Date: 24 April 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-H Areas - Full Protocol - Waste Sites 1607-H2 and 1607-H4
Subject: Semivolatiles - Data Package No. H0754-RLN (SDG No. H0754)

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INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0754-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
B0X4P8	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4R3	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4R4	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4R5	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4R6	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T3	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T4	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T5	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T6	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T7	2/16/00	Soil	C	Semi-volatiles by EPA 8270B
B0X4T8	2/16/00	Soil	C	Semi-volatiles by EPA 8270B

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

All holding times were met.

- **Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

<u>Equipment Blank</u>

One equipment blank (B0X4T8) was submitted for analysis. bis(2-Ethylhexyl)phthalate was detected in the equipment blank. All other equipment blank results were acceptable.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 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". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to an MSD recovery of 67%, all phenol associated compounds (phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, dimethyl phthalate, diethyl pyhthlalate, di-n-butyl phthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, isopherone and dibenzofuran) were qualified as estimates and flagged "J/UJ".

All other accuracy results were acceptable.

Surrogate Recovery

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

All sample 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 by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD RPD results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the CRQLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels for undetected analytes were above the analyte specific CRQL in all instances except for the following two cases: the requirement was met for 2-nitrophenol in all cases; the requirements were met in sample B0X4T8 for all analytes except 2,4,5-trichlorphenol, 2-nitroaniline, 3-nitroanaline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol and pentachlorophenol. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H0754 was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an MSD recovery of 67%, all phenol associated compounds (phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, dimethyl phthalate, diethyl pyhthlalate, di-n-butyl phthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, isopherone and dibenzofuran) were qualified as estimates and flagged "J/UJ". 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.

All reported laboratory detection levels for undetected analytes were above the analyte specific CRQL in all instances except for the following two cases: the requirement was met for 2-nitrophenol in all cases; the requirements were met in sample B0X4T8 for all analytes except 2,4,5-trichlorphenol, 2-nitroaniline, 3-nitroanaline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol and pentachlorophenol. 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-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a 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 usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H0754	REVIEWER: TLI	DATE: 4/24/00	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, dimethyl phthalate, diethyl pyhthlalate, di-n-butyl phthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, isopherone, dibenzofuran	J/UJ	All	MSD recovery

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: RECRA LabNet															
Case:	SDG: H0754														
Sample Number		B0X4P8		B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T3		B0X4T4	
Location		H2		H2		H2		H2		H2		H4		H4	
Remarks															
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00	
Extraction Date		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00	
Analysis Date		3/8/00		3/6/00		3/6/00		3/6/00		3/7/00		3/6/00		3/6/00	
Semivolatile (8270B)	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
bis(2-Chloroethyl)ether	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2-Chlorophenol	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
1,3-Dichlorobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
1,4-Dichlorobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
1,2-Dichlorobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2-Methylphenol	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
2,2'-oxybis(1-Chloropropane)	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
4-Methylphenol	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
N-Nitroso-di-n-propylamine	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Hexachloroethane	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Nitrobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Isophorone	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
2-Nitrophenol	660	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,4-Dimethylphenol	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
bis(2-Chloroethoxy)methane	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,4-Dichlorophenol	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
1,2,4-Trichlorobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Naphthalene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
4-Chloroaniline	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Hexachlorobutadiene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
4-Chloro-3-methylphenol	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2-Methylnaphthalene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Hexachlorocyclopentadiene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,4,6-Trichlorophenol	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,4,5-Trichlorophenol	330	870	U	960	U	860	U	870	U	900	U	900	U	880	U
2-Chloronaphthalene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2-Nitroaniline	330	870	U	960	U	860	U	870	U	920	U	900	U	880	U
Dimethylphthalate	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
Acenaphthylene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,6-Dinitrotoluene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U

000011

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: RECRA LabNet															
Case:	SDG: H0754														
Sample Number		B0X4P8		B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T3		B0X4T4	
Location		H2		H2		H2		H2		H2		H4		H4	
Remarks															
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00	
Extraction Date		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00		3/1/00	
Analysis Date		3/8/00		3/6/00		3/6/00		3/6/00		3/7/00		3/6/00		3/6/00	
Semivolatile (8270B)	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	330	870	U	960	U	860	U	870	U	900	U	900	U	880	U
Acenaphthene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
2,4-Dinitrophenol	825	870	U	960	U	860	U	870	U	900	U	900	U	880	U
4-Nitrophenol	660	870	U	960	U	860	U	870	U	900	U	900	U	880	U
Dibenzofuran	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
2,4-Dinitrotoluene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Diethylphthalate	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
4-Chlorophenyl-phenyl ether	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Fluorene	330	350	U	380	U	340	U	350	U	900	U	360	U	350	U
4-Nitroaniline	330	870	U	960	U	860	U	870	U	900	U	900	U	880	U
4,6-Dinitro-2-methylphenol	330	870	U	960	U	860	U	870	U	900	U	900	U	880	U
N-Nitrosodiphenylamine	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
4-Bromophenyl-phenyl ether	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Hexachlorobenzene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Pentachlorophenol	330	870	U	960	U	860	U	870	U	900	U	900	U	880	U
Phenanthrene	330	350	U	380	U	340	U	350	U	360	U	120		51	
Anthracene	330	350	U	380	U	340	U	350	U	900	U	33		350	U
Carbazole	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Di-n-butylphthalate	330	350	UJ	92	J	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
Fluoranthene	330	350	U	380	U	340	U	350	U	360	U	240		63	
Pyrene	330	350	U	380	U	340	U	350	U	360	U	270		62	
Butylbenzylphthalate	330	350	UJ	380	UJ	340	UJ	350	UJ	360	UJ	360	UJ	350	UJ
3,3'-Dichlorobenzidine	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Benzo(a)anthracene	330	350	U	380	U	340	U	350	U	360	U	170		42	
Chrysene	330	350	U	380	U	340	U	350	U	360	U	180		41	
bis(2-Ethylhexyl)phthalate	330	350	UJ	24	J	20	J	350	UJ	360	UJ	360	UJ	350	UJ
Di-n-octylphthalate	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Benzo(b)fluoranthene	330	350	U	380	U	340	U	350	U	360	U	170		350	U
Benzo(k)fluoranthene	330	350	U	380	U	340	U	350	U	360	U	190		350	U
Benzo(a)pyrene	330	350	U	380	U	340	U	350	U	360	U	180		350	U
Indeno(1,2,3-cd)pyrene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Dibenz(a,h)anthracene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U
Benzo(g,h,i)perylene	330	350	U	380	U	340	U	350	U	360	U	360	U	350	U

000012

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: RECRA LabNet															
Case:	SDG: H0754														
Sample Number		B0X4T5		B0X4T6		B0X4T7		B0X4T8							
Location		H4		H4		H4		H4							
Remarks								E. Blank							
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00							
Extraction Date		3/1/00		3/1/00		3/1/00		3/1/00							
Analysis Date		3/6/00		3/6/00		3/7/00		3/6/00							
Semivolatile (8270B)	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	360	UJ	370	UJ	360	UJ	330	UJ						
bis(2-Chloroethyl)ether	330	360	U	370	U	360	U	330	U						
2-Chlorophenol	330	360	U	370	U	360	U	330	U						
1,3-Dichlorobenzene	330	360	U	370	U	360	U	330	U						
1,4-Dichlorobenzene	330	360	U	370	U	360	U	330	U						
1,2-Dichlorobenzene	330	360	U	370	U	360	U	330	U						
2-Methylphenol	330	360	UJ	370	UJ	360	UJ	330	UJ						
2,2'-oxybis(1-Chloropropane)	330	360	U	370	U	360	U	330	U						
4-Methylphenol	330	360	UJ	370	UJ	360	UJ	330	UJ						
N-Nitroso-di-n-propylamine	330	360	U	370	U	360	U	330	U						
Hexachloroethane	330	360	U	370	U	360	U	330	U						
Nitrobenzene	330	360	U	370	U	360	U	330	U						
Isophorone	330	360	UJ	370	UJ	360	UJ	330	UJ						
2-Nitrophenol	660	360	U	370	U	360	U	330	U						
2,4-Dimethylphenol	330	360	UJ	370	UJ	360	UJ	330	UJ						
bis(2-Chloroethoxy)methane	330	360	U	370	U	360	U	330	U						
2,4-Dichlorophenol	330	360	U	370	U	360	U	330	U						
1,2,4-Trichlorobenzene	330	360	U	370	U	360	U	330	U						
Naphthalene	330	25		370	U	360	U	330	U						
4-Chloroaniline	330	360	U	370	U	360	U	330	U						
Hexachlorobutadiene	330	360	U	370	U	360	U	330	U						
4-Chloro-3-methylphenol	330	360	U	370	U	360	U	330	U						
2-Methylnaphthalene	330	360	U	370	U	360	U	330	U						
Hexachlorocyclopentadiene	330	360	U	370	U	360	U	330	U						
2,4,6-Trichlorophenol	330	360	U	370	U	360	U	330	U						
2,4,5-Trichlorophenol	330	900	U	920	U	900	U	840	U						
2-Chloronaphthalene	330	360	U	370	U	360	U	330	U						
2-Nitroaniline	330	900	U	920	U	920	U	840	U						
Dimethylphthalate	330	360	UJ	370	UJ	360	UJ	330	UJ						
Acenaphthylene	330	360	U	370	U	360	U	330	U						
2,6-Dinitrotoluene	330	360	U	370	U	360	U	330	U						

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: RECRA LabNet															
Case:	SDG: H0754														
Sample Number		B0X4T5		B0X4T6		B0X4T7		B0X4T8							
Location		H4		H4		H4		H4							
Remarks								E. Blank							
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00							
Extraction Date		3/1/00		3/1/00		3/1/00		3/1/00							
Analysis Date		3/6/00		3/6/00		3/7/00		3/6/00							
Semivolatile (8270B)	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	330	900	U	920	U	900	U	840	U						
Acenaphthene	330	360	U	370	U	36		330	U						
2,4-Dinitrophenol	825	900	U	920	U	900	U	840	U						
4-Nitrophenol	660	900	U	920	U	900	U	840	U						
Dibenzofuran	330	42	J	370	UJ	360	UJ	330	UJ						
2,4-Dinitrotoluene	330	360	U	370	U	360	U	330	U						
Diethylphthalate	330	360	UJ	370	UJ	360	UJ	330	UJ						
4-Chlorophenyl-phenyl ether	330	360	U	370	U	360	U	330	U						
Fluorene	330	93		370	U	30		330	U						
4-Nitroaniline	330	900	U	920	U	900	U	840	U						
4,6-Dinitro-2-methylphenol	330	900	U	920	U	900	U	840	U						
N-Nitrosodiphenylamine	330	360	U	370	U	360	U	330	U						
4-Bromophenyl-phenyl ether	330	360	U	370	U	360	U	330	U						
Hexachlorobenzene	330	360	U	370	U	360	U	330	U						
Pentachlorophenol	330	900	U	920	U	900	U	840	U						
Phenanthrene	330	1100		170		400		330	U						
Anthracene	330	280		37		88		330	U						
Carbazole	330	120		370	U	36		330	U						
Di-n-butylphthalate	330	360	UJ	370	UJ	360	UJ	330	UJ						
Fluoranthene	330	1300		290		530		330	U						
Pyrene	330	1200		280		570		330	U						
Butylbenzylphthalate	330	360	UJ	370	UJ	360	UJ	330	UJ						
3,3'-Dichlorobenzidine	330	360	U	370	U	360	U	330	U						
Benzo(a)anthracene	330	760		180		310		330	U						
Chrysene	330	800		200		330		330	U						
bis(2-Ethylhexyl)phthalate	330	32	J	27		360	U	41							
Di-n-octylphthalate	330	360	U	370	U	360	U	330	U						
Benzo(b)fluoranthene	330	720		170		220		330	U						
Benzo(k)fluoranthene	330	630		190		250		330	U						
Benzo(a)pyrene	330	670		200		280		330	U						
Indeno(1,2,3-cd)pyrene	330	360	U	370	U	180		330	U						
Dibenz(a,h)anthracene	330	360	U	370	U	360	U	330	U						
Benzo(g,h,i)perylene	330	360	U	370	U	200		330	U						

000014

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 03/08/00 12:55

RFW Batch Number: 0002L491 Client: TNU-HANFORD B99-042 Work Order: 10985001001 Page: 1a

	Cust ID:	B0X4T3		B0X4T3		B0X4T3		B0X4T4		B0X4T5		B0X4T6	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	88	%	87	%	93	%	81	%	87	%	74	%
	2-Fluorobiphenyl	85	%	85	%	85	%	82	%	82	%	79	%
	Terphenyl-d14	98	%	89	%	87	%	90	%	88	%	81	%
	Phenol-d5	78	%	76	%	69	%	77	%	75	%	68	%
	2-Fluorophenol	69	%	73	%	68	%	67	%	63	%	62	%
	2,4,6-Tribromophenol	87	%	94	%	87	%	95	%	88	%	83	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U J	73	%	67	%	350	U J	360	U J	370	U J
bis(2-Chloroethyl)ether		360	U	360	U	360	U	350	U	360	U	370	U
2-Chlorophenol		360	U	74	%	71	%	350	U	360	U	370	U
1,3-Dichlorobenzene		360	U	360	U	360	U	350	U	360	U	370	U
1,4-Dichlorobenzene		360	U	80	%	79	%	350	U	360	U	370	U
1,2-Dichlorobenzene		360	U	360	U	360	U	350	U	360	U	370	U
2-Methylphenol		360	U J	360	U	360	U	350	U J	360	U J	370	U J
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	350	U	360	U	370	U
4-Methylphenol		360	U J	360	U	360	U	350	U J	360	U J	370	U J
N-Nitroso-di-n-propylamine		360	U	118	%	107	%	350	U	360	U	370	U
Hexachloroethane		360	U	360	U	360	U	350	U	360	U	370	U
Nitrobenzene		360	U	360	U	360	U	350	U	360	U	370	U
Isophorone		360	U J	360	U	360	U	350	U J	360	U J	370	U J
2-Nitrophenol		360	U	360	U	360	U	350	U	360	U	370	U
2,4-Dimethylphenol		360	U J	360	U	360	U	350	U J	360	U J	370	U J
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	350	U	360	U	370	U
2,4-Dichlorophenol		360	U	360	U	360	U	350	U	360	U	370	U
1,2,4-Trichlorobenzene		360	U	82	%	85	%	350	U	360	U	370	U
Naphthalene		360	U	360	U	360	U	350	U	25	J	370	U
4-Chloroaniline		360	U	360	U	360	U	350	U	360	U	370	U
Hexachlorobutadiene		360	U	360	U	360	U	350	U	360	U	370	U
4-Chloro-3-methylphenol		360	U	86	%	78	%	350	U	360	U	370	U
2-Methylnaphthalene		360	U	360	U	360	U	350	U	360	U	370	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	350	U	360	U	370	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	350	U	360	U	370	U
2,4,5-Trichlorophenol		900	U	890	U	890	U	880	U	900	U	920	U

*= Outside of EPA CLP QC limits.

4/21/00

000015

RFW Batch Number: 0002L491 Client: TNU-HANFORD B99-042 Work Order: 10985001001 Page: 1b

Cust ID:	B0X4T3		B0X4T3		B0X4T3		B0X4T4		B0X4T5		B0X4T6	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	350	U	360	U	370	U
2-Nitroaniline	900	U	890	U	890	U	880	U	900	U	920	U
Dimethylphthalate	360	U J	360	U	360	U	350	U J	360	U J	370	U J
Acenaphthylene	360	U	360	U	360	U	350	U	360	U	370	U
2,6-Dinitrotoluene	360	U	360	U	360	U	350	U	360	U	370	U
3-Nitroaniline	900	U	890	U	890	U	880	U	900	U	920	U
Acenaphthene	360	U	82	*	84	*	350	U	100	J	370	U
2,4-Dinitrophenol	900	U	890	U	890	U	880	U	900	U	920	U
4-Nitrophenol	900	U	109	*	95	*	880	U	900	U	920	U
Dibenzofuran	360	U J	360	U	360	U	350	U J	42	~~J~~ J	370	U J
2,4-Dinitrotoluene	360	U	89	*	81	*	350	U	360	U	370	U
Diethylphthalate	360	U J	360	U	360	U	350	U J	360	U J	370	U J
4-Chlorophenyl-phenylether	360	U	360	U	360	U	350	U	360	U	370	U
Fluorene	360	U	360	U	19	J	350	U	93	J	370	U
4-Nitroaniline	900	U	890	U	890	U	880	U	900	U	920	U
4,6-Dinitro-2-methylphenol	900	U	890	U	890	U	880	U	900	U	920	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	350	U	360	U	370	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	350	U	360	U	370	U
Hexachlorobenzene	360	U	360	U	360	U	350	U	360	U	370	U
Pentachlorophenol	900	U	87	*	81	*	880	U	900	U	920	U
Phenanthrene	120	J	100	J	310	J	51	J	1100		170	J
Anthracene	33	J	23	J	60	J	350	U	280	J	37	J
Carbazole	360	U	360	U	40	J	350	U	120	J	370	U
Di-n-butylphthalate	360	U J	360	U	360	U	350	U J	360	U J	370	U J
Fluoranthene	240	J	190	J	460		63	J	1300		290	J
Pyrene	270	J	76	*	85	*	62	J	1200		280	J
Butylbenzylphthalate	360	U J	360	U	360	U	350	U J	360	U J	370	U J
3,3'-Dichlorobenzidine	360	U	360	U	360	U	350	U	360	U	370	U
Benzo(a)anthracene	170	J	130	J	290	J	42	J	760		180	J
Chrysene	180	J	150	J	320	J	41	J	800		200	J
bis(2-Ethylhexyl)phthalate	360	U J	18	J	360	U	350	U J	32	~~J~~ J	27	~~J~~ J
Di-n-octyl phthalate	360	U	360	U	360	U	350	U	360	U	370	U
Benzo(b)fluoranthene	170	J	120	J	300	J	350	U	720		170	J
Benzo(k)fluoranthene	190	J	130	J	280	J	350	U	630		190	J
Benzo(a)pyrene	180	J	150	J	300	J	350	U	670		200	J
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	350	U	360	U	370	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	350	U	360	U	370	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	350	U	360	U	370	U

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

4/6/00

000016

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 03/08/00 12:55

RFW Batch Number: 0002L491 Client: TNU-HANFORD B99-042 Work Order: 10985001001 Page: 2a

	Cust ID:	B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T7		B0X4T8	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	79	%	93	%	86	%	73	%	76	%	92	%
	2-Fluorobiphenyl	84	%	94	%	91	%	78	%	76	%	95	%
	Terphenyl-d14	86	%	101	%	104	%	89	%	93	%	100	%
	Phenol-d5	69	%	80	%	71	%	62	%	67	%	76	%
	2-Fluorophenol	63	%	73	%	68	%	58	%	62	%	74	%
	2,4,6-Tribromophenol	84	%	90	%	89	%	76	%	78	%	77	%
			fl		fl		fl		fl		fl		fl
Phenol		380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
bis(2-Chloroethyl)ether		380	U	340	U	350	U	360	U	360	U	330	U
2-Chlorophenol		380	U	340	U	350	U	360	U	360	U	330	U
1,3-Dichlorobenzene		380	U	340	U	350	U	360	U	360	U	330	U
1,4-Dichlorobenzene		380	U	340	U	350	U	360	U	360	U	330	U
1,2-Dichlorobenzene		380	U	340	U	350	U	360	U	360	U	330	U
2-Methylphenol		380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
2,2'-oxybis(1-Chloropropane)		380	U	340	U	350	U	360	U	360	U	330	U
4-Methylphenol		380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
N-Nitroso-di-n-propylamine		380	U	340	U	350	U	360	U	360	U	330	U
Hexachloroethane		380	U	340	U	350	U	360	U	360	U	330	U
Nitrobenzene		380	U	340	U	350	U	360	U	360	U	330	U
Isophorone		380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
2-Nitrophenol		380	U	340	U	350	U	360	U	360	U	330	U
2,4-Dimethylphenol		380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
bis(2-Chloroethoxy)methane		380	U	340	U	350	U	360	U	360	U	330	U
2,4-Dichlorophenol		380	U	340	U	350	U	360	U	360	U	330	U
1,2,4-Trichlorobenzene		380	U	340	U	350	U	360	U	360	U	330	U
Naphthalene		380	U	340	U	350	U	360	U	360	U	330	U
4-Chloroaniline		380	U	340	U	350	U	360	U	360	U	330	U
Hexachlorobutadiene		380	U	340	U	350	U	360	U	360	U	330	U
4-Chloro-3-methylphenol		380	U	340	U	350	U	360	U	360	U	330	U
2-Methylnaphthalene		380	U	340	U	350	U	360	U	360	U	330	U
Hexachlorocyclopentadiene		380	U	340	U	350	U	360	U	360	U	330	U
2,4,6-Trichlorophenol		380	U	340	U	350	U	360	U	360	U	330	U
2,4,5-Trichlorophenol		960	U	860	U	870	U	900	U	900	U	840	U

*= Outside of EPA CLP QC limits.

4/21/00

000017

Cust ID:	B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T7		B0X4T8	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	380	U	340	U	350	U	360	U	360	U	330	U
2-Nitroaniline	960	U	860	U	870	U	900	U	900	U	840	U
Dimethylphthalate	380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
Acenaphthylene	380	U	340	U	350	U	360	U	360	U	330	U
2,6-Dinitrotoluene	380	U	340	U	350	U	360	U	360	U	330	U
3-Nitroaniline	960	U	860	U	870	U	900	U	900	U	840	U
Acenaphthene	380	U	340	U	350	U	360	U	36	J	330	U
2,4-Dinitrophenol	960	U	860	U	870	U	900	U	900	U	840	U
4-Nitrophenol	960	U	860	U	870	U	900	U	900	U	840	U
Dibenzofuran	380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
2,4-Dinitrotoluene	380	U	340	U	350	U	360	U	360	U	330	U
Diethylphthalate	380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
4-Chlorophenyl-phenylether	380	U	340	U	350	U	360	U	360	U	330	U
Fluorene	380	U	340	U	350	U	360	U	30	J	330	U
4-Nitroaniline	960	U	860	U	870	U	900	U	900	U	840	U
4,6-Dinitro-2-methylphenol	960	U	860	U	870	U	900	U	900	U	840	U
N-Nitrosodiphenylamine (1)	380	U	340	U	350	U	360	U	360	U	330	U
4-Bromophenyl-phenylether	380	U	340	U	350	U	360	U	360	U	330	U
Hexachlorobenzene	380	U	340	U	350	U	360	U	360	U	330	U
Pentachlorophenol	960	U	860	U	870	U	900	U	900	U	840	U
Phenanthrene	380	U	340	U	350	U	360	U	400		330	U
Anthracene	380	U	340	U	350	U	360	U	88	J	330	U
Carbazole	380	U	340	U	350	U	360	U	36	J	330	U
Di-n-butylphthalate	92	~~J~~ J	340	U J	350	U J	360	U J	360	U J	330	U J
Fluoranthene	380	U	340	U	350	U	360	U	530		330	U
Pyrene	380	U	340	U	350	U	360	U	570		330	U
Butylbenzylphthalate	380	U J	340	U J	350	U J	360	U J	360	U J	330	U J
3,3'-Dichlorobenzidine	380	U	340	U	350	U	360	U	360	U	330	U
Benzo(a)anthracene	380	U	340	U	350	U	360	U	310	J	330	U
Chrysene	380	U	340	U	350	U	360	U	330	J	330	U
bis(2-Ethylhexyl)phthalate	24	~~J~~ J	20	~~J~~ J	350	U J	360	U J	360	U J	41	~~J~~ J
Di-n-octyl phthalate	380	U	340	U	350	U	360	U	360	U	330	U
Benzo(b)fluoranthene	380	U	340	U	350	U	360	U	220	J	330	U
Benzo(k)fluoranthene	380	U	340	U	350	U	360	U	250	J	330	U
Benzo(a)pyrene	380	U	340	U	350	U	360	U	280	J	330	U
Indeno(1,2,3-cd)pyrene	380	U	340	U	350	U	360	U	180	J	330	U
Dibenz(a,h)anthracene	380	U	340	U	350	U	360	U	360	U	330	U
Benzo(g,h,i)perylene	380	U	340	U	350	U	360	U	200	J	330	U

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

4/21/00

000018

	Cust ID:	B0X4P8	SBLKLY	SBLKLY BS
Sample Information	RFW#:	011	00LE0202-MB1	00LE0202-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	66 %	78 %	93 %
	2-Fluorobiphenyl	64 %	77 %	84 %
	Terphenyl-d14	73 %	104 %	107 %
	Phenol-d5	57 %	76 %	75 %
	2-Fluorophenol	52 %	66 %	71 %
	2,4,6-Tribromophenol	56 %	87 %	104 %
Phenol		350 U J	330 U	69 %
bis(2-Chloroethyl)ether		350 U	330 U	330 U
2-Chlorophenol		350 U	330 U	71 %
1,3-Dichlorobenzene		350 U	330 U	330 U
1,4-Dichlorobenzene		350 U	330 U	80 %
1,2-Dichlorobenzene		350 U	330 U	330 U
2-Methylphenol		350 U J	330 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	330 U	330 U
4-Methylphenol		350 U J	330 U	330 U
N-Nitroso-di-n-propylamine		350 U	330 U	126 %
Hexachloroethane		350 U	330 U	330 U
Nitrobenzene		350 U	330 U	330 U
Isophorone		350 U J	330 U	330 U
2-Nitrophenol		350 U	330 U	330 U
2,4-Dimethylphenol		350 U J	330 U	330 U
bis(2-Chloroethoxy)methane		350 U	330 U	330 U
2,4-Dichlorophenol		350 U	330 U	330 U
1,2,4-Trichlorobenzene		350 U	330 U	84 %
Naphthalene		350 U	330 U	330 U
4-Chloroaniline		350 U	330 U	330 U
Hexachlorobutadiene		350 U	330 U	330 U
4-Chloro-3-methylphenol		350 U	330 U	92 %
2-Methylnaphthalene		350 U	330 U	330 U
Hexachlorocyclopentadiene		350 U	330 U	330 U
2,4,6-Trichlorophenol		350 U	330 U	330 U
2,4,5-Trichlorophenol		870 U	840 U	840 U

*= Outside of EPA CLP QC limits.

4/21/00

000019

Cust ID:	B0X4P8		SBLKLY		SBLKLY BS	
RFW#:	011		00LE0202-MB1		00LE0202-MB1	
2-Chloronaphthalene	350	U	330	U	330	U
2-Nitroaniline	870	U	840	U	840	U
Dimethylphthalate	350	U J	330	U	330	U
Acenaphthylene	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	330	U	330	U
3-Nitroaniline	870	U	840	U	840	U
Acenaphthene	350	U	330	U	85	%
2,4-Dinitrophenol	870	U	840	U	840	U
4-Nitrophenol	870	U	840	U	118 *	%
Dibenzofuran	350	U J	330	U	330	U
2,4-Dinitrotoluene	350	U	330	U	97 *	%
Diethylphthalate	350	U J	330	U	330	U
4-Chlorophenyl-phenylether	350	U	330	U	330	U
Fluorene	350	U	330	U	330	U
4-Nitroaniline	870	U	840	U	840	U
4,6-Dinitro-2-methylphenol	870	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	330	U	330	U
Hexachlorobenzene	350	U	330	U	330	U
Pentachlorophenol	870	U	840	U	104	%
Phenanthrene	350	U	330	U	330	U
Anthracene	350	U	330	U	330	U
Carbazole	350	U	330	U	330	U
Di-n-butylphthalate	350	U J	330	U	330	U
Fluoranthene	350	U	330	U	330	U
Pyrene	350	U	330	U	96	%
Butylbenzylphthalate	350	U J	330	U	330	U
3,3'-Dichlorobenzidine	350	U	330	U	330	U
Benzo(a)anthracene	350	U	330	U	330	U
Chrysene	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U J	330	U	330	U
Di-n-octyl phthalate	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	330	U	330	U
Benzo(a)pyrene	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	330	U	330	U

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

4/21/00

0000020

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-042
RFW #: 0002L491
SDG/SAF #: H0754/B99-042

W.O. #: 10985-001-001-9999-00
Date Received: 02-18-2000

SEMIVOLATILE

Eleven (11) soil samples were collected on 02-16-2000.

The samples and their associated QC samples were extracted on 03-01-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compound on 03-06,07,08-2000.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. The samples were extracted and analyzed within required holding times.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.

MAR 2000
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Data
Log In

By _____
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-23-00
Date

som\gorup\data\bns\tnu-hanford-02-491.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 2 8 pages.

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208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

00002 711

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-011	Page 1 of 1

Collector: Stankovich/ Trice / Nielson/Winkerose	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: RRC 99-027	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: FedEx	
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A00012	Bill of Lading/Air Bill No.: 4235795 3-3987	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	aG	aG	aG	aG	aG	aG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
B0X4T7	Soil	2-16-00	1040			✓	✓	✓	✓			AB	
B0X4T8	Soil	2-16-00	1020			✓	✓	✓	✓			BLK	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Daniel Nielson / R Nielson	2/16/00 1700	Ref #2A	
Ref 2A	2-17-00/0900	Rikki Thorson	2-17-00/0900
Rikki Thorson	2-17-00/1430	[illegible]	
FedEx	2/18/00 0915	[illegible]	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non-Rad Controlled area. <2000 pCi/g. NOTA Required

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

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

-011 (10/99)

Temp 4.2

000023

Sampling Location 1607-112	TRENT, SJ	Price Code 8L	Data Turnarou 21 Days
	SAF No. B99-042	Air Quality | |	
Ice Chest No. ERC 99-027	Field Logbook No. EL-1500-1	COA R607H22600	Method of Shipment FedEx
Shipped To TMA/RECRA RECRA LabNet	Offsite Property No. A-000121		Bill of Lading/Air Bill No. 4235795 3-3987

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
3	B0X4R3	Soil	2-16-00	1145			X	X	X	X				
4	B0X4R4	Soil	2-16-00	1140			X	X	X	X				
5	B0X4R5	Soil	2-16-00	1200			X	X	X	X				
6	B0X4R6	Soil	2-16-00	1213			X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson/R. Nielson	2/16/00 (700)	Received By Ref #2A	
Relinquished By	Ref 2A	2.17.00 0900	Received By R. Thorson	2.17.00/0900
Relinquished By	R. Thorson	2.17.00/1430	Received By FedEx	
Relinquished By	FedEx	2.18.00 0915	Received By [illegible]	2.18.00 0915
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Chromium, Lead]; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]

Sample originates in non Rad Controlled area <2000 pCi/g
No TA Required

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

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

BHI-EE-011 (10/99)

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-007	Page 1 of 1
Collector: Stankovich/ Trice/ Nielson / Winterrose	Company Contact: Stankovich; Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: SM1823	Field Logbook No.: EL-1500-1; COA: R607H42600	Method of Shipment: FedEx	
Shipped To: TMA/RECRA RECRA Cabinet	Offsite Property No.: A000121	Bill of Lading/Air Bill No.: 42357953-3976	

POSSIBLE SAMPLE HAZARDS/REMARKS: none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
8 ✓	B0X4T3	Soil	2-16-00	1040			✓	✓	✓	✓				
9 ✓	B0X4T4	Soil	2-16-00	1110			✓	✓	✓	✓				
10 ✓	B0X4T5	Soil	2-16-00	1125			✓	✓	✓	✓				
11 ✓	B0X4T6	Soil	2-16-00	1140			✓	✓	✓	✓				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Kelli Nielson / R Nielson	Received By: Ref #2A	2/16/00 1700
Relinquished By: Ref 2A	Received By: RIKKI THOMSON / R. Thomson	2-17-00 0900 / 2-17-00 0900
Relinquished By: RIKKI THOMSON / R Thomson	Received By: FEDEX	2-17-00 1130
Relinquished By: FedEx	Received By: [illegible]	2-18-00 0915 / 2-18-00 0915
Relinquished By:	Received By:	
Relinquished By:	Received By:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Chromium, Lead]; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]

Sample originates in non Rad controlled area, <2000 pCi/g. NOTA Required

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

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

9HI-EE-011 (10/99)

Temp 4.3

Stankovich/ Trice/Nielson/Winterrose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H2		SAF No.: B99-042
Ice Chest No.: ERC99-027	Field Logbook No.: EL-1500-1	COA: R607H22600	Method of Shipment: FedEx
Shipped To: TMA/RECRA Recra Lebanet	Offsite Property No.: 1400121		Bill of Lading/Air Bill No.: 4235795 3-3987

Price Code: 8L

Air Quality: | |

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	sG	sG	sG	sG	sG	sG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
7 B0X4P8	Soil	2-16-00	1255			X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Nielson/R Nielson	2/16/00 700	RLF #2A	
RLF 2A	2-17-00/0900	RIKKI Thorson	2-17-00/0900
RIKKI Thorson	2-17-00/1430	FedEx	
FedEx	2-18-00 0915	Kelly Kennedy	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non RAD. Controlled area. <2000 pCi/g NOTA Required

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

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

BHI-EE-011 (10/99)

Tsyy) 4.2

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 100D 1607-H2/H4		DATA PACKAGE: H0754	
VALIDATOR: TLI	LAB: RecRA		DATE: 4/4/00
CASE:		SDG: H0754	

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☒ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX	BOX4T3	BOX4T4	BOX4T5	BOX4T6
BOX4R3	BOX4R4	BOX4R5	BOX4R6	BOX4T7
BOX4T8	BOX4P4			
				Soil

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:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are continuing calibrations 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: bis(2-ethylhexyl)phthalate in EB

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . Yes No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? Yes No N/A

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

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

Comments: phenol 67% MSD J all assoc

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD 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:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . 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

Has the laboratory properly identified and coded all TIC? . . . Yes No N/A

Comments:

Date: 24 April 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-H Areas - Full Protocol, Waste Sites 1607-H2 and 1607-H4
Subject: PCB - Data Package No. H0754-RLN (SDG No. H0754)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0754-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
B0X4P8	2/16/00	Soil	C	PCBs by EPA 8082
B0X4R3	2/16/00	Soil	C	PCBs by EPA 8082
B0X4R4	2/16/00	Soil	C	PCBs by EPA 8082
B0X4R5	2/16/00	Soil	C	PCBs by EPA 8082
B0X4R6	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T3	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T4	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T5	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T6	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T7	2/16/00	Soil	C	PCBs by EPA 8082
B0X4T8	2/16/00	Soil	C	PCBs by EPA 8082

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). 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 aroclor-1221.

Equipment Blank

One equipment blank (B0X4T8) was submitted for analysis. No analytes were detected in the field blank although the CRDL was exceeded for aroclor-1221.

- **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.

All matrix spike results were acceptable.

Surrogate Recovery

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

All matrix spike/matrix spike 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 aroclor-1221in all samples. Under the BHI statement of work, no qualification is required. All other reported laboratory detection levels met the analyte specific TDL or CRDL.

- **Completeness**

  Data Package No. H0754-RLN (SDG No. H0754) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The reported detection limit was exceeded for aroclor-1221in all samples. 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-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a 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

DATA QUALIFICATION SUMMARY

SDG: H0754	REVIEWER: TLI	DATE: 4/24/00	PAGE_1_OF_1_
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOLID MATRIX, (UG/KG)

Project: BECHTEL-HANFORD	
Laboratory: RECRA	
Case	SDG: H0754.

Sample Number		B0X4P8		B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T3		B0X4T4					
Location		H2		H2		H2		H2		H2		H4		H4					
Remarks																			
Sample Date		02/16/00		02/16/00		02/16/00		02/16/00		02/16/00		02/16/00		02/16/00					
PCB	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	50	35	U	39	U	34	U	34	U	36	U	36	U	36	U				
Aroclor-1221	50	70	U	77	U	69	U	69	U	71	U	72	U	71	U				
Aroclor-1232	50	35	U	39	U	34	U	34	U	36	U	36	U	36	U				
Aroclor-1242	50	35	U	39	U	34	U	34	U	36	U	36	U	36	U				
Aroclor-1248	50	35	U	39	U	34	U	34	U	36	U	36	U	36	U				
Aroclor-1254	50	35	U	160		34	U	34	U	36	U	36	U	36	U				
Aroclor-1260	50	35	U	39	U	34	U	34	U	36	U	36	U	36	U				

Sample Number		B0X4T5		B0X4T6		B0X4T7		B0X4T8											
Location		H4		H4		H4		H4											
Remarks								E. Blank											
Sample Date		02/16/00		02/16/00		02/16/00		02/16/00											
PCB	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	50	36	U	37	U	36	U	33	U										
Aroclor-1221	50	72	U	73	U	71	U	67	U										
Aroclor-1232	50	36	U	37	U	36	U	33	U										
Aroclor-1242	50	36	U	37	U	36	U	33	U										
Aroclor-1248	50	36	U	37	U	36	U	33	U										
Aroclor-1254	50	36	U	37	U	36	U	33	U										
Aroclor-1260	50	36	U	37	U	36	U	33	U										

000010

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 03/07/00 09:36

RFW Batch Number: 0002L491 Client: TNU-HANFORD B99-042 Work Order: 10985001001 Page: 1

	Cust ID:	B0X4T3	B0X4T3	B0X4T3	B0X4T4	B0X4T5	B0X4T6
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	105 %	102 %	100 %	95 %	88 %	100 %
	Decachlorobiphenyl	119 %	111 %	110 %	104 %	103 %	110 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U	35 U	36 U	36 U	36 U	37 U
Aroclor-1221		72 U	71 U	72 U	71 U	72 U	73 U
Aroclor-1232		36 U	35 U	36 U	36 U	36 U	37 U
Aroclor-1242		36 U	35 U	36 U	36 U	36 U	37 U
Aroclor-1248		36 U	35 U	36 U	36 U	36 U	37 U
Aroclor-1254		36 U	89 %	85 %	36 U	36 U	37 U
Aroclor-1260		36 U	35 U	36 U	36 U	36 U	37 U

	Cust ID:	B0X4R3	B0X4R4	B0X4R5	B0X4R6	B0X4T7	B0X4T8
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	100 %	98 %	92 %	102 %	100 %	92 %
	Decachlorobiphenyl	106 %	105 %	101 %	115 %	108 %	114 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		39 U	34 U	34 U	36 U	36 U	33 U
Aroclor-1221		77 U	69 U	69 U	71 U	71 U	67 U
Aroclor-1232		39 U	34 U	34 U	36 U	36 U	33 U
Aroclor-1242		39 U	34 U	34 U	36 U	36 U	33 U
Aroclor-1248		39 U	34 U	34 U	36 U	36 U	33 U
Aroclor-1254		160	34 U	34 U	36 U	36 U	33 U
Aroclor-1260		39 U	34 U	34 U	36 U	36 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

03 07 00

04/24/00

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 03/07/00 09:36

RFW Batch Number: 0002L491 Client: TNU-HANFORD B99-042 Work Order: 10985001001 Page: 2

05

	Cust ID:	B0X4P8	PBLKHC	PBLKHC BS
Sample Information	RFW#:	011	00LE0171-MB1	00LE0171-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	82	%	102	%	102	%
	Decachlorobiphenyl	93	%	116	%	119	%
Aroclor-1016		35	U	33	U	33	U
Aroclor-1221		70	U	67	U	67	U
Aroclor-1232		35	U	33	U	33	U
Aroclor-1242		35	U	33	U	33	U
Aroclor-1248		35	U	33	U	33	U
Aroclor-1254		35	U	33	U	87	%
Aroclor-1260		35	U	33	U	33	U

000012

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

MAR 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-042
RFW#: 0002L491
SDG/SAF#: H0754/B99-042

W.O.#: 10985-001-001-9999-00
Date Received: 02-18-00

PCB

The set of samples consisted of eleven (11) soil samples collected on 02-16-00.

The samples and their associated QC samples were extracted on 02-23-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 03-02-00. 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.

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-10-00
Date

pef\r:\group\data\pest\tnu\02L491.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-011

Collector: Stankovich/ Trice / Nielson/Kirkerose	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: FedEx	
Shipped To: TMA/RECRA — RECRA labnet	Offsite Property No.: A000121	Bill of Lading/Air Bill No.: 123579853-3987	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	sG	sG	sG	sG	sG	sG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
B0X4T7	Soil	2-16-00	1040			✓	✓	✓	✓			A3	
B0X4T8	Soil	2-16-00	1020			✓	✓	✓	✓			BLK	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Daniel Nielson / R Nielson	2/16/00 1740	Ref #2A	
Ref 2A	2-17-00/0920	Rikki Thorn / R. Thorn	2-17-00/0920
Rikki Thorn / R. Thorn	2-17-00/1430	FedEx	
FedEx	2-18-00 0915	Vicki Hennig	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non Rad Controlled area. <2000 pCi/g. NOTA Required

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

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

BHI-EE-011 (10/99)

Temp 4.2

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Stankovich/ Trice/Nielson/Winterose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607-H2		SAF No.: B99-042
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1	COA: R6071122600	Method of Shipment: FedEx
Shipped To: TMA/RECRA RECRA LabNet	Offsite Property No.: A000121		Bill of Lading/Air Bill No.: 4235 7953 3987

Price Code: 8L

Air Quality: | |

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	aG	aG	aG	aG	aG	aG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B0X4R3	Soil	2-16-00	1145			X	X	X	X		
B0X4R4	Soil	2-16-00	1140			X	X	X	X		
B0X4R5	Soil	2-16-00	1200			X	X	X	X		
B0X4R6	Soil	2-16-00	1213			X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson/R. Nielson 2/16/00	17(?)	Ref #2A	
Ref 2A	2.17.00 0900	R. Thoren	2.17.00 0900
R. Thoren	2.17.00 1430	FedEx	
FedEx	2.18.00 0915	Vicki Hennig	2/18/00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non Rad Controlled area <2000 pCi/g
No TA Required

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

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

BHI-EE-011 (10/99)

72 mp 42

000016

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-007	Page 1 of 1

Collector: Stankovich/ Trice/ Nielson/ Winterrose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4		SAF No.: B99-042
Ice Chest No.: SM1523	Field Logbook No.: EL-1500-1	COA: R607H42600	Method of Shipment: FedEx
Shipped To: TMA/RECRA RECRA Cabinet	Offsite Property No.: A000121		Bill of Lading/Air Bill No.: 423557953-3976

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	aG	aG	aG	aG	aG	aG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B0X4T3	Soil	2-16-00	1040			✓	✓	✓	✓		
B0X4T4	Soil	2-16-00	1110			✓	✓	✓	✓		
B0X4T5	Soil	2-16-00	1125			✓	✓	✓	✓		
B0X4T6	Soil	2-16-00	1140			✓	✓	✓	✓		

000017

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kelli Nielson/R Nielson	2/16/00 1700	Ref #2A	
Ref 2A	2.17.00/0900	RIKKI Thorson	2.17.00/0900
RT Rikki Thorson	2.17.00/1530	FedEx	
FedEx	2-18-00 0915	[illegible]	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non Rad Controlled area, <2000 pCi/g. NOTA Required

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

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

BHI-EE-011 (10/99)

Temp 4.3

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

Collector: Stankovich/ Trice/Nielson/Winterrose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H2		SAF No.: B99-042
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1	COA: R607H22600	Method of Shipment: FedEx
Shipped To: TMA/RECRA Lecra Cabinet	Offsite Property No.: 100012		Bill of Lading/Air Bill No.: 4235 7953 3987

Price Code: 8L | Data Turnaround: 21 Days | Air Quality: | |

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time							
B0X4P8	Soil	2-16-00	1255			X	X	X	X	

000018

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Nielson/R Nielson 2/16/00	700	Ref #2A	
Ref 2A	2-17-00/0900	RIKKI Thoren	2-17-00/0900
RIKKI Thoren	2-17-00/1430	FEDEX	
FedEx	2-18-00 0915	Neil Kennedy	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non RAD. Controlled area. <2000 pCi/g NOTA Required

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

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

BHI-EE-011 (10/99)

Tab 4.2

Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 100 D H2/H4		DATA PACKAGE: H0754	
VALIDATOR: TL	LAB: RecRA	DATE: 4/5/00	
CASE:		SDG: H0754	

ANALYSES PERFORMED

☐ CLP3/90	☐ SW-846 8080	☐ SW-846 8081	☒ 8082	☐	☐

SAMPLES/MATRIX	BOX4T3	BOX4T4	BOX4T5	BOX4T6
BOX4R3	BOX4R4	BOX4R5	BOX4R6	BOX4T7
BOX4T8	BOX4P8			
				soil

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

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:_____

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:

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: Aroclor -1221 over in all

Date: 24 April 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-H Areas - Full Protocol - Waste Sites 1607-H2 and 1607-H4
Subject: Inorganics - Data Package No. H0754-RLN (SDG No. H0754)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0754-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
BOX4P8	2/16/00	Soil	C	See note 1
BOX4R3	2/16/00	Soil	C	See note 1
BOX4R4	2/16/00	Soil	C	See note 1
BOX4R5	2/16/00	Soil	C	See note 1
BOX4R6	2/16/00	Soil	C	See note 1
BOX4T3	2/16/00	Soil	C	See note 1
BOX4T4	2/16/00	Soil	C	See note 1
BOX4T5	2/16/00	Soil	C	See note 1
BOX4T6	2/16/00	Soil	C	See note 1
BOX4T7	2/16/00	Soil	C	See note 1
BOX4T8	2/16/00	Soil	C	See note 1

1 - ICP metals by 6010B (lead, chromium and arsenic); mercury by 7471A; hexavalent chromium.

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). 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: Soil samples must be analyzed within 6 months for ICP metals, 28 days for mercury and 30 days for chromium VI.

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.

Equipment Blanks

One equipment blank (B0X4T8) was submitted for analysis. Chromium (total) and lead were detected in the equipment blank. All other equipment 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.

All matrix spike recovery 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% 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 30% 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".

All laboratory duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area Remedial Action Sampling and Analysis Plan TDLs or the CRDL if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. The TDL was exceeded for chromium VI in all undetected samples. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H0754-RLN (SDG No. H0754) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The TDL was exceeded for chromium VI in all undetected samples. 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-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Interoffice Memorandum 056910, Joan Kessner to Distribution, *Hexavalent Chromium Analytical Holding Time*, 4 March 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

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

DATA QUALIFICATION SUMMARY

SDG: H0754	REVIEWER: TLI	DATE: 4/24/00	PAGE_1_OF_1_
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD	
Laboratory: RECRA LabNet	
Case	SDG: H0754

Sample Number		B0X4P8		B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T3		B0X4T4			
Location		H2		H2		H2		H2		H2		H4		H4			
Remarks																	
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00			
Inorganics	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	0.40	U	0.68	U	0.41	U	0.42	U	0.43	U	0.43	U	0.43	U		
Arsenic (total)		9.9		7.0		5.2		2.1		11.1		4.4		3.5			
Chromium (total)	0.5	7.5		68.0		9.2		16.1		11.1		9.0		9.2			
Mercury (total)	0.05	0.02	U	1.2		0.10		0.45		0.02	U	0.02	U	0.02	U		
Lead (total)	2	31.3		32.1		48.5		8.2		38.7		14.9		10.8			

Sample Number		B0X4T5		B0X4T6		B0X4T7		B0X4T8									
Location		H4		H4		H4		H4									
Remarks								E. Blank									
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00									
Inorganic Anaysis	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	0.43	U	0.44	U	0.43	U	0.40	U								
Arsenic (total)		6.4		7.5		4.2		0.23	U								
Chromium (total)	0.5	9.1		9.1		10.2		0.09									
Mercury (total)	0.05	0.04		0.02	U	0.02	U	0.02	U								
Lead (total)	2	23.9		44.1		14.1		0.53									

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/03/00

CLIENT: TMU-HANFORD B99-042 RECRA LOT #: 0002L491

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0X4T3	Arsenic, Total	4.4	MG/KG	0.31	1.0
		Chromium, Total	9.0	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	14.9	MG/KG	0.24	1.0
-002	B0X4T4	Arsenic, Total	3.5	MG/KG	0.30	1.0
		Chromium, Total	9.2	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	10.8	MG/KG	0.24	1.0
-003	B0X4T5	Arsenic, Total	6.4	MG/KG	0.31	1.0
		Chromium, Total	9.1	MG/KG	0.06	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Lead, Total	23.9	MG/KG	0.24	1.0
-004	B0X4T6	Arsenic, Total	7.5	MG/KG	0.31	1.0
		Chromium, Total	9.1	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	44.1	MG/KG	0.25	1.0
-005	B0X4R3	Arsenic, Total	7.0	MG/KG	0.32	1.0
		Chromium, Total	68.0	MG/KG	0.07	1.0
		Mercury, Total	1.2	MG/KG	0.02	1.0
		Lead, Total	32.1	MG/KG	0.26	1.0
-006	B0X4R4	Arsenic, Total	5.2	MG/KG	0.27	1.0
		Chromium, Total	9.2	MG/KG	0.06	1.0
		Mercury, Total	0.10	MG/KG	0.02	1.0
		Lead, Total	48.5	MG/KG	0.21	1.0
-007	B0X4R5	Arsenic, Total	2.1	MG/KG	0.29	1.0
		Chromium, Total	16.1	MG/KG	0.06	1.0
		Mercury, Total	0.45	MG/KG	0.01	1.0
		Lead, Total	8.2	MG/KG	0.23	1.0
-008	B0X4R6	Arsenic, Total	11.1	MG/KG	0.31	1.0
		Chromium, Total	11.1	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	38.7	MG/KG	0.24	1.0

4/21/00

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/03/00

CLIENT: TMU-HANFORD B99-042 RECRA LOT #: 0002L491

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B0X4T7	Arsenic, Total	4.2	MG/KG	0.28	1.0
		Chromium, Total	10.2	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	14.1	MG/KG	0.22	1.0
-010	B0X4T8	Arsenic, Total	0.23 u	MG/KG	0.23	1.0
		Chromium, Total	0.09	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	0.53	MG/KG	0.18	1.0
-011	B0X4P8	Arsenic, Total	9.9	MG/KG	0.29	1.0
		Chromium, Total	7.5	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	31.3	MG/KG	0.23	1.0

R
4/21/00

04

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/02/00

CLIENT: TNU-HANFORD B99-042 RECRA LOT #: 0002L491

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOX4T3	% Solids	92.7	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-002	BOX4T4	% Solids	93.5	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-003	BOX4T5	% Solids	92.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-004	BOX4T6	% Solids	90.5	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
-005	BOX4R3	% Solids	86.0	%	0.01	1.0
		Chromium VI	0.68 u	MG/KG	0.68	1.0
-006	BOX4R4	% Solids	97.1	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-007	BOX4R5	% Solids	96.0	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-008	BOX4R6	% Solids	92.3	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-009	BOX4T7	% Solids	93.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-010	BOX4T8	% Solids	99.8	%	0.01	1.0
		Chromium VI	0.40 u	MG/KG	0.40	1.0

4/21/00

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/02/00

CLIENT: TNU-HANFORD B99-042 RECRA LOT #: 0002L491

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	BOX4P8	% Solids	94.3	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0

5/2/00

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~~0035~~

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

MAR 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-042
RFW# : 0002L491
SDG/SAF# : H0754/B99-042

W.O.# : 10985-001-001-9999-00
Date Received: 02-18-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 11 soil samples.

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

3. All analyses were performed within the required holding times.

4. All cooler temperatures have 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 with the exception of the initial ISA for Lead at 8.3µg/L. This value is slightly high. There should be no significant impact to the results since the levels of the interferents are lower in the samples than in the check solution.

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. All duplicate analyses were within 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 17 pages.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

3-12-00
Date

mld/m02-491

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

MAR 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-042
RFW# : 0002L491
SDG# : H0754
SAF# : B99-042

W.O. # : 10985-001-001-9999-00
Date Received: 02-18-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 11 soil samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Chromium VI was within method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-13-00
Date

njp\l02-491

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 16 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3004

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-011

Collector: Stankovich/Trice / Nielson/Winkerose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4		SAF No.: B99-042
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1	COA: R607H42600	Method of Shipment: FedEx
Shipped To: TMA/RECRA RECRA labonet	Offsite Property No.: A000121		Bill of Lading/Air Bill No.: 423579853-3987

Price Code: 8L

Air Quality ☐

Data Turns: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time									
1 ✓	B0X4T7	Soil	2-16-00	1640			✓	✓	✓	✓		A3	
2 ✓	B0X4T8	Soil	2-16-00	1020			✓	✓	✓	✓		BLK	

000018

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
J Nielson / R Nielson	2/16/00 1710	Ref #2A	
Ref 2A	2.17.00/0900	RIKKI Thoron	2.17.00/0900
RIKKI Thoron	2.17.00/1430	Fed Ex	
Fed Ex	2/18/00 0915	Vicki Hennig	2-18-00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non Rad Controlled area. <2000 pCi/g. NOTA Required

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

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

BHI-EE-011 (10/99)

Temp 4.2

Bechtel Hanford Inc.

CHAIN OF CUSTODY

Collector: Stankovich/ Trice / Nielson/Winterrose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607-H2		SAF No.: B99-042
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1	COA: R6071122600	Method of Shipment: FedEx
Shipped To: TMA/RECRA RECRA LabNet	Offsite Property No.: A000121		Bill of Lading/Air Bill No.: 4235 7953 3987

Price Code: 8L

Air Quality: ☐

Date Tu: 21 Da.

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
3	B0X4R3	Soil	2-16-00	1145			X	X	X	X				
4	B0X4R4	Soil	2-16-00	1140			X	X	X	X				
5	B0X4R5	Soil	2-16-00	1200			X	X	X	X				
6	B0X4R6	Soil	2-16-00	1213			X	X	X	X				

000019

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson/R. Nielson	2/16/00 1700	Ref #2A	
Ref 2A	2.17.00/0900	Rikki Thorson / R. Thorson	2.17.00/0900
R. Thorson	2.17.00/1430	FEDEX	
FedEx	2.18.00 0915	[illegible]	2.18.00 0915

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non Rad Controlled area <2000 pCi/g
No TA Required

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

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

BHI-EE-011 (10/99)

Temp 4.2

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		
Collector: Stankovich/ Trice/ Nielson/ Winterrose	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turn: 21 Day
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: SM1523	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: FedEx	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A000121	Bill of Lading/Air Bill No.: 4235795 3-3976	

POSSIBLE SAMPLE HAZARDS/REMARKS: none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time									
18 ✓	B0X4T3	Soil	2-16-00	1040			✓	✓	✓	✓			
19 ✓	B0X4T4	Soil	2-16-00	1110			✓	✓	✓	✓			
20 ✓	B0X4T5	Soil	2-16-00	1125			✓	✓	✓	✓			
21 ✓	B0X4T6	Soil	2-16-00	1140			✓	✓	✓	✓			

020000

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Rikki Nelson/R Nielson	2/16/00 1700	Lef #2A	
Relinquished By	Lef 2A	2-17-00/0900	Received By: RIKKI Thorson	2-17-00/0900
Relinquished By	RT Thorson	2-17-00/1530	Received By: FedEx	
Relinquished By: FedEx		2-18-00 0915	Received By: [illegible]	2-18-00 0915
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non Rad Controlled area, <2000 pCi/g. NOTA Required

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

BHI-EE-011 (10/99)

Temp 4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-012	Page
Collector: Stankovich/ Trice/Nielson/Winterrose	Company Contact: Stankovich; Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turn: 21 Day
Project Designation: 100-H Area - Full Protocol	Sampling Location: 1607 H2	SAF No.: B99-042	Air Quality: | |
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1500-1; COA: R607H22600	Method of Shipment: FedEx	
Shipped To: TMA/RECRA Lecra Labnet	Offsite Property No.: 1000121	Bill of Lading/Air Bill No.: 4235795 3-3987	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	sG	sG	sG	sG	sG	sG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0X4P8	Soil	2-16-00	1255			X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R Nielson 2/16/00	1700	RLF #2A	
RLF 2A	2-17-00/0900	RIKKI Thorson 2-17-00/0900	
RIKKI Thorson	2-17-00/1430	FEDEX	
Fed Ex	2-18-00 0915	Lila Hennessy 2-18-00 0915	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non RAD. Controlled area. <2000 pCi/g NOTA Required

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

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

HI-EE-011 (10/99)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 100D 1607 A2/A4		DATA PACKAGE: H0754	
VALIDATOR: TLI	LAB: Recra	DATE: 4/4/00	
CASE:		SDG: H0754	

ANALYSES PERFORMED

☐ CLP/ICP	☐ CLP/GFAA	☐ CLP/Hg	☐ CLP/Cyanide	☐	☐
☒ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☒ CRUI	☐

SAMPLES/MATRIX ~~BOX4T3 BOX4T4~~ BOX4T4 BOX4T3
BOX4T5 BOX4T6 BOX4R3 BOX4R4 BOX4R5
BOX4R6 BOX4T7 BOX4T8 BOX4P8

Soil

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: CRUT ok
CR total + lead CR, 45 4T8 - U FB
pb. 1.75 4T8 - U noqual
4T8 - EB CR + lead

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:

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:

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: CRDL over in all undetects

Date: 24 April 2000
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-H Areas - Full Protocol - Waste Sites 1607-H2 and 1607-H4
Subject: Radiochemistry - Data Package No. H0754-TNU (SDG No. H0754)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0754-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
B0X4P8	2/16/00	Soil	C	See note 1
B0X4R3	2/16/00	Soil	C	See note 1
B0X4R4	2/16/00	Soil	C	See note 1
B0X4R5	2/16/00	Soil	C	See note 1
B0X4R6	2/16/00	Soil	C	See note 1
B0X4T3	2/16/00	Soil	C	See note 1
B0X4T4	2/16/00	Soil	C	See note 1
B0X4T5	2/16/00	Soil	C	See note 1
B0X4T6	2/16/00	Soil	C	See note 1
B0X4T7	2/16/00	Soil	C	See note 1
B0X4T8	2/16/00	Soil	C	See note 1

1 - Gamma spectroscopy; alpha spectroscopy (isotopic uranium and isotopic plutonium); total strontium; nickel-63.

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). 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.

All holding times were acceptable.

- **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 blank results were acceptable although the TDL was exceeded for the following: Uranium-233, uranium-235(aspec), uranium-238(aspec) and uranium-238(gea).

Equipment Blanks

One equipment blank (B0X4T8) was submitted for analysis. Uranium-233/34, uranium-238)aspec), potassium-40, radium-226, radium-228, thorium-228 and thorium-230 were detected in the equipment blank.

- **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 range is either 70-130% or ±3 sigma. 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 then 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 for undetected analytes are compared against the 100 Area Remedial Action Sampling and Analysis Plan target detection limits (TDLs) or the contract specified MDA if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. The following analytes were reported above their TDL: Uranium-235(aspec) and uranium-238(gea) in all samples; europium-155 in all samples except B0X4R3 and B0X4R5; europium-154 in samples B0X4R6, B0X4T5 and B0X4T6; americium-241(gea) in samples B0X4R4, B0X4R6, B0X4T4, B0X4T6 and B0X4T8; and uranium-235(gea) in samples B0X4R6, B0X4T4 and B0X4T6. Under the BHI statement of work, no qualifcation is required. All other reported laboratory MDAs were at or below the analyte-specific TDL or contract specified MDA.

- **Completeness**

Data Package No. H0754 (SDG No. H0754) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following analytes were reported above their TDL: Uranium-235(aspec) and uranium-238(gea) in all samples; europium-155 in all samples except B0X4R3 and B0X4R5; europium-154 in samples B0X4R6, B0X4T5 and B0X4T6; americium-241(gea) in samples B0X4R4, B0X4R6, B0X4T4, B0X4T6 and B0X4T8; and uranium-235(gea) in samples B0X4R6, B0X4T4 and B0X4T6.

REFERENCES

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

DOE/RL-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

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

DATA QUALIFICATION SUMMARY

SDG: H0754	REVIEWER: TLI	DATE: 4/24/00	PAGE_1_OF_1_
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: BECHTEL-HANFORD																	
Laboratory: TNU																	
Case	SDG: H0754																
Sample Number		B0X4P8		B0X4R3		B0X4R4		B0X4R5		B0X4R6		B0X4T3		B0X4T4			
Location		H2		H2		H2		H2		H2		H4		H4			
Remarks																	
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00		2/16/00			
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Uranium-233	0.1	0.603		0.839		0.370		0.462		0.675		0.610		0.468			
Uranium-235	0.1	0.020	U	0.019	U	0.019	U	0.041	U	0.048	U	0.045	U	0	U		
Uranium-238	0.1	0.635		0.633		0.354		0.598		0.397		0.406		0.533			
Plutonium-238	0.1	-0.005	U	-0.010	U	-0.007	U	-0.005	U	-0.009	U	0.008	U	-0.009	U		
Plutonium-239/40	0.1	0	U	0.005	U	0.011	U	-0.010	U	0	U	0.015	U	-0.009	U		
Nickel-63	30	-0.102	U	0.100	U	-0.174	U	1.04	U	-0.070	U	1.13	U	0.603	U		
Strontium (total)	1	0.016	U	0.043	U	0.001	U	-0.011	U	-0.024	U	-0.074	U	-0.016	U		
Potassium-40		14.6		12.2		13.3		14.0		14.0		15.0		15.4			
Cobalt 60	0.05	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Cesium 137	0.05	U	U	0.070		U	U	U	U	U	U	0.062		U	U		
Europium 152	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Europium 154	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Europium 155	0.05	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Radium-226		0.534		0.468		0.402		0.408		0.530		0.493		0.510			
Radium-228		0.734		0.653		0.634		0.634		0.728		0.728		0.859			
Thorium-228		0.882		0.522		0.504		0.667		0.769		0.647		0.656			
Thorium-232		0.734		0.653		0.634		0.634		0.728		0.728		0.859			
Americium-241 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Uranium-238 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Uranium-235 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U		

000010

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: BECHTEL-HANFORD																	
Laboratory: TNU																	
Case	SDG: H0754																
Sample Number		B0X4T5		B0X4T6		B0X4T7		B0X4T8									
Location		H4		H4		H4		H4									
Remarks								E. Blank									
Sample Date		2/16/00		2/16/00		2/16/00		2/16/00									
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result		Result	Q	Result	Q	Result	Q
Uranium-234	0.1	0.314		0.351		0.399		0.705									
Uranium-235	0.1	0.035	U	0	U	0.088	U	0.053	U								
Uranium-238	0.1	0.328		0.462		0.417		0.764									
Plutonium-238	0.1	0.014	U	-0.009	U	0.009	U	-0.008	U								
Plutonium-239/40	0.1	0.033	U	0.013	U	0	U	-0.008	U								
Nickel-63	30	-0.048	U	0.050	U	0.602	U	0.704	U								
Strontium (total)	1	0.018	U	-0.040	U	0.015	U	-0.083	U								
Potassium-40		13.7		14.5		14.3		4.84									
Cobalt 60	0.05	U	U	U	U	U	U	U	U								
Cesium 137	0.05	0.072		0.137		0.083		U	U								
Europium 152	0.1	U	U	U	U	U	U	U	U								
Europium 154	0.1	U	U	U	U	U	U	U	U								
Europium 155	0.05	U	U	U	U	U	U	U	U								
Radium-226		0.464		0.475		0.481		0.167									
Radium-228		0.766		0.694		0.638		0.204									
Thorium-228		0.629		0.592		0.636		0.208									
Thorium-232		0.766		0.694		0.638		0.204									
Americium-241 (GEA)	0.1	U	U	U	U	U	U	U	U								
Uranium-238 (GEA)	0.1	U	U	U	U	U	U	U	U								
Uranium-235 (GEA)	0.1	U	U	U	U	U	U	U	U								

000011

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-11 B0X4P8

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-11	Client sample id	B0X4P8
Dept sample id	7361-011	Location/Matrix	1607-H2 SOLID
Received	02/18/00	Collected	02/16/00 12:55
% solids	93.9	Custody/SAF No	B99-042-012 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.603	0.20	0.16	1.0	J	U
Uranium 235	15117-96-1	0.020	0.079	0.15	1.0	U	U
Uranium 238	U-238	0.635	0.20	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.005	0.019	0.053	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.010	0.037	1.0	U	PU
Nickel 63	13981-37-8	-0.102	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	0.016	0.12	0.19	1.0	U	SR
Potassium 40	13966-00-2	14.6	0.61	0.27			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.021	0.10	U	GAM
Europium 152	14683-23-9	U		0.050	0.10	U	GAM
Europium 154	15585-10-1	U		0.071	0.10	U	GAM
Europium 155	14391-16-3	U		0.051	0.10	U	GAM
Radium 226	13982-63-3	0.534	0.045	0.042	0.10		GAM
Radium 228	15262-20-1	0.734	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.882	0.039	0.037			GAM
Thorium 232	TH-232	0.734	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.030		U	GAM
Uranium 238	U-238	U		2.5		U	GAM
Uranium 235	15117-96-1	U		0.075		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-05 B0X4R3

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-05	Client sample id	B0X4R3
Dept sample id	7361-005	Location/Matrix	1607-H2 SOLID
Received	02/18/00	Collected	02/16/00 11:45
% solids	93.9	Custody/SAF No	B99-042-009 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.839	0.23	0.12	1.0	J	U
Uranium 235	15117-96-1	0.019	0.038	0.15	1.0	U	U
Uranium 238	U-238	0.633	0.20	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.010	0.020	0.061	1.0	U	PU
Plutonium 239/240	PU-239/240	0.005	0.020	0.048	1.0	U	PU
Nickel 63	13981-37-8	0.100	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.043	0.13	0.21	1.0	U	SR
Potassium 40	13966-00-2	12.2	0.42	0.15			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	0.070	0.019	0.020	0.10	J	GAM
Europium 152	14683-23-9	U		0.042	0.10	U	GAM
Europium 154	15585-10-1	U		0.062	0.10	U	GAM
Europium 155	14391-16-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.468	0.036	0.033	0.10		GAM
Radium 228	15262-20-1	0.653	0.087	0.076	0.20		GAM
Thorium 228	14274-82-9	0.522	0.023	0.021			GAM
Thorium 232	TH-232	0.653	0.087	0.076			GAM
Americium 241	14596-10-2	U		0.067		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.067		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-06 B0X4R4

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-06	Client sample id	B0X4R4
Dept sample id	7361-006	Location/Matrix	1607-H2 SOLID
Received	02/18/00	Collected	02/16/00 11:40
% solids	97.2	Custody/SAF No	B99-042-009 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.370	0.16	0.12	1.0	J	U
Uranium 235	15117-96-1	0.019	0.039	0.15	1.0	U	U
Uranium 238	U-238	0.354	0.16	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.007	0.022	0.049	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.022	0.035	1.0	U	PU
Nickel 63	13981-37-8	-0.174	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.001	0.12	0.20	1.0	U	SR
Potassium 40	13966-00-2	13.3	0.53	0.22			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.081	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.402	0.047	0.044	0.10		GAM
Radium 228	15262-20-1	0.634	0.098	0.091	0.20		GAM
Thorium 228	14274-82-9	0.504	0.030	0.030			GAM
Thorium 232	TH-232	0.634	0.098	0.091			GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.099		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-07 B0X4R5

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-07	Client sample id	B0X4R5
Dept sample id	7361-007	Location/Matrix	1607-H2 SOLID
Received	02/18/00	Collected	02/16/00 12:00
% solids	96.7	Custody/SAF No	B99-042-009 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.462	0.18	0.13	1.0	J	U
Uranium 235	15117-96-1	0.041	0.042	0.16	1.0	U	U
Uranium 238	U-238	0.598	0.21	0.13	1.0	J	U
Plutonium 238	13981-16-3	-0.005	0.019	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.010	0.010	0.046	1.0	U	PU
Nickel 63	13981-37-8	1.04	1.5	2.4	30	U	NI_L
Total Strontium	SR-RAD	-0.011	0.11	0.20	1.0	U	SR
Potassium 40	13966-00-2	14.0	0.55	0.22			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Europium 152	14683-23-9	U		0.042	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.408	0.043	0.042	0.10		GAM
Radium 228	15262-20-1	0.634	0.090	0.084	0.20		GAM
Thorium 228	14274-82-9	0.667	0.034	0.034			GAM
Thorium 232	TH-232	0.634	0.090	0.084			GAM
Americium 241	14596-10-2	U		0.026		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-08 B0X4R6

DATA SHEET

SDG	7361	Client/Case no	Hanford	SDG H0754	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	R002136-08	Client sample id	B0X4R6		
Dept sample id	7361-008	Location/Matrix	1607-H2	SOLID	
Received	02/18/00	Collected	02/16/00 12:13		
% solids	91.8	Custody/SAF No	B99-042-009	B99-042	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.675	0.25	0.15	1.0	J	U
Uranium 235	15117-96-1	0.048	0.048	0.18	1.0	U	U
Uranium 238	U-238	0.397	0.16	0.15	1.0	J	U
Plutonium 238	13981-16-3	-0.009	0.027	0.065	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.018	0.043	1.0	U	PU
Nickel 63	13981-37-8	-0.070	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.024	0.11	0.19	1.0	U	SR
Potassium 40	13966-00-2	14.0	0.75	0.35			GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	U		0.034	0.10	U	GAM
Europium 152	14683-23-9	U		0.081	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.087	0.10	U	GAM
Radium 226	13982-63-3	0.530	0.068	0.071	0.10		GAM
Radium 228	15262-20-1	0.728	0.15	0.16	0.20		GAM
Thorium 228	14274-82-9	0.769	0.040	0.041			GAM
Thorium 232	TH-232	0.728	0.15	0.16			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

100 H Area - Full Protocol

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Lab id	TMANC
Protocol	Hanford
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Form	DVD-DS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-01 B0X4T3

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-01	Client sample id	B0X4T3
Dept sample id	7361-001	Location/Matrix	1607-H4 SOLID
Received	02/18/00	Collected	02/16/00 10:40
% solids	93.2	Custody/SAF No	B99-042-007 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.610	0.23	0.14	1.0	J	U
Uranium 235	15117-96-1	0.045	0.045	0.17	1.0	U	U
Uranium 238	U-238	0.406	0.19	0.14	1.0	J	U
Plutonium 238	13981-16-3	0.008	0.023	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0.015	0.015	0.029	1.0	U	PU
Nickel 63	13981-37-8	1.13	1.8	2.9	30	U	NI_L
Total Strontium	SR-RAD	-0.074	0.11	0.20	1.0	U	SR
Potassium 40	13966-00-2	15.0	0.47	0.16			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	0.062	0.014	0.018	0.10	J	GAM
Europium 152	14683-23-9	U		0.048	0.10	U	GAM
Europium 154	15585-10-1	U		0.071	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.493	0.038	0.034	0.10		GAM
Radium 228	15262-20-1	0.728	0.084	0.080	0.20		GAM
Thorium 228	14274-82-9	0.647	0.026	0.023			GAM
Thorium 232	TH-232	0.728	0.084	0.080			GAM
Americium 241	14596-10-2	U		0.073		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.070		U	GAM

100 H Area - Full Protocol

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Lab id	TMANC
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Form	DVD-DS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-02 B0X4T4

DATA SHEET

SDG	7361	Client/Case no	Hanford	SDG H0754	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	R002136-02	Client sample id	B0X4T4		
Dept sample id	7361-002	Location/Matrix	1607-H4	SOLID	
Received	02/18/00	Collected	02/16/00 11:10		
% solids	92.0	Custody/SAF No	B99-042-007	B99-042	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.468	0.17	0.12	1.0	J	U
Uranium 235	15117-96-1	0	0.039	0.15	1.0	U	U
Uranium 238	U-238	0.533	0.20	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.009	0.027	0.061	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.009	0.027	0.065	1.0	U	PU
Nickel 63	13981-37-8	0.603	1.7	2.8	30	U	NI_L
Total Strontium	SR-RAD	-0.016	0.10	0.18	1.0	U	SR
Potassium 40	13966-00-2	15.4	0.63	0.30			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Europium 152	14683-23-9	U		0.065	0.10	U	GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.093	0.10	U	GAM
Radium 226	13982-63-3	0.510	0.061	0.058	0.10		GAM
Radium 228	15262-20-1	0.859	0.14	0.12	0.20		GAM
Thorium 228	14274-82-9	0.656	0.036	0.037			GAM
Thorium 232	TH-232	0.859	0.14	0.12			GAM
Americium 241	14596-10-2	U		0.24		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

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SAMPLE DELIVERY GROUP H0754

R002136-03 B0X4T5

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-03	Client sample id	B0X4T5
Dept sample id	7361-003	Location/Matrix	1607-H4 SOLID
Received	02/18/00	Collected	02/16/00 11:25
% solids	92.0	Custody/SAF No	B99-042-007 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.314	0.14	0.11	1.0	J	U
Uranium 235	15117-96-1	0.035	0.035	0.13	1.0	U	U
Uranium 238	U-238	0.328	0.14	0.11	1.0	J	U
Plutonium 238	13981-16-3	0.014	0.028	0.058	1.0	U	PU
Plutonium 239/240	PU-239/240	0.033	0.028	0.045	1.0	U	PU
Nickel 63	13981-37-8	-0.048	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.018	0.10	0.18	1.0	U	SR
Potassium 40	13966-00-2	13.7	0.76	0.35			GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	0.072	0.034	0.039	0.10	J	GAM
Europium 152	14683-23-9	U		0.079	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	0.464	0.060	0.058	0.10		GAM
Radium 228	15262-20-1	0.766	0.18	0.16	0.20		GAM
Thorium 228	14274-82-9	0.629	0.040	0.039			GAM
Thorium 232	TH-232	0.766	0.18	0.16			GAM
Americium 241	14596-10-2	U		0.046		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-04 B0X4T6

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-04	Client sample id	B0X4T6
Dept sample id	7361-004	Location/Matrix	1607-H4 SOLID
Received	02/18/00	Collected	02/16/00 11:40
% solids	89.8	Custody/SAF No	B99-042-007 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.351	0.16	0.12	1.0	J	U
Uranium 235	15117-96-1	0	0.039	0.15	1.0	U	U
Uranium 238	U-238	0.462	0.16	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.009	0.009	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	0.013	0.017	0.033	1.0	U	PU
Nickel 63	13981-37-8	0.050	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	-0.040	0.12	0.21	1.0	U	SR
Potassium 40	13966-00-2	14.5	0.75	0.34			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	0.137	0.037	0.043	0.10		GAM
Europium 152	14683-23-9	U		0.077	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	0.475	0.061	0.064	0.10		GAM
Radium 228	15262-20-1	0.694	0.14	0.15	0.20		GAM
Thorium 228	14274-82-9	0.592	0.037	0.038			GAM
Thorium 232	TH-232	0.694	0.14	0.15			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		4.4		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-09 B0X4T7

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-09	Client sample id	B0X4T7
Dept sample id	7361-009	Location/Matrix	1607-H4 SOLID
Received	02/18/00	Collected	02/16/00 10:40
% solids	92.8	Custody/SAF No	B99-042-011 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.399	0.18	0.14	1.0	J	U
Uranium 235	15117-96-1	0.088	0.088	0.17	1.0	U	U
Uranium 238	U-238	0.417	0.18	0.14	1.0	J	U
Plutonium 238	13981-16-3	0.009	0.026	0.058	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.026	0.058	1.0	U	PU
Nickel 63	13981-37-8	0.602	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	0.015	0.12	0.20	1.0	U	SR
Potassium 40	13966-00-2	14.3	0.48	0.19			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	0.083	0.015	0.017	0.10	J	GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.072	0.10	U	GAM
Europium 155	14391-16-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	0.481	0.037	0.033	0.10		GAM
Radium 228	15262-20-1	0.638	0.092	0.092	0.20		GAM
Thorium 228	14274-82-9	0.636	0.026	0.024			GAM
Thorium 232	TH-232	0.638	0.092	0.092			GAM
Americium 241	14596-10-2	U		0.074		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.071		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/12/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0754

R002136-10 B0X4T8

DATA SHEET

SDG	7361	Client/Case no	Hanford SDG H0754
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	R002136-10	Client sample id	B0X4T8
Dept sample id	7361-010	Location/Matrix	1607-H4 SOLID
Received	02/18/00	Collected	02/16/00 10:20
% solids	100.0	Custody/SAF No	B99-042-011 B99-042

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233	U-233/234	0.705	0.21	0.11	1.0	J	U
Uranium 235	15117-96-1	0.053	0.071	0.14	1.0	U	U
Uranium 238	U-238	0.764	0.21	0.11	1.0	J	U
Plutonium 238	13981-16-3	-0.008	0.008	0.038	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.016	0.044	1.0	U	PU
Nickel 63	13981-37-8	0.704	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	-0.083	0.095	0.18	1.0	U	SR
Potassium 40	13966-00-2	4.84	0.32	0.12			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.037	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Radium 226	13982-63-3	0.167	0.030	0.027	0.10		GAM
Radium 228	15262-20-1	0.204	0.061	0.060	0.20		GAM
Thorium 228	14274-82-9	0.208	0.028	0.030			GAM
Thorium 232	TH-232	0.204	0.061	0.060			GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.069		U	GAM

100 H Area - Full Protocol

4/21/00

Lab id	TMANC
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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0754 was composed of eleven solid (soil) samples designated under SAF No. B99-042 with a Project Designation of: 100 H Area – Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. Results were transmitted to BHI via eFax on March 12, 2000.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

MAR 2000
RECEIVED
Data
Log In

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-042-007 | Page 1 of 1

Collector: Stankovich/ Trice /Nielson/winter	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4 H0754 (7361)	SAF No.: B99-042	
Ice Chest No.: ERC99-062	Field Logbook No.: EL-1500-1	COA: R607H42600	Method of Shipment: FedEx RAD SDG H0754
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A000126		Bill of Lading/Air Bill No.: 42357953-3954

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
Type of Container	aG	aG	aG	aG	aG	aG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B0X4T3	Soil	2-16-00	1040	✓	✓					✓		A1
B0X4T4	Soil	2-16-00	1110	✓	✓					✓		A2
B0X4T5	Soil	2-16-00	1125	✓	✓					✓		A3
B0X4T6	Soil	2-16-00	1140	✓	✓					✓		A4

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Nielson/R.Nielson	2/16/00 17:00	RcF#2A	
RcF#2A	2.17.00/0900	R.Thoren	2.17.00/0900
R.Thoren	2.17.00/1430	FEDEX	2-17-00
FedEx	2-18-00 10:00	JR Corse	2-18-00 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Samples originated in non Rad Controlled Area. < 2000pCi/g NO TA Req

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-042-009

Collector: Stankovich/ Trice / Nickon / Winterroe	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607-H2 H0754 (7361)	SAF No.: B99-042	
Ice Chest No.: ERC 96-059	Field Logbook No.: EL-1500-1	COA: R607H22600	Method of Shipment: FedEx RAD SDA 40754
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A0000126		Bill of Lading/Air Bill No.: 4235795 3 3965

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				None	None	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container				aG	aG	aG	aG	aG	aG	P		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				60mL	60mL	125mL	250mL	250mL	250mL	1000mL		
				Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time									
B0X4R3	Soil	2-16-00	1145	X	X					X		
B0X4R4	Soil	2-16-00	1140	X	X					X		
B0X4R5	Soil	2-16-00	1200	X	X					X		
B0X4R6	Soil	2-16-00	1213	X	X					X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.W. Nickon / R. Nickon	2/16/00 1700	Ref #2A	
Ref 2A	2/17/00 0900	R.K. Thorson	2/17/00 0900
R.K. Thorson	2/17/00 1430	FED EX	2-17-00
Fed Ex	2-18-00 10:00	JR Cross	2-18-00 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non Rad Controlled area. <2000 pCi/g NO TA Required

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-011	Page 1 of 1

Collector: Stankovich/ Trice / Nelson / Windrose	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4 — H0754 (7361)	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: ERC 96-059	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: FedEx — RAD SDA H0754	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A0000126	Bill of Lading/Air Bill No.: 4235795 3 3965	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS												
			Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None			
			Type of Container	aG	aG	aG	aG	aG	aG	P			
			No. of Container(s)	1	1	1	1	1	1	1			
			Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL			
				Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 – Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time										
B0X4T7	Soil	2-16-00	1040	✓	✓					✓			
B0X4T8	Soil	2-16-00	1020	✓	✓					✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
D. Nelson / R. Nelson	2/16/00 1700	Ref #2A	
R. 2A	2-17-00/0900	R. Thorson / RIKKI Thorson	2-17-00 0900
RIKKI Thorson / R. Thorson	2-17-00/1430	FEDEX	2-17-00
FedEx	2-18-00 10:00	A. Cuzzo / A. Cuzzo	2-18-00 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in RAD Controlled area. Contaminated
NO TA Required

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-012	Page 1 of 1

Collector: Stankovich/ Trice / Nielson / Winterrose	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H2 H0754 (7361)		SAF No.: B99-042
Ice Chest No.	Field Logbook No.: EL-1500-1	COA: R607H22600	Method of Shipment: FedEx RAD SDG H0754
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A000126		Bill of Lading/Air Bill No.: 4235 7953 3954

Price Code: 8L

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: none

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	aG	aG	aG	aG	aG	aG	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	125mL	250mL	250mL	250mL	1000mL				
SAMPLE ANALYSIS	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr; Nickel-63	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B0X4P8	Soil	2-16-00	1255	X	X				X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kevin Nielson / R. Nielson		RLF #0A	
RLF 0A	2-17-00 0900	R. Nielson	2-17-00 0900
R. Nielson	2-17-00 1400	FEDEX	2-17-00
Fed Ex	2-18-00 10:00	McCarron / R. Cotton	2-18-00 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non Rad. Controlled area. <2000pCi/g NOTA Required

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

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

BHI-EE-011 (10/99)

Appendix 5

Data Validation Supporting Documentation

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100D 1607-H2/H4.			DATA PACKAGE: H0754		
VALIDATOR: TLI		LAB: TNU		DATE: 4/4/00	
CASE:			SDG: H0754		
ANALYSES PERFORMED					
☐ Gross Alpha/Beta	☑ Strontium-90	☐ Technetium-99	☑ Alpha Spectroscopy	☑ Gamma Spectroscopy	
☐ Total Uranium	☐ Radium-22	☐ Tritium	☑ Ni-63		

SAMPLES/MATRIX				
BOX4T3	BOX4T4	BOX4T5	BOX4T6	
BOX4R3	BOX4R4	BOX4R5	BOX4R6	BOX4T7
BOX4T8	BOX4P8			
				soil

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: As Ur 233/234 U238 (aspec) K40
Ra 226/228 th 228/230 in eb

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:

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:

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: U235(ca pm) w/in 2X TPL

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:_____

Review Comment Record (RCR)

1. Date	2. Review No.
05/01/00	QA-0027
3. Project	**4. Page**
100-D	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
SDG No. H0754	100-D Full Protocol, Waste Sites 1607-H2 and 1607-H4	Claude Stacey	Quality Program	372-9208

17. Comment Submittal Approval:

Organization Manager (Optional) — Date

18. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact — Date

Author/Originator

19. CLOSED

05/02/00 — Date

Claude Stacey — Reviewer/Point of Contact

Author/Originator

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.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry: Page 10, sample B0X4R5, Ra-228 has the result as 0.738 where as the lab report sheet shows the result as 0.728.		cancel Kc	
2	Inorganic: OK			
3	Semivolatiles: Page 13 and 14, the heading for page 14 needs to be moved from the bottom of page 13 and placed at the top of page 14.		cancel Kc	
4	PCB: Page 04, Reference Section references DOE/RL-99-35 which is the SAP for 105F/105DR. The reference should be DOE/RL-96-22.		cancel Kc	
5	PCB: Page 10, sample B0X4T8 all the PCB isomers should have the "U" qualifiers assign to them.		cancel Kc	

Post-it® Fax Note 7671

To Jeanette Duncan	Date / # of pages ▶ 1
Co./Dept.	From C. Stacey
Phone #	Co.
Fax # 372-9487	Phone #
	Fax #

MAY 02 '00 03:03PM BHI 509 372 9447 509 372 9487
MAY 02 '00 02:06PM P.1/1

Review Comment Record (RCR)

1. Date	2. Review No.
05/01/00	QA-0027
3. Project	**4. Page**
100-D	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
SDG No. H0754	100-D Full Protocol, Waste Sites 1607-H2 and 1607-H4	Claude Stacey	Quality Program	372-9208

17. Comment Submittal Approval:

Organization Manager (Optional) _____ Date _____

10. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

11. CLOSED

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

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.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry: Page 10, sample B0X4R6, Ra-228 has the result as 0.738 where as the lab report sheet shows the result as 0.728.		Correct [illegible]	
2	Inorganic: OK			
3	Semivolatiles: Page 13 and 14, the heading for page 14 needs to be moved from the bottom of page 13 and placed at the top of page 14.		Correct [illegible]	
4	PCB: Page 04, Reference Section references DOE/RL-99-35 which is the SAP for 105F/105DR. The reference should be DOE/RL-96-22.		Correct [illegible]	
5	PCB: Page 10, sample B0X4T8 all the PCB isomers should have the "U" qualifiers assign to them.		Correct [illegible]	

Data validation results:			
Validator:	DWS		
Date:	4/26 & 4/27		
Project:	100D full protocol waste sites 1607-H2 and 1607-H4		
SAF	899-042		
SDGs:	H0754		
data package	**analysis**	**page**	**comment**
H0754	Rad	12-~~22 & 24~~	~~Lab documents cite "100 H Area - Full protocol" where as these samples are from 100-D~~
H0754	Inorganic	?	There are no apparent pages out of sequence or missing, however, there is no report from the lab on the Cr+6 results for sample B0X4P8, the data reviewer does include a result for this sample on page 10.
H0754	semivol	11-14	The cited CRDL limit for the following analytes do not match the RDLs listed in the Comercial Contract Laboratory SOW rev. 6: 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro--2-methylphenol, pentachlorophenol (should all be 330); 2-nitrophenol & 4-nitrophenol (should be 660)
H0754	semivol	4	Under Detection Levels, the second sentence needs to be changed in light of the above observation on CRDLs. The second sentence should read as follows: "All reported laboratory detection levels for undetected analystes were above the analyte specific CRQLs in all instances except for the following two cases: 1) the requirement was met for 2-nitrophenol in all samples, and 2) the requirement was met in sample B0X4T8 for analytes except 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, and pentachlorophenol.
H0754	semivol	4	The first sentence of the last paragraph under the heading Minor Deficiencies should be changed to read as: "All reported laboratory detection levels for undetected analystes were above the analyte specific CRQLs in all instances except for the following two cases: 1) the requirement was met for 2-nitrophenol in all samples, and 2) the requirement was met in sample B0X4T8 for analytes except 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, and pentachlorophenol."
H0754	PCBs	all	no observations

See RLW comments
RLW 5-1-00
carried K
changed K
changed K
changed K

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Monday, May 01, 2000 12:25 PM
To: Duncan, Jeanette M
Subject: Reviiew of Validation of H0754 data Package

Jeaeatte,

The following are my comments on the H0754 validation reports.

All packages: In "Project" line - Should identify "100-H Areas", not "100-D Areas". changed JK

Semi-Voa; Page 12: Results reported for Di-n-octylphthalate and Benzo(k)fluoranthene for sample B0X4P8 are incorrect. Values should be 350, not 870. corrected JK

Rich

FAX

TECHLAW, INC.
451 Hills, Suite 23
Richland, WA 99352
509-375-5667
509-375-5151 (fax)

To: Jeanette Duncan

From: Bruce Christian

Pages: 1

Date: 4 April 2000

Information Request #1

H0754 - Metals

The methods glossary is missing from the metals package.

See attached sheet. this IR is closed.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00021491

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17 __Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	__6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	__6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2 __200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

L-WI-033/M-11/99

02A

Duncan, Jeanette M

From: Callison, Stacey W
Sent: Tuesday, May 02, 2000 3:02 PM
To: Duncan, Jeanette M
Subject: H0754 Draft Validation

I will not be reviewing the H0754 draft validation package.

Data validation results:			
Validator:	DWS		
Date:	4/25/2000		
Project:	100D full protocol waste site 116-D-6		
SAF			
SDGs:	HO766		
data package	**analysis**	**page**	**comment**
HO766-TNU	Rad	NA	No corrections needed
HO766-TNU	Inorganics	1	The first line of the table lists sample "B0X952", the correct sample number is B0XP52.
HO766-TNU	Inorganics	2	~~The third sentence under Preparation Blanks is not complete, suspect the word "and" should be "an"~~
HO766-TNU	volatiles	NA	no corrections needed

Data validation results:			
Validator:	DWS		
Date:	4/26 & 4/27		
Project:	100D full protocol waste sites 1607-H2 and 1607-H4		
SAF	B99-042		
SDGs:	H0754		
data package	**analysis**	**page**	**comment**
H0754	Rad	12-~~22-8~~ 24	~~Lab documents cite "100 H Area - Full protocol" where as these samples are from 100 D.~~
H0754	Inorganic	?	There are no apparent pages out of sequence or missing, however, there is no report from the lab on the Cr+6 results for sample B0X4P8, the data reviewer does include a result for this sample on page 10.
H0754	semivol	11-14	The cited CRDL limit for the following analytes do not match the RDLs listed in the Comercial Contract Laboratory SOW rev. 6: 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro--2-methylphenol, pentachlorophenol (should all be 330); 2-nitrophenol & 4-nitrophenol (should be 660)
H0754	semivol	4	Under Detection Levels, the second sentence needs to be changed in light of the above observation on CRDLs. The second sentence should read as follows: "All reported laboratory detection levels for undetected analystes were above the analyte specific CRQLs in all instances except for the following two cases: 1) the requirement was met for 2-nitrophenol in all samples, and 2) the requirement was met in sample B0X4T8 for analytes except 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, and pentachlorophenol.
H0754	semivol	4	The first sentence of the last paragraph under the heading Minor Deficiencies should be changed to read as: "All reported laboratory detection levels for undetected analystes were above the analyte specific CRQLs in all instances except for the following two cases: 1) the requirement was met for 2-nitrophenol in all samples, and 2) the requirement was met in sample B0X4T8 for analytes except 2,4,5-trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, and pentachlorophenol."
H0754	PCBs	all	no observations

See RLW comments
DLW 5-1-00

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Monday, May 01, 2000 12:25 PM
To: Duncan, Jeanette M
Subject: Reviiew of Validation of H0754 data Package

Jeaeatte,

The following are my comments on the H0754 validation reports.

All packages: In "Project" line - Should identify "100-H Areas", not "100-D Areas".

Semi-Voa; Page 12: Results reported for Di-n-octylphthalate and Benzo(k)fluoranthene for sample B0X4P8 are incorrect. Values should be 350, not 870.

Rich

Review Comment Record (RCR)

1. Date	2. Review No.
05/01/00	QA-0027
3. Project	4. Page
100-D	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
SDG No. H0754	100-D Full Protocol, Waste Sites 1607-H2 and 1607-H4	Claude Stacey	Quality Program	372-9208

17. Comment Submittal Approval:

Organization Manager (Optional) _____ Date _____

10. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

11. CLOSED

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

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.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry: Page 10, sample B0X4R6, Ra-228 has the result as 0.738 where as the lab report sheet shows the result as 0.728.			
2	Inorganic: OK			
3	Semivolatiles: Page 13 and 14, the heading for page 14 needs to be moved from the bottom of page 13 and placed at the top of page 14.			
4	PCB: Page 04, Reference Section references DOE/RL-99-35 which is the SAP for 105F/105DR. The reference should be DOE/RL-96-22.			
5	PCB: Page 10, sample B0X4T8 all the PCB isomers should have the "U" qualifiers assign to them.			

CHEMICAL RDLs

Ignitability - 1010	IGNITABLTY	Ignitability	1 Deg. C	1 Deg. C			
Conductivity - 120.1	CONDUCT	Conductivity	1 umho/cm	NA			
Hardness - 130.N[1]	HARDNESS	Hardness	10000	NA			
pH - 150.1	PH	pH Measurement	.1 pH unit	.1 pH unit			
Total Dissolved Solids (TDS) - 160.1	TDS	Total dissolved solids	10000	NA			
Total Suspended Solids (TSS) - 160.2	TSS	Total suspended solids	5000	NA			
Turbidity - 180.1	TURBIDITY	Turbidity	.1 NTU	NA			
Trace Elements by ICP - 200.7	7429-90-5	Aluminum	200	20000			
Trace Elements by ICP - 200.7	7439-89-6	Iron	100	10000			
Trace Elements by ICP - 200.7	7439-92-1	Lead	100	10000			
Trace Elements by ICP - 200.7	7439-93-2	Lithium	50	5000			
Trace Elements by ICP - 200.7	7439-95-4	Magnesium	5000	500000			
Trace Elements by ICP - 200.7	7439-96-5	Manganese	15	1500			
Trace Elements by ICP - 200.7	7439-98-7	Molybdenum	100	10000			
Trace Elements by ICP - 200.7	7440-02-0	Nickel	40	4000			
Trace Elements by ICP - 200.7	7440-09-7	Potassium	5000	500000			
Trace Elements by ICP - 200.7	7440-22-4	Silver	20	2000			
Trace Elements by ICP - 200.7	7440-23-5	Sodium	5000	500000			
Trace Elements by ICP - 200.7	7440-24-6	Strontium (elemental)	50	5000			
Trace Elements by ICP - 200.7	7440-28-0	Thallium	100	10000			
Trace Elements by ICP - 200.7	7440-31-5	Tin	100	10000			
Trace Elements by ICP - 200.7	7440-36-0	Antimony	60	6000			
Trace Elements by ICP - 200.7	7440-38-2	Arsenic	100	10000			
Trace Elements by ICP - 200.7	7440-39-3	Barium	200	20000			
Trace Elements by ICP - 200.7	7440-41-7	Beryllium	5	500			
Trace Elements by ICP - 200.7	7440-42-8	Boron	20	2000			
Trace Elements by ICP - 200.7	7440-43-9	Cadmium	5	500			
Trace Elements by ICP - 200.7	7440-47-3	Chromium	10	1000			
Trace Elements by ICP - 200.7	7440-48-4	Cobalt	50	5000			
Trace Elements by ICP - 200.7	7440-50-8	Copper	25	2500			
Trace Elements by ICP - 200.7	7440-62-2	Vanadium	50	5000			
Trace Elements by ICP - 200.7	7440-66-6	Zinc	20	2000			
Trace Elements by ICP - 200.7	7440-70-2	Calcium	5000	500000			
Trace Elements by ICP - 200.7	7631-86-9	Silica	50	5000			
Trace Elements by ICP - 200.7	7782-49-2	Selenium	100	10000			
Chromium by GFAA - 218.2	7440-47-3	Chromium	5	500			
Copper by GFAA - 220.2	7440-50-8	Copper	5	500			
Iron by GFAA - 236.2	7439-89-6	Iron	10	1000			
Mercury be Cold Vapor - 245.N	7439-97-6	Mercury	0.5	50			
Selenium by GFAA - 270.2	7782-49-2	Selenium	10	1000			
Anions by IC - 300.0	14265-44-2	Phosphate	500	5000	IC Anions - 300.0		
Anions by IC - 300.0	14797-55-8	Nitrate	250	2500			
Anions by IC - 300.0	14797-65-0	Nitrite	250	2500			
Anions by IC - 300.0	14808-79-8	Sulfate	500	5000	IC Anions - 300.0		
Anions by IC - 300.0	16887-00-6	Chloride	200	2000	IC Anions - 300.0		
Anions by IC - 300.0	16984-48-8	Fluoride	500	5000			

Anions by IC - 300.0	24959-67-9	Bromide	250	2500			
Anions by IC - 300.0	NO2-N	Nitrogen in Nitrite	75	750	IC Anions - 300.0		
Anions by IC - 300.0	NO3-N	Nitrogen in Nitrate	75	750	IC Anions - 300.0		
Acidity - 305.1	ACIDITY	Acidity	10000	NA			
Alkalinity - 310.1	ALKALINITY	Alkalinity	5000	NA			
Chlorine (total residue) - 330.N	7782-50-5	Chlorine	100	NA			
Cyanide (total) - 335.N	57-12-5	Cyanide	5	500			
Ammonia - 350.1	14798-03-9	Ammonium ion	50	500			
Ammonia - 350.1	7664-41-7	Ammonia	50	500			
Ammonia - 350.1	NH3-N	Nitrogen in ammonia	50	500			
Nitrogen by Kjeldahl - 351.N	N-KJELDAHL	Nitrogen, Kjeldahl total	50	2500			
Nitrite - 352.1	14797-65-0	Nitrite	75	750			
NO2/NO3 - 353.N	NO2+NO3-N	Nitrogen in Nitrite and Nitrate	75	750			
Phosphorous - 365.N	7723-14-0	Phosphorus	100	10000			
Sulfate - 375.N	14808-79-8	Sulfate	100	1000			
Biological Oxygen Demand - 405.1	BOD	Biochemical oxygen demand	2000	NA			
Chemical Oxygen Demand - 410.N	COD	Chemical Oxygen Demand	10000	NA			
Oil & Grease (total recoveable) - 413.N	OIL/GREASE	Oil and grease	2000	200000			
Total Carbon (TC) - 415.1M	TC	Total carbon	1000	25000			
Total Inorganic Carbon (TIC) -415.1M	TIC	Total inorganic carbon	500	12500			
Total Organic Carbon (TOC) - 415.1	TOC	Total organic carbon	1000	25000			
Total Petroleum Hydrocarbons - 418.1	TPH	Total petroleum hydrocarbons	500	5000			
Cyanide, Colorimetric Method	57-12-5	Cyanide	5	500			
ICP Metals - 6010	7429-90-5	Aluminum	200	20000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7439-89-6	Iron	100	10000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7439-92-1	Lead	100	10000			
ICP Metals - 6010	7439-93-2	Lithium	50	5000			
ICP Metals - 6010	7439-95-4	Magnesium	5000	500000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7439-96-5	Manganese	15	1500	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7439-98-7	Molybdenum	50	5000			
ICP Metals - 6010	7440-02-0	Nickel	40	4000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-09-7	Potassium	5000	500000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7440-21-3	Silicon	50	5000			
ICP Metals - 6010	7440-22-4	Silver	20	2000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-23-5	Sodium	5000	500000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7440-24-6	Strontium (elemental)	50	5000		ICP Metals - 6010	
ICP Metals - 6010	7440-28-0	Thallium	100	10000			
ICP Metals - 6010	7440-31-5	Tin	100	10000			ICP Metals - 6010
ICP Metals - 6010	7440-32-6	Titanium	5	500			
ICP Metals - 6010	7440-36-0	Antimony	60	6000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-38-2	Arsenic	100	10000			
ICP Metals - 6010	7440-39-3	Barium	200	20000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-41-7	Beryllium	5	500	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-42-8	Boron	20	2000			
ICP Metals - 6010	7440-43-9	Cadmium	5	500	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-47-3	Chromium	10	1000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010

ICP Metals - 6010	7440-48-4	Cobalt	50	5000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-50-8	Copper	25	2500	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-62-2	Vanadium	50	5000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-66-6	Zinc	20	2000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	ICP Metals - 6010
ICP Metals - 6010	7440-67-7	Zirconium	25	2500			
ICP Metals - 6010	7440-69-9	Bismuth	100	10000			
ICP Metals - 6010	7440-70-2	Calcium	5000	500000	ICP Metals - 6010 (TAL)	ICP Metals - 6010	
ICP Metals - 6010	7782-49-2	Selenium	100	10000			
Trace - ICP	7439-92-1	Lead	10	1000			
Trace - ICP	7440-22-4	Silver	5	500			
Trace - ICP	7440-28-0	Thallium	10	1000			
Trace - ICP	7440-36-0	Antimony	10	1000			
Trace - ICP	7440-38-2	Arsenic	10	1000			
Trace - ICP	7440-39-3	Barium	5	500			
Trace - ICP	7440-43-9	Cadmium	5	500			
Trace - ICP	7440-47-3	Chromium	10	1000			
Trace - ICP	7782-49-2	Selenium	10	1000			
Organics/Purgabiles - 624	100-41-4	Ethylbenzene	5	5			
Organics/Purgabiles - 624	10061-01-5	cis-1,3-Dichloropropene	5	5			
Organics/Purgabiles - 624	10061-02-6	trans-1,3-Dichloropropene	5	5			
Organics/Purgabiles - 624	106-46-7	1,4-Dichlorobenzene	5 (4)	5 (4)			
Organics/Purgabiles - 624	107-06-2	1,2-Dichloroethane	5 (1.5)	5 (1.5)			
Organics/Purgabiles - 624	108-88-3	Toluene	5	5			
Organics/Purgabiles - 624	108-90-7	Chlorobenzene	5	5			
Organics/Purgabiles - 624	110-75-8	2-Chloroethyl vinyl ether	10	10			
Organics/Purgabiles - 624	124-48-1	Dibromochloromethane	5	5			
Organics/Purgabiles - 624	127-18-4	Tetrachloroethene	5	5			
Organics/Purgabiles - 624	156-60-5	trans-1,2-Dichloroethylene	5	5			
Organics/Purgabiles - 624	541-73-1	1,3-Dichlorobenzene	10	10			
Organics/Purgabiles - 624	56-23-5	Carbon tetrachloride	5 (2)	5 (2)			
Organics/Purgabiles - 624	67-66-3	Chloroform	5	5			
Organics/Purgabiles - 624	71-43-2	Benzene	5 (1.5)	5 (1.5)			
Organics/Purgabiles - 624	71-55-6	1,1,1-Trichloroethane	5	5			
Organics/Purgabiles - 624	74-83-9	Bromomethane	10	10			
Organics/Purgabiles - 624	74-87-3	Chloromethane	10	10			
Organics/Purgabiles - 624	75-00-3	Chloroethane	10	10			
Organics/Purgabiles - 624	75-01-4	Vinyl chloride	10	10			
Organics/Purgabiles - 624	75-09-2	Methylenechloride	5	5			
Organics/Purgabiles - 624	75-25-2	Bromoform	5	5			
Organics/Purgabiles - 624	75-27-4	Bromodichloromethane	5	5			
Organics/Purgabiles - 624	75-34-3	1,1-Dichloroethane	5	5			
Organics/Purgabiles - 624	75-35-4	1,1-Dichloroethene	5 (2)	5 (2)			
Organics/Purgabiles - 624	75-69-4	Trichloromonofluoromethane	10	10			
Organics/Purgabiles - 624	75-71-8	Dichlorodifluoromethane	10	10			
Organics/Purgabiles - 624	78-87-5	1,2-Dichloropropane	5 (1.5)	5 (1.5)			
Organics/Purgabiles - 624	79-00-5	1,1,2-Trichloroethane	5 (2)	5 (2)			

Organics/Purgabiles - 624	79-01-6	Trichloroethene	5	5			
Organics/Purgabiles - 624	79-34-5	1,1,2,2-Tetrachloroethane	5	5			
Organics/Purgabiles - 624	95-50-1	1,2-Dichlorobenzene	10	10			
Organics Base/Neutrals & Acids - 625	100-02-7	4-Nitrophenol	20	660			
Organics Base/Neutrals & Acids - 625	101-55-3	4-Bromophenylphenyl ether	10	330			
Organics Base/Neutrals & Acids - 625	103-33-3	Azobenzene	10	330			
Organics Base/Neutrals & Acids - 625	105-67-9	2,4-Dimethylphenol	10	330			
Organics Base/Neutrals & Acids - 625	106-46-7	1,4-Dichlorobenzene	10 (5)	330			
Organics Base/Neutrals & Acids - 625	108-60-1	2,2'-Oxybis(1-chloropropane)	10	330			
Organics Base/Neutrals & Acids - 625	108-95-2	Phenol	10	330			
Organics Base/Neutrals & Acids - 625	111-44-4	Bis(2-chloroethyl) ether	10	330			
Organics Base/Neutrals & Acids - 625	111-91-1	Bis(2-Chloroethoxy)methane	10	330			
Organics Base/Neutrals & Acids - 625	117-81-7	Bis(2-ethylhexyl) phthalate	10	330			
Organics Base/Neutrals & Acids - 625	117-84-0	Di-n-octylphthalate	10	330			
Organics Base/Neutrals & Acids - 625	118-74-1	Hexachlorobenzene	10	330			
Organics Base/Neutrals & Acids - 625	120-12-7	Anthracene	10	330			
Organics Base/Neutrals & Acids - 625	120-82-1	1,2,4-Trichlorobenzene	10	330			
Organics Base/Neutrals & Acids - 625	120-83-2	2,4-Dichlorophenol	10	330			
Organics Base/Neutrals & Acids - 625	121-14-2	2,4-Dinitrotoluene	10	330			
Organics Base/Neutrals & Acids - 625	129-00-0	Pyrene	10	330			
Organics Base/Neutrals & Acids - 625	131-11-3	Dimethyl phthalate	10	330			
Organics Base/Neutrals & Acids - 625	191-24-2	Benzo(ghi)perylene	10	330			
Organics Base/Neutrals & Acids - 625	193-39-5	Indeno(1,2,3-cd)pyrene	10	330			
Organics Base/Neutrals & Acids - 625	205-99-2	Benzo(b)fluoranthene	10	330			
Organics Base/Neutrals & Acids - 625	206-44-0	Fluoranthene	10	330			
Organics Base/Neutrals & Acids - 625	207-08-9	Benzo(k)fluoranthene	10	330			
Organics Base/Neutrals & Acids - 625	208-96-8	Acenaphthylene	10	330			
Organics Base/Neutrals & Acids - 625	218-01-9	Chrysene	10	330			
Organics Base/Neutrals & Acids - 625	50-32-8	Benzo(a)pyrene	10	330			
Organics Base/Neutrals & Acids - 625	51-28-5	2,4-Dinitrophenol	25	825			
Organics Base/Neutrals & Acids - 625	53-70-3	Dibenz[a,h]anthracene	10	330			
Organics Base/Neutrals & Acids - 625	534-52-1	4,6-Dinitro-2methyl phenol	10	330			
Organics Base/Neutrals & Acids - 625	541-73-1	1,3-Dichlorobenzene	10	330			
Organics Base/Neutrals & Acids - 625	56-55-3	Benzo(a)anthracene	10	330			
Organics Base/Neutrals & Acids - 625	59-50-7	4-Chloro-3-methylphenol	10	330			
Organics Base/Neutrals & Acids - 625	606-20-2	2,6-Dinitrotoluene	10	330			
Organics Base/Neutrals & Acids - 625	62-75-9	N-Nitrosodimethylamine	10	330			
Organics Base/Neutrals & Acids - 625	621-64-7	N-Nitroso-di-n-dipropylamine	10	330			
Organics Base/Neutrals & Acids - 625	67-72-1	Hexachloroethane	10	330			
Organics Base/Neutrals & Acids - 625	7005-72-3	4-Chlorophenylphenyl ether	10	330			
Organics Base/Neutrals & Acids - 625	77-47-4	Hexachlorocyclopentadiene	10	330			
Organics Base/Neutrals & Acids - 625	78-59-1	Isophorone	10	330			
Organics Base/Neutrals & Acids - 625	83-32-9	Acenaphthene	10	330			
Organics Base/Neutrals & Acids - 625	84-66-2	Diethylphthalate	10	330			
Organics Base/Neutrals & Acids - 625	84-74-2	Di-n-butylphthalate	10	330			
Organics Base/Neutrals & Acids - 625	85-01-8	Phenanthrene	10	330			

Organics Base/Neutrals & Acids - 625	85-68-7	Butylbenzylphthalate	10	330			
Organics Base/Neutrals & Acids - 625	86-30-6	N-Nitrosodiphenylamine	10	330			
Organics Base/Neutrals & Acids - 625	86-73-7	Fluorene	10	330			
Organics Base/Neutrals & Acids - 625	87-68-3	Hexachlorobutadiene	10	330			
Organics Base/Neutrals & Acids - 625	87-86-5	Pentachlorophenol	10	330			
Organics Base/Neutrals & Acids - 625	88-06-2	2,4,6-Trichlorophenol	10	330			
Organics Base/Neutrals & Acids - 625	88-75-5	2-Nitrophenol	20	660			
Organics Base/Neutrals & Acids - 625	91-20-3	Naphthalene	10	330			
Organics Base/Neutrals & Acids - 625	91-58-7	2-Chloronaphthalene	10	330			
Organics Base/Neutrals & Acids - 625	91-94-1	3,3'-Dichlorobenzidine	10	330			
Organics Base/Neutrals & Acids - 625	92-87-5	Benzidine	50	1650			
Organics Base/Neutrals & Acids - 625	95-50-1	1,2-Dichlorobenzene	10	330			
Organics Base/Neutrals & Acids - 625	95-57-8	2-Chlorophenol	10	330			
Organics Base/Neutrals & Acids - 625	98-95-3	Nitrobenzene	10	330			
Arsenic - 7060	7440-38-2	Arsenic	10	1000			
Cadmium - 7031	7440-43-9	Cadmium	5	500			
Chromium - 7191	7440-47-3	Chromium	10	1000			
Chromium (hex) - 7196	18540-29-9	Hexavalent Chromium	10	500			
Lead - 7421	7439-92-1	Lead	10	1000			
Mercury - 7470	7439-97-6	Mercury	0.5	NA			
Mercury - 7471	7439-97-6	Mercury	NA	200			
Selenium - 7740	7782-49-2	Selenium	10	1000			
Thallium - 7841	7440-28-0	Thallium	10	1000			
Halogenated VOA - 8010	106-46-7	1,4-Dichlorobenzene	1	1			
Halogenated VOA - 8010	107-06-2	1,2-Dichloroethane	1	1			
Halogenated VOA - 8010	127-18-4	Tetrachloroethene	1	1			
Halogenated VOA - 8010	156-59-2	cis-1,2-Dichloroethylene	1	1			
Halogenated VOA - 8010	156-60-5	trans-1,2-Dichloroethylene	1	1			
Halogenated VOA - 8010	56-23-5	Carbon tetrachloride	1	1			
Halogenated VOA - 8010	67-66-3	Chloroform	1	1			
Halogenated VOA - 8010	71-55-6	1,1,1-Trichloroethane	1	1			
Halogenated VOA - 8010	75-01-4	Vinyl chloride	1	1			
Halogenated VOA - 8010	75-09-2	Methylenechloride	1	1			
Halogenated VOA - 8010	75-34-3	1,1-Dichloroethane	1	1			
Halogenated VOA - 8010	79-00-5	1,1,2-Trichloroethane	1	1			
Halogenated VOA - 8010	79-01-6	Trichloroethene	1	1			
Non-Halogenated VOA - 8015	107-21-1	Ethylene glycol	5000	5000			
Non-Halogenated VOA - 8015	141-78-6	Ethyl acetate	5000	5000			
Non-Halogenated VOA - 8015	60-29-7	Diethyl ether	5000	5000			
Non-Halogenated VOA - 8015	64-17-5	Ethanol	5000	5000			
Non-Halogenated VOA - 8015	71-36-3	1-Butanol	5000	5000			
GC Organic - 8015M	111-76-2	2-Butoxyethanol	5000	5000			
GC Organic - 8015M	67-56-1	Methanol	1000	1000			
Aromatic VOA - 8020	100-41-4	Ethylbenzene	1	1		Aromatic VOA - 8020	
Aromatic VOA - 8020	106-46-7	1,4-Dichlorobenzene	1	1		Aromatic VOA - 8020	
Aromatic VOA - 8020	108-88-3	Toluene	1	1		Aromatic VOA - 8020	

Aromatic VOA - 8020	1330-20-7	Xylenes (total)	1	1		Aromatic VOA - 8020	
Aromatic VOA - 8020	71-43-2	Benzene	1	1		Aromatic VOA - 8020	
Phenols - 8040	100-02-7	4-Nitrophenol	5	165			
Phenols - 8040	105-67-9	2,4-Dimethylphenol	5	165			
Phenols - 8040	108-95-2	Phenol	5	165			
Phenols - 8040	120-83-2	2,4-Dichlorophenol	5	165			
Phenols - 8040	1319-77-3	Total cresols	AS	AS ISOMERS			
Phenols - 8040	51-28-5	2,4-Dinitrophenol	5	165			
Phenols - 8040	534-52-1	4,6-Dinitro-2methyl phenol	5	165			
Phenols - 8040	58-90-2	2,3,4,6-Tetrachlorophenol	5	165			
Phenols - 8040	59-50-7	4-Chloro-3-methylphenol	5	165			
Phenols - 8040	65794-96-9	Cresol, M&P	10	330			
Phenols - 8040	87-65-0	2,6-Dichlorophenol	5	165			
Phenols - 8040	87-86-5	Pentachlorophenol	5	165			
Phenols - 8040	88-06-2	2,4,6-Trichlorophenol	5	165			
Phenols - 8040	88-75-5	2-Nitrophenol	5	165			
Phenols - 8040	88-85-7	2-secButyl-4,6-dinitrophenol(DNBP)	2.5	82.5			
Phenols - 8040	95-48-7	2-Methylphenol (o-cresol)	5	165			
Phenols - 8040	95-57-8	2-Chlorophenol	5	165			
Phenols - 8040	95-95-4	2,4,5-Trichlorophenol	5	165			
Pesticices/PCBs 808X[2]	1024-57-3	Heptachlor epoxide	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	1031-07-8	Endosulfan sulfate	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	11096-82-5	Aroclor-1260	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	11097-69-1	Aroclor-1254	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	11104-28-2	Aroclor-1221	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	11141-16-5	Aroclor-1232	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	12672-29-6	Aroclor-1248	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	12674-11-2	Aroclor-1016	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	309-00-2	Aldrin	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	319-84-6	Alpha-BHC	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	319-85-7	Beta-BHC	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	319-86-8	Delta-BHC	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	33213-65-9	Endosulfan II	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	50-29-3	4,4'-DDT	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	5103-71-9	alpha-Chlordane	0.5	16.5	Pesticides/PCBs (TCL)		
Pesticices/PCBs 808X[2]	5103-74-2	gamma-Chlordane	0.5	16.5	Pesticides/PCBs (TCL)		
Pesticices/PCBs 808X[2]	53469-21-9	Aroclor-1242	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	53494-70-5	Endrin ketone	0.1	3.3	Pesticides/PCBs (TCL)		
Pesticices/PCBs 808X[2]	57-74-9	Chlordane	0.5	16.5			Pesticides/PCBs
Pesticices/PCBs 808X[2]	58-89-9	Gamma-BHC (Lindane)	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	60-57-1	Dieldrin	0.1 (0.05)	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	72-20-8	Endrin	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	72-43-5	Methoxychlor	0.5	16.5	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	72-54-8	4,4'-DDD	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	72-55-9	4,4'-DDE	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	7421-93-4	Endrin aldehyde	0.1	3.3	Pesticides/PCBs (TCL)		Pesticides/PCBs

Pesticices/PCBs 808X[2]	76-44-8	Heptachlor	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	8001-35-2	Toxaphene	5 (2)	165	Pesticides/PCBs (TCL)		Pesticides/PCBs
Pesticices/PCBs 808X[2]	959-98-8	Endosulfan I	0.05	1.65	Pesticides/PCBs (TCL)		Pesticides/PCBs
Phosphorous Pesticides - 8140	298-00-0	Methyl parathion	1	33		Phorphorous Pesticides -	Organo Pest -- 8140
Phosphorous Pesticides - 8140	298-02-2	Phorate	1	33		Phorphorous Pesticides -	Organo Pest -- 8140
Phosphorous Pesticides - 8140	298-04-4	Disulfoton	1	33		Phorphorous Pesticides -	Organo Pest -- 8140
Herbicides - 8150	120-36-5	Dichloroprop	5	100			
Herbicides - 8150	1918-00-9	Dicamba	5	100			
Herbicides - 8150	75-99-0	Dalapon	5	100			
Herbicides - 8150	88-85-7	2-secButyl-4,6-dinitrophenol(DNBP)	0.6	12		Herbicides -- 8150	Herbicides -- 8150
Herbicides - 8150	93-65-2	MCPP	500	10000			
Herbicides - 8150	93-72-1	2,4,5-TP	1	20		Herbicides -- 8150	Herbicides -- 8150
Herbicides - 8150	93-76-5	2,4,5-T	1	20		Herbicides -- 8150	Herbicides -- 8150
Herbicides - 8150	94-74-6	MCPA	500	10000			
Herbicides - 8150	94-75-7	2,4-Dichlorophenoxyacetic acid	20	400		Herbicides -- 8150	Herbicides -- 8150
Herbicides - 8150	94-82-6	2,4-DB	5	100			
Volatile Organics - 8240	100-02-7	4-Nitrophenol	20	20			Volatile Organics - 8240
Volatile Organics - 8240	100-41-4	Ethylbenzene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	100-42-5	Styrene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	10061-01-5	cis-1,3-Dichloropropene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	10061-02-6	trans-1,3-Dichloropropene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	106-46-7	1,4-Dichlorobenzene	5	5			
Volatile Organics - 8240	106-93-4	1,2-Dibromoethane	5	5			Volatile Organics - 8240
Volatile Organics - 8240	107-02-8	Acrolein	50	50			Volatile Organics - 8240
Volatile Organics - 8240	107-05-1	Allyl chloride	10	10			Volatile Organics - 8240
Volatile Organics - 8240	107-06-2	1,2-Dichloroethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	107-12-0	Ethyl cyanide	10	10			Volatile Organics - 8240
Volatile Organics - 8240	107-13-1	Acrylonitrile	10	10			Volatile Organics - 8240
Volatile Organics - 8240	108-05-4	Vinyl acetate	10	10			Volatile Organics - 8240
Volatile Organics - 8240	108-10-1	4-Methyl-2-Pentanone	20	20	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	108-88-3	Toluene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	108-90-7	Chlorobenzene	10	10	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	109-06-8	2-Picoline	20	20			Volatile Organics - 8240
Volatile Organics - 8240	110-57-6	trans-1,4-dichloro-2-butene	50	50			Volatile Organics - 8240
Volatile Organics - 8240	110-86-1	Pyridine	5	5			Volatile Organics - 8240
Volatile Organics - 8240	123-91-1	1,4-Dioxane	1000	1000			Volatile Organics - 8240
Volatile Organics - 8240	124-48-1	Dibromochloromethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	126-98-7	Methacrylonitrile	10	10			Volatile Organics - 8240
Volatile Organics - 8240	126-99-8	Chloroprene	10	10			Volatile Organics - 8240
Volatile Organics - 8240	127-18-4	Tetrachloroethene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	1330-20-7	Xylenes (total)	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	156-60-5	trans-1,2-Dichloroethylene	5	5			Volatile Organics - 8240
Volatile Organics - 8240	540-59-0	1,2-Dichloroethene(Total)	10	10	Volatile Organics - 8240		
Volatile Organics - 8240	56-23-5	Carbon tetrachloride	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	591-78-6	2-Hexanone	20	20	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	630-20-6	1,1,1,2-Tetrachloroethane	10	10			Volatile Organics - 8240

Volatile Organics - 8240	67-64-1	Acetone	20	20	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	67-66-3	Chloroform	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	71-43-2	Benzene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	71-55-6	1,1,1-Trichloroethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	74-83-9	Bromomethane	10	10	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	74-87-3	Chloromethane	10	10	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	74-88-4	Iodomethane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	74-95-3	Dibromomethane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	75-00-3	Chloroethane	10	10	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-01-4	Vinyl chloride	10	10	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-05-8	Acetonitrile	100	100			Volatile Organics - 8240
Volatile Organics - 8240	75-09-2	Methylenechloride	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-15-0	Carbon disulfide	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-25-2	Bromoform	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-27-4	Bromodichloromethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-34-3	1,1-Dichloroethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-35-4	1,1-Dichloroethene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	75-69-4	Trichloromonofluoromethane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	75-71-8	Dichlorodifluoromethane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	76-01-7	Pentachloroethane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	78-83-1	Isobutyl alcohol	1000	1000			Volatile Organics - 8240
Volatile Organics - 8240	78-87-5	1,2-Dichloropropane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	78-93-3	2-Butanone	20	20	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	79-00-5	1,1,2-Trichloroethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	79-01-6	Trichloroethene	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	79-34-5	1,1,2,2-Tetrachloroethane	5	5	Volatile Organics - 8240		Volatile Organics - 8240
Volatile Organics - 8240	80-62-6	Methyl methacrylate	10	10			Volatile Organics - 8240
Volatile Organics - 8240	95-50-1	1,2-Dichlorobenzene	10	10			
Volatile Organics - 8240	96-12-8	1,2-Dibromo-3-chloropropane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	96-18-4	1,2,3-Trichloropropane	10	10			Volatile Organics - 8240
Volatile Organics - 8240	97-63-2	Ethyl methacrylate	10	10			Volatile Organics - 8240
Volatile Organics - 8260	100-02-7	4-Nitrophenol	20	20			Volatile Organics - 8260
Volatile Organics - 8260	100-41-4	Ethylbenzene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	100-42-5	Styrene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	100-51-6	Benzyl alcohol	10	10			
Volatile Organics - 8260	10061-01-5	cis-1,3-Dichloropropene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	10061-02-6	trans-1,3-Dichloropropene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	106-46-7	1,4-Dichlorobenzene	5 (4)	5 (4)		Volatile Organics - 8260	
Volatile Organics - 8260	106-93-4	1,2-dibromoethane	5 (1)	5 (1)			Volatile Organics - 8260
Volatile Organics - 8260	107-02-8	Acrolein	100	100			Volatile Organics - 8260
Volatile Organics - 8260	107-05-1	Allyl chloride	10	10			Volatile Organics - 8260
Volatile Organics - 8260	107-06-2	1,2-Dichloroethane	5 (1.5)	5 (1.5)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	107-12-0	Ethyl cyanide	10	10		Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	107-13-1	Acrylonitrile	100	100			Volatile Organics - 8260
Volatile Organics - 8260	107-87-9	2-Pentanone	10	10			
Volatile Organics - 8260	108-05-4	vinyl acetate	50	50			Volatile Organics - 8260

Volatile Organics - 8260	108-10-1	4-Methyl-2-Pentanone	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	108-88-3	Toluene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	108-90-7	Chlorobenzene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	109-06-8	2-Picoline	20	20			Volatile Organics - 8260
Volatile Organics - 8260	109-99-9	Tetrahydrofuran	50	50		Volatile Organics - 8260	
Volatile Organics - 8260	110-57-6	trans-1,4-dichloro-2-butene	50	50			Volatile Organics - 8260
Volatile Organics - 8260	110-75-8	2-Chloroethyl vinyl ether	20	20			
Volatile Organics - 8260	110-86-1	Pyridine	5	5			Volatile Organics - 8260
Volatile Organics - 8260	120-82-1	1,2,4-Trichlorobenzene	10	10			
Volatile Organics - 8260	123-91-1	1,4-Dioxane	500	500			Volatile Organics - 8260
Volatile Organics - 8260	124-48-1	Dibromochloromethane	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	126-98-7	Methacrylonitrile	10	10			Volatile Organics - 8260
Volatile Organics - 8260	126-99-8	Chloroprene	10	10			Volatile Organics - 8260
Volatile Organics - 8260	127-18-4	Tetrachloroethene	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	1330-20-7	Xylenes (total)	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	156-59-2	cis-1,2-Dichloroethylene	5	5		Volatile Organics - 8260	
Volatile Organics - 8260	156-60-5	trans-1,2-Dichloroethylene	5	5		Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	540-59-0	1,2-Dichloroethene(Total)	10	10	Volatile Organics - 8260	Volatile Organics - 8260	
Volatile Organics - 8260	56-23-5	Carbon tetrachloride	5 (2)	5 (2)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	591-78-6	2-Hexanone	20	20	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	60-29-7	Diethyl ether	5	5			
Volatile Organics - 8260	630-20-6	1,1,1,2-Tetrachloroethane	5	5		Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	67-64-1	Acetone	20	20	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	67-66-3	Chloroform	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	67-72-1	Hexachloroethane	5	5			
Volatile Organics - 8260	71-36-3	1-Butanol	100	100		Volatile Organics - 8260	
Volatile Organics - 8260	71-43-2	Benzene	5 (1.5)	5 (1.5)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	71-55-6	1,1,1-Trichloroethane	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	74-83-9	Bromomethane	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	74-87-3	Chloromethane	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	74-88-4	Iodomethane	10	10			Volatile Organics - 8260
Volatile Organics - 8260	74-95-3	Dibromomethane	10	10			Volatile Organics - 8260
Volatile Organics - 8260	75-00-3	Chloroethane	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-01-4	Vinyl chloride	10 (5)	10 (5)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-05-8	Acetonitrile	100	100			Volatile Organics - 8260
Volatile Organics - 8260	75-09-2	Methylenechloride	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-15-0	Carbon disulfide	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-25-2	Bromoform	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-27-4	Bromodichloromethane	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-34-3	1,1-Dichloroethane	10 (1)	10 (1)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-35-4	1,1-Dichloroethene	10 (2)	10 (2)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	75-69-4	Trichloromonofluoromethane	10	10			Volatile Organics - 8260
Volatile Organics - 8260	75-71-8	Dichlorodifluoromethane	10	10			Volatile Organics - 8260
Volatile Organics - 8260	76-01-7	Pentachloroethane	10	10			Volatile Organics - 8260
Volatile Organics - 8260	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	10			
Volatile Organics - 8260	78-83-1	Isobutyl alcohol	500	500			Volatile Organics - 8260

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Volatile Organics - 8260	78-87-5	1,2-Dichloropropane	5 (1.5)	5 (1.5)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	78-93-3	2-Butanone	10	10	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	79-00-5	1,1,2-Trichloroethane	5 (2)	5 (2)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	79-01-6	Trichloroethene	5 (2)	5 (2)	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	79-34-5	1,1,2,2-Tetrachloroethane	5	5	Volatile Organics - 8260	Volatile Organics - 8260	Volatile Organics - 8260
Volatile Organics - 8260	80-62-6	Methyl methacrylate	10	10			Volatile Organics - 8260
Volatile Organics - 8260	96-12-8	1,2-dibromo-3-chloropropane	5 (1)	5 (1)			Volatile Organics - 8260
Volatile Organics - 8260	96-18-4	1,2,3-Trichloropropane	5	5			Volatile Organics - 8260
Volatile Organics - 8260	97-63-2	Ethyl methacrylate	10	10			Volatile Organics - 8260
Volatile Organics - 8260	98-82-8	Isopropylbenzene	5	5			
Semi-Volatiles - 8270	100-01-6	4-Nitroaniline	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	100-02-7	4-Nitrophenol	20	660	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	100-51-6	Benzyl alcohol	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	100-75-4	N-Nitrosopiperidine	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	101-55-3	4-Bromophenylphenyl ether	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	1024-57-3	Heptachlor epoxide	10	330			
Semi-Volatiles - 8270	105-67-9	2,4-Dimethylphenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	10595-95-6	N-Nitrosomethylethylamine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	106-44-5	4-Methylphenol (cresol, p-)	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	106-46-7	1,4-Dichlorobenzene	10 (5)	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	106-47-8	4-Chloroaniline	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	106-50-3	p-Phenylenediamine	400	13200			Semi-Volatiles - 8270
Semi-Volatiles - 8270	108-39-4	m-Cresol	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	108-60-1	2,2'-Oxybis(1-chloropropane)	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	108-95-2	Phenol	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	109-06-8	2-Picoline	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	109-99-9	Tetrahydrofuran	10	330			
Semi-Volatiles - 8270	110-86-1	Pyridine	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	11096-82-5	Aroclor-1260	20	660			
Semi-Volatiles - 8270	11097-69-1	Aroclor-1254	20	660			
Semi-Volatiles - 8270	111-44-4	Bis(2-chloroethyl) ether	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	111-91-1	Bis(2-Chloroethoxy)methane	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	11104-28-2	Aroclor-1221	20	660			
Semi-Volatiles - 8270	11141-16-5	Aroclor-1232	20	660			
Semi-Volatiles - 8270	112-40-3	Dodecane	TBD	TBD		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	115-96-8	Tris-2-chloroethyl phosphate	TBD	TBD		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	117-81-7	Bis(2-ethylhexyl) phthalate	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	117-84-0	Di-n-octylphthalate	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	118-74-1	Hexachlorobenzene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	119-93-7	3,3'-Dimethylbenzidine	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	120-12-7	Anthracene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	120-58-1	Isosafrole	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	120-82-1	1,2,4-Trichlorobenzene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	120-83-2	2,4-Dichlorophenol	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	121-14-2	2,4-Dinitrotoluene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	122-09-8	alpha,alpha-Dimethylphenethylamine	200	6600			Semi-Volatiles - 8270

Semi-Volatiles - 8270	122-39-4	Diphenylamine	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	124-18-5	Decane	TBD	TBD		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	126-68-1	O,O,O-Triethyl phosphorothioate	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	126-73-8	Tributyl phosphate	100	3300		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	12672-29-6	Aroclor-1248	20	660			
Semi-Volatiles - 8270	12674-11-2	Aroclor-1016	20	660			
Semi-Volatiles - 8270	129-00-0	Pyrene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	130-15-4	1,4-Naphthoquinone	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	131-11-3	Dimethyl phthalate	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	131-89-5	2-Cyclohexyl-4,6-dinitrophenol	100	3300			
Semi-Volatiles - 8270	132-64-9	Dibenzofuran	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	134-32-7	1-Naphthylamine	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	140-57-8	Aramite	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	140-57-8A	Aramite I	50	1650			
Semi-Volatiles - 8270	140-57-8B	Aramite II	50	1650			
Semi-Volatiles - 8270	143-50-0	Kepone	100	3300			Semi-Volatiles - 8270
Semi-Volatiles - 8270	1888-71-7	Hexachloropropene	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	191-24-2	Benzo(ghi)perylene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	193-39-5	Indeno(1,2,3-cd)pyrene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	205-99-2	Benzo(b)fluoranthene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	206-44-0	Fluoranthene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	207-08-9	Benzo(k)fluoranthene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	208-96-8	Acenaphthylene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	218-01-9	Chrysene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	2303-16-4	Diallate	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	23950-58-5	Pronamide	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	297-97-2	O,O-Diethyl 0-2-pyrazinyl phosphorothioate	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	298-00-0	Methyl parathion	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	298-02-2	Phorate	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	298-04-4	Disulfoton	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	309-00-2	Aldrin	20	660			
Semi-Volatiles - 8270	319-84-6	Alpha-BHC	20	660			
Semi-Volatiles - 8270	319-85-7	Beta-BHC	20	660			
Semi-Volatiles - 8270	3689-24-5	Tetraethyl dithiopyrophosphate	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	465-73-6	Isodrin	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	50-29-3	4,4'-DDT	20	660			
Semi-Volatiles - 8270	50-32-8	Benzo(a)pyrene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	51-28-5	2,4-Dinitrophenol	25	825	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	510-15-6	Chlorobenzilate	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	52-85-7	Famphur	200	6600			Semi-Volatiles - 8270
Semi-Volatiles - 8270	53-70-3	Dibenz[a,h]anthracene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	53-96-3	2-Acetylaminofluorene	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	534-52-1	4,6-Dinitro-2methyl phenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	541-73-1	1,3-Dichlorobenzene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	55-18-5	N-Nitrosodiethylamine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	56-38-2	Parathion	50	1650			Semi-Volatiles - 8270

Semi-Volatiles - 8270	56-49-5	3-Methylcholanthrene	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	56-53-1	Diethylstilbesterol	20	660			
Semi-Volatiles - 8270	56-55-3	Benzo(a)anthracene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	56-57-5	4-Nitroquinoline-1-oxide	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	57-74-9	Chlordane	20	660			
Semi-Volatiles - 8270	57-97-6	7,12-Dimethylbenz[a]anthracene	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	58-89-9	Gamma-BHC (Lindane)	20	660			
Semi-Volatiles - 8270	58-90-2	2,3,4,6-Tetrachlorophenol	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	59-50-7	4-Chloro-3-methylphenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	59-89-2	N-Nitrosomorpholine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	591-08-2	1-Acetyl-2-thiourea	1000	33000			
Semi-Volatiles - 8270	60-11-7	p-Dimethylaminoazobenzene	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	60-51-5	Dimethoate	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	60-57-1	Dieldrin	20	660			
Semi-Volatiles - 8270	606-20-2	2,6-Dinitrotoluene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	608-93-5	Pentachlorobenzene	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	62-44-2	Phenacetin	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	62-50-0	Ethyl methanesulfonate	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	62-53-3	Aniline	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	62-75-9	N-Nitrosodimethylamine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	621-64-7	N-Nitroso-di-n-dipropylamine	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	629-59-4	Tetradecane	TBD	TBD		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	65-85-0	Benzoic acid	500	16500			
Semi-Volatiles - 8270	66-27-3	Methyl methanesulfonate	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	67-72-1	Hexachloroethane	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	70-30-4	Hexachlorophene	500	16500			Semi-Volatiles - 8270
Semi-Volatiles - 8270	7005-72-3	4-Chlorophenylphenyl ether	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	72-20-8	Endrin	20	660			
Semi-Volatiles - 8270	72-54-8	4,4'-DDD	20	660			
Semi-Volatiles - 8270	72-55-9	4,4'-DDE	20	660			
Semi-Volatiles - 8270	76-01-7	Pentachloroethane	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	76-44-8	Heptachlor	20	660			
Semi-Volatiles - 8270	77-47-4	Hexachlorocyclopentadiene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	78-59-1	Isophorone	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	8001-35-2	Toxaphene	20	660			
Semi-Volatiles - 8270	82-68-8	Pentachloronitrobenzene (PCNB)	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	83-32-9	Acenaphthene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	84-66-2	Diethylphthalate	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	84-74-2	Di-n-butylphthalate	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	85-01-8	Phenanthrene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	85-68-7	Butylbenzylphthalate	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	86-30-6	N-Nitrosodiphenylamine	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	86-73-7	Fluorene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	86-74-8	Carbazole	10	330	Semi-Volatiles - 8270 (TCL)		
Semi-Volatiles - 8270	87-65-0	2,6-Dichlorophenol	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	87-68-3	Hexachlorobutadiene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270

Semi-Volatiles - 8270	87-86-5	Pentachlorophenol	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	88-06-2	2,4,6-Trichlorophenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	88-74-4	2-Nitroaniline	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	88-75-5	2-Nitrophenol	20	660	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	88-85-7	2-secButyl-4,6-dinitrophenol(DNBP)	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-20-3	Naphthalene	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-57-6	2-Methylnaphthalene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-58-7	2-Chloronaphthalene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-59-8	2-Naphthylamine	25	825			Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-80-5	Methapyrilene	100	3300			Semi-Volatiles - 8270
Semi-Volatiles - 8270	91-94-1	3,3'-Dichlorobenzidine	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	92-67-1	4-Aminobiphenyl	50	1650			Semi-Volatiles - 8270
Semi-Volatiles - 8270	92-87-5	Benzidine	50	1650			
Semi-Volatiles - 8270	924-16-3	N-Nitrosodi-n-butylamine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	930-55-2	Nitrosopyrrolidine	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	94-59-7	Safrol	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-16-9	Benzothiazole	TBD	TBD		Semi-Volatiles - 8270	
Semi-Volatiles - 8270	95-48-7	2-Methylphenol (cresol, o-)	10	330	Semi-Volatiles - 8270 (TCL)	Semi-Volatiles - 8270	Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-50-1	1,2-Dichlorobenzene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-53-4	o-Toluidine	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-57-8	2-Chlorophenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-94-3	1,2,4,5-Tetrachlorobenzene	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	95-95-4	2,4,5-Trichlorophenol	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	96-12-8	1,2-Dibromo-3-chloropropane	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	97-63-2	Ethyl methacrylate	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	98-86-2	Acetophenone	10	330			Semi-Volatiles - 8270
Semi-Volatiles - 8270	98-95-3	Nitrobenzene	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	99-09-2	3-Nitroaniline	10	330	Semi-Volatiles - 8270 (TCL)		Semi-Volatiles - 8270
Semi-Volatiles - 8270	99-35-4	sym-Trinitrobenzene	100	3300			Semi-Volatiles - 8270
Semi-Volatiles - 8270	99-55-8	5-Nitro-o-toluidine	20	660			Semi-Volatiles - 8270
Semi-Volatiles - 8270	99-65-0	m-Dinitrobenzene	15	495			Semi-Volatiles - 8270
Semi-Volatiles - 8270	M+PCRESOL	m-Cresol and p-Cresol, total	10	330		Semi-Volatiles - 8270	
Dioxins - 8280	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.01	1		Dioxins - 8280	
Dioxins - 8280	30402-15-4	Pentachlorodibenzofurans	0.01	1		Dioxins - 8280	
Dioxins - 8280	3268-87-9	Octachlorodibenzo-p-dioxin	0.05	5		Dioxins - 8280	
Dioxins - 8280	34465-46-8	Hexachlorodibenzo-p-dioxin	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	36088-22-9	Pentachlorodibenzo-p-dioxins	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	37871-00-4	Heptachlorodibenzo-p-dioxins	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	38998-75-3	Heptachlorodibenzofurans	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	39001-02-0	Octachlorodibenzofuran	0.05	5		Dioxins - 8280	
Dioxins - 8280	55684-94-1	Hexachlorodibenzofurans	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	55722-27-5	Tetrachlorodibenzofurans	0.025	2.5		Dioxins - 8280	
Dioxins - 8280	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.01	1			
Acrylamide - 8316	79-06-1	Acrylamide	100	3300			
Total Cyanide - 9010	57-12-5	Cyanide	5	500	Total Cyanide - 9010		
Total Cyanide - 9012	57-12-5	Cyanide	5	500			

Total Organic Halides (TOX) - 9020	59473-04-0	Total organic halides	20	500			
Sulfides - 9030	18496-25-8	Sulfide	500	5000	Sulfides - 9030		Sulfides - 9030
pH - 9040 & 9045	PH	pH Measurement	.1 pH unit	.1 pH unit			
Conductance - 9050	CONDUCT	Conductivity	0.15umho/	NA			
Anions by IC - 9056	14265-44-2	Phosphate	500	5000	Anions - IC 9056		
Anions by IC - 9056	14808-79-8	Sulfate	500	5000	Anions - IC 9056		
Anions by IC - 9056	16887-00-6	Chloride	200	2000	Anions - IC 9056		
Anions by IC - 9056	16984-48-8	Fluoride	500	5000			
Anions by IC - 9056	24959-67-9	Bromide	250	2500			
Anions by IC - 9056	NO2-N	Nitrogen in Nitrite	75	750	Anions - IC 9056		
Anions by IC - 9056	NO3-N	Nitrogen in Nitrate	75	750	Anions - IC 9056		
Total Organic Carbon (TOC) - 9060	TOC	Total organic carbon	1000	25000			
Oil & Grease - 9070	OIL/GREASE	Oil and grease	1000	100000			
Paint Filter Liquids - 9095	TBD	TBD	PASS/FAIL	PASS/FAIL			
ICP Metals (CLP)	7429-90-5	Aluminum	200	20000	ICP Metals - CLP		
ICP Metals (CLP)	7439-89-6	Iron	100	10000	ICP Metals - CLP		
ICP Metals (CLP)	7439-95-4	Magnesium	5000	500000	ICP Metals - CLP		
ICP Metals (CLP)	7439-96-5	Manganese	15	1500	ICP Metals - CLP		
ICP Metals (CLP)	7440-02-0	Nickel	40	4000	ICP Metals - CLP		
ICP Metals (CLP)	7440-09-7	Potassium	5000	500000	ICP Metals - CLP		
ICP Metals (CLP)	7440-22-4	Silver	20	2000	ICP Metals - CLP		
ICP Metals (CLP)	7440-23-5	Sodium	5000	500000	ICP Metals - CLP		
ICP Metals (CLP)	7440-36-0	Antimony	60	6000	ICP Metals - CLP		
ICP Metals (CLP)	7440-39-3	Barium	200	20000	ICP Metals - CLP		
ICP Metals (CLP)	7440-41-7	Beryllium	5	500	ICP Metals - CLP		
ICP Metals (CLP)	7440-43-9	Cadmium	5	500	ICP Metals - CLP		
ICP Metals (CLP)	7440-47-3	Chromium	10	1000	ICP Metals - CLP		
ICP Metals (CLP)	7440-48-4	Cobalt	50	5000	ICP Metals - CLP		
ICP Metals (CLP)	7440-50-8	Copper	25	2500	ICP Metals - CLP		
ICP Metals (CLP)	7440-62-2	Vanadium	50	5000	ICP Metals - CLP		
ICP Metals (CLP)	7440-66-6	Zinc	20	2000	ICP Metals - CLP		
ICP Metals (CLP)	7440-70-2	Calcium	5000	500000	ICP Metals - CLP		
Volatile Organics (CLP)	100-41-4	Ethylbenzene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	100-42-5	Styrene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	10061-01-5	cis-1,3-Dichloropropene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	10061-02-6	trans-1,3-Dichloropropene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	107-06-2	1,2-Dichloroethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	108-10-1	4-Methyl-2-Pentanone	20	20	Volatile Organics - CLP		
Volatile Organics (CLP)	108-88-3	Toluene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	108-90-7	Chlorobenzene	10	10	Volatile Organics - CLP		
Volatile Organics (CLP)	124-48-1	Dibromochloromethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	127-18-4	Tetrachloroethene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	1330-20-7	Xylenes (total)	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	540-59-0	1,2-Dichloroethene(Total)	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	56-23-5	Carbon tetrachloride	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	591-78-6	2-Hexanone	20	20	Volatile Organics - CLP		

Volatile Organics (CLP)	67-64-1	Acetone	20	20	Volatile Organics - CLP		
Volatile Organics (CLP)	67-66-3	Chloroform	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	71-43-2	Benzene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	71-55-6	1,1,1-Trichloroethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	74-83-9	Bromomethane	10	10	Volatile Organics - CLP		
Volatile Organics (CLP)	74-87-3	Chloromethane	10	10	Volatile Organics - CLP		
Volatile Organics (CLP)	75-00-3	Chloroethane	10	10	Volatile Organics - CLP		
Volatile Organics (CLP)	75-01-4	Vinyl chloride	10	10	Volatile Organics - CLP		
Volatile Organics (CLP)	75-09-2	Methylenechloride	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	75-15-0	Carbon disulfide	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	75-25-2	Bromoform	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	75-27-4	Bromodichloromethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	75-34-3	1,1-Dichloroethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	75-35-4	1,1-Dichloroethene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	78-87-5	1,2-Dichloropropane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	78-93-3	2-Butanone	20	20	Volatile Organics - CLP		
Volatile Organics (CLP)	79-00-5	1,1,2-Trichloroethane	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	79-01-6	Trichloroethene	5	5	Volatile Organics - CLP		
Volatile Organics (CLP)	79-34-5	1,1,2,2-Tetrachloroethane	5	5	Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	100-01-6	4-Nitroaniline	10	10	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	100-02-7	4-Nitrophenol	20	660	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	101-55-3	4-Bromophenylphenyl ether	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	105-67-9	2,4-Dimethylphenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	106-44-5	4-Methylphenol (cresol, p-)	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	106-46-7	1,4-Dichlorobenzene	5	165	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	106-47-8	4-Chloroaniline	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	108-60-1	2,2'-Oxybis(1-chloropropane)	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	108-95-2	Phenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	111-44-4	Bis(2-chloroethyl) ether	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	111-91-1	Bis(2-Chloroethoxy)methane	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	117-81-7	Bis(2-ethylhexyl) phthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	117-84-0	Di-n-octylphthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	118-74-1	Hexachlorobenzene	5	165	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	120-12-7	Anthracene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	120-82-1	1,2,4-Trichlorobenzene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	120-83-2	2,4-Dichlorophenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	121-14-2	2,4-Dinitrotoluene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	129-00-0	Pyrene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	131-11-3	Dimethyl phthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	132-64-9	Dibenzofuran	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	191-24-2	Benzo(ghi)perylene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	193-39-5	Indeno(1,2,3-cd)pyrene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	205-99-2	Benzo(b)fluoranthene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	206-44-0	Fluoranthene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	207-08-9	Benzo(k)fluoranthene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	208-96-8	Acenaphthylene	10	330	Semi-Volatile Organics - CLP		

Semi-Volatile Organics (CLP)	218-01-9	Chrysene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	50-32-8	Benzo(a)pyrene	3	99	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	51-28-5	2,4-Dinitrophenol	50	1650	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	53-70-3	Dibenz[a,h]anthracene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	534-52-1	4,6-Dinitro-2methyl phenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	541-73-1	1,3-Dichlorobenzene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	56-55-3	Benzo(a)anthracene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	59-50-7	4-Chloro-3-methylphenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	606-20-2	2,6-Dinitrotoluene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	621-64-7	N-Nitroso-di-n-dipropylamine	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	67-72-1	Hexachloroethane	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	7005-72-3	4-Chlorophenylphenyl ether	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	77-47-4	Hexachlorocyclopentadiene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	78-59-1	Isophorone	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	83-32-9	Acenaphthene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	84-66-2	Diethylphthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	84-74-2	Di-n-butylphthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	85-01-8	Phenanthrene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	85-68-7	Butylbenzylphthalate	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	86-30-6	N-Nitrosodiphenylamine	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	86-73-7	Fluorene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	86-74-8	Carbazole	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	87-68-3	Hexachlorobutadiene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	87-86-5	Pentachlorophenol	5	165	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	88-06-2	2,4,6-Trichlorophenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	88-74-4	2-Nitroaniline	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	88-75-5	2-Nitrophenol	20	660	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	91-20-3	Naphthalene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	91-57-6	2-Methylnaphthalene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	91-58-7	2-Chloronaphthalene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	91-94-1	3,3'-Dichlorobenzidine	50	1650	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	95-48-7	2-Methylphenol (cresol, o-)	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	95-50-1	1,2-Dichlorobenzene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	95-57-8	2-Chlorophenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	95-95-4	2,4,5-Trichlorophenol	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	98-95-3	Nitrobenzene	10	330	Semi-Volatile Organics - CLP		
Semi-Volatile Organics (CLP)	99-09-2	3-Nitroaniline	10	330	Semi-Volatile Organics - CLP		
D2216 Moisture Content	%MOISTURE	Percent moisture (mostly solid sample)	NA	0.50%			
TCLP Herbicides - 1311/8150	93-72-1	2,4,5-TP	1000	1000			
TCLP Herbicides - 1311/8150	94-75-7	2,4-Dichlorophenoxyacetic acid	10000	10000			
TCLP Metals by ICP - 1311/6010	7439-92-1	Lead	5000	5000	TCLP _ METALS		
TCLP Metals by ICP - 1311/6010	7440-22-4	Silver	5000	5000	TCLP _ METALS		
TCLP Metals by ICP - 1311/6010	7440-38-2	Arsenic	5000	5000	TCLP _ METALS		
TCLP Metals by ICP - 1311/6010	7440-39-3	Barium	100000	100000	TCLP _ METALS		
TCLP Metals by ICP - 1311/6010	7440-43-9	Cadmium	1000	1000	TCLP _ METALS		
TCLP Metals by ICP - 1311/6010	7440-47-3	Chromium	5000	5000	TCLP _ METALS		

CHEMICAL RDLs

SERVICE LIST TITLE	CAS	LONG NAME	WATER	SOIL/OTHER	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]			
TCLP Metals by ICP - 1311/6010	7782-49-2	Selenium	1000	1000	TCLP _ METALS		
TCLP Arsenic - 1311/7060	7440-38-2	Arsenic	5000	5000			
TCLP Lead - 1311/7421	7439-92-1	Lead	5000	5000			
TCLP Mercury - 1311/7470	7439-97-6	Mercury	200	200	TCLP _ METALS		
TCLP Selenium - 1311/7740	7782-49-2	Selenium	1000	1000			
TCLP VOA - 1311/8260	107-06-2	1,2-Dichloroethane	500	500			
TCLP VOA - 1311/8260	108-90-7	Chlorobenzene	100000	100000	TCLP - VOA		
TCLP VOA - 1311/8260	127-18-4	Tetrachloroethene	700	700	TCLP - VOA		
TCLP VOA - 1311/8260	56-23-5	Carbon tetrachloride	500	500	TCLP - VOA		
TCLP VOA - 1311/8260	67-66-3	Chloroform	6000	6000	TCLP - VOA		
TCLP VOA - 1311/8260	71-43-2	Benzene	500	500	TCLP - VOA		
TCLP VOA - 1311/8260	75-01-4	Vinyl chloride	200	200	TCLP - VOA		
TCLP VOA - 1311/8260	75-35-4	1,1-Dichloroethene	7000	7000	TCLP - VOA		
TCLP VOA - 1311/8260	78-93-3	Methylethyl Ketone	200000	200000	TCLP - VOA		
TCLP VOA - 1311/8260	79-01-6	Trichloroethene	500	500	TCLP - VOA		
TCLP Semi-VOA - 1311/8270	106-44-5	4-Methylphenol (cresol, p-)	200000	200000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	106-46-7	1,4-Dichlorobenzene	7500	7500	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	108-39-4	3-Methylphenol (cresol, m-)	200000	200000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	110-86-1	Pyridine	5000	5000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	118-74-1	Hexachlorobenzene	130	130	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	121-14-2	2,4-Dinitrotoluene	130	130	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	67-72-1	Hexachloroethane	3000	3000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	87-68-3	Hexachlorobutadiene	500	500	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	87-86-5	Pentachlorophenol	100000	100000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	88-06-2	2,4,6-Trichlorophenol	2000	2000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	95-48-7	2-Methylphenol (cresol, o-)	200000	200000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	95-95-4	2,4,5-Trichlorophenol	400000	400000	TCLP - SVOA		
TCLP Semi-VOA - 1311/8270	98-95-3	Nitrobenzene	2000	2000	TCLP - SVOA		
TPH - Diesel Range (WTPH-D)	68334-30-5	Diesel oil	500	5000			
TPH - Gasoline Range (WTPH-G)	8006-61-9	Gasoline	500	5000			

[1]Letter "N" is used when multiple sub-analysis techniques are available and identified in the Service Price List. RDLs apply to any sub-analysis.

[2]RDLs apply to methods 8080, 8081, and 8082 as appropriate.

Duncan, Jeanette M

From: Routt, Tina/RLO [troutt@ch2m.com]
Sent: Wednesday, May 03, 2000 4:31 PM
To: Duncan, Jeanette/RLO-HAN
Cc: Callison, Stacey/RLO-HAN
Subject: Validation for 1607-H2 and 1607-H4

I take back my earlier message about no changes on the validation report. In looking at the 1607-H4 data (semi-volatiles), it appears that the validator is changing the value reported. For instance: Phenanthrene for B0X4T3. The lab value reported is 120 J. The validator's summary table reports this samples value as 360 U. This happens with other SVOAs as well. I don't see any explanation of why values would change, but I'm curious about which number the validator uses in his analysis.

I know this is probably as clear as mud, but we need to talk about it.

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Duncan, Jeanette M

From: Routt, Tina/RLO [troutt@ch2m.com]
Sent: Wednesday, May 03, 2000 2:57 PM
To: Duncan, Jeanette/RLO-HAN
Cc: Callison, Stacey/RLO-HAN
Subject: Validation for 1607-H2 and 1607-H4

I don't have any changes. The only comment I have is that in the past it was requested that the validation report be complete (i.e., include copies of the blanks, MS/MSD sheets, etc.) It is very helpful to have that in a consolidated package.

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