

Date: 17 October 2000
 To: Bechtel Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 105-F/DR Phase III Below-grade Areas Sampling and Analysis - Concrete
 Subject: PCB - Data Package No. H0958-RLN (SDG No. H0958)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0958-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
BOYWJ9	8/1/00	Solid	C	PCBs by 8082
BOYWK0	8/1/00	Solid	C	PCBs by 8082
BOYWK1	8/1/00	Solid	C	PCBs by 8082
BOYWK2	8/1/00	Solid	C	PCBs by 8082
BOYWK3	8/1/00	Solid	C	PCBs by 8082
BOYWK4	8/1/00	Solid	C	PCBs by 8082
BOYWK5	8/1/00	Solid	C	PCBs by 8082
BOYWK6	8/1/00	Solid	C	PCBs by 8082

Data validation was conducted in accordance with the BHI validation statement of work and "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

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DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **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 control limits of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". 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.

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Due to a matrix spike duplicate recovery of 34%, all PCB results were qualified as estimates and flagged "J".

Due to the samples not being analyzed with the MS/MSD, all PCB results in samples BOYWK1, BOYWK2, BOYWK4, BOYWK5, and BOYWK6 were qualified as estimates and flagged "J".

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.

All 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.

Due to an MS/MSD RPD of 66%, all PCB results were qualified as estimates and flagged "J".

Field Duplicate Samples

One pair of field duplicate samples (samples BOYWK5/BOYWK6) were submitted to RLN for analysis. The duplicate sample results were compared using the validation guidelines for determining the RPD between a sample and its duplicate. The RPD for aroclor-1260 was outside QC limits (35%). Under the

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BHI statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100-D Area TDLs or the CRDL if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. The reported detection limit was exceeded for following: Undetected analytes in samples BOYWK1, BOYWK2, and BOYWK6; and aroclor-1221 in samples BOYWK4 and BOYWK5. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H0958-RLN (SDG No. H0958) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike duplicate recovery of 34%, all PCB results were qualified as estimates and flagged "J". Due to the samples not being analyzed with the MS/MSD, all PCB results in samples BOYWK1, BOYWK2, BOYWK4, BOYWK5, and BOYWK6 were qualified as estimates and flagged "J". Due to an MS/MSD RPD of 66%, all PCB 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 associated with the methods.

The reported detection limit was exceeded for following: Undetected analytes in samples BOYWK1, BOYWK2, and BOYWK6; and aroclor-1221 in samples BOYWK4 and BOYWK5. Under the BHI statement of work, no qualification is required.

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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*.

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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).

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Appendix 2

Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0958	REVIEWER: TLI	DATE: 10/17/00	PAGE_1_OF_1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	BOYWK1, BOYWK2, BOYWK4, BOYWK5, BOYWK6	Not analyzed with MS/MSD
All	J	All	RPD
All	J	All	MSD percent recovery

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recre LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/13/00 19:53

RFW Batch Number: 0008L079

Client: TNU-HANFORD B00-013

Work Order: 10985001001 Page: 1

Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
D.F.:	1.00	1.00	1.00	1.00	5.00	5.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene	82 %	62 %	68 %	75 %	48 %	38 %	
Decachlorobiphenyl	86 %	73 %	65 %	90 %	98 %	89 %	
Aroclor-1016	32 U J	33 U	56 U	33 U J	170 U J	160 U J	
Aroclor-1221	64 U	66 U	110 U	66 U	330 U	330 U	
Aroclor-1232	32 U	33 U	56 U	33 U	170 U	160 U	
Aroclor-1242	32 U	33 U	56 U	33 U	170 U	160 U	
Aroclor-1248	35 U	80 U	77 U	33 U	170 U	160 U	
Aroclor-1254	32 U	78 %	34 %	33 U	170 U	160 U	
Aroclor-1260	160 U	220 U	170 U	200 U	380 U	540 U	

500

10000

Sample Information	RFW#:	005	006	007	008	00LE0947-MB1	00LE0947-MB1
Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
D.F.:	1.00	2.00	2.00	5.00	1.00	1.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene	65 %	75 %	80 %	80 %	58 %	80 %	
Decachlorobiphenyl	78 %	86 %	92 %	111 %	77 %	85 %	
Aroclor-1016	33 U J	67 U J	69 U J	170 U J	33 U	33 U	
Aroclor-1221	66 U	130 U	140 U	340 U	67 U	67 U	
Aroclor-1232	33 U	67 U	69 U	170 U	33 U	33 U	
Aroclor-1242	33 U	67 U	69 U	170 U	33 U	33 U	
Aroclor-1248	65 U	67 U	69 U	170 U	33 U	33 U	
Aroclor-1254	33 U	67 U	69 U	170 U	33 U	90 %	
Aroclor-1260	190 U	150 U	140 U	200 U	33 U	33 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

10/11/00

Handwritten signature

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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OCT 12 '00 02:30PM BHI S&D MANAGEMENT 509 372 9487

P. 1/9



**RECRA
ENVIRONMENTAL
INC.**

Chemical and Environmental Measurement Information



**Recra LabNet Philadelphia
Analytical Report**

Client: TNU HANFORD B00-013
RFW#: 0008L079
SDG/SAF#: H0958/B00-013

W.O.#: 10985-001-001-9999-00
Date Received: 08-03-00

PCB

The set of samples consisted of eight (8) solid samples collected on 08-01-00.

The samples and their associated QC samples were extracted on 08-14-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-01,05-00. 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 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 initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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 9 pages.

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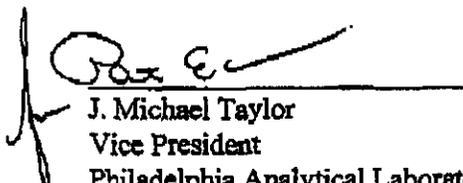
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OCT 12 '00 02:30PM BHI S&D MANAGEMENT 509 372 9487

P.2/9

10. Patterns for Aroclors 1248, 1254 and 1260 were identified in these samples. The reported Aroclor(s) was/were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.

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



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

pdf:group\data/gms108L-079.pdf

09-15-00
Date



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0022

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-013-239		Page 1 of 1		
Collector T. Johansen		Company Contact Jason Adler		Telephone No. 373-4316		Project Coordinator TRENT, SJ		Price Code 9L		
Project Designation 105-FDR Phase III Below-grade Areas Sampling and Analy		Sampling Location 105-F		SAF No. B00-013		Air Quality <input type="checkbox"/>		Data Turnaround 21 Days		
Ice Chest No. ERC 99.058 (20F3)		Field Logbook No. EL-1516		COA R105F2280C		Method of Shipment Federal Express				
Shipped To TMA/RECRA RECRA		OnSite Property No. A000261		Bill of Lading/Air Bill No. 42387953 7846						
POSSIBLE SAMPLE HAZARDS/REMARKS NONE				Preservation	Cool #C	None				
				Type of Container	40	40				
				No. of Container(s)	1	1				
				Volume	60mL	60mL				
Special Handling and/or Storage 100026				PCBs - 800	Soil (1) in Special Instruction					
SAMPLE ANALYSIS										
Sample No.	Matrix	Sample Date	Sample Time							
BOYWK9	OTHER SOLID	8-1-00	0740	X	X					
BOYWK0	OTHER SOLID	8-1-00	0752	X	X					
BOYWK1	OTHER SOLID	8-1-00	0803	X	X					
BOYWK2	OTHER SOLID	8-1-00	0810	X	X					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix		
Relinquished By [Signature]		Date/Time 8:10		Received By R. Thoma		Date/Time 8:10 1230		(1) ICP Metals - 6010A (Supernat) (Chromium, Lead); Mercury - 7471 - (CV) 00082079 2.4"		
Relinquished By R. Thoma		Date/Time 8:20 1430		Received By FED EX		Date/Time 8:30 1045				
Relinquished By Fed Ex		Date/Time 8:30 1045		Received By [Signature]		Date/Time 8:30 1045				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
LABORATORY SECTION		Received By		Title				Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time		

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-013-240		Page 1 of 1		
Collector T. Johansen		Company Contact Jason Adler		Telephone No. 373-4316		Project Coordinator TRENZ, SJ		Price Code 9L		
Project Designation 105-F/DR Phase III Below-grade Areas Sampling and Analy		Sampling Location 105-F		SAF No. B00-013		Air Quality <input type="checkbox"/>		Data Turnaround 21 Days		
Ice Chest No. ERC99-058 (20F3)		Field Logbook No. EL-1516		COA R105F2200C		Method of Shipment Federal Express		BHI of Loading Air BHI No. 42357953-7846		
Shipped To TMA/RECRA RECLA		Offsite Property No. A000261								
POSSIBLE SAMPLE HAZARDS/REMARKS None				Preservation	Cool-FC	None				
Special Handling and/or Storage				Type of Container	aG	aC				
				No. of Container(s)	1	1				
				Volume	60mL	60mL				
SAMPLE ANALYSIS				PCNs - 5082	See Note (1) for Special Instructions					
Sample No.		Matrix *		Sample Date		Sample Time				
BOYWK3		OTHER SOLID		8-1-00		0821		X X		
BOYWK4		OTHER SOLID		8-1-00		0830		X X		
BOYWK5		OTHER SOLID		8-1-00		0842		X X		
BOYWK6		OTHER SOLID		8-1-00		0842		X X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By M. Johnson		Date/Time 8-1-00 0830		Received By R. Johnson		Date/Time 8-1-00 1230		(1) ICP Metals - 6910A (Supernova) (Chromium, Lead); Mercury - 3411 - (CV)		
Relinquished By R. Johnson		Date/Time 8-2-00 1430		Received By F. E. S. W.		Date/Time				
Relinquished By F. E. S. W.		Date/Time 8-3-00/0945		Received By J. Johnson		Date/Time 8-3-00/0945				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
LABORATORY SECTION		Received By		Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time				

Appendix 5
Data Validation Supporting Documentation

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PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	10SD/F <i>concrete</i>		DATA PACKAGE: <i>H0958</i>		
VALIDATOR:	<i>TLI</i>	LAB: <i>RECKA</i>	DATE: <i>10/13/00</i>		
CASE:	SDG: <i>H0958</i>				
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/80	<input type="checkbox"/> SW-846 8080	<input type="checkbox"/> SW-846 8081	<input checked="" type="checkbox"/> <i>8082</i>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX	<i>BOYWK9</i>	<i>BOYWK0</i>	<i>BOYWK1</i>	<i>BOYWK2</i>	
	<i>BOYWK3</i>	<i>BOYWK4</i>	<i>BOYWK5</i>	<i>BOYWK6</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: ~~kl kr~~

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**

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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

N/A
N/A
N/A
N/A
N/A
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: K1 K2 K4 K5 K6 - not analyzed
w/ MS/MSD T all
MSD 3470 - T all

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PESTICIDE/PCB DATA VALIDATION CHECKLIST

6. 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: 66% RPD MS/MSD
FD 35% RPD 12%

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: all undetected over

AG

Date: 17 October 2000
 To: Bechtel Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 105-F/DR Phase III Below-grade Areas Sampling and Analysis - Concrete
 Subject: Inorganics - Data Package No. H0958-RLN (SDG No. H0958)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0958-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.

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BOYWK0	8/1/00	Solid	C	See note 1
BOYWK1	8/1/00	Solid	C	See note 1
BOYWK2	8/1/00	Solid	C	See note 1
BOYWK3	8/1/00	Solid	C	See note 1
BOYWK4	8/1/00	Solid	C	See note 1
BOYWK5	8/1/00	Solid	C	See note 1
BOYWK6	8/1/00	Solid	C	See note 1

1- ICP metals - 6010 Supertrace (lead, chromium); mercury by 7471A.

Data validation was conducted in accordance with the BHI validation statement of work and "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:

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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: Soil samples must be analyzed within six (6) months for ICP metals and 28 days for mercury.

All holding times were acceptable.

- **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

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30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike results were acceptable.

- **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%. 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 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".

- Due to an RPD of 37%, all lead results were qualified as estimates and flagged "J".

- All other laboratory duplicate results were acceptable.

- Field Duplicates

- One pair of field duplicate samples (BOYWK5/BOYWK6) were submitted for analysis. The samples were compared using the same criteria as laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the CRDLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific CRDL.

- **Completeness**

Data package No. H0958-RLN (SDG No. H0958) was submitted for validation and verified for completeness. The completion percentage was 100%.

0000C3

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD of 37%, all lead 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 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*.

000004

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a 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).

000006

Appendix 2

Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H0958	REVIEWER: TLI	DATE: 10/17/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Lead	J	All	RPD

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Source Address - Knoxville

INORGANICS DATA SUMMARY REPORT 09/25/00

CLIENT: TNO-INDUSTRIAL 800-013
WORK ORDER: 10908-001-001-9999-08

LABORATORY: 91 90000079

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REMARKS	DETECTION LIMIT	INTERFERING FACTOR
-001	B07W03	Chromium, Total	23.1	MG/100		0.09	1.0
		Mercury, Total	6.2	MG/100		0.02	1.0
		Lead, Total	0.2 J	MG/100		0.20	1.0
-002	B07W03	Chromium, Total	36.8	MG/100		0.09	1.0
		Mercury, Total	0.08	MG/100		0.02	1.0
		Lead, Total	4.2 J	MG/100		0.20	1.0
-003	B07W03	Chromium, Total	29.2	MG/100		0.09	1.0
		Mercury, Total	0.07	MG/100		0.02	1.0
		Lead, Total	0.1 J	MG/100		0.20	1.0
-004	B07W03	Chromium, Total	27.8	MG/100		0.09	1.0
		Mercury, Total	0.17	MG/100		0.02	1.0
		Lead, Total	2.0 J	MG/100		0.20	1.0
-005	B07W03	Chromium, Total	16.4	MG/100		0.09	1.0
		Mercury, Total	0.09	MG/100		0.02	1.0
		Lead, Total	0.5 J	MG/100		0.20	1.0
-006	B07W03	Chromium, Total	16.2	MG/100		0.09	1.0
		Mercury, Total	0.12	MG/100		0.02	1.0
		Lead, Total	7.4 J	MG/100		0.20	1.0
-007	B07W03	Chromium, Total	29.2	MG/100		0.09	1.0
		Mercury, Total	0.07	MG/100		0.02	1.0
		Lead, Total	7.6 J	MG/100		0.20	1.0
-008	B07W03	Chromium, Total	21.8	MG/100		0.09	1.0
		Mercury, Total	0.09	MG/100		0.02	1.0
		Lead, Total	7.8 J	MG/100		0.20	1.0

R 10/13/00

008

000011

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012



Chemical and Environmental Measurement Information



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B00-013
RFW# : 0008L079
SDG/SAP# : H0958/B00-013

W.O.# : 10985-001-001-9999-00
Date Received: 08-03-00

METALS CASE NARRATIVE

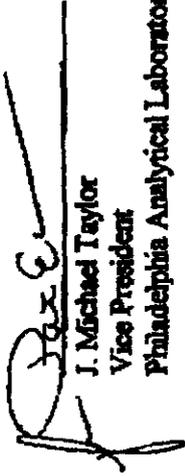
- 1. This narrative covers the analyses of 8 solid samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. 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 samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis for Lead was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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 14 pages 000013

OCT 12 '00 02:25PM BHI S&D MANAGEMENT 505 372 9487

P.2/14

- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 J. Michael Taylor
 Vice President
 Philadelphia Analytical Laboratory

nlm004-079

08-28-00
 Date



000014

~~042~~

Appendix 5

Data Validation Supporting Documentation

000017

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	10SP/R concrete		DATA PACKAGE: H0958		
VALIDATOR:	TLI	LAB: Recept	DATE: 10/13/00		
CASE:	SDG: H0958				
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/CP	<input type="checkbox"/> CLP/GFAA	<input type="checkbox"/> CLP/Mg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/CP	<input type="checkbox"/> SW-846/GFAA	<input checked="" type="checkbox"/> SW-846/Mg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX	BOYWK9	BOYWK0	BOYWK1	BOYWK2	
	BOYWK3	BOYWK4	BOYWK4	BOYWK5	
	BOYWK6				

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: _____

~~A-12~~ 000018

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: CR in prep blank - all samples > 5%

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: _____

ADG 000019

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: ph 37020 Jall

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: all detect

OCT 12 '00 02:26PM BHI S&D MANAGEMENT 509 372 9487

P.6/14

Bechtel LabNet - Louisville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/25/00

CLIENT: TRU-STANFORD 900-013

REC'D LOT #: 00001079

WORK ORDER: 10900-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1494-MB1	Chromium, Total	0.10	MG/ML	0.09	1.0
		Lead, Total	0.21	MG/ML	0.21	1.0
BLANK1	90C0266-MB1	Mercury, Total	0.02	MG/ML	0.02	1.0

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OCT 12 '00 02:26PM BHI S&D MANAGEMENT 509 372 9487

Secure Labels - Knoxville

TRANSMITTED ACCOUNT REPORT 00/25/00

MEMO LOT #: 00002879

CUSTOMER: WFO-BUFFORD 800-013
WORK ORDER: 19999-001-001-5555-00

SAMPLE	TYPE ID	MARKETS	APPLIED SAMPLE	INITIAL	APPLIED AMOUNT	RECOVERY	DILUTION
-001	B07A079	XXXXXXXXXXXXXXXXXXXX	39.6	23.1	19.3	86.1	1.0
		Granular, Total	9.29	0.1	0.56	130.4	1.0
		Moisture, Total	49.3	0.2	47.8	85.4	1.0

Handwritten mark

000022

OCT 12 '00 02:26PM BHI S&D MANAGEMENT 509 372 9487

P.8/14

Beers Lab&S - LenoVille

INORGANICS PRECISION REPORT 08/28/00

ANALYST: JMW-MANFORD 800-813

WORK ORDER: 10945-001-001-9999-09

SAMPLE	SITE ID	ANALYTE	UNIT	RESULTS	REFERENCE RFD	REMARKS	DILUTION FACTOR (REF)
-0018EP	8079079	Chromium, Total	mg/L	23.1	25.3	0.06	1.0
		Mercury, Total	ug/L	0.1	0.11	0.7	3.0
		Lead, Total	ug/L	8.2	12.0	37.0	1.0

002

000023

Duncan, Jeanette M

From: Duncan, Jeanette M
Sent: Wednesday, November 01, 2000 4:21 PM
To: 'bchristian@techlawinc.com'
Subject: Need additional things changed on H0950 & H0958 and other stuff

Bruce,

Rich needs the following changes made:

H0958: PCBs - Page 2 Blanks - Change to blanks did meet CRDL.

H0950: Rad - Page 3 & 4 - sample number B0YWB7 - change to B0YXB7 and sample number BOXWC6 needs to be changed to B0YXC6.

Please Note: H0924 and H0943 are done with review and complete.

Also Please Note: H0859 - Claudes comment #1 - there is a new guidance document on this project and we failed to get this to you. So, you are going to have to change the referenced document to the document Claude referenced within his comment. I am in the process of getting this document printed from our wonderful document control system, will get it to Rich to review for possible impacts to the validation that you just completed, and then get a copy to you. I will keep you posted as to when we will ask you to change the references in your document.

Oh, and did you get the efax I sent you yesterday - I set validation for the 116-H-7 site.

And, have a wonderful rest of the day.

Jeanette

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
047	MEMORY TX		12087238944	09/09	OK

ERRORS

- 1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION

Review Comment Record (RCR)

5. Document Number(s)/Title(s)
SDG No. H933

6. Program/Project/
Building Number
100-D Areas - F011
Protocol, Waste Sites
116-D-1A

17. Consent Submittal Approval:

10. Agreement with indicated co

Organization Manager (Optional)

Date

Auth

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)
1	Radiochemistry: OK No Comments.
2	Inorganic: OK No Comments.
3	
4	
5	

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Wednesday, October 18, 2000 11:53 AM
To: Duncan, Jeanette M
Subject: Review of Validation Reports for Data Package SDG H0958

Jeneatte,

The following are comments from review of the validation reports for data package SDG H0958

PCBs - Pg 2 Blanks, Pg 4 Analytical Detection Limits and Minor Deficiencies - The detection limit requirement of 0.1 mg/Kg appears to have been misinterpreted as 0.1 ug/Kg (units results are reported in). Most of the samples meet the detection limit requirements. Re-review detection limit criteria and revise sections as necessary.

Inorganics - No Comments

Rich Weiss

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Wednesday, October 18, 2000 11:53 AM
To: Duncan, Jeanette M
Subject: Review of Validation Reports for Data Package SDG H0958

Jeanette,

The following are comments from review of the validation reports for data package SDG H0958

PCBs ^{ok} Pg 2 Blanks, Pg 4 Analytical Detection Limits and Minor Deficiencies - The detection limit requirement of 0.1 mg/Kg appears to have been misinterpreted as 0.1 ug/Kg (units results are reported in). Most of the samples meet the detection limit requirements. Re-review detection limit criteria and revise sections as necessary.

Inorganics - No Comments

Not fix



Rich Weiss

Date: 17 October 2000
 To: Bechtel Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 105-F/DR Phase III Below-grade Areas Sampling and Analysis - Concrete
 Subject: PCB - Data Package No. H0958-RLN (SDG No.21 H0958)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0958-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
BOYWJ9	8/1/00	Solid	C	PCBs by 8082
BOYWK0	8/1/00	Solid	C	PCBs by 8082
BOYWK1	8/1/00	Solid	C	PCBs by 8082
BOYWK2	8/1/00	Solid	C	PCBs by 8082
BOYWK3	8/1/00	Solid	C	PCBs by 8082
BOYWK4	8/1/00	Solid	C	PCBs by 8082
BOYWK5	8/1/00	Solid	C	PCBs by 8082
BOYWK6	8/1/00	Solid	C	PCBs by 8082

Data validation was conducted in accordance with the BHI validation statement of work and "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: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

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

All holding times were acceptable.

- **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 although the CRDL was exceeded for all analytes.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike analyses are performed in duplicate and must be within control limits of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Nondetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ".

0000C2

Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike duplicate recovery of 34%, all PCB results were qualified as estimates and flagged "J".

Due to the samples not being analyzed with the MS/MSD, all PCB results in samples BOYWK1, BOYWK2, BOYWK4, BOYWK5, and BOYWK6 were qualified as estimates and flagged "J".

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.

All 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.

Due to an MS/MSD RPD of 66%, all PCB results were qualified as estimates and flagged "J".

0000C3

Field Duplicate Samples

One pair of field duplicate samples (samples BOYWK5/BOYWK6) were submitted to RLN for analysis. The duplicate sample results were compared using the validation guidelines for determining the RPD between a sample and its duplicate. The RPD for aroclor-1260 was outside QC limits (35%). Under the BHI statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100-D Area TDLS or the CRDL if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. The reported detection limit was exceeded for following: Undetected analytes in samples BOYWK1, BOYWK2, and BOYWK6; and aroclor-1221 in samples BOYWK4 and BOYWK5. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H0958-RLN (SDG No. H0958) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike duplicate recovery of 34%, all PCB results were qualified as estimates and flagged "J". Due to the samples not being analyzed with the MS/MSD, all PCB results in samples BOYWK1, BOYWK2, BOYWK4, BOYWK5, and BOYWK6 were qualified as estimates and flagged "J". Due to an MS/MSD RPD of 66%, all PCB 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 associated with the methods.

The reported detection limit was exceeded for following: Undetected analytes in samples BOYWK1, BOYWK2, and BOYWK6; and aroclor-1221 in samples BOYWK4 and BOYWK5. Under the BHI statement of work, no qualification is required.

0000C4

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*.

000005