silicon, Total	456	422	7.9	3.0
		Tin, Total	1.6 u	1.6	NC	3.0
		Strontium, Total	33.6	33.8	0.59	3.0
		Thallium, Total	1.0 u	1.0 u	NC	3.0
		Uranium, Total	1.3 u	1.3 u	NC	3.0
		Vanadium, Total	42.6	42.2	0.94	3.0
		Zinc, Total	390	390	0.026	3.0

*200 correct entry
 M/stock*

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/19/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LC31	06L0245-LC1	Silver, LCS	23.2	25.0	MG/KG	92.8
		Aluminum, LCS	230	250	MG/KG	92.0
		Arsenic, LCS	442	500	MG/KG	88.3
		Boron, LCS	228	250	MG/KG	91.2
		Barium, LCS	233	250	MG/KG	93.4
		Beryllium, LCS	11.6	12.5	MG/KG	92.8
		Bismuth, LCS	47.9	50.0	MG/KG	95.8
		Calcium, LCS	1180	1250	MG/KG	94.6
		Cadmium, LCS	11.4	12.5	MG/KG	91.2
		Cobalt, LCS	115	125	MG/KG	91.8
		Chromium, LCS	23.3	25.0	MG/KG	93.2
		Copper, LCS	58.8	62.5	MG/KG	94.1
		Iron, LCS	234	250	MG/KG	93.5
		Potassium, LCS	1110	1250	MG/KG	88.5
		Lithium, LCS	243	250	MG/KG	97.2
		Magnesium, LCS	1150	1250	MG/KG	91.7
		Manganese, LCS	35.9	37.5	MG/KG	95.7
		Molybdenum, LCS	235	250	MG/KG	94.2
		Sodium, LCS	1100	1250	MG/KG	88.4
		Nickel, LCS	92.2	100	MG/KG	92.2
		Phosphorus, LCS	233	250	MG/KG	93.1
		Lead, LCS	115	125	MG/KG	91.8
		Antimony, LCS	136	150	MG/KG	90.7
		Selenium, LCS	430	500	MG/KG	86.0
		Silicon, LCS	168	250	MG/KG	67.0
		Tin, LCS	232	250	MG/KG	93.0
		Strontium, LCS	234	250	MG/KG	93.6
		Thallium, LCS	458	500	MG/KG	91.6
		Uranium, LCS	47.7	50.0	MG/KG	95.3
		Vanadium, LCS	117	125	MG/KG	93.4
		Zinc, LCS	45.5	50.0	MG/KG	91.0

0604L722

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD RC-051
 Est. Final Proj. Sampling Date _____
 Project # 11343-006-001-9999-00
 Project Contact/Phone # _____
 Lionville Laboratory Project Manager OJ
 GC Spec Del Std TAT 30 days
 Date Rec'd 4/17/06 Date Due 5/17/06

Refrigerator #	A-C 2 2		G-I 2		J-L 2		M-O 2		P-R 2		S-U 2		
#/Type Container	Liquid												
	Solid	G	G	G	G	G	G	G	G	G	G	G	
Volume	Liquid												
	Solid	309	309	309	309	309	309	309	309	309	309	309	
Preservatives		-	-	-	-	-	-	-	-	-	-	-	
ANALYSES REQUESTED →	ORGANIC						INORG						
	VOA	BNA	Pest/ PPS	Herb			Metal	CN	Heavy Metals	IC	Asbestos	NOE	NOB

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (S)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only											
			MS	MSD				H500	H800	DFCB	METALS	ICKG	ICN03	INBND					
			001	I11JB9					-	-	SOIL	45-06	0933	1	1	1	3	1	1
002	C4		-	-			1115	3	1	1	1	3	1	1					
003	5		-	-			1547	1	3	3	1	1	1	1					
004	6		-	-			1056	1	1	1	1	1	3	3					
005	7		-	-			1310	1	1	1	3	3	1	1					

Special Instructions: OC = #001 met
002 BNA, heavy metals
003 Pest PPS
004 IC, NO2, NO3
005 met heavy metals
JP 4/17/06 EE

DATE/REVISIONS: METALS (C) = HSL + Bi, B, Li, Mn, P, Si, Sr, Sn, U (Noting)

- _____
- _____
- _____
- _____
- _____
- _____

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Red Eo</u>	<u>VAJ</u>	<u>4/17/06</u>	<u>0920</u>					<u>COMPOSITE WASTE</u>			
											<u>ORIGINAL REWRITTEN</u>

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-051-70		Page 2 of 3	
Collector STANKOVICH, M.		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 8L	
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So		Sample Location 100-H RIPARIAN #1		SAF No. RC-051		Air Quality <input type="checkbox"/>		Data Turnaround 45 Days	
Ice Chest No.		Field Logbook No. EL-1596		COA BESRAS6520		Method of Shipment FED EX			
Shipped To EBERLINE SERVICES <u>LIONVILLE</u>		Offsite Property No. A060151		Bill of Lading/Air Bill No.					

POSSIBLE SAMPLE HAZARDS/REMARKS NONE Special Handling and/or Storage Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.	Preservation	None	None	None	None	None	None	None	None	None	None
	Type of Container	G/P	G/P	aG	aG	aG	aG	G/P	G/P	^	^
	No. of Container(s)	9	9	7		7	7	7	7	0	0
	Volume	30g	30g	30g	30g	30g	30g	30g	30g	1^	1^

SAMPLE ANALYSIS				See item (1) in Special Instructions	Chromium Hex - 7196	Semi-VOA - 8270A (TCL)	PAHs - 8310	Pesticides - 8081	PCBs - 8082	IC Anions - 300.0 (Nitrate)	NO2/NO3 - 353.2 (Nitrogen in Nitrite and Nitrate)	-	-
Sample No.	Matrix *	Sample Date	Sample Time										
J11JB9	SOIL	4-5-06	08:33	3	1	1		1	1	1	1		
J11JC4			11:15	1	3	3		1	1	1	1		
J11JC5			15:47	1	1	1		3	3	1	1		
J11JC6			10:56	1	1	1		1	1	3	3		
J11JC7			13:10	3	3	1		1	1	1	1		

CHAIN OF POSSESSION			Sign/Print Names			SPECIAL INSTRUCTIONS						Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			* These marks indicate that unless lined out, analytes to be included with Strontium-89.90 -- Total Sr analysis fraction. ~ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions. (1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Tantalum, Tin, Uranium, Vanadium, Zinc]						S=Soil SE=Soilment SD=Soil SL=Sludge W=Water Dr=Oil A=Air DS=Drum & Spill DL=Drum Liquid T=Tissue WL=Waste L=Liquid V=Vegetation X=Other
Elizabeth M Tepper		CHZM Hill										
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Elizabeth M Tepper	11:30	Fed Ex	11:30									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Fed Ex	4-6-06	CHZM Hill	4-6-06									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Fed Ex	4/16/06 0920	CHZM Hill	4-7-06 0930									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									

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

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JB9

Tray # 57

Tare Wt. 1445 gm.

Total Dry Wt. 3970.0 gm.

Net Dry Wt. 2525.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	08:33	400 g	401.1	KE
RAD STR	↓	30 g	30.5	↓
ICP MET		30 g	30.4	
HEX CR		30 g	30.5	
SEMI VOA		30 g	30.4	
PEST		30 g	20.3	
PCB		30 g	30.0	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.4	
RAD STR MS		30 g	30.5	
RAD STR MSD		30 g	30.4	
ICP MET MS		30 g	30.3	
ICP MET MSD		30 g	30.5	

Comments: _____

Name (print): Kelley Enson

Signature: Kelley Enson

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC4

Tray # 65

Tare Wt. 1456 gm.

Total Dry Wt. 4221.0 gm.

Net Dry Wt. 2765.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	11:15	400 g	400.63 g	AW
RAD STR		30 g	30.30 g	AW
ICP MET		30 g	30.11 g	AW
HEX CR		30 g	30.22 g	AW
SEMI VOA		30 g	30.11 g	AW
PEST		30 g	30.04 g	AW
PCB		30 g	30.33 g	AW
IC ANION		30 g	30.03 g	AW
NO2/NO3		30 g	30.15 g	AW
HEX CR MS		30 g	30.10 g	AW
HEX CR MSD		30 g	30.16 g	AW
SEMI VOA MS		30 g	30.11 g	AW
SEMI VOA MSD		30 g	30.07 g	AW

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC5

Tray# 45

Tare Wt. 1455 gm.

Total Dry Wt. 4719.3 gm.

Net Dry Wt. 3264.3 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	15:47	400 g	401.4	KE
RAD STR	↓	30 g	30.0	↓
ICP MET		30 g	30.0	
HEX CR		30 g	30.2	
SEMI VOA		30 g	30.4	
PEST		30 g	30.0	
PCB		30 g	30.1	
IC ANION		30 g	30.2	
NO2/NO3		30 g	30.3	
PEST MS		30 g	30.2	
PEST MSD		30 g	30.0	
PCB MS		30 g	30.0	
PCB MSD		30 g	30.1	

Comments:

Name (print): Kelly Enson

Signature: *Kelly Enson*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC6

Tray # 44

Tare Wt. 1457 gm.

Total Dry Wt. 5154.7 gm.

Net Dry Wt. 3697.7 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	10:56	400 g	1400.9	we
RAD STR	↓	30 g	30.0	↓
ICP MET		30 g	30.0	
HEX CR		30 g	30.0	
SEMI VOA		30 g	30.0	
PEST		30 g	30.1	
PCB		30 g	30.3	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.5	
IC ANION MS		30 g	30.3	
IC ANION MSD		30 g	30.2	
NO2/NO3 MS		30 g	30.2	
NO2/NO3 MSD		30 g	30.2	

Comments:

Name (print): Kelby Ensur

Signature: *Kelby Ensur*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet

Spring 2006

Project ID WCH

Project # 336761.A0.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC7

Tray # 10

Tare Wt. 1453 gm.

Total Dry Wt. 4774.0 gm.

Net Dry Wt. 2321.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	13:10	400 g	400.73 g	AW
RAD STR		30 g	30.04 g	
ICP MET		30 g	30.14 g	
HEX CR		30 g	30.02 g	
SEMI VOA		30 g	30.11 g	
PEST		30 g	30.01 g	
PCB		30 g	30.08 g	
IC ANION		30 g	30.06 g	
NO2/NO3		30 g	30.00 g	
ICP MET MS		30 g	30.16 g	
ICP MET MSD		30 g	30.00 g	
HEX CR MS		30 g	30.03 g	
HEX CR MSD		30 g	30.08 g	

Comments: _____

Name (print): Ashley Wille

Signature: Ashley Wille

Sub-Sampled Date: 4/5/06

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNUL - HANFORD*

Date: *4/7/06*

Purchase Order / Project# /
SAF# / SOW# / Release #: *RC-051*

LvLI Batch #: *0604L722*

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or Shipped | Carrier <i>Fed Ex</i> | Airbill# <i>6595 0631 3075</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or ambient
<i>IR</i> | Temp <i>7-9°</i> °C | Cooler # <i>N/A</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-051 K0290



DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

J11JB9

NITRATE BY IC	001	S	06LIC046	04/05/06	05/08/06	05/08/06
CHROMIUM VI	001	S	06LVI028	04/05/06	04/19/06	04/19/06
NITRATE NITRITE	001	S	06LN3033	04/05/06	05/08/06	05/09/06

J11JC4

NITRATE BY IC	002	S	06LIC046	04/05/06	05/08/06	05/08/06
CHROMIUM VI	002	S	06LVI028	04/05/06	04/19/06	04/19/06
CHROMIUM VI	002 REP	S	06LVI028	04/05/06	04/19/06	04/19/06
CHROMIUM VI	002 MS	S	06LVI028	04/05/06	04/19/06	04/19/06
NITRATE NITRITE	002	S	06LN3033	04/05/06	05/08/06	05/09/06

J11JC5

NITRATE BY IC	003	S	06LIC046	04/05/06	05/08/06	05/08/06
CHROMIUM VI	003	S	06LVI028	04/05/06	04/19/06	04/19/06
NITRATE NITRITE	003	S	06LN3033	04/05/06	05/08/06	05/09/06

J11JC6

NITRATE BY IC	004	S	06LIC046	04/05/06	05/08/06	05/08/06
NITRATE BY IC	004 REP	S	06LIC046	04/05/06	05/08/06	05/08/06
NITRATE BY IC	004 MS	S	06LIC046	04/05/06	05/08/06	05/08/06
CHROMIUM VI	004	S	06LVI028	04/05/06	04/19/06	04/19/06
NITRATE NITRITE	004	S	06LN3033	04/05/06	05/08/06	05/09/06
NITRATE NITRITE	004 REP	S	06LN3033	04/05/06	05/08/06	05/09/06
NITRATE NITRITE	004 MS	S	06LN3033	04/05/06	05/08/06	05/09/06

J11JC7

NITRATE BY IC	005	S	06LIC046	04/05/06	05/08/06	05/08/06
CHROMIUM VI	005	S	06LVI028	04/05/06	04/19/06	04/19/06
NITRATE NITRITE	005	S	06LN3033	04/05/06	05/08/06	05/09/06

LAB QC:

NITRATE BY IC	MB1	S	06LIC046	N/A	05/08/06	05/08/06
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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-051 K0290

DATE RECEIVED: 04/07/06

LVL LOT # :0604L722

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE BY IC	MB1 BS	S	06LIC046	N/A	05/08/06	05/08/06
CHROMIUM VI	MB1	S	06LVI028	N/A	04/19/06	04/19/06
CHROMIUM VI	MB1 BS	S	06LVI028	N/A	04/19/06	04/19/06
CHROMIUM VI	MB1 BSD	S	06LVI028	N/A	04/19/06	04/19/06
NITRATE NITRITE	MB1	S	06LN3033	N/A	05/09/06	05/09/06
NITRATE NITRITE	MB1 BS	S	06LN3033	N/A	05/09/06	05/09/06



Analytical Report

Client: TNU-HANFORD RC-051 K0290
LVL#: 0604L722

W.O.#: 11343-606-001-9999-00
Date Received: 04-07-06

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 with the exception of the sample digestate compilation modification requested by the client for Chromium VI. The total sample mass submitted for each sample number was determined and then portioned for the digestion preparation step and the subsequent digestates were composited prior to the colorimetric analysis. For Nitrate Nitrite and IC analyses, the sample extraction ratios were 1:10 using the total sample masses submitted. The Nitrate Nitrite extracts were preserved with sulfuric acid prior to analysis. The sample weights were as follows:

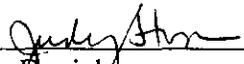
<u>LvLI Sample</u>	<u>Site ID</u>	<u>Cr6+ sample wt.g</u>	<u>Nitrate-Nitrite IC Nitrate sample wt.g</u>
0604L722-001	J11JB9	30.499	30.372
0604L722-002	J11JC4	30.202	29.994
0604L722-002 dup	J11JC4	30.095	NA
0604L722-002 spk	J11JC4	30.159	NA
0604L722-003	J11JC5	30.165	30.215
0604L722-004	J11JC6	30.039	30.366
0604L722-004 dup	J11JC6	NA	30.167
0604L722-004 spk	J11JC6	NA	30.242
0604L722-005	J11JC7	30.008	30.021

Elevated reporting limits for Chromium VI are the result of the necessity to dilute the samples to diminish background color of the digestates.

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 18 pages.

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

3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that did not meet LvLI's sample acceptance policy as noted on the Sample Receipt Checklist.
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 Soluble Chromium VI, Nitrate and Nitrate Nitrite were within the 75-125% control limits.
8. The replicate analyses for Chromium VI, Nitrate and Nitrate Nitrite were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples were reported on a wet-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

5/18/00
Date

ljp\04-722



Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	___ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		✓ ___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		___ 9030B(mod)	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
Other: <i>nitrate nitrite</i>		Method: <i>EPA 353.2 (mod.)</i>	
Other: <i>nitrate</i>		Method: <i>EPA 300.0</i>	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/18/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11JB9	Nitrate by IC	58.3	MG/KG	2.47	1.0
		Chromium VI	2.0	u MG/KG	2.0	10.0
		Nitrate Nitrite	15.2	MG/KG	0.40	2.0
-002	J11JC4	Nitrate by IC	36.4	MG/KG	2.50	1.0
		Chromium VI	0.20	u MG/KG	0.20	1.0
		Nitrate Nitrite	9.7	MG/KG	0.20	1.0
-003	J11JC5	Nitrate by IC	34.4	MG/KG	2.48	1.0
		Chromium VI	0.20	u MG/KG	0.20	1.0
		Nitrate Nitrite	9.4	MG/KG	0.20	1.0
-004	J11JC6	Nitrate by IC	31.4	MG/KG	2.47	1.0
		Chromium VI	2.0	u MG/KG	2.0	10.0
		Nitrate Nitrite	8.1	MG/KG	0.20	1.0
-005	J11JC7	Nitrate by IC	44.6	MG/KG	2.50	1.0
		Chromium VI	0.20	u MG/KG	0.20	1.0
		Nitrate Nitrite	11.2	MG/KG	0.40	2.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/18/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	06LIC046-MB1	Nitrate by IC	2.50 u	MG/KG	2.50	1.0
BLANK10	06LVI028-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	06LN3033-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/18/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-C01-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	J11JC4	Soluble Chromium VI	3.5	0.20u	4.0	93.8	1.0
-004	J11JC6	Nitrate by IC	79.9	31.4	50.0	97.0	1.0
		Nitrate Nitrite	33.1	8.1	24.8	100.9	5.0
BLANK10	06LICO46-MB1	Nitrate by IC	47.0	2.50u	50.0	94.0	1.0
BLANK10	06LVI028-MB1	Soluble Chromium VI	3.9	0.20u	4.0	98.4	1.0
		Insoluble Chromium VI	1130	0.20u	1080	104.0	100
BLANK10	06LN3033-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/18/06

CLIENT: TNUHANFORD RC-051 K0290
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L722

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-002REP	J11JC4	Chromium VI	0.20u	0.20u	NC	1.0
-004REP	J11JC6	Nitrate by IC	31.4	29.8	4.9	1.0
		Nitrate Nitrite	8.1	7.9	2.2	1.0

0604L722

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

AC 2F G-I J-L M-O P-R S-U **11**

Client TNU HANFORD RC-051
 Est. Final Proj. Sampling Date _____
 Project # 11343-606-001-9999-00
 Project Contact/Phone # _____
 Lionville Laboratory Project Manager OJ
 QC SPRL Del std TAT 30 days
 Date Rec'd 4/7/06 Date Due 5/7/06

Refrigerator #	2	2	2	2	2	2	2	2	2
#/Type Container	Liquid								
	Solid	G	G	G	G	G	G	G	G
Volume	Liquid								
	Solid	309	309	309	309	309	309	309	309
Preservatives		-	-						
ANALYSES REQUESTED →	ORGANIC				INORG				
	VOA	BNA	Pest/POB	Herb	Metal	CN	H ₂ O	IC	N ₂
							Plum	Am	NBS

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																
			MS	MSD				H525H	H808H	OPCB	METALS	ICRG	T.C.HG3	T.N312										
	001	I11B9	✓	✓	SOIL	4-5-06	0833	1	1	1	3	1	1	1										
	002	C4	✓	✓			1115	3	1	1	1	3	1	1										
	003	5	✓	✓			1547	1	3	3	1	1	1	1										
	004	6	✓	✓			1056	1	1	1	1	1	3	3										
	005	7	✓	✓			1310	1	1	1	3	3	1	1										

Special Instructions: QC = #001 mat
002 BNA, Hex other
003 Pest Pcs
004 Ic, #02, #03
005 mat #02 other
SP 4/7/06 KE

NO I% SOL

DATE/REVISIONS: METALS (C) = HSL + Bi, B, Li, MA, P, Si, Sr, Sn, U (Notig)

- _____
- _____
- _____
- _____
- _____
- _____

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Red Eo</u>	<u>Alj</u>	<u>7/7/06</u>	<u>0920</u>					COMPOSITE WASTE			
											ORIGINAL REWRITTEN

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-051-70		Page 2 of 2	
Collector STANKOVICH, M.		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 8L Data Turnaround	
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So		Sampling Location 100-H RIPARIAN #1		SAF No. RC-051		Air Quality <input type="checkbox"/>		45 Days	
Ice Chest No.		Field Logbook No. EL-1596		COA BESRAS6520		Method of Shipment FED EX			
Shipped To EBERLINE SERVICES <u>LIONVILLE</u>		Offsite Property No. A060151		Bill of Lading/Air Bill No.					

POSSIBLE SAMPLE HAZARDS/REMARKS NONE Special Handling and/or Storage Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.	Preservation	None	None	None	None	None	None	None	None	None	None
	Type of Container	G/P	G/P	aG	aG	aG	aG	G/P	G/P	A	A
	No. of Container(s)	9	9	7		7	7	7	7	0	0
	Volume	30g	30g	30g	30g	30g	30g	30g	30g	1A	1A

SAMPLE ANALYSIS				See item (1) in Special Instructions.	Chromium Hex - 7196	Semi-VOA - 8270A (TCL)	PAHs - 8310	Pesticides - 8081	PCBs - 8082	IC Anions - 300.0 (Nitrate)	NO2/NO3 - 353.2 (Nitrogen in Nitrite and Nitrate)	-	--
------------------------	--	--	--	---------------------------------------	---------------------	------------------------	-------------	-------------------	-------------	-----------------------------	---	---	----

Sample No.	Matrix *	Sample Date	Sample Time										
J11JB9	SOIL	4-5-06	08:33	3	1	1		1	1	1	1		
J11JC4			11:15	1	3	3		1	1	1	1		
J11JC5			15:47	1	1	1		3	3	1	1		
J11JC6			10:56	1	1	1		1	1	3	3		
J11JC7			13:10	3	3	1		1	1	1	1		

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		* These marks indicate that unless lined out, analytes to be included with Strontium-89,90 -- Total Sr analysis fraction. ~ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions. (1) ICP Metals - 6010 (Full List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc)	
Elizabeth M. Tupper		11:30		CH2M Hill		11:30			
Elizabeth M. Tupper		4-6-06		FedEx		4-6-06			
FedEx		4/7/06 0924		[Signature]		4-7-06 0924			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		S=Soil SE=Soilment SO=Soil SL=Sludge W=Water O=Oil A=Air DS=Drum Spill DL=Drum Liquid T=Tissue W=Wipe L=Liquid V=Vegetation N=Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			

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

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JB9

Tray # 57

Tare Wt. 1445 gm.

Total Dry Wt. 3970.0 gm.

Net Dry Wt. 2525.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	08:33	400 g	401.1	lee
RAD STR	↓	30 g	30.5	↓
ICP MET		30 g	30.4	
HEX CR		30 g	30.5	
SEMI VOA		30 g	30.4	
PEST		30 g	30.3	
PCB		30 g	30.0	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.4	
RAD STR MS		30 g	30.5	
RAD STR MSD		30 g	30.4	
ICP MET MS		30 g	30.3	
ICP MET MSD		30 g	30.5	

Comments: _____

Name (print): Kelley Enson

Signature: Kelley Enson

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC4

Tray # 65

Tare Wt. 1956 gm.

Total Dry Wt. 4221.0 gm.

Net Dry Wt. 2765.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	11:15	400 g	400.63 g	AW
RAD STR		30 g	30.30 g	AW
ICP MET		30 g	30.11 g	AW
HEX CR		30 g	30.22 g	AW
SEMI VOA		30 g	30.11 g	AW
PEST		30 g	30.04 g	AW
PCB		30 g	30.33 g	AW
IC ANION		30 g	30.03 g	AW
NO2/NO3		30 g	30.15 g	AW
HEX CR MS		30 g	30.10 g	AW
HEX CR MSD		30 g	30.16 g	AW
SEMI VOA MS		30 g	30.11 g	AW
SEMI VOA MSD		30 g	30.07 g	AW

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC5

Tray # 45

Tare Wt. 1455 gm.

Total Dry Wt. 4719.3 gm.

Net Dry Wt. 3264.3 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials	
GEA	15:47	400 g	401.7	KE	
RAD STR	↓	30 g	30.0	↓	
ICP MET		30 g	30.0		
HEX CR		30 g	30.2		
SEMI VOA		30 g	30.4		
PEST		30 g	30.0		
PCB		30 g	30.1		
IC ANION		30 g	30.2		
NO2/NO3		30 g	30.3		
PEST MS		30 g	30.2		
PEST MSD		30 g	30.0		
PCB MS		30 g	30.0		
PCB MSD		30 g	30.1		✓

Comments:

Name (print): Kelly Enson

Signature: *Kelly Enson*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC6

Tray # 44

Tare Wt. 1457 gm.

Total Dry Wt. 5154.7 gm.

Net Dry Wt. 3697.7 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	10:56	400 g	400.9	↓ KE
RAD STR		30 g	30.0	
ICP MET		30 g	30.0	
HEX CR		30 g	30.0	
SEMI VOA		30 g	30.0	
PEST		30 g	30.1	
PCB		30 g	30.3	
IC ANION		30 g	30.4	
NO2/NO3		30 g	30.5	
IC ANION MS		30 g	30.3	
IC ANION MSD		30 g	30.2	
NO2/NO3 MS		30 g	30.2	
NO2/NO3 MSD		30 g	30.2	

Comments: _____

Name (print): Kelly Enser

Signature: *Kelly Enser*

Sub-Sampled Date: 4/5/06

CH2M HILL Soil Sampling Bench Sheet Spring 2006

Project ID WCH

Project # 336761.AO.ZZ

Site # 100-H RIPARIAN # 1

Sample # J11JC7

Tray # 10

Tare Wt. 1453 gm.

Total Dry Wt. 4774.0 gm.

Net Dry Wt. 3321.0 gm.

ALL SAMPLES COLLECTED BELOW CONSIST OF 50 SAMPLE INCREMENTS

Analyte	Sample Time	Grams Needed	Grams Collected	Initials
GEA	13:10	400 g	400.79 g	AW
RAD STR		30 g	30.04 g	
ICP MET		30 g	30.14 g	
HEX CR		30 g	30.02 g	
SEMI VOA		30 g	30.11 g	
PEST		30 g	30.01 g	
PCB		30 g	30.08 g	
IC ANION		30 g	30.06 g	
NO2/NO3		30 g	30.00 g	
ICP MET MS		30 g	30.16 g	
ICP MET MSD		30 g	30.00 g	
HEX CR MS		30 g	30.03 g	
HEX CR MSD		30 g	30.00 g	

Comments: _____

Name (print): Ashley Wille

Signature: *Ashley Wille*

Sub-Sampled Date: 4/5/06

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: *TNU - HANFORD*

Date: *4/7/06*

Purchase Order / Project# /
 (SAF#) SOW# / Release #: *RC-051*

LvLI Batch #: *0604L722*

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>Fed Ex</i> | Airbill# <i>659506313075</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or <u>ambient?</u>
<i>IR</i> | Temp <i>7-9</i> °C | Cooler # <i>N/A</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |

SR-002-B





EBERLINE
SERVICES



May 30, 2006

Ms. Joan Kessner
Washington Closure Hanford
3190 George Washington Way
MSIN H9-02
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R6-04-047-7416, SDG K0290

Dear Ms. Kessner:

Enclosed is the data report for five solid (soil) samples designated under SAF No. RC-051. The samples were received at Eberline Services on April 7, 2006. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0290 was composed of five solid (soil) samples designated under SAF No. RC-051 with a Project Designation of: 100 & 300 Area Component of the RCBRA-Incremental So.

The strontium, thorium, and uranium aliquots were taken from 30-gram leachates of the respective samples and not from full dissolutions. The gamma aliquots were taken from the samples as received.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. All results were transmitted to WCH via e-mail on May 24, 2006.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.3 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.4 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

SDG 7416
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG K0290

S U M M A R Y D A T A S E C T I O N

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Melissa C. Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 05/24/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0290

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_K0290

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/24/06

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0290

SDG 7416

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG_K0290

GUIDE, cont.

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

SAMPLE SUMMARY

SDG 7416
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG K0290

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J11JB9	100-H RIPARIAN #1	SOLID		R604047-01	RC-051	RC-051-70	04/05/06 08:33
J11JC4	100-H RIPARIAN #1	SOLID		R604047-02	RC-051	RC-051-70	04/05/06 11:15
J11JC5	100-H RIPARIAN #1	SOLID		R604047-03	RC-051	RC-051-70	04/05/06 15:47
J11JC6	100-H RIPARIAN #1	SOLID		R604047-04	RC-051	RC-051-70	04/05/06 10:56
J11JC7	100-H RIPARIAN #1	SOLID		R604047-05	RC-051	RC-051-70	04/05/06 13:10
Method Blank		SOLID		R604047-07	RC-051		
Lab Control Sample		SOLID		R604047-06	RC-051		
Duplicate (R604047-01)	100-H RIPARIAN #1	SOLID		R604047-08	RC-051		04/05/06 08:33

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

SDG 7416
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG K0290

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID	
7416	RC-051-70	J11JB9	SOLID	100.0	492 g		04/07/06 2	R604047-01	7416-001	
		J11JC4	SOLID	100.0	431 g		04/07/06 2	R604047-02	7416-002	
		J11JC5	SOLID	100.0	431 g		04/07/06 2	R604047-03	7416-003	
		J11JC6	SOLID	100.0	431 g		04/07/06 2	R604047-04	7416-004	
		J11JC7	SOLID	100.0	430 g		04/07/06 2	R604047-05	7416-005	
		Method Blank	SOLID						R604047-07	7416-007
		Lab Control Sample	SOLID						R604047-06	7416-006
		Duplicate (R604047-01)	SOLID	100.0	492 g		04/07/06 2	R604047-08	7416-008	

QC SUMMARY

Page 1

SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

SDG 7416
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG K0290

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS		DUP/ORIG MS/ORIG
Alpha Spectroscopy									
TH	SOLID	Thorium, Isotopic in Solids	7181-057	5.0	5		1	1	1/1
U	SOLID	Uranium, Isotopic in Solids	7181-057	5.0	5		1	1	1/1
Beta Counting									
SR	SOLID	Total Strontium in Solids	7181-057	10.0	5		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	7181-057	15.0	5		1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

SDG 7416
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG K0290

WORK SUMMARY

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	SUF-							
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FLX	ANALYZED	REVIEWED	BY	METHOD	
J11JB9		R604047-01	7416-001	GAM		05/18/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-001	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
RC-051-70	RC-051	04/07/06	7416-001	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-001	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
J11JC4		R604047-02	7416-002	GAM		05/18/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-002	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
RC-051-70	RC-051	04/07/06	7416-002	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-002	U		05/09/06	05/08/06	MWT	Uranium, Isotopic in Solids	
J11JC5		R604047-03	7416-003	GAM		05/18/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-003	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
RC-051-70	RC-051	04/07/06	7416-003	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-003	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
J11JC6		R604047-04	7416-004	GAM		05/18/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-004	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
RC-051-70	RC-051	04/07/06	7416-004	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-004	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
J11JC7		R604047-05	7416-005	GAM		05/19/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-005	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
RC-051-70	RC-051	04/07/06	7416-005	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-005	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
Method Blank		R604047-07	7416-007	GAM		05/19/06	05/19/06	CSS	Gamma Scan	
	SOLID		7416-007	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
	RC-051		7416-007	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-007	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
Lab Control Sample		R604047-06	7416-006	GAM		05/19/06	05/19/06	CSS	Gamma Scan	
	SOLID		7416-006	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
	RC-051		7416-006	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-006	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	
Duplicate (R604047-01)		R604047-08	7416-008	GAM		05/18/06	05/19/06	CSS	Gamma Scan	
100-H RIPARIAN #1	SOLID	04/05/06	7416-008	SR		05/08/06	05/16/06	MWT	Total Strontium in Solids	
	RC-051	04/07/06	7416-008	TH		05/10/06	05/16/06	MWT	Thorium, Isotopic in Solids	
			7416-008	U		05/05/06	05/08/06	MWT	Uranium, Isotopic in Solids	

WORK SUMMARY

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SUMMARY DATA SECTION

Page 6

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

WORK SUMMARY, cont.

SDG 7416
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG K0290

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
GAM	RC-051	Gamma Scan	GAMMA_GS	5			1	1	1		8
SR	RC-051	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	5			1	1	1		8
TH	RC-051	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	5			1	1	1		8
U	RC-051	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	5			1	1	1		8
TOTALS				20			4	4	4		32

WORK SUMMARY

Page 2

SUMMARY DATA SECTION

Page 7

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CWS
 Version 3.06
 Report date 05/24/06

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-07

Method Blank

METHOD BLANK

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	SDG <u>K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604047-07</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7416-007</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-051</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.083	0.12	0.27	1.0	U	SR
Thorium 228	14274-82-9	0.078	0.31	0.60	1.0	U	TH
Thorium 230	14269-63-7	0.078	0.31	0.59	1.0	U	TH
Thorium 232	TH-232	0.078	0.16	0.59	1.0	U	TH
Uranium 233/234	U-233/234	0.030	0.060	0.23	1.0	U	U
Uranium 235	15117-96-1	0	0.072	0.28	1.0	U	U
Uranium 238	U-238	0	0.059	0.23	1.0	U	U
Potassium 40	13966-00-2	U		7.1		U	GAM
Cobalt 60	10198-40-0	U		<u>0.30</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.51</u>	0.10	U	GAM
Radium 226	13982-63-3	U		<u>0.74</u>	0.10	U	GAM
Radium 228	15262-20-1	U		<u>1.2</u>	0.20	U	GAM
Europium 152	14683-23-9	U		<u>0.61</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.69</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.59</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.32		U	GAM
Thorium 232	TH-232	U		1.2		U	GAM
Uranium 235	15117-96-1	U		0.87		U	GAM
Uranium 238	U-238	U		28		U	GAM
Americium 241	14596-10-2	U		0.75		U	GAM
Cesium 134	13967-70-9	U		0.30		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

QC-BLANK 56877

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
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Version <u>3.06</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

R604047-06

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7416</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R604047-06</u> Dept sample id <u>7416-006</u>	Client/Case no <u>Hanford</u> SDG <u>K0290</u> Contract No. <u>630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>RC-051</u>
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ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	‡	(TOTAL)	LIMITS
Total Strontium	11.9	0.59	0.24	1.0	SR	10.8	0.43	110	81-119	80-120
Thorium 230	40.5	4.7	0.37	1.0	TH	44.4	1.8	91	82-118	80-120
Uranium 233/234	19.3	2.0	0.89	1.0	U	18.6	0.74	104	81-119	80-120
Uranium 235	14.4	1.7	0.22	1.0	U	15.1	0.60	95	81-119	80-120
Uranium 238	19.8	2.1	0.85	1.0	U	20.2	0.81	98	82-118	80-120
Cobalt 60	8.18	0.82	<u>0.25</u>	0.050	GAM	7.72	0.31	106	71-129	80-120
Cesium 137	8.43	0.72	<u>0.49</u>	0.10	GAM	8.05	0.32	105	72-128	80-120

100&300Area Compt RCBRA-Incrmntl So

QC-LCS 56876

LAB CONTROL SAMPLES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

R604047-08

J11JB9

DUPLICATE

SDG <u>7416</u> Contact <u>Melissa C. Mannion</u> DUPLICATE	ORIGINAL Lab sample id <u>R604047-01</u> Dept sample id <u>7416-001</u> Received <u>04/07/06</u> % solids <u>100.0</u>	Client/Case no <u>Hanford</u> SDG <u>K0290</u> Contract <u>No. 630</u> Client sample id <u>J11JB9</u> Location/Matrix <u>100-H RIPARIAN #1</u> <u>SOLID</u> Collected/Weight <u>04/05/06 08:33</u> <u>492 g</u> Custody/SAF No <u>RC-051-70</u> <u>RC-051</u>
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ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Total Strontium	-0.028	0.13	0.27	1.0	U	SR	0.050	0.12	0.24	U	-	0.9	
Thorium 228	0.428	0.31	0.30	1.0		TH	0.554	0.34	0.42		26	141	0.5
Thorium 230	0.389	0.31	0.30	1.0		TH	0.110	0.33	0.53	U	112	272	1.2
Thorium 232	0.583	0.31	0.30	1.0		TH	0.332	0.22	0.42	U	55	125	1.3
Uranium 233/234	0.690	0.33	0.25	1.0		U	0.840	0.36	0.34		20	96	0.6
Uranium 235	0.040	0.080	0.30	1.0	U	U	0	0.11	0.41	U	-		0.6
Uranium 238	0.493	0.27	0.25	1.0		U	0.486	0.27	0.34		1	118	0
Potassium 40	11.4	1.8	0.79			GAM	11.7	1.8	0.89		3	46	0.2
Cobalt 60	U		<u>0.099</u>	0.050	U	GAM	U		<u>0.098</u>	U	-		0
Cesium 137	0.577	0.14	<u>0.14</u>	0.10		GAM	0.632	0.12	0.10		9	56	0.5
Radium 226	0.659	0.17	<u>0.18</u>	0.10		GAM	0.735	0.21	<u>0.20</u>		11	66	0.5
Radium 228	0.659	0.44	<u>0.48</u>	0.20		GAM	0.593	0.35	<u>0.37</u>		11	138	0.2
Europium 152	0.289	0.15	<u>0.23</u>	0.10		GAM	0.420	0.15	<u>0.20</u>		37	95	1.2
Europium 154	U		<u>0.29</u>	0.10	U	GAM	U		<u>0.29</u>	U	-		0
Europium 155	U		<u>0.27</u>	0.10	U	GAM	U		<u>0.25</u>	U	-		0.1
Thorium 228	0.686	0.11	0.12			GAM	0.670	0.10	0.11		2	46	0.2
Thorium 232	0.659	0.44	0.48			GAM	0.593	0.35	0.37		11	138	0.2
Uranium 235	U		0.40		U	GAM	U		0.37	U	-		0.1
Uranium 238	U		12		U	GAM	U		11	U	-		0.1
Americium 241	U		0.41		U	GAM	U		0.38	U	-		0.1
Cesium 134	U		0.13		U	GAM	U		0.12	U	-		0.1

100&300Area Compnt RCBRA-Incrmntl So

QC-DUP#1 56878

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-01

J11JB9

DATA SHEET

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	<u>SDG K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604047-01</u>	Client sample id <u>J11JB9</u>	
Dept sample id <u>7416-001</u>	Location/Matrix <u>100-H RIPARIAN #1</u>	<u>SOLID</u>
Received <u>04/07/06</u>	Collected/Weight <u>04/05/06 08:33</u>	<u>492 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-051-70</u>	<u>RC-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Total Strontium	SR-RAD	0.050	0.12	0.24	1.0	U	SR
Thorium 228	14274-82-9	0.554	0.34	0.42	1.0		TH
Thorium 230	14269-63-7	0.110	0.33	0.53	1.0	U	TH
Thorium 232	TH-232	0.332	0.22	0.42	1.0	U	TH
Uranium 233/234	U-233/234	0.840	0.36	0.34	1.0		U
Uranium 235	15117-96-1	0	0.11	0.41	1.0	U	U
Uranium 238	U-238	0.486	0.27	0.34	1.0		U
Potassium 40	13966-00-2	11.7	1.8	0.89			GAM
Cobalt 60	10198-40-0	U		0.098	0.050	U	GAM
Cesium 137	10045-97-3	0.632	0.12	0.10	0.10		GAM
Radium 226	13982-63-3	0.735	0.21	0.20	0.10		GAM
Radium 228	15262-20-1	0.593	0.35	0.37	0.20		GAM
Europium 152	14683-23-9	0.420	0.15	0.20	0.10		GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Europium 155	14391-16-3	U		0.25	0.10	U	GAM
Thorium 228	14274-82-9	0.670	0.10	0.11			GAM
Thorium 232	TH-232	0.593	0.35	0.37			GAM
Uranium 235	15117-96-1	U		0.37		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.38		U	GAM
Cesium 134	13967-70-9	U		0.12		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
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Report date <u>05/24/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-02

J11JC4

DATA SHEET

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	<u>SDG K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R604047-02</u>	Client sample id <u>J11JC4</u>	
Dept sample id <u>7416-002</u>	Location/Matrix <u>100-H RIPARIAN #1</u>	<u>SOLID</u>
Received <u>04/07/06</u>	Collected/Weight <u>04/05/06 11:15</u>	<u>431 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-051-70</u>	<u>RC-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	<u>-0.340</u>	0.098	0.31	1.0	U	SR
Thorium 228	14274-82-9	0.339	0.29	0.37	1.0	U	TH
Thorium 230	14269-63-7	0.580	0.39	0.37	1.0		TH
Thorium 232	TH-232	0.483	0.29	0.37	1.0		TH
Uranium 233/234	U-233/234	0.830	0.10	0.024	1.0		U
Uranium 235	15117-96-1	0.039	0.031	0.029	1.0		U
Uranium 238	U-238	0.608	0.091	0.030	1.0		U
Potassium 40	13966-00-2	13.2	4.1	1.4			GAM
Cobalt 60	10198-40-0	U		<u>0.14</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.500	0.13	<u>0.14</u>	0.10		GAM
Radium 226	13982-63-3	0.983	0.25	<u>0.22</u>	0.10		GAM
Radium 228	15262-20-1	0.644	0.53	<u>0.58</u>	0.20		GAM
Europium 152	14683-23-9	0.325	0.16	<u>0.25</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.39</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.36</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.630	0.13	0.14			GAM
Thorium 232	TH-232	0.644	0.53	0.58			GAM
Uranium 235	15117-96-1	U		0.44		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.42		U	GAM
Cesium 134	13967-70-9	U		0.16		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-03

J11JC5

DATA SHEET

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	SDG <u>K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604047-03</u>	Client sample id <u>J11JC5</u>	
Dept sample id <u>7416-003</u>	Location/Matrix <u>100-H RIPARIAN #1</u>	<u>SOLID</u>
Received <u>04/07/06</u>	Collected/Weight <u>04/05/06 15:47</u>	<u>431 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-051-70</u>	<u>RC-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	0.082	0.13	0.25	1.0	U	SR
Thorium 228	14274-82-9	0.761	0.44	0.42	1.0		TH
Thorium 230	14269-63-7	0.217	0.33	0.42	1.0	U	TH
Thorium 232	TH-232	0.543	0.33	0.42	1.0		TH
Uranium 233/234	U-233/234	0.721	0.35	0.26	1.0		U
Uranium 235	15117-96-1	0.083	0.083	0.32	1.0	U	U
Uranium 238	U-238	0.515	0.28	0.26	1.0		U
Potassium 40	13966-00-2	13.2	4.1	0.92			GAM
Cobalt 60	10198-40-0	U		<u>0.14</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.434	0.12	<u>0.12</u>	0.10		GAM
Radium 226	13982-63-3	0.758	0.23	<u>0.22</u>	0.10		GAM
Radium 228	15262-20-1	0.737	0.53	<u>0.53</u>	0.20		GAM
Europium 152	14683-23-9	0.302	0.22	<u>0.30</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.44</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.37</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.619	0.14	0.15			GAM
Thorium 232	TH-232	0.737	0.53	0.53			GAM
Uranium 235	15117-96-1	U		0.46		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.43		U	GAM
Cesium 134	13967-70-9	U		0.16		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-04

J11JC6

DATA SHEET

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	<u>SDG_K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604047-04</u>	Client sample id <u>J11JC6</u>	
Dept sample id <u>7416-004</u>	Location/Matrix <u>100-H RIPARIAN #1</u>	<u>SOLID</u>
Received <u>04/07/06</u>	Collected/Weight <u>04/05/06 10:56</u>	<u>431 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-051-70</u>	<u>RC-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	0.025	0.12	0.24	1.0	U	SR
Thorium 228	14274-82-9	0.921	0.62	0.59	1.0		TH
Thorium 230	14269-63-7	0.230	0.46	0.59	1.0	U	TH
Thorium 232	TH-232	0.613	0.47	0.59	1.0		TH
Uranium 233/234	U-233/234	0.496	0.27	0.25	1.0		U
Uranium 235	15117-96-1	0	0.080	0.31	1.0	U	U
Uranium 238	U-238	0.562	0.27	0.25	1.0		U
Potassium 40	13966-00-2	10.8	1.7	0.72			GAM
Cobalt 60	10198-40-0	U		<u>0.11</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.450	0.11	<u>0.11</u>	0.10		GAM
Radium 226	13982-63-3	0.714	0.20	<u>0.20</u>	0.10		GAM
Radium 228	15262-20-1	0.540	0.39	<u>0.42</u>	0.20		GAM
Europium 152	14683-23-9	0.267	0.25	<u>0.33</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.35</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.25</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.637	0.11	0.13			GAM
Thorium 232	TH-232	0.540	0.39	0.42			GAM
Uranium 235	15117-96-1	U		0.43		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.40		U	GAM
Cesium 134	13967-70-9	U		0.12		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

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Report date <u>05/24/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0290

R604047-05

J11JC7

DATA SHEET

SDG <u>7416</u>	Client/Case no <u>Hanford</u>	SDG <u>K0290</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604047-05</u>	Client sample id <u>J11JC7</u>	
Dept sample id <u>7416-005</u>	Location/Matrix <u>100-H RIPARIAN #1</u>	<u>SOLID</u>
Received <u>04/07/06</u>	Collected/Weight <u>04/05/06 13:10</u>	<u>430 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-051-70</u>	<u>RC-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	0.009	0.12	0.24	1.0	U	SR
Thorium 228	14274-82-9	0.466	0.40	0.51	1.0	U	TH
Thorium 230	14269-63-7	0	0.27	0.51	1.0	U	TH
Thorium 232	TH-232	0.599	0.40	0.51	1.0		TH
Uranium 233/234	U-233/234	0.669	0.30	0.22	1.0		U
Uranium 235	15117-96-1	0.070	0.071	0.27	1.0	U	U
Uranium 238	U-238	0.698	0.30	0.22	1.0		U
Potassium 40	13966-00-2	10.3	1.8	1.1			GAM
Cobalt 60	10198-40-0	U		<u>0.11</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.422	0.13	<u>0.14</u>	0.10		GAM
Radium 226	13982-63-3	0.651	0.20	<u>0.22</u>	0.10		GAM
Radium 228	15262-20-1	1.03	0.40	<u>0.42</u>	0.20		GAM
Europium 152	14683-23-9	0.391	0.17	<u>0.23</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.33</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.27</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.775	0.12	0.13			GAM
Thorium 232	TH-232	1.03	0.40	0.42			GAM
Uranium 235	15117-96-1	U		0.41		U	GAM
Uranium 238	U-238	U		13		U	GAM
Americium 241	14596-10-2	U		0.44		U	GAM
Cesium 134	13967-70-9	U		0.13		U	GAM

100&300Area Compnt RCBRA-Incrmntl So

Lab id <u>EBRLNE</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

Test TH Matrix SOLID
 SDG 7416
 Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG K0290

RESULTS

	LAB	RAW	SUF-	
CLIENT SAMPLE ID	SAMPLE ID	TEST FIX	PLANCHET	Thorium 230

Preparation batch 7181-057

J11JB9	R604047-01	7416-001	U
J11JC4	R604047-02	7416-002	0.580
J11JC5	R604047-03	7416-003	U
J11JC6	R604047-04	7416-004	U
J11JC7	R604047-05	7416-005	U
Method Blank	R604047-07	7416-007	U
Lab Control Sample	R604047-06	7416-006	ok
Duplicate (R604047-01)	R604047-08	7416-008	ok

Nominal values and limits from method RDLs (pCi/g) 1.0
 100&300Area Compnt RCBRA-Incrmntl So

METHOD PERFORMANCE

	LAB	RAW	SUF-	MAX	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
CLIENT SAMPLE ID	SAMPLE ID	TEST FIX		pCi/g		g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7181-057 2σ prep error 5.0 % Reference Lab Notebook 7181 pg. 57

J11JB9	R604047-01	0.53	0.250	62	158	35	05/09/06	05/10	SS-061
J11JC4	R604047-02	0.37	0.250	71	158	35	05/09/06	05/10	SS-062
J11JC5	R604047-03	0.42	0.250	71	157	35	05/09/06	05/10	SS-063
J11JC6	R604047-04	0.59	0.250	45	158	35	05/09/06	05/10	SS-064
J11JC7	R604047-05	0.51	0.250	49	158	35	05/09/06	05/10	SS-027
Method Blank	R604047-07	0.60	0.250	42	158		05/09/06	05/10	SS-029
Lab Control Sample	R604047-06	0.37	0.250	66	158		05/09/06	05/10	SS-028
Duplicate (R604047-01)	R604047-08	0.30	0.250	86	158	35	05/09/06	05/10	SS-031

Nominal values and limits from method 1.0 0.250 20-105 150 180

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

Test TH Matrix SOLID

SDG 7416

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG K0290

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-073	Soil Leaching 10-200 g Aliquot, rev 0
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	<u>0.46</u>	±	<u>0.22</u>
FOR 8 SAMPLES	YIELD	<u>62</u>	±	<u>30</u>

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 05/24/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0290

Test U Matrix SOLID
 SDG 7416
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG K0290

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX PLANCHET	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)				
			233/234	235	238	1+3	2σ	2+3	2σ	
Preparation batch 7181-057										
J11JB9	R604047-01	7416-001	0.840	U	0.486	173	121	0	23	
J11JC4	R604047-02	7416-002	0.830	0.039	0.608	137	26	6	5	
J11JC5	R604047-03	7416-003	0.721	U	0.515	140	102	16	18	
J11JC6	R604047-04	7416-004	0.496	U	0.562	88	64	0	14	
J11JC7	R604047-05	7416-005	0.669	U	0.698	96	60	10	11	
Method Blank	R604047-07	7416-007	U	U	U					
Lab Control Sample	R604047-06	7416-006	ok	ok	ok					
Duplicate (R604047-01)	R604047-08	7416-008	ok	- U	ok	140	102	8	17	
Nominal values and limits from method										
		RDLs (pCi/g)	1.0	1.0	1.0	100			4	
100&300Area Compnt RCBRA-Incrmntl So						Averages		129	7	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-		
													PREPARED	YZED	DETECTOR
Preparation batch 7181-057															
2σ prep error 5.0 % Reference Lab Notebook 7181 pg. 57															
J11JB9	R604047-01		0.41	0.500			59		101		30	05/05/06	05/05	SS-031	
J11JC4	R604047-02		0.030	0.500			77		910		34	05/05/06	05/09	SS-036	
J11JC5	R604047-03		0.32	0.500			78		102		30	05/05/06	05/05	SS-034	
J11JC6	R604047-04		0.31	0.500			68		102		30	05/05/06	05/05	SS-035	
J11JC7	R604047-05		0.27	0.500			77		102		30	05/05/06	05/05	SS-036	
Method Blank	R604047-07		0.28	0.500			72		102			05/05/06	05/05	SS-038	
Lab Control Sample	R604047-06		0.89	0.500			95		102			05/05/06	05/05	SS-037	
Duplicate (R604047-01)	R604047-08		0.30	0.500			80		103		30	05/05/06	05/05	SS-042	
Nominal values and limits from method															
			1.0	0.500			20-105		100	100	180				

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SAMPLE DELIVERY GROUP K0290

Test U Matrix SOLID
SDG 7416
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG K0290

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
	CP-073	Soil Leaching, 10 - 200 g Aliquot, rev 3
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	<u>0.35</u>	±	<u>0.49</u>
FOR 8 SAMPLES	YIELD	<u>76</u>	±	<u>21</u>

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SAMPLE DELIVERY GROUP K0290

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Test SR Matrix SOLID
SDG 7416
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG K0290

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUP- FIX	PLANCHET	Total Strontium
Preparation batch 7181-057					
J11JB9	R604047-01			7416-001	U
J11JC4	R604047-02			7416-002	U
J11JC5	R604047-03			7416-003	U
J11JC6	R604047-04			7416-004	U
J11JC7	R604047-05			7416-005	U
Method Blank	R604047-07			7416-007	U
Lab Control Sample	R604047-06			7416-006	ok
Duplicate (R604047-01)	R604047-08			7416-008	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100&300Area Compnt RCBRA-Incrmntl So

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUP- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7181-057 2σ prep error 10.0 % Reference Lab Notebook 7181 pg. 57																
J11JB9	R604047-01			0.24	1.00			92		100			33	05/08/06	05/08	GRB-232
J11JC4	R604047-02			0.31	1.00			93		100			33	05/08/06	05/08	GRB-218
J11JC5	R604047-03			0.25	1.00			96		100			33	05/08/06	05/08	GRB-227
J11JC6	R604047-04			0.24	1.00			96		100			33	05/08/06	05/08	GRB-228
J11JC7	R604047-05			0.24	1.00			93		100			33	05/08/06	05/08	GRB-201
Method Blank	R604047-07			0.27	1.00			94		100				05/08/06	05/08	GRB-231
Lab Control Sample	R604047-06			0.24	1.00			94		100				05/08/06	05/08	GRB-225
Duplicate (R604047-01)	R604047-08			0.27	1.00			90		100			33	05/08/06	05/08	GRB-232

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
CP-383 Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD MDA 0.26 ± 0.050
FOR 8 SAMPLES YIELD 94 ± 4

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SAMPLE DELIVERY GROUP K0290

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7416
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG K0290

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7181-057						
J11JB9	R604047-01	7416-001			U	0.632
J11JC4	R604047-02	7416-002			U	0.500
J11JC5	R604047-03	7416-003			U	0.434
J11JC6	R604047-04	7416-004			U	0.450
J11JC7	R604047-05	7416-005			U	0.422
Method Blank	R604047-07	7416-007			U	U
Lab Control Sample	R604047-06	7416-006			ok	ok
Duplicate (R604047-01)	R604047-08	7416-008			- U	ok
Nominal values and limits from method		RDLs (pCi/g)			0.050	0.10
100&300Area Compnt RCBRA-Incrmntl So						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7181-057 2σ prep error 15.0 % Reference Lab Notebook 7181 pg. 57																
J11JB9	R604047-01			<u>22</u>	149					131			43	04/27/06	05/18	JR,05,00
J11JC4	R604047-02			<u>26</u>	147					111			43	04/27/06	05/18	JR,02,00
J11JC5	R604047-03			<u>28</u>	145					104			43	04/27/06	05/18	JR,02,00
J11JC6	R604047-04			<u>24</u>	151					105			43	04/27/06	05/18	JR,05,00
J11JC7	R604047-05			<u>24</u>	148					107			44	04/27/06	05/19	JR,05,00
Method Blank	R604047-07			<u>57</u>	<u>61.0</u>					108				04/27/06	05/19	JR,08,00
Lab Control Sample	R604047-06			<u>0.25</u>	<u>61.0</u>					103				04/27/06	05/19	JR,03,00
Duplicate (R604047-01)	R604047-08			<u>22</u>	149					114			43	04/27/06	05/18	JR,05,00
Nominal values and limits from method				0.050	145					100						180

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 25 ± 31
FOR 8 SAMPLES YIELD _____ ± _____

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SAMPLE DELIVERY GROUP K0290

SDG 7416
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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SDG 7416
 Contact Melissa C. Mannion

REPORT GUIDE

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PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

 Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_K0290

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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Form DVD-RG
Version 3.06
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SAMPLE DELIVERY GROUP K0290

SDG 7416
Contact Melissa C. Mannion

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-051-70		Page 1 of 3					
Collector STANKOVICH, M.		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 8L		Data Turnaround 45 Days				
Project Designation 100 & 300 Area Component of the RCBRA - Incremental So		Sampling Location 100-H RIPARIAN #1 K0290 (7416)			SAF No. RC-051		Air Quality <input type="checkbox"/>							
Ice Chest No.		Field Logbook No. EL-1596		COA BESRAS6520		Method of Shipment FED EX								
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. A060151			Bill of Lading/Air Bill No.									
POSSIBLE SAMPLE HAZARDS/REMARKS NONE				Preservation	None	None	None	None	None	None	None	None	None	
Special Handling and/or Storage <i>Use page 3 for original material to Corvallis for MIS preparation and aliquoting, page 1 for radioanalytical fractions to Eberline, & page 2 for chemical analytical fractions to Lionville.</i>				Type of Container	G/P	G/P								
				No. of Container(s)	5	7	0	0	0	0	0	0	0	0
				Volume	400g	30g	1'	1'	1'	1^	1^	1^	1^	1^
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr	Isotopic Thorium (Thorium-232)	Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)	Isotopic Plutonium (Plutonium-238, Plutonium-239/240)						
Sample No.	Matrix *	Sample Date	Sample Time											
J11JB9	SOIL	4-5-06	08:33	1	3	ET 4-5-6								
J11JC4			11:15	1	1									
J11JC5			15:47	1	1									
J11JC6			10:56	1	1									
J11JC7			13:10	1	1									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *	
Relinquished By/Removed From Elizabeth M Tepper		Date/Time 11:30		Received By/Stored In CHZM HILL		Date/Time 4-6-06		These marks indicate that unless lined out, analytes to be included with Strontium-89,90 -- Total Sr analysis fraction. ~ These marks indicate that this is a non-analysis used to properly format COC form. Contact Joan Kessner for any questions. (1) Gamma Spec - (Full List) (Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228)					S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From CHZM Hill		Date/Time 11:30		Received By/Stored In Fed ex		Date/Time 4-6-06								
Relinquished By/Removed From Fed ex		Date/Time		Received By/Stored In Fun		Date/Time 04/07/06 9:30								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By				Title				Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By				Date/Time				

