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Date: 19 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB Concrete
Subject: PCB - Data Package No. H0475-RLN (SDG No. H0475)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0475-RLN prepared by Recra LabNet (RLN). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOWOY1	7/20/99	Solid	C	EPA8082*
BOWOY2	7/20/99	Solid	C	EPA 8082*
BOWOY3	7/20/99	Solid	C	EPA 8082*

*Equivalent to the requested method (EPA 8080)

Data validation was conducted in accordance with the "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all nondetects are rejected and flagged "UR".

Holding times were met for all samples.

- **Blanks**

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

All method blank target compound results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike analyses are performed in duplicate and must be within 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Nondetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified

as estimates and flagged "J". Nondetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Nondetected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to surrogate recoveries outside QC limits, all detected PCB results in samples BOWOY2 and BOWOY3 were qualified as estimates and flagged "J" and all undetected PCB results in samples BOWOY2 and BOWOY3 were rejected and flagged "UR".

All other surrogate recovery results were acceptable.

- **Precision**

- Matrix Spike/Matrix Spike Duplicate Samples

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

- All matrix spike results were acceptable.

- **Analytical Detection Levels**

- Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. The reported detection limit for all analytes except aroclor-1254 were exceeded in samples BOWOY2 and BOWOY3. Under the BHI statement of work, no qualification is required. All other analytes meet the analyte specific PQL.

- **Completeness**

- Data Package No. H0475-RLN (SDG No. H0475) was submitted for validation and verified for completeness. The completion percentage was 43%.

MAJOR DEFICIENCIES

Due to surrogate recoveries outside QC limits, all undetected PCB results in samples BOWOY2 and BOWOY3 were rejected and flagged "UR". Rejected data is invalid and should not be reported.

MINOR DEFICIENCIES

Due to surrogate recoveries outside QC limits, all detected PCB results in samples BOWOY2 and BOWOY3 were qualified as estimates and flagged "J". Data flagged 'J' is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The reported detection limit for all analytes except aroclor-1254 were exceeded in samples BOWOY2 and BOWOY3. Under the BHI statement of work, no qualification is required.

REFERENCES

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

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

Appendix 1
Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

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

Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0475	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All except arochlor-1254	UR	BOWOY2, BOWOY3	Surrogate diluted out
Arochlor-1254	J	BOWOY2, BOWOY3	Surrogate diluted out

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-016
RFW#: 9907L501
SDG/SAF#: H0475/B99-016

W.O.#: 10985-001-001-9999-00
Date Received: 07-23-99

PCB

The set of samples consisted of three (3) solid samples collected on 07-20-99.

The samples and their associated QC samples were extracted on 07-27-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 07-29,30-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All obtainable surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All samples required instrument dilutions due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
9. All 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 11 pages.

Signature

10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria. The CCV run after the samples was increased for Aroclor 1260 on the RTX-5 column only. All results were reported from the RTX-35 column. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

Pr. St O Wess
2 J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

08-09
Date

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Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #:

9402190

Initiator: B. Pator RFW Batch: 99072501
 Date: 8/5/97 Samples: 211
 Client: TNU Harbor Method: SWB45/D/CAWW/CLPI

Parameter: OPCB
 Matrix: Soil
 Prep Batch: 99LE0873

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

The final CCU was increased 22% on the confirmation column only. The CCU before the samples was acceptable. The sampler contained AR1254. All results were reported from the primary & within criteria column.

2. Known or Probable Causes(s) Sample Matrix - This is the second time the samples were analyzed with similar results.

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)

4. Project Manager Instructions...signature/date: Christie S. Johnson 8/9/97

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: B. Pator 8/10/97 Other Explanation: _____

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
<input checked="" type="checkbox"/>	Initiator	<input type="checkbox"/>	Metals: Doughty
<input checked="" type="checkbox"/>	Lab Manager: M. Taylor	<input type="checkbox"/>	Inorganic: Perrone
<input checked="" type="checkbox"/>	Project Mgr: Stone/Carey/Schrenkel/Johnson	<input type="checkbox"/>	GC/LC: Schnell
<input checked="" type="checkbox"/>	Section Mgr: Wesson/Daniels	<input type="checkbox"/>	MS: LeMin/Taylor
<input checked="" type="checkbox"/>	QA (file): Racioppi	<input type="checkbox"/>	Log-in: Toder
<input type="checkbox"/>	Data Management: Feldman	<input type="checkbox"/>	Admin: Soos
<input type="checkbox"/>	Sample Prep: Schnell/Doughty/Kauffman	<input type="checkbox"/>	Other: _____

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-076-01	Page 1 of 1
Collector Fahlberg/Porter		Company Contact J Adler		Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Data Turnaround 15 Days
Project Designation 105-DR FSB - Concrete		Sampling Location 105-DR		SAF No. B99-076		
Ice Chest No. SML 534		Field Logbook No. EL 1281		Method of Shipment Fed Ex		
Shipped To EPA/RECRA RS 7.20.99		Offsite Property No.		Bill of Lading/Air Bill No.		

COA R105 D4 2870

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None								
	Type of Container	aG	aG	aG								
	No. of Container(s)	1	1	1								
Special Handling and/or Storage	Volume	60mL	60mL	120mL								

SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions								
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Sample No.	Matrix *	Sample Date	Sample Time									
BOW0Y1	Other Solid	7.20.99	0855	X	X							tiato BOW0Y6
BOW0Y2	Other Solid	7.20.99	0905	X	X							BOW 0Y7
BOW0Y3	Other Solid	7.20.99	0920	X	X							BOW 0Y8

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By R. Fahlberg	Date/Time 7:20:99	Received By Ref 1-C	Date/Time 7:20:99	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - 113				Soil Water Vapor Other Solid Other Liquid	
Relinquished By Ref 2-C	Date/Time 7.22.99	Received By R. Fahlberg	Date/Time 7.22.99						
Relinquished By R. Fahlberg	Date/Time 7.22.99	Received By Fed Ex	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						

LABORATORY SECTION	Received By B. Miller	Title.	Date/Time 7/23/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5
Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 105 DR F3B <i>QC</i>			DATA PACKAGE: H0475		
VALIDATOR: 105 DR F4		LAB: <i>Reckra</i>	DATE: 10/11/85		
CASE: <i>741</i>			SDG: H0475		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/90	<input type="checkbox"/> SW-846 8080	<input type="checkbox"/> SW-846 8081	<input checked="" type="checkbox"/> 8082	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX <i>Bowoy1 Bowoy2 Bowoy3</i>					
<i>solid</i>					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? Yes No *N/A*
 Is a case narrative present? *Yes* No *N/A*

Comments: _____

2. HOLDING TIMES

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

Comments: _____

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (METHOD 8080 AND 8081)

Are DDT retention times acceptable Yes No *N/A*
 Are calibration standard retention times acceptable? Yes No *N/A*
 Are DDT and endrin breakdowns acceptable? Yes No *N/A*

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PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are DBC retention times acceptable? Yes No **N/A**
Is the GC/MS tuning/performance check acceptable? Yes No **N/A**

Comments: _____

3.2 CALIBRATIONS (METHOD 8080 AND 8081)

Are EVAL standard calibration factors and
%RSD values acceptable? Yes No **N/A**
Are quantitation column calibration factor
%RSD values acceptable? Yes No **N/A**
Were the analytical sequence requirements met? Yes No **N/A**
Are continuing calibration %D values acceptable? Yes No **N/A**

Comments: _____

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Was the initial calibration sequence performed? Yes No **N/A**
Was the resolution acceptable in the resolution check mix? Yes No **N/A**
Is resolution acceptable in the PEM, INDA and INDB? Yes No **N/A**
Are DDT and Endrin breakdowns acceptable? Yes No **N/A**
Are retention times in PEMs and calibration mixes acceptable? Yes No **N/A**
Are RPD values in the PEMs acceptable? Yes No **N/A**
Are %RSD values acceptable? Yes No **N/A**

Comments: _____

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Were the analytical sequence requirements met? Yes No **N/A**
Is resolution acceptable in the PEMs? Yes No **N/A**
Are initial calibrations acceptable? Yes No **N/A**

PESTICIDE/PCB DATA VALIDATION CHECKLIST

- Are retention times acceptable in the PEMS, INDA and INDB mixes? Yes No N/A
- Are RPD values in the PEMS acceptable? Yes No N/A
- Are the DDT and endrin breakdowns acceptable? Yes No N/A
- Was GPC cleanup performed? Yes No N/A
- Is the GPC calibration check acceptable? Yes No N/A
- Was Florisil cleanup performed? Yes No N/A
- Is the Florisil performance check acceptable? Yes No N/A

Comments: _____

4. BLANKS

- Were laboratory blanks analyzed? Yes No N/A
- Are laboratory blank results acceptable? Yes No N/A
- Were field/trip blanks analyzed? Yes No N/A
- Are field/trip blank results acceptable? Yes No N/A

Comments: _____

5. ACCURACY

- Were surrogates analyzed? Yes No N/A
- Are surrogate recoveries acceptable? Yes No N/A
- Were MS/MSD samples analyzed? Yes No N/A
- Are MS/MSD results acceptable? Yes No N/A
- Were LCS samples analyzed? Yes No N/A
- Are LCS results acceptable? Yes No N/A

Comments: 42 + 43 - deleted cut - J/UR

PESTICIDE/PCB DATA VALIDATION CHECKLIST

5. PRECISION

- Are MS/MSD RPD values acceptable? Yes No N/A
- Are laboratory duplicate results acceptable? Yes No N/A
- Are field duplicate RPD values acceptable? Yes No N/A
- Are field split RPD values acceptable? Yes No N/A

Comments: _____

7. SYSTEM PERFORMANCE

- Is chromatographic performance acceptable? Yes No N/A
- Are positive results resolved acceptably? Yes No N/A

Comments: _____

8. COMPOUND IDENTIFICATION AND QUANTITATION

- Is compound identification acceptable? Yes No N/A
- Is compound quantitation acceptable? Yes No N/A

Comments: _____

9. REPORTED RESULTS AND QUANTITATION LIMITS

- Are results reported for all requested analyses? Yes No N/A
- Are all results supported in the raw data? Yes No N/A
- Do results meet the CRQLs? Yes No N/A

Comments: JK 42+43 - all but 1254 above

Date: 19 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Concrete
Subject: Inorganics - Data Package No. H0475-RLN (SDG No. H0475)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0475-RLN prepared by RECRA LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOW0Y1	7/20/99	Solid	C	See note 1
BOW0Y2	7/20/99	Solid	C	See note 1
BOW0Y3	7/20/99	Solid	C	See note 1

1 - ICP metals by 6010B (lead); mercury by 7471A.

Data validation was conducted in accordance with the "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within six (6) months for lead and 28 days for mercury.

All holding times were acceptable.

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- **Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the Contract Required Detection Limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the IDL and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery of 182%, all mercury results were qualified as estimates and flagged "J".

All other matrix spike recovery results were acceptable.

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- **Precision**

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within RPD limits of plus or minus 30% for solid samples. If RPD values are out of specification and the sample concentration is greater than five times the CRDL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the CRDL and the sample concentration is less than five times the CRDL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for aqueous laboratory duplicates are an RPD less than 20% for positive sample results greater than five times the CRDL or plus or minus the CRDL for positive sample results less than five times the CRDL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

Due to an RPD of 161%, all mercury results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific PQL.

- **Completeness**

Data package No. H0475-RLN (SDG No. H0475) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery of 182%, all mercury results were qualified as estimates and flagged "J". Due to an RPD of 161%, all mercury results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error

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associated with the methods.

REFERENCES

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

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0475	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Mercury	J	All	Matrix spike
Mercury	J	All	RPD

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recre LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076

RECRA LOT #: 9907L501

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWOY1	Mercury, Total	0.33 J	MG/KG	0.02	1.0
		Lead, Total	29.0	MG/KG	3.4	1.0
-002	BOWOY2	Mercury, Total	0.28 J	MG/KG	0.02	1.0
		Lead, Total	60.3	MG/KG	3.6	1.0
-003	BOWOY3	Mercury, Total	1.1 J	MG/KG	0.02	1.0
		Lead, Total	45.4	MG/KG	3.4	1.0

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10/18/99

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-076
RFW# : 9907L501
SDG/SAF# : H0475/B99-076

W.O.# : 10985-001-001-9999-00
Date Received: 07-23-99

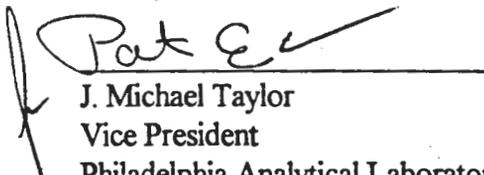
METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 solid samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL 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 sample (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recovery for Mercury was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report. When the MS is outside the control limits, a serial dilution is performed.

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.

000013

11. The Mercury duplicate analysis was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

mld/m07-501

8-4-99
Date



000014

~~002~~

Collector Fahlberg/Porter	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENZ, SJ	Price Code 9K	Data Turnaround 15 Days
Project Designation 105-DR FSB - Concrete	Sampling Location 105-DR	Field Logbook No. EL 1281	SAF No. B99-076		
Ice Chest No. SML 534	Offsite Property No.	Method of Shipment Fed Ex			
Shipped To FMA/RECRA RS 7.20.99	Bill of Lading/Air Bill No.				

COA R105D42870

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None						
	Type of Container	aG	aG	aG						
	No. of Container(s)	1	1	1						
Special Handling and/or Storage	Volume	60mL	60mL	120mL						
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time							
BOWDY1	Other Solid	7.20.99	0855	X	X					fiato Bowdy6
BOWDY2	Other Solid	7.20.99	0905	X	X					Bow 047
BOWDY3	Other Solid	7.20.99	0920	X	X					Bow 048

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix * Soil Water Vapor Other Solid Other Liquid
	Relinquished By R. Fahlberg Date/Time 7:20:99	Received By Ref 1-C Date/Time 7:20:99	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - H3				
	Relinquished By Ref 2-C Date/Time 7.22.99	Received By R. Fahlberg / R. Fahlberg Date/Time 7.22.99					
	Relinquished By R. Fahlberg Date/Time 7.22.99	Received By Fed Ex Date/Time					

LABORATORY SECTION	Received By J. M. Miller	Title	Date/Time 7/23/99 0930
FINAL SAMPLE POSITION	Disposal Method	Disposed By	Date/Time

012

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 105 DR FSB concrete					
VALIDATOR: TLI		LAB: Recra		DATE: 10/18/97	
CASE:			SDG: H0475		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/ICP	<input type="checkbox"/> CLP/GFAA	<input type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input checked="" type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX	Bow041	Bow042	Bow043		
					solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? Yes No N/A

Is a case narrative present? Yes No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? Yes No N/A
Are initial calibrations acceptable? Yes No N/A
Are ICP interference checks acceptable? Yes No N/A
Were ICV and CCV checks performed on all instruments? Yes No N/A
Are ICV and CCV checks acceptable? Yes No N/A

Comments: _____

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? Yes No N/A
Were preparation blanks analyzed? Yes No N/A
Are preparation blank results acceptable? Yes No N/A
Were field/trip blanks analyzed? Yes No N/A
Are field/trip blank results acceptable? Yes No N/A

Comments: _____

5. ACCURACY

Were spike samples analyzed? Yes No N/A
Are spike sample recoveries acceptable? Yes No N/A
Were laboratory control samples (LCS) analyzed? Yes No N/A
Are LCS recoveries acceptable? Yes No N/A

Comments: 182 % for Hg I all (all detected)

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

- Were laboratory duplicates analyzed? Yes No N/A
- Are laboratory duplicate samples RPD values acceptable? Yes No N/A
- Were ICP serial dilution samples analyzed? Yes No N/A
- Are ICP serial dilution %D values acceptable? Yes No N/A
- Are field duplicate RPD values acceptable? Yes No N/A
- Are field split RPD values acceptable? Yes No N/A

Comments: Hg 16170 rpd

7. FURNACE AA QUALITY CONTROL

- Were duplicate injections performed as required? Yes No N/A
- Are duplicate injection %RSD values acceptable? Yes No N/A
- Were analytical spikes performed as required? Yes No N/A
- Are analytical spike recoveries acceptable? Yes No N/A
- Was MSA performed as required? Yes No N/A
- Are MSA results acceptable? Yes No N/A

Comments: _____

8. REPORTED RESULTS AND DETECTION LIMITS

- Are results reported for all requested analyses? Yes No N/A
- Are all results supported in the raw data? Yes No N/A
- Are results calculated properly? Yes No N/A
- Do results meet the CRDLs? Yes No N/A

Comments: _____

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 08/04/99

CLIENT: TRU-HANFORD B99-076

RECRA LOT #: 9907L501

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	BOWOY1	Mercury, Total	0.70	0.33	0.20	181.9	1.0
		Lead, Total	82.2	29.0	61.3	86.8	1.0

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Recra LabNet - Lionville

INORGANICS PRECISION REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076

RECRA LOT #: 9907L501

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	B0W0Y1	Mercury, Total	0.33	3.1	161.3	5.0
		Lead, Total	29.0	33.4	14.1	1.0

000021

Handwritten signature

Date: 19 January 2000
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Concrete
Subject: Radiochemistry - Data Package No. H0475-TNU (SDG No. H0475)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0475-TNU which was prepared by Thermo NUtech (TNU). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOWOX9	07/19/99	Solid	C	See note 1
BOWOY0	07/19/99	Solid	C	See note 1

1 - Gamma spectroscopy; alpha spectroscopy (isotopic uranium, isotopic plutonium and americium-241); total strontium; nickel-63; tritium; carbon-14; technetium-99.

Data validation was conducted in accordance with the "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months with liquid scintillation requiring analysis within 7 days of distillation.

All holding times were acceptable.

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- **Blanks**

Laboratory Blanks

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

All laboratory blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample and matrix spike recovery is 70-130% (80-120% for gamma spectroscopy). In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

All accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the CRDL and the RPD is less than 30 percent, the results are acceptable. If either activities are less than five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory MDAs were at or below the analyte-specific TDL.

- **Completeness**

Data Package No. H0475 (SDG No. H0475) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

Appendix 1

Glossary of Data Reporting Qualifiers

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

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.

Appendix 2

Summary of Data Qualification

000006

DATA QUALIFICATION SUMMARY

SDG: H0475	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000008

Project: BECHTEL-HANFORD																					
Laboratory: TNU																					
Case		SDG: H0475																			
Sample Number		BOW0X9				BOW0Y0															
Location		B				D															
Remarks																					
Sample Date		07/19/99				07/19/99															
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Tritium		6.23		8.09																	
Carbon-14	50	540		961																	
Technetium-99	15	1.37		0.438																	
Uranium-233/234	1	3.10		1.37																	
Uranium-235	1	0.321		0.059																	
Uranium-238	1	3.19		1.21																	
Plutonium-238	1	5.77		6.63																	
Plutonium-239/40	1	358		240																	
Nickel-63	30	5360		11900																	
Americium-241	1	54.7		72.0																	
Strontium (total)	1	4500		1980																	
Potassium-40		U	U	U	U																
Barium-133		U	U	U	U																
Cobalt 60	0.1	323		596																	
Cesium 137	0.1	5070		5140																	
Europium 152	0.2	806		2810																	
Europium 154	0.2	105		518																	
Europium 155	0.1	4.38		21.5																	
Radium-226		U	U	U	U																
Radium-228		U	U	U	U																
Thorium-228		U	U	U	U																
Thorium-232		U	U	U	U																
Americium-241 (GEA)		60.0	U	119																	
Uranium-238 (GEA)		U	U	U	U																
Uranium-235 (GEA)		U	U	U	U																

600000

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0475

N907145-01

BOWOX9

DATA SHEET

SDG <u>7166</u>	Client/Case no <u>Hanford</u>	<u>SDG-H0475</u>
Contact <u>L.A. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N907145-01</u>	Client sample id <u>BOWOX9</u>	
Dept sample id <u>7166-001</u>	Location/Matrix <u>105-DR</u>	<u>SOLID</u>
Received <u>07/23/99</u>	Collected <u>07/19/99 10:15</u>	
* solids <u>100.0</u>	Custody/SAF No <u>B99-076-01</u>	<u>B99-076</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR. (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	6.23	0.17	0.087	400	J	H
Carbon 14	14762-75-5	540	8.6	4.4	50		C
Technetium 99	14133-76-7	1.37	0.51	0.88	15	J	TC
Uranium 233/234	U-233/234	3.10	0.33	0.080	1.0		U
Uranium 235	15117-96-1	0.321	0.091	0.048	1.0	J	U
Uranium 238	U-238	3.19	0.34	0.075	1.0		U
Plutonium 238	13981-16-3	5.77	0.50	0.031	1.0		PU
Plutonium 239/240	PU-239/240	358	24	0.050	1.0	B	PU
Nickel 63	13981-37-8	5360	54	5.3	30		NI_L
Americium 241	14596-10-2	54.7	11	0.34	1.0		AM
Total Strontium	SR-RAD	4500	9.0	0.27	1.0		SR
Potassium 40	13966-00-2	U		7.3		U	GAM
Barium 133	13981-41-4	U		2.6		UX	GAM
Cobalt 60	10198-40-0	323	2.5	<u>1.1</u>	0.050		GAM
Cesium 137	10045-97-3	5070	7.0	<u>2.5</u>	0.10		GAM
Europium 152	14683-23-9	806	6.4	<u>7.1</u>	0.10		GAM
Europium 154	15585-10-1	105	3.9	<u>3.4</u>	0.10		GAM
Europium 155	14391-16-3	4.38	2.9	<u>4.0</u>	0.10		GAM
Radium 226	13982-63-3	U		<u>3.2</u>	0.10	U	GAM
Radium 228	15262-20-1	U		<u>7.2</u>	0.20	U	GAM
Thorium 228	14274-82-9	U		2.8		U	GAM
Thorium 232	TH-232	U		7.2		U	GAM
Americium 241	14596-10-2	60.0	1.6	2.2			GAM
Uranium 238	U-238	U		250		U	GAM
Uranium 235	15117-96-1	U		5.8		U	GAM

105-DR FSB-Concrete

Jr
1/18/00

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 15

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/07/99</u>

000010

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0475

N907145-02

BOWOYO

- DATA SHEET

SDG <u>7166</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0475</u>
Contact <u>L.A. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N907145-02</u>	Client sample id <u>BOWOYO</u>	
Dept sample id <u>7166-002</u>	Location/Matrix <u>105-DR</u>	<u>SOLID</u>
Received <u>07/23/99</u>	Collected <u>07/19/99 10:45</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-076-01</u>	<u>B99-076</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	8.09	0.19	0.085	400	J	H
Carbon 14	14762-75-5	961	12	5.0	50		C
Technetium 99	14133-76-7	0.438	0.35	0.66	15	U	TC
Uranium 233/234	U-233/234	1.37	0.22	0.054	1.0		U
Uranium 235	15117-96-1	0.059	0.051	0.065	1.0	U	U
Uranium 238	U-238	1.21	0.20	0.054	1.0		U
Plutonium 238	13981-16-3	6.63	0.52	0.063	1.0		PU
Plutonium 239/240	PU-239/240	240	15	0.027	1.0	B	PU
Nickel 63	13981-37-8	11900	120	8.1	30		NI_L
Americium 241	14596-10-2	72.0	14	0.30	1.0		AM
Total Strontium	SR-RAD	1980	4.7	0.17	1.0	B	SR
Potassium 40	13966-00-2	U		11		U	GAM
Barium 133	13981-41-4	U		3.0		UX	GAM
Cobalt 60	10198-40-0	596	3.3	1.8	0.050		GAM
Cesium 137	10045-97-3	5140	7.0	2.6	0.10		GAM
Europium 152	14683-23-9	2810	10	9.7	0.10		GAM
Europium 154	15585-10-1	518	7.1	6.2	0.10		GAM
Europium 155	14391-16-3	21.5	4.3	6.3	0.10		GAM
Radium 226	13982-63-3	U		4.7	0.10	U	GAM
Radium 228	15262-20-1	U		9.9	0.20	U	GAM
Thorium 228	14274-82-9	U		3.3		U	GAM
Thorium 232	TH-232	U		9.9		U	GAM
Americium 241	14596-10-2	119	5.5	7.5			GAM
Uranium 238	U-238	U		340		U	GAM
Uranium 235	15117-96-1	U		7.0		U	GAM

105-DR FSB-Concrete

pu
11/18/00

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 16

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/07/99</u>

000011

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0475 is composed of two solid samples designated under SAF No. B99-076 with a Project Designation of : 105-DR FSB-Concrete.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on August 19, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

The RPD in the duplicate result and the original was 28%, greater than the 3 sigma total limit of 22%. The blank sample indicated slight cross contamination from the high activity of the samples.

2.3 Americium-241 Analyses

No problems were encountered during the course of the analyses although all client samples, the duplicate and the LCS sample were recounted.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses although all client samples and the duplicate were recounted.

2.5 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses, although sample BOWOX9 was recounted.

2.7 Carbon-14 Analyses

The RPD in the duplicate result and the original was 23%, slightly greater than the 3 sigma total limit of 22%.

2.8 Tritium Analyses

No problems were encountered during the course of the analyses.

2.9 Technetium-99 Analyses



000013

The RPD in the duplicate result and the original was 59%, slightly greater than the 3sigma total limit of 58%.

000014

Collector Fahlberg/Porter	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K	Data Turnaround 15 Days
Project Designation 105-DR FSB - Concrete	Sampling Location 105-DR	Field Logbook No. EL 1281	SAF No. B99-076		
Ice Chest No. ERC 99-005	Offsite Property No.	Method of Shipment Fed Ex			
Shipped To TMA/RECRA RS 7-19-99		Bill of Lading/Air Bill No. COA R105D4 2870			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None							
	Type of Container	aG	aG	aG							
	No. of Container(s)	1	1	1							
	Special Handling and/or Storage	Volume	60mL	60mL	120mL						
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See Item (1) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time								
BOW0X9	Other Solid	7-19-99	1015			X					tricta BOW0Y4
BOW0Y0	Other Solid	7-19-99	1045			X					BOW0Y5
BOW0Y1	Other Solid	7-19-99									
BOW0Y2	Other Solid	7-19-99									
BOW0Y3	Other Solid	7-19-99									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Date/Time
Relinquished By R. Fahlberg	Received By Ref 2-C	7-19-99 1700	7-19-99 1700
Relinquished By Ref 2-C	Received By R. Fahlberg	7-22-99 0800	7-22-99 0800
Relinquished By R. Fahlberg	Received By Fed Ex	7-22-99 1330	7-22-99 1330
Relinquished By Fed Ex	Received By TNU M. Goldenberg	7-23-99 10:00	7-23-99 10:00

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) | Isotopic Plutonium | Isotopic Uranium | Americium-241 | Strontium-89,90 - Total SH | Technetium-99 | Nickel-63 | Carbon-14 | Tritium - H3

Matrix *

- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

Appendix 5

Data Validation Supporting Documentation

000016

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	OSDR FSB Concrete		DATA PACKAGE: H0475		
VALIDATOR:	LAB: TNV		DATE: 10/7/99		
CASE:			SDG: H0475		
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input checked="" type="checkbox"/> Strontium-80	<input checked="" type="checkbox"/> Technetium-88	<input type="checkbox"/> Alpha Spectroscopy	<input checked="" type="checkbox"/> Gamma Spectroscopy	
<input type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input checked="" type="checkbox"/> Tritium	<input checked="" type="checkbox"/> C14	<input checked="" type="checkbox"/> MW	
SAMPLES/MATRIX	BOWOX7		BOWOYO		
	Saled				

1. Completeness N/A
 Technical verification forms present? Yes No N/A
 Comments: _____

2. Initial Calibration N/A
 Instruments/detectors calibrated within one year of sample analysis? Yes No N/A
 Initial calibration acceptable? Yes No N/A
 Standards NIST traceable? Yes No N/A
 Standards Expired? Yes No N/A
 Comments: _____

3. Continuing Calibration N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards NIST traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Comments: _____

4. Blanks N/A

Method blank analyzed? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

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

Field blank results acceptable? Yes No N/A

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

Transcription/Calculation Errors? Yes No N/A

Comments: ^{ok det + over} DU 239 ^{ok} SR-90 // COGO CS137 EU152/154/155

Am 241 (gas) U238 (gas) U235 ~~gas~~ over TDL

NO qual req.

5. Matrix Spikes N/A

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? Yes No N/A

Spike source expired? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: IR

6. Laboratory Control Samples N/A

LCS analyzed? Yes No N/A

LCS recoveries acceptable? Yes No N/A

LCS traceable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: U233/34 J 82% vs 85% 30

7. Chemical Recovery N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? Yes No N/A

Chemical carrier expired? Yes No N/A

Transcription/Calculation errors? Yes No N/A

Comments: _____

8. Duplicates N/A

Duplicates Analyzed? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: ~~IC 99 57% J~~

C14 23%

AK

9. Field QC Samples N/A
- Field duplicate sample(s) analyzed? ~~Yes~~ No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split sample(s) analyzed? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Performance audit sample(s) analyzed? Yes No N/A
- Performance audit sample results acceptable? Yes No N/A

Comments: _____

10. Holding Times

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

Comments: _____

11. Results and Detection Limits (Levels D & E) N/A

- Results reported for all required sample analyses? Yes No N/A
- Results supported in raw data? Yes No N/A
- Results Acceptable? Yes No N/A
- Transcription/Calculation errors? Yes No N/A
- MDA's meet required detection limits? Yes No N/A
- Transcription/calculation errors? Yes No N/A

Comments: ~~CS137~~ all ~~Am 241 (g)~~ U235 (g) ~~U238 (g)~~ Nosh
