SAF-RC-189
100N Field Remediation –
Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0798 SAF-RC-189

Sample Location: 100-N-93

Date: 2 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-93
Subject: Semivolatiles - Data Package No. JP0798-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0798 prepared by TestAmerica Laboratories (TAL). 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	Analyte
J1TPK8	5/15/14	Soil	C	See note 1
J1TPK9	5/15/14	Soil	C	See note 1
J1TPL0	5/15/14	Soil	C	See note 1
J1TPL1	5/15/14	Soil	C	See note 1
J1TPL2	5/15/14	Soil	C	See note 1
J1TPL3	5/15/14	Soil	C	See note 1
J1TPL4	5/15/14	Soil	C	See note 1
J1TPL5	5/15/14	Soil	C	See note 1
J1TPL6	5/15/14	Soil	C	See note 1
J1TPL7	5/15/14	Soil	C	See note 1
J1TPL8	5/15/14	Soil	C	See note 1
J1TPL9	5/15/14	Soil	C	See note 1
J1TPM0	5/15/14	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

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: 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 acceptable.

Method Blanks

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

All method blank results were acceptable.

Field (equipment) Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike and matrix spike duplicate results outside QC limits (36% & 40%) all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

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 contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate recoveries were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

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

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPL4/J1TPM0) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0798 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike and matrix spike duplicate results outside QC limits (36% & 40%) all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Appendix 2

Summary of Data Qualification

SEMIVOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0798	**REVIEWER: ELR**	**Project: 100-N-54**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
2,4-dinitrophenol	J	All	MS & MSD recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK8

Lab Sample ID: 280-55577-1
Client Matrix: Solid

% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5775.D
Dilution:	1.0			Initial Weight/Volume:	31.7 g
Analysis Date:	05/22/2014 1751			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

JL 5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	310
Acenaphthylene		16	U	16	310
Anthracene		16	U	16	310
Benzo[a]anthracene		19	U	19	310
Benzo[a]pyrene		19	U	19	310
Benzo[b]fluoranthene		25	U	25	310
Benzo[ghi]perylene		15	U	15	310
Benzo[k]fluoranthene		38	U	38	310
Bis(2-chloroethoxy)methane		22	U	22	310
Bis(2-chloroethyl)ether		16	U	16	310
bis (2-chloroisopropyl) ether		22	U	22	310
Bis(2-ethylhexyl) phthalate		44	U	44	310
4-Bromophenyl phenyl ether		18	U	18	310
Butyl benzyl phthalate		41	U	41	310
Carbazole		34	U	34	310
4-Chloroaniline		78	U	78	310
4-Chloro-3-methylphenol		63	U	63	310
2-Chloronaphthalene		9.5	U	9.5	310
2-Chlorophenol		20	U	20	310
4-Chlorophenyl phenyl ether		20	U	20	310
Chrysene		26	U	26	310
Dibenz(a,h)anthracene		18	U	18	310
Dibenzofuran		19	U	19	310
1,2-Dichlorobenzene		21	U	21	310
1,3-Dichlorobenzene		11	U	11	310
1,4-Dichlorobenzene		13	U	13	310
3,3'-Dichlorobenzidine		85	U	85	630
2,4-Dichlorophenol		9.5	U	9.5	310
Diethyl phthalate		25	U	25	310
2,4-Dimethylphenol		63	U	63	310
Dimethyl phthalate		22	U	22	310
Di-n-butyl phthalate		28	U	28	310
4,6-Dinitro-2-methylphenol		310	U	310	630
2,4-Dinitrophenol		320	U T J	320	780
2,4-Dinitrotoluene		63	U	63	310
2,6-Dinitrotoluene		27	U	27	310
Di-n-octyl phthalate		14	U	14	310
Fluoranthene		34	U	34	310
Fluorene		17	U	17	310
Hexachlorobenzene		28	U	28	310
Hexachlorobutadiene		9.5	U	9.5	310
Hexachlorocyclopentadiene		47	U	47	310
Hexachloroethane		20	U	20	310
Indeno[1,2,3-cd]pyrene		21	U	21	310
Isophorone		16	U	16	310
2-Methylnaphthalene		18	U	18	310

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK8**

Lab Sample ID: 280-55577-1
Client Matrix: Solid
% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5775.D
Dilution:	1.0			Initial Weight/Volume:	31.7 g
Analysis Date:	05/22/2014 1751			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		12	U	12	310
3 & 4 Methylphenol		31	U	31	310
Naphthalene		29	U	29	310
2-Nitroaniline		47	U	47	310
3-Nitroaniline		69	U	69	310
4-Nitroaniline		69	U	69	310
Nitrobenzene		21	U	21	310
2-Nitrophenol		9.5	U	9.5	310
4-Nitrophenol		92	U	92	630
N-Nitrosodi-n-propylamine		29	U	29	310
N-Nitrosodiphenylamine		20	U	20	310
Pentachlorophenol		310	U	310	630
Phenanthrene		16	U	16	310
Phenol		17	U	17	310
Pyrene		11	U	11	310
1,2,4-Trichlorobenzene		27	U	27	310
2,4,5-Trichlorophenol		9.5	U	9.5	310
2,4,6-Trichlorophenol		9.5	U	9.5	310

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	73		50 - 120
2-Fluorophenol	70		53 - 120
Nitrobenzene-d5	65		50 - 120
Phenol-d5	69		52 - 120
Terphenyl-d14	85		55 - 120
2,4,6-Tribromophenol	67		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK8**

Lab Sample ID: 280-55577-1
Client Matrix: Solid

% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5775.D
Dilution:	1.0			Initial Weight/Volume:	31.7 g
Analysis Date:	05/22/2014 1751			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	1800	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK9

Lab Sample ID: 280-55577-2
Client Matrix: Solid

% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5778.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1921			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

K 5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		39	U	39	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		16	U	16	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		45	U	45	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		42	U	42	330
Carbazole		36	U	36	330
4-Chloroaniline		81	U	81	330
4-Chloro-3-methylphenol		65	U	65	330
2-Chloronaphthalene		9.9	U	9.9	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		13	U	13	330
3,3'-Dichlorobenzidine		89	U	89	650
2,4-Dichlorophenol		9.9	U	9.9	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		65	U	65	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	650
2,4-Dinitrophenol		330	U J	330	810
2,4-Dinitrotoluene		65	U	65	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		14	U	14	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		9.9	U	9.9	330
Hexachlorocyclopentadiene		49	U	49	330
Hexachloroethane		21	U	21	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK9

Lab Sample ID: 280-55577-2
Client Matrix: Solid

% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5778.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1921			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		49	U	49	330
3-Nitroaniline		72	U	72	330
4-Nitroaniline		72	U	72	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		9.9	U	9.9	330
4-Nitrophenol		96	U	96	650
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	650
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		9.9	U	9.9	330
2,4,6-Trichlorophenol		9.9	U	9.9	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	73		53 - 120
Nitrobenzene-d5	69		50 - 120
Phenol-d5	72		52 - 120
Terphenyl-d14	87		55 - 120
2,4,6-Tribromophenol	76		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK9**

Lab Sample ID: 280-55577-2
Client Matrix: Solid

% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5778.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1921			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2000	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid

% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5779.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1951			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	320
Acenaphthylene		17	U	17	320
Anthracene		17	U	17	320
Benzo[a]anthracene		20	U	20	320
Benzo[a]pyrene		20	U	20	320
Benzo[b]fluoranthene		26	U	26	320
Benzo[ghi]perylene		16	U	16	320
Benzo[k]fluoranthene		39	U	39	320
Bis(2-chloroethoxy)methane		23	U	23	320
Bis(2-chloroethyl)ether		16	U	16	320
bis (2-chloroisopropyl) ether		23	U	23	320
Bis(2-ethylhexyl) phthalate		45	U	45	320
4-Bromophenyl phenyl ether		19	U	19	320
Butyl benzyl phthalate		42	U	42	320
Carbazole		35	U	35	320
4-Chloroaniline		81	U	81	320
4-Chloro-3-methylphenol		65	U	65	320
2-Chloronaphthalene		9.8	U	9.8	320
2-Chlorophenol		21	U	21	320
4-Chlorophenyl phenyl ether		21	U	21	320
Chrysene		27	U	27	320
Dibenz(a,h)anthracene		19	U	19	320
Dibenzofuran		20	U	20	320
1,2-Dichlorobenzene		22	U	22	320
1,3-Dichlorobenzene		12	U	12	320
1,4-Dichlorobenzene		13	U	13	320
3,3'-Dichlorobenzidine		89	U	89	650
2,4-Dichlorophenol		9.8	U	9.8	320
Diethyl phthalate		26	U	26	320
2,4-Dimethylphenol		65	U	65	320
Dimethyl phthalate		23	U	23	320
Di-n-butyl phthalate		29	U	29	320
4,6-Dinitro-2-methylphenol		320	U	320	650
2,4-Dinitrophenol		330	U J	330	810
2,4-Dinitrotoluene		65	U	65	320
2,6-Dinitrotoluene		28	U	28	320
Di-n-octyl phthalate		14	U	14	320
Fluoranthene		35	U	35	320
Fluorene		18	U	18	320
Hexachlorobenzene		29	U	29	320
Hexachlorobutadiene		9.8	U	9.8	320
Hexachlorocyclopentadiene		49	U	49	320
Hexachloroethane		21	U	21	320
Indeno[1,2,3-cd]pyrene		22	U	22	320
Isophorone		17	U	17	320
2-Methylnaphthalene		19	U	19	320

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid
% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5779.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1951			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	320
3 & 4 Methylphenol		32	U	32	320
Naphthalene		31	U	31	320
2-Nitroaniline		49	U	49	320
3-Nitroaniline		72	U	72	320
4-Nitroaniline		71	U	71	320
Nitrobenzene		22	U	22	320
2-Nitrophenol		9.8	U	9.8	320
4-Nitrophenol		95	U	95	650
N-Nitrosodi-n-propylamine		31	U	31	320
N-Nitrosodiphenylamine		21	U	21	320
Pentachlorophenol		320	U	320	650
Phenanthrene		17	U	17	320
Phenol		18	U	18	320
Pyrene		12	U	12	320
1,2,4-Trichlorobenzene		28	U	28	320
2,4,5-Trichlorophenol		9.8	U	9.8	320
2,4,6-Trichlorophenol		9.8	U	9.8	320

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	72		50 - 120
2-Fluorophenol	69		53 - 120
Nitrobenzene-d5	65		50 - 120
Phenol-d5	68		52 - 120
Terphenyl-d14	80		55 - 120
2,4,6-Tribromophenol	66		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid

% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5779.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/22/2014 1951			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2000	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5780.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/22/2014 2022			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		46	U	46	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		43	U	43	330
Carbazole		36	U	36	330
4-Chloroaniline		82	U	82	330
4-Chloro-3-methylphenol		66	U	66	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		14	U	14	330
3,3'-Dichlorobenzidine		90	U	90	660
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		66	U	66	330
Dimethyl phthalate		35	J	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	660
2,4-Dinitrophenol		330	U J	330	820
2,4-Dinitrotoluene		66	U	66	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		14	U	14	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		50	U	50	330
Hexachloroethane		21	U	21	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5780.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/22/2014 2022			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		50	U	50	330
3-Nitroaniline		73	U	73	330
4-Nitroaniline		72	U	72	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		97	U	97	660
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	660
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	79		50 - 120
2-Fluorophenol	75		53 - 120
Nitrobenzene-d5	71		50 - 120
Phenol-d5	74		52 - 120
Terphenyl-d14	87		55 - 120
2,4,6-Tribromophenol	77		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5780.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/22/2014 2022			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2600	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL2

Lab Sample ID: 280-55577-5
Client Matrix: Solid

% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5781.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	05/22/2014 2052			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		46	U	46	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		43	U	43	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		14	U	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U J	340	830
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		50	U	50	330
Hexachloroethane		21	U	21	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL2

Lab Sample ID: 280-55577-5
Client Matrix: Solid

% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5781.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	05/22/2014 2052			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		50	U	50	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	72		53 - 120
Nitrobenzene-d5	68		50 - 120
Phenol-d5	71		52 - 120
Terphenyl-d14	81		55 - 120
2,4,6-Tribromophenol	70		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL2

Lab Sample ID: 280-55577-5
Client Matrix: Solid

% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5781.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	05/22/2014 2052			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2200	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5782.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	05/22/2014 2122			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		27	U	27	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		47	U	47	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		44	U	44	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		14	U	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U J	340	830
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		51	U	51	330
Hexachloroethane		22	U	22	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5782.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	05/22/2014 2122			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/30/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		51	U	51	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	72		53 - 120
Nitrobenzene-d5	68		50 - 120
Phenol-d5	71		52 - 120
Terphenyl-d14	86		55 - 120
2,4,6-Tribromophenol	68		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5782.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	05/22/2014 2122			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2600	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid

% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5783.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/22/2014 2152			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		27	U	27	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		41	U	41	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		47	U	47	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		44	U	44	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		14	U	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U J	340	840
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		51	U	51	330
Hexachloroethane		22	U	22	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid
% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5783.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/22/2014 2152			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/21/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		51	U	51	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	78		50 - 120
2-Fluorophenol	74		53 - 120
Nitrobenzene-d5	71		50 - 120
Phenol-d5	73		52 - 120
Terphenyl-d14	84		55 - 120
2,4,6-Tribromophenol	71		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid

% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5783.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/22/2014 2152			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2600	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid
% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5784.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/22/2014 2222			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene	10	U	10	320
Acenaphthylene	17	U	17	320
Anthracene	17	U	17	320
Benzo[a]anthracene	20	U	20	320
Benzo[a]pyrene	20	U	20	320
Benzo[b]fluoranthene	26	U	26	320
Benzo[ghi]perylene	16	U	16	320
Benzo[k]fluoranthene	39	U	39	320
Bis(2-chloroethoxy)methane	23	U	23	320
Bis(2-chloroethyl)ether	16	U	16	320
bis (2-chloroisopropyl) ether	23	U	23	320
Bis(2-ethylhexyl) phthalate	45	U	45	320
4-Bromophenyl phenyl ether	19	U	19	320
Butyl benzyl phthalate	42	U	42	320
Carbazole	35	U	35	320
4-Chloroaniline	80	U	80	320
4-Chloro-3-methylphenol	65	U	65	320
2-Chloronaphthalene	9.8	U	9.8	320
2-Chlorophenol	21	U	21	320
4-Chlorophenyl phenyl ether	21	U	21	320
Chrysene	26	U	26	320
Dibenz(a,h)anthracene	19	U	19	320
Dibenzofuran	20	U	20	320
1,2-Dichlorobenzene	22	U	22	320
1,3-Dichlorobenzene	12	U	12	320
1,4-Dichlorobenzene	13	U	13	320
3,3'-Dichlorobenzidine	88	U	88	650
2,4-Dichlorophenol	9.8	U	9.8	320
Diethyl phthalate	25	U	25	320
2,4-Dimethylphenol	65	U	65	320
Dimethyl phthalate	24	J	23	320
Di-n-butyl phthalate	28	U	28	320
4,6-Dinitro-2-methylphenol	320	U	320	650
2,4-Dinitrophenol	330	U J	330	810
2,4-Dinitrotoluene	65	U	65	320
2,6-Dinitrotoluene	27	U	27	320
Di-n-octyl phthalate	14	U	14	320
Fluoranthene	35	U	35	320
Fluorene	18	U	18	320
Hexachlorobenzene	28	U	28	320
Hexachlorobutadiene	9.8	U	9.8	320
Hexachlorocyclopentadiene	49	U	49	320
Hexachloroethane	21	U	21	320
Indeno[1,2,3-cd]pyrene	22	U	22	320
Isophorone	17	U	17	320
2-Methylnaphthalene	19	U	19	320

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5784.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/22/2014 2222			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	320
3 & 4 Methylphenol		32	U	32	320
Naphthalene		30	U	30	320
2-Nitroaniline		49	U	49	320
3-Nitroaniline		72	U	72	320
4-Nitroaniline		71	U	71	320
Nitrobenzene		22	U	22	320
2-Nitrophenol		9.8	U	9.8	320
4-Nitrophenol		95	U	95	650
N-Nitrosodi-n-propylamine		30	U	30	320
N-Nitrosodiphenylamine		21	U	21	320
Pentachlorophenol		320	U	320	650
Phenanthrene		17	U	17	320
Phenol		18	U	18	320
Pyrene		12	U	12	320
1,2,4-Trichlorobenzene		27	U	27	320
2,4,5-Trichlorophenol		9.8	U	9.8	320
2,4,6-Trichlorophenol		9.8	U	9.8	320

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	74		50 - 120
2-Fluorophenol	72		53 - 120
Nitrobenzene-d5	68		50 - 120
Phenol-d5	71		52 - 120
Terphenyl-d14	80		55 - 120
2,4,6-Tribromophenol	68		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5784.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/22/2014 2222			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2400	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5785.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/22/2014 2253			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		18	U	18	340
Anthracene		18	U	18	340
Benzo[a]anthracene		21	U	21	340
Benzo[a]pyrene		21	U	21	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		17	U	17	340
Benzo[k]fluoranthene		42	U	42	340
Bis(2-chloroethoxy)methane		24	U	24	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		24	U	24	340
Bis(2-ethylhexyl) phthalate		48	U	48	340
4-Bromophenyl phenyl ether		20	U	20	340
Butyl benzyl phthalate		45	U	45	340
Carbazole		37	U	37	340
4-Chloroaniline		85	U	85	340
4-Chloro-3-methylphenol		69	U	69	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		22	U	22	340
4-Chlorophenyl phenyl ether		22	U	22	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		20	U	20	340
Dibenzofuran		21	U	21	340
1,2-Dichlorobenzene		23	U	23	340
1,3-Dichlorobenzene		12	U	12	340
1,4-Dichlorobenzene		14	U	14	340
3,3'-Dichlorobenzidine		94	U	94	690
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		69	U	69	340
Dimethyl phthalate		24	U	24	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	690
2,4-Dinitrophenol		350	U J	350	860
2,4-Dinitrotoluene		69	U	69	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		19	U	19	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		52	U	52	340
Hexachloroethane		22	U	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		18	U	18	340
2-Methylnaphthalene		20	U	20	340

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid
% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5785.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/22/2014 2253			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol	14	U	14	340
3 & 4 Methylphenol	34	U	34	340
Naphthalene	32	U	32	340
2-Nitroaniline	52	U	52	340
3-Nitroaniline	76	U	76	340
4-Nitroaniline	75	U	75	340
Nitrobenzene	23	U	23	340
2-Nitrophenol	10	U	10	340
4-Nitrophenol	100	U	100	690
N-Nitrosodi-n-propylamine	32	U	32	340
N-Nitrosodiphenylamine	22	U	22	340
Pentachlorophenol	340	U	340	690
Phenanthrene	18	U	18	340
Phenol	19	U	19	340
Pyrene	13	U	13	340
1,2,4-Trichlorobenzene	29	U	29	340
2,4,5-Trichlorophenol	10	U	10	340
2,4,6-Trichlorophenol	10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	74		53 - 120
Nitrobenzene-d5	69		50 - 120
Phenol-d5	73		52 - 120
Terphenyl-d14	83		55 - 120
2,4,6-Tribromophenol	70		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5785.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/22/2014 2253			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2100	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL7

Lab Sample ID: 280-55577-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5786.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/22/2014 2323			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

2 5/31/14

Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene	10	U	10	320
Acenaphthylene	17	U	17	320
Anthracene	17	U	17	320
Benzo[a]anthracene	20	U	20	320
Benzo[a]pyrene	20	U	20	320
Benzo[b]fluoranthene	26	U	26	320
Benzo[ghi]perylene	16	U	16	320
Benzo[k]fluoranthene	39	U	39	320
Bis(2-chloroethoxy)methane	23	U	23	320
Bis(2-chloroethyl)ether	16	U	16	320
bis (2-chloroisopropyl) ether	23	U	23	320
Bis(2-ethylhexyl) phthalate	45	U	45	320
4-Bromophenyl phenyl ether	19	U	19	320
Butyl benzyl phthalate	42	U	42	320
Carbazole	35	U	35	320
4-Chloroaniline	80	U	80	320
4-Chloro-3-methylphenol	65	U	65	320
2-Chloronaphthalene	9.8	U	9.8	320
2-Chlorophenol	21	U	21	320
4-Chlorophenyl phenyl ether	21	U	21	320
Chrysene	27	U	27	320
Dibenz(a,h)anthracene	19	U	19	320
Dibenzofuran	20	U	20	320
1,2-Dichlorobenzene	22	U	22	320
1,3-Dichlorobenzene	12	U	12	320
1,4-Dichlorobenzene	13	U	13	320
3,3'-Dichlorobenzidine	88	U	88	650
2,4-Dichlorophenol	9.8	U	9.8	320
Diethyl phthalate	26	U	26	320
2,4-Dimethylphenol	65	U	65	320
Dimethyl phthalate	23	U	23	320
Di-n-butyl phthalate	28	U	28	320
4,6-Dinitro-2-methylphenol	320	U	320	650
2,4-Dinitrophenol	330	U J	330	810
2,4-Dinitrotoluene	65	U	65	320
2,6-Dinitrotoluene	27	U	27	320
Di-n-octyl phthalate	14	U	14	320
Fluoranthene	35	U	35	320
Fluorene	18	U	18	320
Hexachlorobenzene	28	U	28	320
Hexachlorobutadiene	9.8	U	9.8	320
Hexachlorocyclopentadiene	49	U	49	320
Hexachloroethane	21	U	21	320
Indeno[1,2,3-cd]pyrene	22	U	22	320
Isophorone	17	U	17	320
2-Methylnaphthalene	19	U	19	320

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL7

Lab Sample ID: 280-55577-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5786.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/22/2014 2323			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	320
3 & 4 Methylphenol		32	U	32	320
Naphthalene		30	U	30	320
2-Nitroaniline		49	U	49	320
3-Nitroaniline		72	U	72	320
4-Nitroaniline		71	U	71	320
Nitrobenzene		22	U	22	320
2-Nitrophenol		9.8	U	9.8	320
4-Nitrophenol		95	U	95	650
N-Nitrosodi-n-propylamine		30	U	30	320
N-Nitrosodiphenylamine		21	U	21	320
Pentachlorophenol		320	U	320	650
Phenanthrene		17	U	17	320
Phenol		18	U	18	320
Pyrene		12	U	12	320
1,2,4-Trichlorobenzene		27	U	27	320
2,4,5-Trichlorophenol		9.8	U	9.8	320
2,4,6-Trichlorophenol		9.8	U	9.8	320

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	74		53 - 120
Nitrobenzene-d5	71		50 - 120
Phenol-d5	74		52 - 120
Terphenyl-d14	83		55 - 120
2,4,6-Tribromophenol	67		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL7

Lab Sample ID: 280-55577-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5786.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/22/2014 2323			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2200	N J

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL8

Lab Sample ID: 280-55577-11
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5787.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	05/22/2014 2353			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		39	U	39	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		16	U	16	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		45	U	45	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		42	U	42	330
Carbazole		36	U	36	330
4-Chloroaniline		81	U	81	330
4-Chloro-3-methylphenol		65	U	65	330
2-Chloronaphthalene		9.9	U	9.9	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		13	U	13	330
3,3'-Dichlorobenzidine		89	U	89	650
2,4-Dichlorophenol		9.9	U	9.9	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		65	U	65	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	650
2,4-Dinitrophenol		330	U J	330	810
2,4-Dinitrotoluene		65	U	65	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		14	U	14	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		9.9	U	9.9	330
Hexachlorocyclopentadiene		49	U	49	330
Hexachloroethane		21	U	21	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL8**

Lab Sample ID: 280-55577-11
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5787.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	05/22/2014 2353			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		49	U	49	330
3-Nitroaniline		72	U	72	330
4-Nitroaniline		72	U	72	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		9.9	U	9.9	330
4-Nitrophenol		96	U	96	650
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	650
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		9.9	U	9.9	330
2,4,6-Trichlorophenol		9.9	U	9.9	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	72		53 - 120
Nitrobenzene-d5	69		50 - 120
Phenol-d5	71		52 - 120
Terphenyl-d14	84		55 - 120
2,4,6-Tribromophenol	75		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL8

Lab Sample ID: 280-55577-11
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5787.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	05/22/2014 2353			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 2

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2000	N J
580-72-3	2(3H)-Furanone, dihydro-3,4-bis[(4-hydro	19.64	410	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5788.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/23/2014 0023			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		27	U	27	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		41	U	41	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		47	U	47	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		44	U	44	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U	22	330
1,3-Dichlorobenzene		12	U	12	330
1,4-Dichlorobenzene		14	U	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U J	340	840
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		51	U	51	330
Hexachloroethane		22	U	22	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5788.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/23/2014 0023			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		51	U	51	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		74	U	74	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	79		50 - 120
2-Fluorophenol	78		53 - 120
Nitrobenzene-d5	73		50 - 120
Phenol-d5	78		52 - 120
Terphenyl-d14	85		55 - 120
2,4,6-Tribromophenol	79		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5788.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/23/2014 0023			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.20	2600	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPM0

Lab Sample ID: 280-55577-13
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227479	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5810.D
Dilution:	1.0			Initial Weight/Volume:	32.9 g
Analysis Date:	05/27/2014 2013			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.6	U	9.6	310
Acenaphthylene		16	U	16	310
Anthracene		16	U	16	310
Benzo[a]anthracene		19	U	19	310
Benzo[a]pyrene		19	U	19	310
Benzo[b]fluoranthene		24	U	24	310
Benzo[ghi]perylene		15	U	15	310
Benzo[k]fluoranthene		37	U	37	310
Bis(2-chloroethoxy)methane		21	U	21	310
Bis(2-chloroethyl)ether		16	U	16	310
bis (2-chloroisopropyl) ether		21	U	21	310
Bis(2-ethylhexyl) phthalate		43	U	43	310
4-Bromophenyl phenyl ether		18	U	18	310
Butyl benzyl phthalate		40	U	40	310
Carbazole		34	U	34	310
4-Chloroaniline		77	U	77	310
4-Chloro-3-methylphenol		62	U	62	310
2-Chloronaphthalene		9.3	U	9.3	310
2-Chlorophenol		20	U	20	310
4-Chlorophenyl phenyl ether		20	U	20	310
Chrysene		25	U	25	310
Dibenz(a,h)anthracene		18	U	18	310
Dibenzofuran		19	U	19	310
1,2-Dichlorobenzene		21	U	21	310
1,3-Dichlorobenzene		11	U	11	310
1,4-Dichlorobenzene		13	U	13	310
3,3'-Dichlorobenzidine		84	U	84	620
2,4-Dichlorophenol		9.3	U	9.3	310
Diethyl phthalate		24	U	24	310
2,4-Dimethylphenol		62	U	62	310
Dimethyl phthalate		21	U	21	310
Di-n-butyl phthalate		27	U	27	310
4,6-Dinitro-2-methylphenol		310	U	310	620
2,4-Dinitrophenol		310	U J	310	770
2,4-Dinitrotoluene		62	U	62	310
2,6-Dinitrotoluene		26	U	26	310
Di-n-octyl phthalate		13	U	13	310
Fluoranthene		34	U	34	310
Fluorene		17	U	17	310
Hexachlorobenzene		27	U	27	310
Hexachlorobutadiene		9.3	U	9.3	310
Hexachlorocyclopentadiene		47	U	47	310
Hexachloroethane		20	U	20	310
Indeno[1,2,3-cd]pyrene		21	U	21	310
Isophorone		16	U	16	310
2-Methylnaphthalene		18	U	18	310

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPM0**

Lab Sample ID: 280-55577-13
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227479	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5810.D
Dilution:	1.0			Initial Weight/Volume:	32.9 g
Analysis Date:	05/27/2014 2013			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		12	U	12	310
3 & 4 Methylphenol		31	U	31	310
Naphthalene		29	U	29	310
2-Nitroaniline		47	U	47	310
3-Nitroaniline		68	U	68	310
4-Nitroaniline		68	U	68	310
Nitrobenzene		21	U	21	310
2-Nitrophenol		9.3	U	9.3	310
4-Nitrophenol		91	U	91	620
N-Nitrosodi-n-propylamine		29	U	29	310
N-Nitrosodiphenylamine		20	U	20	310
Pentachlorophenol		310	U	310	620
Phenanthrene		16	U	16	310
Phenol		17	U	17	310
Pyrene		11	U	11	310
1,2,4-Trichlorobenzene		26	U	26	310
2,4,5-Trichlorophenol		9.3	U	9.3	310
2,4,6-Trichlorophenol		9.3	U	9.3	310

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	64		53 - 120
Nitrobenzene-d5	60		50 - 120
Phenol-d5	64		52 - 120
Terphenyl-d14	73		55 - 120
2,4,6-Tribromophenol	66		51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPM0**

Lab Sample ID: 280-55577-13
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-227479	Instrument ID:	SMS_B2
Prep Method:	3550C	Prep Batch:	280-226532	Lab File ID:	B2-5810.D
Dilution:	1.0			Initial Weight/Volume:	32.9 g
Analysis Date:	05/27/2014 2013			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL

5/31/14

Tentatively Identified Compounds **Number TIC's Found:** 1

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.19	1800	N J

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55577-1

SDG #: JP0798
SAF#: RC-189

Date SDG Closed: May 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPK8	280-55577-1	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPK9	280-55577-2	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL0	280-55577-3	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL1	280-55577-4	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL2	280-55577-5	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL3	280-55577-6	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL4	280-55577-7	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL5	280-55577-8	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL6	280-55577-9	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL7	280-55577-10	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL8	280-55577-11	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL9	280-55577-12	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPM0	280-55577-13	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/17/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.8° C, 3.9° C, 5.2° C and 5.6° C.

GC/MS SEMIVOLATILES - SW846 8270C
The MS/MSD performed on sample J1TPK8 exhibited percent recoveries outside the control limits for 2,4-Dinitrophenol, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1TPL8 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-226333 indicates that physical and chemical interferences are present for Cobalt and Zinc. Results have been flagged with an "X".

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-226333. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPK8; therefore, control limits are not applicable.

No other anomalies were encountered.

PERCENT MOISTURE
The duplicate analysis of sample J1TPK8 exceeded the RPD limit, and the associated sample result has been flagged "M".

No other anomalies were encountered.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-M 12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: DMS 5-16-14 ~~A131411~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D+						

Sample No.	Matrix	Sample Date	Sample Time										
J1TPK8	SOIL	5-15-14	0827	X	X	X	X	X					
J1TPK9	SOIL	5-15-14	0821	X	X	X	X	X					
J1TPL0	SOIL	5/15/14	0652	X	X	X	X	X					
J1TPL1	SOIL	5/15/14	0724	X	X	X	X	X					
J1TPL2	SOIL	5-15-14	0838	X	X	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Quincy Stowe		5-15-14 1037
Received By/Stored In: DWSHEA DWSHEA		5/15/14 1037
Relinquished By/Removed From: DWSHEA DWSHEA		5/15/14 1710
Received By/Stored In: SM Sexton		5/15/14 1710
Relinquished By/Removed From: SM Sexton		5/15/14 1715
Received By/Stored In: 1060 Battelle Fridge 3C		5/15/14 1715
Relinquished By/Removed From: 1060 Battelle Fridge 3C		5/16/14 0715
Received By/Stored In: SM Sexton		5/16/14 0715
Relinquished By/Removed From: SM Sexton		5/16/14 0725
Received By/Stored In: FED EX		
Relinquished By/Removed From:		
Received By/Stored In:		5-17-14 940
Relinquished By/Removed From:		
Received By/Stored In:		

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

5,3,3,6,4,9,1,8,2,5,RGT03
5/17/14
SO

DMS 5-16-14

REVIEWED BY KW DATE 5/16/14

REVIEWED BY DMS DATE 5/15/14 DMS 5-16-14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 2 of 3

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Date Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-JH12 5/14/14 DWSHEA	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						
Sample No.	Matrix	Sample Date	Sample Time								
J1TPL3	SOIL	5-15-14	0854	X	X	X	X	X			
J1TPL4	SOIL	5-15-14	0711	X	X	X	X	X			
J1TPL5	SOIL	5-15-14	0737	X	X	X	X	X			
J1TPL6	SOIL	5-15-14	0939	X	X	X	X	X			
J1TPL7	SOIL	5-15-14	0945	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Coball, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 5/16/14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-1/12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: SMS 5-16-14 ~~A13141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/19/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						
Sample No.	Matrix	Sample Date	Sample Time								
TPL8	SOIL	5-15-14	~~0950~~ DWS ~~0954~~ 5/15	X	X	X	X	X			
TPL9	SOIL	5-15-14	1003	X	X	X	X	X			
TPM0	SOIL	5-15-14	0711	X	X	X	X	X			

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

None

Page 154 of 159

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Quincy Stowe	Date/Time: 5-15-14 1037	Received By/Stored In: DWSHEA DWSHEA	Date/Time: 5/15/14 1037
Relinquished By/Removed From: DWSHEA DWSHEA	Date/Time: 5/15/14 1710	Received By/Stored In: SM Sexton	Date/Time: 5/15/14 1710
Relinquished By/Removed From: SM Sexton	Date/Time: 5/15/14 1715	Received By/Stored In: 1060 Battelle Fridge 3C	Date/Time: 5/15/14 1715
Relinquished By/Removed From: 1060 Battelle Fridge 3C	Date/Time: 5/16/14 0715	Received By/Stored In: SM Sexton	Date/Time: 5/16/14 0715
Relinquished By/Removed From: SM Sexton	Date/Time: 5/16/14 0725	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time: 5-17-14 940
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
FINAL SAMPLE DISPOSITION	Disposal Method:	Disposed By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

~~REVIEWED BY SMS DATE 5/15/14~~ SMS 5-16-14

JP0798

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-N-93		DATA PACKAGE:	JP0798	
VALIDATOR:	ELR	LAB: ELR		DATE: 5/31/14	
			SDG:	JP0798	

ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX			
J1TPK8	J1TPK9	J1TPL0	J1TPL1
J1TPL2	J1TPL3	J1TPL4	J1TPL5
J1TPL6	J1TPL7	J1TPL8	J1TPL9
J1TPM0			
			Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

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

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

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

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

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

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

Performance audit sample results acceptable? ..... Yes No N/A

Comments: MS - 2,4-dinitrophenol - 36% } all
MSD 40% }

no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD RPD values acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A
Iinternal standard areas acceptable? ..... Yes No N/A
Internal standard retention times acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226532

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-226532/1-A	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5768.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.5 g
Analysis Date:	05/22/2014 1348	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.8	U	9.8	310
Acenaphthylene	16	U	16	310
Anthracene	16	U	16	310
Benzo[a]anthracene	19	U	19	310
Benzo[a]pyrene	19	U	19	310
Benzo[b]fluoranthene	25	U	25	310
Benzo[ghi]perylene	15	U	15	310
Benzo[k]fluoranthene	38	U	38	310
Bis(2-chloroethoxy)methane	22	U	22	310
Bis(2-chloroethyl)ether	16	U	16	310
bis (2-chloroisopropyl) ether	22	U	22	310
Bis(2-ethylhexyl) phthalate	44	U	44	310
4-Bromophenyl phenyl ether	18	U	18	310
Butyl benzyl phthalate	41	U	41	310
Carbazole	34	U	34	310
4-Chloroaniline	78	U	78	310
4-Chloro-3-methylphenol	63	U	63	310
2-Chloronaphthalene	9.5	U	9.5	310
2-Chlorophenol	20	U	20	310
4-Chlorophenyl phenyl ether	20	U	20	310
Chrysene	26	U	26	310
Dibenz(a,h)anthracene	18	U	18	310
Dibenzofuran	19	U	19	310
1,2-Dichlorobenzene	21	U	21	310
1,3-Dichlorobenzene	11	U	11	310
1,4-Dichlorobenzene	13	U	13	310
3,3'-Dichlorobenzidine	86	U	86	630
2,4-Dichlorophenol	9.5	U	9.5	310
Diethyl phthalate	25	U	25	310
2,4-Dimethylphenol	63	U	63	310
Dimethyl phthalate	22	U	22	310
Di-n-butyl phthalate	28	U	28	310
4,6-Dinitro-2-methylphenol	310	U	310	630
2,4-Dinitrophenol	320	U	320	790
2,4-Dinitrotoluene	63	U	63	310
2,6-Dinitrotoluene	27	U	27	310
Di-n-octyl phthalate	14	U	14	310
Fluoranthene	34	U	34	310
Fluorene	17	U	17	310
Hexachlorobenzene	28	U	28	310
Hexachlorobutadiene	9.5	U	9.5	310
Hexachlorocyclopentadiene	48	U	48	310
Hexachloroethane	20	U	20	310
Indeno[1,2,3-cd]pyrene	21	U	21	310
Isophorone	16	U	16	310

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226532

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-226532/1-A	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5768.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.5 g
Analysis Date:	05/22/2014 1348	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
2-Methylnaphthalene	18	U	18	310
2-Methylphenol	12	U	12	310
3 & 4 Methylphenol	31	U	31	310
Naphthalene	30	U	30	310
2-Nitroaniline	48	U	48	310
3-Nitroaniline	70	U	70	310
4-Nitroaniline	69	U	69	310
Nitrobenzene	21	U	21	310
2-Nitrophenol	9.5	U	9.5	310
4-Nitrophenol	92	U	92	630
N-Nitrosodi-n-propylamine	30	U	30	310
N-Nitrosodiphenylamine	20	U	20	310
Pentachlorophenol	310	U	310	630
Phenanthrene	16	U	16	310
Phenol	17	U	17	310
Pyrene	12	U	12	310
1,2,4-Trichlorobenzene	27	U	27	310
2,4,5-Trichlorophenol	9.5	U	9.5	310
2,4,6-Trichlorophenol	9.5	U	9.5	310

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	78	50 - 120
2-Fluorophenol	75	53 - 120
Nitrobenzene-d5	71	50 - 120
Phenol-d5	73	52 - 120
Terphenyl-d14	88	55 - 120
2,4,6-Tribromophenol	74	51 - 120

Method Blank TICs- Batch: 280-226532

Cas Number	Analyte	RT	Est. Result (ug/K	Qual
	Tentatively Identified Compound		None	N J

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Lab Control Sample - Batch: 280-226532

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-226532/2-A	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5769.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/22/2014 1418	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	2620	2110	80	60 - 120	
Acenaphthylene	2620	2060	79	64 - 120	
Anthracene	2620	2180	83	63 - 120	
Benzo[a]anthracene	2620	2250	86	65 - 120	
Benzo[a]pyrene	2620	2200	84	59 - 120	
Benzo[b]fluoranthene	2620	2270	86	47 - 129	
Benzo[ghi]perylene	2620	2340	89	55 - 126	
Benzo[k]fluoranthene	2620	2350	90	48 - 130	
Bis(2-chloroethoxy)methane	2620	1940	74	56 - 120	
Bis(2-chloroethyl)ether	2620	1950	74	51 - 120	
bis (2-chloroisopropyl) ether	2620	1700	65	49 - 120	
Bis(2-ethylhexyl) phthalate	2620	2280	87	65 - 120	
4-Bromophenyl phenyl ether	2620	2240	85	64 - 120	
Butyl benzyl phthalate	2620	2230	85	65 - 120	
Carbazole	2620	2220	85	64 - 120	
4-Chloroaniline	2620	1300	50	28 - 120	
4-Chloro-3-methylphenol	2620	2010	77	63 - 120	
2-Chloronaphthalene	2620	2080	79	59 - 120	
2-Chlorophenol	2620	2020	77	57 - 120	
4-Chlorophenyl phenyl ether	2620	2190	83	64 - 120	
Chrysene	2620	2290	87	64 - 120	
Dibenz(a,h)anthracene	2620	2360	90	50 - 133	
Dibenzofuran	2620	2160	82	61 - 120	
1,2-Dichlorobenzene	2620	1970	75	53 - 120	
1,3-Dichlorobenzene	2620	1910	73	52 - 120	
1,4-Dichlorobenzene	2620	1950	74	52 - 120	
3,3'-Dichlorobenzidine	2620	1580	60	30 - 120	
2,4-Dichlorophenol	2620	2080	79	60 - 120	
Diethyl phthalate	2620	2300	88	66 - 120	
2,4-Dimethylphenol	2620	1870	71	54 - 120	
Dimethyl phthalate	2620	2220	85	65 - 120	
Di-n-butyl phthalate	2620	2310	88	67 - 120	
4,6-Dinitro-2-methylphenol	5250	4300	82	57 - 120	
2,4-Dinitrophenol	5250	3850	73	46 - 120	
2,4-Dinitrotoluene	2620	2420	92	68 - 120	
2,6-Dinitrotoluene	2620	2320	89	64 - 120	
Di-n-octyl phthalate	2620	2310	88	66 - 120	
Fluoranthene	2620	2290	87	66 - 120	
Fluorene	2620	2180	83	64 - 120	
Hexachlorobenzene	2620	2310	88	62 - 120	
Hexachlorobutadiene	2620	2000	76	53 - 120	
Hexachlorocyclopentadiene	2620	1820	69	47 - 120	
Hexachloroethane	2620	1880	72	51 - 120	
Indeno[1,2,3-cd]pyrene	2620	2340	89	63 - 120	
Isophorone	2620	1760	67	56 - 120	
2-Methylnaphthalene	2620	2030	77	57 - 120	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Lab Control Sample - Batch: 280-226532

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-226532/2-A	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5769.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/22/2014 1418	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
2-Methylphenol	2620	1880	72	56 - 120	
3 & 4 Methylphenol	2620	1900	72	53 - 120	
Naphthalene	2620	2000	76	57 - 120	
2-Nitroaniline	2620	2020	77	63 - 120	
3-Nitroaniline	2620	1680	64	47 - 120	
4-Nitroaniline	2620	2050	78	64 - 120	
Nitrobenzene	2620	1870	71	54 - 120	
2-Nitrophenol	2620	2160	82	56 - 120	
4-Nitrophenol	5250	4300	82	63 - 121	
N-Nitrosodi-n-propylamine	2620	1830	70	51 - 120	
N-Nitrosodiphenylamine	2620	2140	82	61 - 120	
Pentachlorophenol	5250	4230	81	56 - 120	
Phenanthrene	2620	2240	86	64 - 120	
Phenol	2620	1930	73	56 - 120	
Pyrene	2620	2270	87	64 - 120	
1,2,4-Trichlorobenzene	2620	2060	79	52 - 120	
2,4,5-Trichlorophenol	2620	2210	84	64 - 120	
2,4,6-Trichlorophenol	2620	2210	84	61 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	77	50 - 120
2-Fluorophenol	73	53 - 120
Nitrobenzene-d5	70	50 - 120
Phenol-d5	72	52 - 120
Terphenyl-d14	85	55 - 120
2,4,6-Tribromophenol	91	51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226532

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-55577-1	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5776.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.3 g
Analysis Date:	05/22/2014 1821			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-55577-1	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5777.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.8 g
Analysis Date:	05/22/2014 1851			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	82	81	60 - 120	0	30		
Acenaphthylene	81	79	64 - 120	0	30		
Anthracene	85	86	63 - 120	3	30		
Benzo[a]anthracene	88	88	65 - 120	2	30		
Benzo[a]pyrene	88	88	59 - 120	2	30		
Benzo[b]fluoranthene	88	89	47 - 129	3	44		
Benzo[ghi]perylene	91	90	55 - 126	0	31		
Benzo[k]fluoranthene	92	90	48 - 130	0	30		
Bis(2-chloroethoxy)methane	77	74	56 - 120	2	30		
Bis(2-chloroethyl)ether	78	73	51 - 120	6	30		
bis (2-chloroisopropyl) ether	68	64	49 - 120	4	30		
Bis(2-ethylhexyl) phthalate	89	89	65 - 120	2	30		
4-Bromophenyl phenyl ether	85	87	64 - 120	4	30		
Butyl benzyl phthalate	88	88	65 - 120	1	30		
Carbazole	87	87	64 - 120	2	30		
4-Chloroaniline	57	58	28 - 120	2	30		
4-Chloro-3-methylphenol	81	79	63 - 120	0	30		
2-Chloronaphthalene	81	80	59 - 120	0	30		
2-Chlorophenol	81	77	57 - 120	3	30		
4-Chlorophenyl phenyl ether	85	85	64 - 120	1	30		
Chrysene	89	90	64 - 120	2	35		
Dibenz(a,h)anthracene	91	91	50 - 133	2	30		
Dibenzofuran	83	82	61 - 120	1	30		
1,2-Dichlorobenzene	78	72	53 - 120	7	30		
1,3-Dichlorobenzene	76	71	52 - 120	5	32		
1,4-Dichlorobenzene	77	72	52 - 120	6	30		
3,3'-Dichlorobenzidine	70	72	30 - 120	5	30		
2,4-Dichlorophenol	82	79	60 - 120	2	30		
Diethyl phthalate	89	89	66 - 120	2	30		
2,4-Dimethylphenol	75	71	54 - 120	4	30		
Dimethyl phthalate	87	86	65 - 120	1	30		
Di-n-butyl phthalate	89	90	67 - 120	2	30		
4,6-Dinitro-2-methylphenol	69	70	57 - 120	3	30		

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226532

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-55577-1	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5776.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.3 g
Analysis Date:	05/22/2014 1821			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-55577-1	Analysis Batch:	280-227024	Instrument ID:	SMS_B2
Client Matrix:	Solid	Prep Batch:	280-226532	Lab File ID:	B2-5777.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.8 g
Analysis Date:	05/22/2014 1851			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 0847			Injection Volume:	0.5 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
2,4-Dinitrophenol	36	40	46 - 120	12	34	T	T
2,4-Dinitrotoluene	94	95	68 - 120	2	30		
2,6-Dinitrotoluene	91	89	64 - 120	0	30		
Di-n-octyl phthalate	90	92	66 - 120	3	30		
Fluoranthene	89	90	66 - 120	2	30		
Fluorene	85	85	64 - 120	2	30		
Hexachlorobenzene	90	90	62 - 120	2	30		
Hexachlorobutadiene	81	75	53 - 120	6	30		
Hexachlorocyclopentadiene	70	68	47 - 120	2	30		
Hexachloroethane	75	70	51 - 120	6	30		
Indeno[1,2,3-cd]pyrene	93	91	63 - 120	1	30		
Isophorone	70	67	56 - 120	2	30		
2-Methylnaphthalene	81	77	57 - 120	4	30		
2-Methylphenol	75	73	56 - 120	2	30		
3 & 4 Methylphenol	76	74	53 - 120	1	30		
Naphthalene	80	75	57 - 120	4	30		
2-Nitroaniline	78	77	63 - 120	1	30		
3-Nitroaniline	73	74	47 - 120	3	30		
4-Nitroaniline	85	85	64 - 120	2	30		
Nitrobenzene	75	70	54 - 120	5	30		
2-Nitrophenol	85	80	56 - 120	4	30		
4-Nitrophenol	82	82	63 - 121	2	30		
N-Nitrosodi-n-propylamine	73	69	51 - 120	4	30		
N-Nitrosodiphenylamine	84	85	61 - 120	3	36		
Pentachlorophenol	76	77	56 - 120	2	30		
Phenanthrene	86	87	64 - 120	3	30		
Phenol	77	74	56 - 120	2	30		
Pyrene	88	88	64 - 120	2	38		
1,2,4-Trichlorobenzene	84	77	52 - 120	7	30		
2,4,5-Trichlorophenol	87	87	64 - 120	2	30		
2,4,6-Trichlorophenol	85	84	61 - 120	1	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorobiphenyl	78	76	50 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorophenol	77	72	53 - 120
Nitrobenzene-d5	73	69	50 - 120
Phenol-d5	74	72	52 - 120
Terphenyl-d14	87	88	55 - 120
2,4,6-Tribromophenol	93	92	51 - 120

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226532

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-55577-1	Units:	ug/Kg	MSD Lab Sample ID:	280-55577-1
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/22/2014 1821			Analysis Date:	05/22/2014 1851
Prep Date:	05/20/2014 0847			Prep Date:	05/20/2014 0847
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual		MSD Result/Qual	
Acenaphthene	9.8	U	2560	2600	2110		2110	
Acenaphthylene	16	U	2560	2600	2070		2070	
Anthracene	16	U	2560	2600	2170		2240	
Benzo[a]anthracene	19	U	2560	2600	2260		2290	
Benzo[a]pyrene	19	U	2560	2600	2250		2280	
Benzo[b]fluoranthene	25	U	2560	2600	2240		2320	
Benzo[ghi]perylene	15	U	2560	2600	2330		2330	
Benzo[k]fluoranthene	38	U	2560	2600	2350		2350	
Bis(2-chloroethoxy)methane	22	U	2560	2600	1960		1920	
Bis(2-chloroethyl)ether	16	U	2560	2600	2000		1890	
bis (2-chloroisopropyl) ether	22	U	2560	2600	1740		1670	
Bis(2-ethylhexyl) phthalate	44	U	2560	2600	2280		2330	
4-Bromophenyl phenyl ether	18	U	2560	2600	2190		2280	
Butyl benzyl phthalate	41	U	2560	2600	2270		2280	
Carbazole	34	U	2560	2600	2230		2270	
4-Chloroaniline	78	U	2560	2600	1460		1500	
4-Chloro-3-methylphenol	63	U	2560	2600	2080		2070	
2-Chloronaphthalene	9.5	U	2560	2600	2080		2080	
2-Chlorophenol	20	U	2560	2600	2070		2010	
4-Chlorophenyl phenyl ether	20	U	2560	2600	2190		2210	
Chrysene	26	U	2560	2600	2280		2340	
Dibenz(a,h)anthracene	18	U	2560	2600	2330		2360	
Dibenzofuran	19	U	2560	2600	2120		2140	
1,2-Dichlorobenzene	21	U	2560	2600	2010		1880	
1,3-Dichlorobenzene	11	U	2560	2600	1960		1860	
1,4-Dichlorobenzene	13	U	2560	2600	1980		1870	
3,3'-Dichlorobenzidine	85	U	2560	2600	1790		1880	
2,4-Dichlorophenol	9.5	U	2560	2600	2100		2070	
Diethyl phthalate	25	U	2560	2600	2270		2320	
2,4-Dimethylphenol	63	U	2560	2600	1920		1850	
Dimethyl phthalate	22	U	2560	2600	2220		2240	
Di-n-butyl phthalate	28	U	2560	2600	2280		2330	
4,6-Dinitro-2-methylphenol	310	U	5130	5210	3550		3650	
2,4-Dinitrophenol	320	U	5130	5210	1860	T	2080	T
2,4-Dinitrotoluene	63	U	2560	2600	2420		2480	
2,6-Dinitrotoluene	27	U	2560	2600	2320		2320	
Di-n-octyl phthalate	14	U	2560	2600	2320		2380	
Fluoranthene	34	U	2560	2600	2280		2340	
Fluorene	17	U	2560	2600	2170		2220	
Hexachlorobenzene	28	U	2560	2600	2310		2350	
Hexachlorobutadiene	9.5	U	2560	2600	2080		1960	
Hexachlorocyclopentadiene	47	U	2560	2600	1800		1770	
Hexachloroethane	20	U	2560	2600	1930		1810	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226532

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-55577-1	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	05/22/2014 1821		
Prep Date:	05/20/2014 0847		
Leach Date:	N/A		

MSD Lab Sample ID:	280-55577-1
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	05/22/2014 1851
Prep Date:	05/20/2014 0847
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Indeno[1,2,3-cd]pyrene	21	U	2560	2600	2390	2360
Isophorone	16	U	2560	2600	1790	1750
2-Methylnaphthalene	18	U	2560	2600	2090	2010
2-Methylphenol	12	U	2560	2600	1930	1890
3 & 4 Methylphenol	31	U	2560	2600	1950	1930
Naphthalene	29	U	2560	2600	2050	1960
2-Nitroaniline	47	U	2560	2600	1990	2010
3-Nitroaniline	69	U	2560	2600	1860	1920
4-Nitroaniline	69	U	2560	2600	2170	2210
Nitrobenzene	21	U	2560	2600	1930	1840
2-Nitrophenol	9.5	U	2560	2600	2170	2090
4-Nitrophenol	92	U	5130	5210	4190	4280
N-Nitrosodi-n-propylamine	29	U	2560	2600	1880	1810
N-Nitrosodiphenylamine	20	U	2560	2600	2140	2210
Pentachlorophenol	310	U	5130	5210	3900	3990
Phenanthrene	16	U	2560	2600	2210	2270
Phenol	17	U	2560	2600	1960	1930
Pyrene	11	U	2560	2600	2270	2300
1,2,4-Trichlorobenzene	27	U	2560	2600	2160	2010
2,4,5-Trichlorophenol	9.5	U	2560	2600	2220	2260
2,4,6-Trichlorophenol	9.5	U	2560	2600	2180	2200

Date: 2 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-93
Subject: Inorganic - Data Package No. JP0798-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0798 prepared by TestAmerica Laboratories (TAL). 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	Analyte
J1TPK8	5/15/14	Soil	C	See note 1
J1TPK9	5/15/14	Soil	C	See note 1
J1TPL0	5/15/14	Soil	C	See note 1
J1TPL1	5/15/14	Soil	C	See note 1
J1TPL2	5/15/14	Soil	C	See note 1
J1TPL3	5/15/14	Soil	C	See note 1
J1TPL4	5/15/14	Soil	C	See note 1
J1TPL5	5/15/14	Soil	C	See note 1
J1TPL6	5/15/14	Soil	C	See note 1
J1TPL7	5/15/14	Soil	C	See note 1
J1TPL8	5/15/14	Soil	C	See note 1
J1TPL9	5/15/14	Soil	C	See note 1
J1TPM0	5/15/14	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals

and 28 days for mercury.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (63%) and silicon (31%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1TPL4/J1TPM0) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0798 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all antimony (63%) and silicon (31%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0798	**REVIEWER: ELR**	**Project: 100-N-93**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK8

Lab Sample ID: 280-55577-1
Client Matrix: Solid
% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.17 g
Analysis Date:	05/21/2014 1931			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

✓ 5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5040		1.3	4.3
Antimony		0.33	U J	0.33	0.51
Arsenic		2.2		0.57	0.86
Barium		36.7		0.065	0.43
Beryllium		0.19		0.028	0.17
Boron		0.84	U	0.84	1.7
Cadmium		0.035	U	0.035	0.17
Calcium		5120		12.1	42.8
Chromium		8.9		0.050	0.17
Cobalt		4.9	X	0.086	0.86
Copper		12.7		0.19	0.86
Iron		13700		3.3	4.3
Lead		2.4		0.23	0.43
Magnesium		3910		3.2	17.1
Manganese		223		0.086	0.86
Molybdenum		0.22	U	0.22	1.7
Nickel		9.8		0.11	3.4
Potassium		726		35.1	257
Selenium		0.74	U J	0.74	0.86
Silicon		197		4.9	8.6
Silver		0.14	U	0.14	0.17
Sodium		164		50.6	103
Vanadium		35.9		0.081	1.7
Zinc		27.9	X	0.34	0.86

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.59 g
Analysis Date:	05/20/2014 2156			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0056	U	0.0056	0.017

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK9

Lab Sample ID: 280-55577-2
Client Matrix: Solid
% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.04 g
Analysis Date:	05/21/2014 1939			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

r 5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4050		1.5	4.9
Antimony		0.37	U J	0.37	0.59
Arsenic		1.2		0.65	0.98
Barium		40.6		0.075	0.49
Beryllium		0.21		0.032	0.20
Boron		0.96	U	0.96	2.0
Cadmium		0.040	U	0.040	0.20
Calcium		4790		13.8	49.1
Chromium		2.9		0.057	0.20
Cobalt		7.9	X	0.098	0.98
Copper		16.5		0.21	0.98
Iron		20400		3.7	4.9
Lead		2.0		0.26	0.49
Magnesium		3850		3.6	19.6
Manganese		244		0.098	0.98
Molybdenum		0.26	U	0.26	2.0
Nickel		6.7		0.12	3.9
Potassium		513		40.2	294
Selenium		0.84	U J	0.84	0.98
Silicon		123		5.6	9.8
Silver		0.16	U	0.16	0.20
Sodium		332		57.9	118
Vanadium		45.1		0.092	2.0
Zinc		35.8	X	0.39	0.98

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.61 g
Analysis Date:	05/20/2014 2202			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0056	U	0.0056	0.017

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid
% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	05/21/2014 1941			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4070		1.4	4.7
Antimony		0.35	U J	0.35	0.56
Arsenic		1.5		0.62	0.93
Barium		39.2		0.071	0.47
Beryllium		0.23		0.031	0.19
Boron		0.91	U	0.91	1.9
Cadmium		0.038	U	0.038	0.19
Calcium		4930		13.2	46.6
Chromium		3.4		0.054	0.19
Cobalt		8.0	X	0.093	0.93
Copper		16.9		0.20	0.93
Iron		20800		3.5	4.7
Lead		1.9		0.25	0.47
Magnesium		3960		3.5	18.7
Manganese		268		0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		6.7		0.11	3.7
Potassium		554		38.2	280
Selenium		0.80	U J	0.80	0.93
Silicon		133		5.3	9.3
Silver		0.15	U	0.15	0.19
Sodium		317		55.0	112
Vanadium		47.1		0.088	1.9
Zinc		33.1	X	0.37	0.93

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.56 g
Analysis Date:	05/20/2014 2205			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0060	U	0.0060	0.019

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	05/21/2014 1944			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5820		1.6	5.0
Antimony		0.38	U J	0.38	0.60
Arsenic		3.7		0.66	1.0
Barium		50.1		0.076	0.50
Beryllium		0.25		0.033	0.20
Boron		0.99	U	0.99	2.0
Cadmium		0.041	U	0.041	0.20
Calcium		5970		14.2	50.3
Chromium		11.7		0.058	0.20
Cobalt		7.6	X	0.10	1.0
Copper		17.8		0.22	1.0
Iron		19200		3.8	5.0
Lead		4.0		0.27	0.50
Magnesium		5140		3.7	20.1
Manganese		296		0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		14.6		0.12	4.0
Potassium		926		41.2	302
Selenium		0.86	U	0.86	1.0
Silicon		226	J	5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		258		59.3	121
Vanadium		45.8		0.094	2.0
Zinc		38.0	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.60 g
Analysis Date:	05/20/2014 2207			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0056	U	0.0056	0.017

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL2

Lab Sample ID: 280-55577-5
Client Matrix: Solid
% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.18 g
Analysis Date:	05/21/2014 1959			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4000		1.3	4.3
Antimony		0.33	U J	0.33	0.52
Arsenic		1.5		0.57	0.87
Barium		44.2		0.066	0.43
Beryllium		0.21		0.029	0.17
Boron		0.85	U	0.85	1.7
Cadmium		0.036	U	0.036	0.17
Calcium		4550		12.2	43.3
Chromium		4.3		0.050	0.17
Cobalt		7.9	X	0.087	0.87
Copper		16.1		0.19	0.87
Iron		19000		3.3	4.3
Lead		2.3		0.23	0.43
Magnesium		3800		3.2	17.3
Manganese		259		0.087	0.87
Molybdenum		0.23	U	0.23	1.7
Nickel		7.5		0.11	3.5
Potassium		650		35.5	260
Selenium		0.74	U	0.74	0.87
Silicon		172	J	4.9	8.7
Silver		0.14	U	0.14	0.17
Sodium		239		51.1	104
Vanadium		36.7		0.081	1.7
Zinc		33.4	X	0.34	0.87

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.67 g
Analysis Date:	05/20/2014 2209			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0051	U	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.04 g
Analysis Date:	05/21/2014 2001			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6900		1.5	4.9
Antimony		0.37	U J	0.37	0.59
Arsenic		3.9		0.64	0.98
Barium		72.4		0.074	0.49
Beryllium		0.26		0.032	0.20
Boron		0.96	U	0.96	2.0
Cadmium		0.10	B	0.040	0.20
Calcium		12300		13.8	48.8
Chromium		14.9		0.057	0.20
Cobalt		5.7	X	0.098	0.98
Copper		16.4		0.21	0.98
Iron		13900		3.7	4.9
Lead		4.2		0.26	0.49
Magnesium		5820		3.6	19.5
Manganese		298		0.098	0.98
Molybdenum		0.25	U	0.25	2.0
Nickel		13.6		0.12	3.9
Potassium		1350		40.0	293
Selenium		0.84	U	0.84	0.98
Silicon		266	J	5.5	9.8
Silver		0.16	U	0.16	0.20
Sodium		174		57.6	117
Vanadium		28.7		0.092	2.0
Zinc		35.1	X	0.39	0.98

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.54 g
Analysis Date:	05/20/2014 2216			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0062	U	0.0062	0.019

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid

% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	05/21/2014 2003			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7000		1.6	5.1
Antimony		0.39	U J	0.39	0.61
Arsenic		3.3		0.67	1.0
Barium		66.7		0.078	0.51
Beryllium		0.23		0.034	0.20
Boron		1.0	U	1.0	2.0
Cadmium		0.077	B	0.042	0.20
Calcium		8640		14.4	51.0
Chromium		14.2		0.059	0.20
Cobalt		5.9	X	0.10	1.0
Copper		19.0		0.22	1.0
Iron		14100		3.9	5.1
Lead		3.1		0.28	0.51
Magnesium		5000		3.8	20.4
Manganese		281		0.10	1.0
Molybdenum		0.27	U	0.27	2.0
Nickel		13.6		0.13	4.1
Potassium		1140		41.8	306
Selenium		0.88	U	0.88	1.0
Silicon		369	J	5.8	10.2
Silver		0.16	U	0.16	0.20
Sodium		173		60.2	122
Vanadium		34.0		0.096	2.0
Zinc		33.4	X	0.41	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.55 g
Analysis Date:	05/20/2014 2219			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0062	U	0.0062	0.019

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid
% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.14 g
Analysis Date:	05/21/2014 2005			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4520		1.4	4.5
Antimony		0.34	U J	0.34	0.54
Arsenic		2.4		0.59	0.90
Barium		37.9		0.068	0.45
Beryllium		0.22		0.030	0.18
Boron		0.88	U	0.88	1.8
Cadmium		0.037	U	0.037	0.18
Calcium		4820		12.7	44.9
Chromium		4.6		0.052	0.18
Cobalt		7.0	X	0.090	0.90
Copper		18.6		0.19	0.90
Iron		18500		3.4	4.5
Lead		2.1		0.24	0.45
Magnesium		3960		3.3	17.9
Manganese		217		0.090	0.90
Molybdenum		0.23	U	0.23	1.8
Nickel		7.8		0.11	3.6
Potassium		577		36.8	269
Selenium		0.77	U J	0.77	0.90
Silicon		135		5.1	9.0
Silver		0.14	U	0.14	0.18
Sodium		344		52.9	108
Vanadium		36.5		0.084	1.8
Zinc		31.9	X	0.36	0.90

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.56 g
Analysis Date:	05/20/2014 2221			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0061	U	0.0061	0.019

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid
% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.13 g
Analysis Date:	05/21/2014 2007			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7420		1.4	4.6
Antimony		0.35	U J	0.35	0.55
Arsenic		3.1		0.61	0.92
Barium		61.5		0.070	0.46
Beryllium		0.34		0.030	0.18
Boron		0.90	U	0.90	1.8
Cadmium		0.038	U	0.038	0.18
Calcium		6300		13.0	46.1
Chromium		7.9		0.053	0.18
Cobalt		8.4	X	0.092	0.92
Copper		21.5		0.20	0.92
Iron		19900		3.5	4.6
Lead		4.7		0.25	0.46
Magnesium		4920		3.4	18.4
Manganese		304		0.092	0.92
Molybdenum		0.31	B	0.24	1.8
Nickel		10.7		0.11	3.7
Potassium		1220		37.8	276
Selenium		0.79	U	0.79	0.92
Silicon		129	J	5.2	9.2
Silver		0.15	U	0.15	0.18
Sodium		460		54.3	111
Vanadium		43.8		0.087	1.8
Zinc		40.5	X	0.37	0.92

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.55 g
Analysis Date:	05/20/2014 2223			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0063	U	0.0063	0.019

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL7

Lab Sample ID: 280-55577-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	05/21/2014 2010			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4580		1.6	5.1
Antimony		0.38	U J	0.38	0.61
Arsenic		1.8		0.67	1.0
Barium		35.7		0.077	0.51
Beryllium		0.20		0.033	0.20
Boron		0.99	U	0.99	2.0
Cadmium		0.041	U	0.041	0.20
Calcium		5360		14.3	50.6
Chromium		6.8		0.059	0.20
Cobalt		6.0	X	0.10	1.0
Copper		14.8		0.22	1.0
Iron		16200		3.8	5.1
Lead		2.4		0.27	0.51
Magnesium		4090		3.7	20.2
Manganese		246		0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		9.4		0.12	4.0
Potassium		614		41.5	303
Selenium		0.87	U	0.87	1.0
Silicon		121	J	5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		217		59.7	121
Vanadium		41.1		0.095	2.0
Zinc		31.1	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.61 g
Analysis Date:	05/20/2014 2226			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0055	U	0.0055	0.017

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL8

Lab Sample ID: 280-55577-11
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.15 g
Analysis Date:	05/21/2014 2012			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5130		1.4	4.4
Antimony		0.33	U J	0.33	0.53
Arsenic		2.0		0.58	0.88
Barium		52.6		0.067	0.44
Beryllium		0.23		0.029	0.18
Boron		0.86	U	0.86	1.8
Cadmium		0.036	U	0.036	0.18
Calcium		6380		12.4	44.1
Chromium		6.8		0.051	0.18
Cobalt		6.5	X	0.088	0.88
Copper		16.6		0.19	0.88
Iron		17700		3.3	4.4
Lead		2.7		0.24	0.44
Magnesium		3990		3.3	17.6
Manganese		251		0.088	0.88
Molybdenum		0.39	B	0.23	1.8
Nickel		10.9		0.11	3.5
Potassium		800		36.1	264
Selenium		0.76	U	0.76	0.88
Silicon		259	J	5.0	8.8
Silver		0.14	U	0.14	0.18
Sodium		312		52.0	106
Vanadium		44.7		0.083	1.8
Zinc		34.6	X	0.35	0.88

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.62 g
Analysis Date:	05/20/2014 2228			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0054	U	0.0054	0.017

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.12 g
Analysis Date:	05/21/2014 2014			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5620		1.4	4.5
Antimony		0.34	U J	0.34	0.54
Arsenic		1.5		0.60	0.91
Barium		52.7		0.069	0.45
Beryllium		0.24		0.030	0.18
Boron		0.89	U	0.89	1.8
Cadmium		0.037	U	0.037	0.18
Calcium		6340		12.8	45.3
Chromium		6.9		0.053	0.18
Cobalt		6.5	X	0.091	0.91
Copper		17.9		0.20	0.91
Iron		18800		3.4	4.5
Lead		3.0		0.24	0.45
Magnesium		4010		3.3	18.1
Manganese		248		0.091	0.91
Molybdenum		0.24	U	0.24	1.8
Nickel		8.1		0.11	3.6
Potassium		804		37.1	272
Selenium		0.78	U J	0.78	0.91
Silicon		187		5.1	9.1
Silver		0.14	U	0.14	0.18
Sodium		319		53.4	109
Vanadium		46.4		0.085	1.8
Zinc		38.1	X	0.36	0.91

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.63 g
Analysis Date:	05/20/2014 2230			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U	0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPM0

Lab Sample ID: 280-55577-13
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-226975	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0			Initial Weight/Volume:	1.05 g
Analysis Date:	05/21/2014 2016			Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				

5/31/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6260		1.5	4.9
Antimony		0.37	U J	0.37	0.59
Arsenic		3.1		0.64	0.98
Barium		60.4		0.074	0.49
Beryllium		0.20		0.032	0.20
Boron		0.96	U	0.96	2.0
Cadmium		0.067	B	0.040	0.20
Calcium		7060		13.8	48.8
Chromium		12.9		0.057	0.20
Cobalt		5.4	X	0.098	0.98
Copper		17.3		0.21	0.98
Iron		12800		3.7	4.9
Lead		2.9		0.26	0.49
Magnesium		4510		3.6	19.5
Manganese		249		0.098	0.98
Molybdenum		0.30	B	0.25	2.0
Nickel		12.2		0.12	3.9
Potassium		1010		40.0	293
Selenium		0.84	U	0.84	0.98
Silicon		297	J	5.5	9.8
Silver		0.16	U	0.16	0.20
Sodium		150		57.6	117
Vanadium		30.6		0.092	2.0
Zinc		31.0	X	0.39	0.98

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0			Initial Weight/Volume:	.52 g
Analysis Date:	05/20/2014 2233			Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0065	U	0.0065	0.020

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55577-1

SDG #: JP0798
SAF#: RC-189

Date SDG Closed: May 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPK8	280-55577-1	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPK9	280-55577-2	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL0	280-55577-3	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL1	280-55577-4	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL2	280-55577-5	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL3	280-55577-6	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL4	280-55577-7	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL5	280-55577-8	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL6	280-55577-9	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL7	280-55577-10	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL8	280-55577-11	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL9	280-55577-12	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPM0	280-55577-13	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/17/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.8° C, 3.9° C, 5.2° C and 5.6° C.

GC/MS SEMIVOLATILES - SW846 8270C
The MS/MSD performed on sample J1TPK8 exhibited percent recoveries outside the control limits for 2,4-Dinitrophenol, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1TPL8 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-226333 indicates that physical and chemical interferences are present for Cobalt and Zinc. Results have been flagged with an "X".

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-226333. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPK8; therefore, control limits are not applicable.

No other anomalies were encountered.

PERCENT MOISTURE
The duplicate analysis of sample J1TPK8 exceeded the RPD limit, and the associated sample result has been flagged "M".

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1852-~~11~~ 12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: DMS 5-16-14 ~~A131141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DMS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1TPK8	SOIL	5-15-14	0827	X	X	X	X	X					
J1TPK9	SOIL	5-15-14	0821	X	X	X	X	X					
J1TPL0	SOIL	5/15/14	0652	X	X	X	X	X					
J1TPL1	SOIL	5/15/14	0724	X	X	X	X	X					
J1TPL2	SOIL	5-15-14	0838	X	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0745	SM Sexton	5/16/14 0745
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

5,3,3,6,4,9,1,8,2,SIRGTO3 5/17/14 SO

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

SMS 5-16-14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 2 of 3

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER	SAF No.: RC-189	
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-~~112~~ DWSHEA 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container: G/P	eG	eG	eG	G					
				No. of Container(s): 1	1	1	1	1					
				Volume: DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL					
				Sample Analysis: See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +					
J1TPL3	SOIL	5-15-14	0854	X	X	X	X	X					
J1TPL4	SOIL	5-15-14	0711	X	X	X	X	X					
J1TPL5	SOIL	5-15-14	0737	X	X	X	X	X					
J1TPL6	SOIL	5-15-14	0939	X	X	X	X	X					
J1TPL7	SOIL	5-15-14	0945	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

Relinquished By/Removed From	Date/Time	Redesigned By/Stored In	Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5/16/14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-1/12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: SMS 5-16-14 ~~A13141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	SMS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D+						

Sample No.	Matrix	Sample Date	Sample Time										
TPL8	SOIL	5-15-14	0956 SMS ~~0951~~ 5/15/14	X	X	X	X	X					
TPL9	SOIL	5-15-14	1003	X	X	X	X	X					
TPM0	SOIL	5-15-14	0711	X	X	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe — Date/Time: 5-15-14 1037	Received By/Stored In: DWSHEA DWSHEA 5/15/14 — Date/Time: 1037
Relinquished By/Removed From: DWSHEA DWSHEA 5/15/14 — Date/Time: 1710	Received By/Stored In: SM Sexton — Date/Time: 5/15/14 1710
Relinquished By/Removed From: SM Sexton — Date/Time: 5/15/14 1715	Received By/Stored In: 100N Battelle Fridge 3C — Date/Time: 5/15/14 1715
Relinquished By/Removed From: 100N Battelle Fridge 3C — Date/Time: 5/16/14 0715	Received By/Stored In: SM Sexton — Date/Time: 5/16/14 0715
Relinquished By/Removed From: SM Sexton — Date/Time: 5/16/14 0725	Received By/Stored In: FED Ex — Date/Time:
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time: 5-17-14 940
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

JP0798

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-N-93		DATA PACKAGE:	JP0798	
VALIDATOR:	ELR	LAB: TAL		DATE: 5/31/14	
			SDG:	JP0798	

ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX				
JITPK8	JITPK9	JITPL0	JITPL1	JITPL2
JITPL3	JITPL4	JITPL5	JITPL6	JITPL7
JITPL8	JITPL9	JITPM0		
				soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

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

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

Comments: LCS - silica - 18% - J all
MS - antimony (63%) silica (322% - J all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226333

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-226333/1-A	Analysis Batch:	280-226975	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	05/21/2014 1926	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	4.13	B	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Lab Control Sample - Batch: 280-226333

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-226333/2-A	Analysis Batch:	280-226975	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	05/21/2014 1928	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	185.8	93	82 - 116	
Antimony	50.0	49.66	99	82 - 110	
Arsenic	100	99.53	100	85 - 110	
Barium	200	195.0	97	87 - 112	
Beryllium	5.00	4.85	97	84 - 114	
Boron	100	97.26	97	80 - 120	
Cadmium	10.0	10.01	100	87 - 110	
Calcium	5000	4731	95	82 - 114	
Chromium	20.0	20.31	102	84 - 114	
Cobalt	50.0	49.42	99	87 - 110	
Copper	25.0	25.10	100	88 - 110	
Iron	100	96.91	97	87 - 120	
Lead	50.0	48.16	96	86 - 110	
Magnesium	5000	4776	96	90 - 110	
Manganese	50.0	47.46	95	88 - 110	
Molybdenum	100	100.1	100	86 - 110	
Nickel	50.0	49.18	98	87 - 110	
Potassium	5000	4905	98	89 - 110	
Selenium	200	190.2	95	83 - 110	
Silicon	1000	177.5	18	10 - 70	
Silver	5.00	4.84	97	87 - 114	
Sodium	5000	5226	105	90 - 112	
Vanadium	50.0	48.99	98	88 - 110	
Zinc	50.0	45.03	90	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike - Batch: 280-226333

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-55577-1	Analysis Batch:	280-226975	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.01 g
Analysis Date:	05/21/2014 1937	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	5040		199	7365	1171	50 - 200	4
Antimony	0.33	U	49.6	31.08	63	20 - 200	
Arsenic	2.2		99.3	94.57	93	76 - 111	
Barium	36.7		199	231.6	98	52 - 159	
Beryllium	0.19		4.96	4.70	91	72 - 105	
Boron	0.84	U	99.3	89.49	90	80 - 120	
Cadmium	0.035	U	9.93	9.43	95	40 - 130	
Calcium	5120		4960	11460	128	43 - 165	
Chromium	8.9		19.9	31.31	113	70 - 200	
Cobalt	4.9		49.6	50.65	92	72 - 106	
Copper	12.7		24.8	38.77	105	37 - 187	
Iron	13700		99.3	16130	2402	70 - 200	4
Lead	2.4		49.6	46.23	88	70 - 200	
Magnesium	3910		4960	9788	119	64 - 145	
Manganese	223		49.6	321.0	198	40 - 200	4
Molybdenum	0.22	U	99.3	91.34	92	75 - 103	
Nickel	9.8		49.6	57.95	97	61 - 126	
Potassium	726		4960	5658	99	56 - 172	
Selenium	0.74	U	199	176.8	89	76 - 104	
Silicon	197		993	505.2	31	20 - 200	
Silver	0.14	U	4.96	4.63	93	75 - 141	
Sodium	164		4960	5171	101	78 - 111	
Vanadium	35.9		49.6	90.18	109	50 - 169	
Zinc	27.9		49.6	71.41	88	70 - 200	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Duplicate - Batch: 280-226333

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-55577-1	Analysis Batch:	280-226975	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-226333	Lab File ID:	25A1052114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.15 g
Analysis Date:	05/21/2014 1935	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/19/2014 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	5040		5532	9	40	
Antimony	0.33	U	0.33	NC	40	U
Arsenic	2.2		2.21	0.2	30	
Barium	36.7		37.51	2	30	
Beryllium	0.19		0.207	7	30	
Boron	0.84	U	0.85	NC	30	U
Cadmium	0.035	U	0.036	NC	30	U
Calcium	5120		5688	10	30	
Chromium	8.9		10.88	20	40	
Cobalt	4.9		5.51	12	30	
Copper	12.7		12.77	0.6	30	
Iron	13700		14570	6	40	
Lead	2.4		2.60	8	40	
Magnesium	3910		4316	10	30	
Manganese	223		232.3	4	40	
Molybdenum	0.22	U	0.23	NC	30	U
Nickel	9.8		11.38	15	30	
Potassium	726		803.8	10	40	
Selenium	0.74	U	0.75	NC	30	U
Silicon	197		213.4	8	40	
Silver	0.14	U	0.14	NC	30	U
Sodium	164		158.4	3	30	
Vanadium	35.9		37.65	5	30	
Zinc	27.9		28.95	4	40	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226576

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-226576/1-A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/20/2014 2151	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-226576

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-226576/2-A	Analysis Batch:	280-226711	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/20/2014 2153	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.434	104	87 - 111	

Matrix Spike - Batch: 280-226576

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-55577-1	Analysis Batch:	280-226711	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.57 g
Analysis Date:	05/20/2014 2200	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0056	U	0.440	0.449	102	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Duplicate - Batch: 280-226576

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-55577-1	Analysis Batch:	280-226711	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-226576	Lab File ID:	140520taa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.52 g
Analysis Date:	05/20/2014 2158	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/20/2014 1410				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0056	U	0.0064	NC	20	U

Date: 2 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-93
Subject: Diesel Range Organic - Data Package No. JP0798-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0798 prepared by TestAmerica Laboratories (TAL). 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	Analyte
J1TPK8	5/15/14	Soil	C	See note 1
J1TPK9	5/15/14	Soil	C	See note 1
J1TPL0	5/15/14	Soil	C	See note 1
J1TPL1	5/15/14	Soil	C	See note 1
J1TPL2	5/15/14	Soil	C	See note 1
J1TPL3	5/15/14	Soil	C	See note 1
J1TPL4	5/15/14	Soil	C	See note 1
J1TPL5	5/15/14	Soil	C	See note 1
J1TPL6	5/15/14	Soil	C	See note 1
J1TPL7	5/15/14	Soil	C	See note 1
J1TPL8	5/15/14	Soil	C	See note 1
J1TPL9	5/15/14	Soil	C	See note 1
J1TPM0	5/15/14	Soil	C	See note 1

1 – Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custcdy Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

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: 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 acceptable.

Method Blanks

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All 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 contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPL4/J1TPM0) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0798 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DIESEL RANGE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0798	REVIEWER: ELR	Project: 100-N-93	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK8

Lab Sample ID: 280-55577-1
Client Matrix: Solid

% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210022.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/21/2014 1815			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		670	U	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK9**

Lab Sample ID: 280-55577-2
Client Matrix: Solid

% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210023.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/21/2014 1844			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		670	U	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	69		49 - 115

5/31/14

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid
% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210024.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/21/2014 1912			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	72		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210025.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/21/2014 1940			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4500		980	3900
C10-C28		2000	J	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

5/31/14

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL2

Lab Sample ID: 280-55577-5
Client Matrix: Solid

% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210026.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	05/21/2014 2008			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

5/31/14

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210027.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	05/21/2014 2036			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

5/31/14

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL4**

Lab Sample ID: 280-55577-7
Client Matrix: Solid
% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210028.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/21/2014 2104			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		700	U	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL5**

Lab Sample ID: 280-55577-8
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210030.D
Dilution:	1.0			Initial Weight/Volume:	32.7 g
Analysis Date:	05/21/2014 2200			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		940	U	940	3800
C10-C28		640	U	640	3800

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid
% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210031.D
Dilution:	1.0			Initial Weight/Volume:	30.3 g
Analysis Date:	05/21/2014 2228			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		2900	J	1000	4100
C10-C28		1400	J	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	75		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL7**

Lab Sample ID: 280-55577-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210032.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	05/21/2014 2256			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL8**

Lab Sample ID: 280-55577-11
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210035.D
Dilution:	1.0			Initial Weight/Volume:	32.2 g
Analysis Date:	05/22/2014 0020			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		10000		940	3800
C10-C28		4200		640	3800

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL9**

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210036.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/22/2014 0048			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		7400		990	4000
C10-C28		3000	J	670	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPM0**

Lab Sample ID: 280-55577-13
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-226624	Lab File ID:	05210037.D
Dilution:	1.0			Initial Weight/Volume:	33.0 g
Analysis Date:	05/22/2014 0115			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		930	U	930	3700
C10-C28		630	U	630	3700

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		49 - 115

5/31/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55577-1

SDG #: JP0798
SAF#: RC-189

Date SDG Closed: May 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPK8	280-55577-1	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPK9	280-55577-2	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL0	280-55577-3	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL1	280-55577-4	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL2	280-55577-5	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL3	280-55577-6	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL4	280-55577-7	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL5	280-55577-8	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL6	280-55577-9	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL7	280-55577-10	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL8	280-55577-11	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL9	280-55577-12	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPM0	280-55577-13	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/17/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.8° C, 3.9° C, 5.2° C and 5.6° C.

GC/MS SEMIVOLATILES - SW846 8270C
The MS/MSD performed on sample J1TPK8 exhibited percent recoveries outside the control limits for 2,4-Dinitrophenol, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1TPL8 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-226333 indicates that physical and chemical interferences are present for Cobalt and Zinc. Results have been flagged with an "X".

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-226333. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPK8; therefore, control limits are not applicable.

No other anomalies were encountered.

PERCENT MOISTURE
The duplicate analysis of sample J1TPK8 exceeded the RPD limit, and the associated sample result has been flagged "M".

No other anomalies were encountered.

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294 | Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 DAY		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-83, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-1 12 5/14/14 DWSHEA	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: DMS 5-16-14 ~~A131141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container: G/P	aG	aG	aG	G					
				No. of Container(s): 1	1	1	1	1					
				Volume: ~~250mL~~ 125 DWS 5/14/14	250mL	250mL	250mL	125mL					
				Sample Analysis: See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +					
J1TPK8	SOIL	5-15-14	0827	X	X	X	X	X					
J1TPK9	SOIL	5-15-14	0821	X	X	X	X	X					
J1TPL0	SOIL	5/15/14	0652	X	X	X	X	X					
J1TPL1	SOIL	5/15/14	0724	X	X	X	X	X					
J1TPL2	SOIL	5-15-14	0838	X	X	X	X	X					

Page 1 of 2

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

5.3, 3.6, 4.9, 1.8, 2.5 IRGTO3 5/17/14 SO

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 2 of 3

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Date Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-1-12 5/14/14 DWSHEA	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1TPL3	SOIL	5-15-14	0854	X	X	X	X	X					
J1TPL4	SOIL	5-15-14	0711	X	X	X	X	X					
J1TPL5	SOIL	5-15-14	0737	X	X	X	X	X					
J1TPL6	SOIL	5-15-14	0939	X	X	X	X	X					
J1TPL7	SOIL	5-15-14	0945	X	X	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe, Date/Time: 5-15-14 1037	Received By/Stored In: DWSHEA DWSHEA, Date/Time: 5/15/14 1037
Relinquished By/Removed From: DWSHEA DWSHEA, Date/Time: 5/15/14 1710	Received By/Stored In: SM Sexton, Date/Time: 5/15/14 1710
Relinquished By/Removed From: SM Sexton, Date/Time: 5/15/14 1715	Received By/Stored In: 10100 Battelle Fridge 3C, Date/Time: 5/15/14 1715
Relinquished By/Removed From: 10100 Battelle Fridge 3C, Date/Time: 5/16/14 0715	Received By/Stored In: SM Sexton, Date/Time: 5/16/14 0715
Relinquished By/Removed From: SM Sexton, Date/Time: 5/16/14 0725	Received By/Stored In: FED EX, Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time: 5-17-14 940
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5/16/14

JP0798

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294 | Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-N12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: SMS 5-16-14 ~~A13141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
TPL8	SOIL	5-15-14	0956 DWS ~~0951~~ 5/15/14	X	X	X	X	X					
TPL9	SOIL	5-15-14	1003	X	X	X	X	X					
TPM0	SOIL	5-15-14	0711	X	X	X	X	X					

Page 15 of 15

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	10100 Battelle Fridge 3C	5/15/14 1715
10100 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

JP0798

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-93			DATA PACKAGE: JP0798		
VALIDATOR: ELR		LAB: TAL		DATE: 5/31/14	
			SDG: JP0798		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1TPK8	J1TPK9	J1TPL0	J1TPL1	J1TPL2	
J1TPL3	J1TPL4	J1TPL5	J1TPL6	J1TPL7	
J1TPL8	J1TPL9	J1TPM0			
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments:

No BA

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries aceptable? ..... Yes No N/A

Check materials traceable? ..... Yes No N/A

Check materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226624

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-226624/1-A	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-226624	Lab File ID:	05210019.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.5 g
Analysis Date:	05/21/2014 1650	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	920	U	920	3700
C10-C28	630	U	630	3700

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	70	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-226624

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-226624/2-A	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-226624	Lab File ID:	05210020.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.0 g
Analysis Date:	05/21/2014 1718	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-226624/3-A	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-226624	Lab File ID:	05210021.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.5 g
Analysis Date:	05/21/2014 1747	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	87	90	57 - 115	1	23		
C10-C28	86	90	53 - 115	1	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	67	80	49 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-226624

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-226624/2-A	Units: ug/Kg		LCSD Lab Sample ID:	LCSD 280-226624/3-A
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/21/2014 1718			Analysis Date:	05/21/2014 1747
Prep Date:	05/20/2014 1325			Prep Date:	05/20/2014 1325
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	64600	61600	55900	55300
C10-C28	64600	61600	55600	55300

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226624

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-55577-10	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-226624	Lab File ID:	05210033.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.2 g
Analysis Date:	05/21/2014 2324			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-55577-10	Analysis Batch:	280-226712	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-226624	Lab File ID:	05210034.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.0 g
Analysis Date:	05/21/2014 2352			Final Weight/Volume:	1 mL
Prep Date:	05/20/2014 1325			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	86	85	57 - 115	2	23		
C10-C28	86	85	56 - 115	2	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	68	67	49 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226624

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-55577-10	Units:	ug/Kg	MSD Lab Sample ID:	280-55577-10
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/21/2014 2324			Analysis Date:	05/21/2014 2352
Prep Date:	05/20/2014 1325			Prep Date:	05/20/2014 1325
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	1000	U	64900	67500	56000	57100
C10-C28	680	U	64900	67500	55900	57100

Date: 2 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-93
Subject: Polyaromatic Hydrocarbon - Data Package No. JP0798-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0798 prepared by TestAmerica Laboratories (TAL). 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	Analyte
J1TPK8	5/15/14	Soil	C	See note 1
J1TPK9	5/15/14	Soil	C	See note 1
J1TPL0	5/15/14	Soil	C	See note 1
J1TPL1	5/15/14	Soil	C	See note 1
J1TPL2	5/15/14	Soil	C	See note 1
J1TPL3	5/15/14	Soil	C	See note 1
J1TPL4	5/15/14	Soil	C	See note 1
J1TPL5	5/15/14	Soil	C	See note 1
J1TPL6	5/15/14	Soil	C	See note 1
J1TPL7	5/15/14	Soil	C	See note 1
J1TPL8	5/15/14	Soil	C	See note 1
J1TPL9	5/15/14	Soil	C	See note 1
J1TPM0	5/15/14	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

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: 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 acceptable.

Method Blanks

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

All method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of

50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All 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 contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPL4/J1TPM0) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0798 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: JP0798	REVIEWER: ELR	Project: 100-N-93	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK8**

Lab Sample ID: 280-55577-1
Client Matrix: Solid

% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0341			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	80		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPK9

Lab Sample ID: 280-55577-2
Client Matrix: Solid

% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	31.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0311			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/3/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		3.1	U	3.1	14
Benzo[a]pyrene		6.2	U	6.2	14
Benzo[b]fluoranthene		4.1	U	4.1	14
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	14
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	79		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL0**

Lab Sample ID: 280-55577-3
Client Matrix: Solid

% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0240			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

JK 5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.9	U	8.9	98
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	39
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	39
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	81		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	32.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0210			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.4	U	9.4	94
Acenaphthylene		8.5	U	8.5	94
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		3.0	U	3.0	14
Benzo[a]pyrene		6.0	U	6.0	14
Benzo[b]fluoranthene		3.9	U	3.9	14
Benzo[g,h,i]perylene		6.8	U	6.8	28
Benzo[k]fluoranthene		3.7	U	3.7	14
Chrysene		4.5	U	4.5	38
Dibenzo(a,h)anthracene		10	U	10	28
Fluoranthene		12	U	12	38
Fluorene		5.0	U	5.0	28
Indeno[1,2,3-cd]pyrene		11	U	11	28
Naphthalene		11	U	11	94
Phenanthrene		11	U	11	38
Pyrene		11	U	11	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	79		72 - 115

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL2**

Lab Sample ID: 280-55577-5
Client Matrix: Solid

% Moisture: 2.1

Date Sampled: 05/15/2014 0838
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0139			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	79		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0109			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	79		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid

% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0038			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/21/2014 0008			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	82		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/20/2014 2337			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	80		72 - 115

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL7**

Lab Sample ID: 280-55577-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/20/2014 2306			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	80		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL8

Lab Sample ID: 280-55577-11
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/20/2014 2104			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U N	10	100
Acenaphthylene		9.0	U N	9.0	100
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U N	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U N	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	80		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/20/2014 2034			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	78		72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPM0

Lab Sample ID: 280-55577-13
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-226317	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/20/2014 2003			Injection Volume:	20 uL
Prep Date:	05/18/2014 1352			Result Type:	PRIMARY

5/31/14

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	80		72 - 115

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55577-1

SDG #: JP0798
SAF#: RC-189

Date SDG Closed: May 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPK8	280-55577-1	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPK9	280-55577-2	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL0	280-55577-3	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL1	280-55577-4	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL2	280-55577-5	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL3	280-55577-6	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL4	280-55577-7	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL5	280-55577-8	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL6	280-55577-9	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL7	280-55577-10	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL8	280-55577-11	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL9	280-55577-12	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPM0	280-55577-13	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/17/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.8° C, 3.9° C, 5.2° C and 5.6° C.

GC/MS SEMIVOLATILES - SW846 8270C
The MS/MSD performed on sample J1TPK8 exhibited percent recoveries outside the control limits for 2,4-Dinitrophenol, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1TPL8 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-226333 indicates that physical and chemical interferences are present for Cobalt and Zinc. Results have been flagged with an "X".

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-226333. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPK8; therefore, control limits are not applicable.

No other anomalies were encountered.

PERCENT MOISTURE
The duplicate analysis of sample J1TPK8 exceeded the RPD limit, and the associated sample result has been flagged "M".

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 DAY		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-1/12 DWSHEA 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: DMS 5-16-14 ~~A131411~~ A131141		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To:			

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container: G/P	aG	aG	aG	G					
				No. of Container(s): 1	1	1	1	1					
				Volume: DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL					
				Sample Analysis: See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +					
J1TPK8	SOIL	5-15-14	0827	X	X	X	X	X					
J1TPK9	SOIL	5-15-14	0821	X	X	X	X	X					
J1TPL0	SOIL	5/15/14	0652	X	X	X	X	X					
J1TPL1	SOIL	5/15/14	0724	X	X	X	X	X					
J1TPL2	SOIL	5-15-14	0838	X	X	X	X	X					

Page 15 of 16

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0745	SM Sexton	5/16/14 0745
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION: Disposal Method: | Disposed By: | Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

5.3, 3.6, 4.9, 1.8, 2.5 IRGTO3 5/17/14 SO

REVIEWED BY KW DATE 5/16/14

DMS 5-16-14

REVIEWED BY DMS DATE 5/15/14 DMS 5-16-14

JP0798

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294 | Page 2 of 3

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-~~14~~12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131141		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To:			

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	eG	eG	eG	G					
No. of Container(s)	1	1	1	1	1					
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL					
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +					

Sample No.	Matrix	Sample Date	Sample Time										
J1TPL3	SOIL	5-15-14	0854	X	X	X	X	X					
J1TPL4	SOIL	5-15-14	0711	X	X	X	X	X					
J1TPL5	SOIL	5-15-14	0737	X	X	X	X	X					
J1TPL6	SOIL	5-15-14	0939	X	X	X	X	X					
J1TPL7	SOIL	5-15-14	0945	X	X	X	X	X					

Page 1 of 1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5/16/14

JP0798

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294 | Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: JWSHEA EL-1652-1/12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: SMS 5-16-14 ~~A13141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To:

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
TPL8	SOIL	5-15-14	~~0956~~ 0951	X	X	X	X	X					
TPL9	SOIL	5-15-14	1003	X	X	X	X	X					
TPM0	SOIL	5-15-14	0711	X	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

JP0798

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-93			DATA PACKAGE: JP0798		
VALIDATOR: ELR		LAB: TAL		DATE: 5/31/14	
			SDG: JP0798		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
JITPK8	JITPK9	JITPL0	JITPL1	JITPL2	
JITPL3	JITPL4	JITPL5	JITPL6	JITPL7	
JITPL8	JITPL9	JITPM0			
				SOIL	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

no PA

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries aceptable? ..... Yes No N/A

Check materials traceable? ..... Yes No N/A

Check materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226317

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-226317/1-A	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-226317	Lab File ID:	G0520022.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.1 g
Analysis Date:	05/20/2014 1902	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/18/2014 1352			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.3	U	9.3	93
Acenaphthylene	8.4	U	8.4	93
Anthracene	2.9	U	2.9	19
Benzo[a]anthracene	3.0	U	3.0	14
Benzo[a]pyrene	6.0	U	6.0	14
Benzo[b]fluoranthene	3.9	U	3.9	14
Benzo[g,h,i]perylene	6.7	U	6.7	28
Benzo[k]fluoranthene	3.7	U	3.7	14
Chrysene	4.5	U	4.5	37
Dibenzo(a,h)anthracene	10	U	10	28
Fluoranthene	12	U	12	37
Fluorene	4.9	U	4.9	28
Indeno[1,2,3-cd]pyrene	11	U	11	28
Naphthalene	11	U	11	93
Phenanthrene	11	U	11	37
Pyrene	11	U	11	37

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	80	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Lab Control Sample - Batch: 280-226317

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-226317/2-A	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-226317	Lab File ID:	G0520023.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/20/2014 1933	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/18/2014 1352			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1970	1730	88	78 - 116	
Acenaphthylene	1970	1660	84	76 - 115	
Anthracene	1970	1620	82	74 - 115	
Benzo[a]anthracene	1970	1850	94	85 - 120	
Benzo[a]pyrene	1970	1770	90	74 - 121	
Benzo[b]fluoranthene	1970	1760	90	85 - 115	
Benzo[g,h,i]perylene	1970	1920	98	85 - 120	
Benzo[k]fluoranthene	1970	1850	94	85 - 115	
Chrysene	1970	1820	92	83 - 115	
Dibenzo(a,h)anthracene	1970	1790	91	83 - 115	
Fluoranthene	1970	1770	90	83 - 115	
Fluorene	1970	1770	90	80 - 115	
Indeno[1,2,3-cd]pyrene	1970	1860	94	85 - 123	
Naphthalene	1970	1780	91	80 - 121	
Phenanthrene	1970	1750	89	80 - 115	
Pyrene	1970	1770	90	75 - 116	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	81	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226317

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-55577-11	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-226317	Lab File ID:	G0520027.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.1 g
Analysis Date:	05/20/2014 2135			Final Weight/Volume:	4 mL
Prep Date:	05/18/2014 1352			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-55577-11	Analysis Batch:	280-226530	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-226317	Lab File ID:	G0520028.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.0 g
Analysis Date:	05/20/2014 2205			Final Weight/Volume:	4 mL
Prep Date:	05/18/2014 1352			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	80	73	78 - 116	12	20		N
Acenaphthylene	78	74	76 - 115	6	21		N
Anthracene	82	77	74 - 115	6	20		
Benzo[a]anthracene	93	86	85 - 120	7	20		
Benzo[a]pyrene	86	79	74 - 121	7	20		
Benzo[b]fluoranthene	88	81	85 - 115	7	20		N
Benzo[g,h,i]perylene	97	89	85 - 120	8	20		
Benzo[k]fluoranthene	91	85	85 - 115	7	20		
Chrysene	90	84	83 - 115	7	20		
Dibenzo(a,h)anthracene	89	82	83 - 115	8	20		N
Fluoranthene	90	84	83 - 115	7	20		
Fluorene	85	80	80 - 115	6	20		
Indeno[1,2,3-cd]pyrene	95	85	85 - 123	10	20		
Naphthalene	87	82	80 - 121	6	20		
Phenanthrene	86	81	80 - 115	6	20		
Pyrene	90	84	75 - 116	6	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Terphenyl-d14 (SUR)	81	75	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226317

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-55577-11	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	05/20/2014 2135		
Prep Date:	05/18/2014 1352		
Leach Date:	N/A		

MSD Lab Sample ID:	280-55577-11
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	05/20/2014 2205
Prep Date:	05/18/2014 1352
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Acenaphthene	10	U	1960	1960	1570	1430	N
Acenaphthylene	9.0	U	1960	1960	1530	1440	N
Anthracene	3.0	U	1960	1960	1600	1510	
Benzo[a]anthracene	3.2	U	1960	1960	1810	1690	
Benzo[a]pyrene	6.4	U	1960	1960	1680	1560	
Benzo[b]fluoranthene	4.2	U	1960	1960	1720	1600	N
Benzo[g,h,i]perylene	7.2	U	1960	1960	1900	1750	
Benzo[k]fluoranthene	3.9	U	1960	1960	1790	1660	
Chrysene	4.8	U	1960	1960	1760	1640	
Dibenzo(a,h)anthracene	11	U	1960	1960	1730	1600	N
Fluoranthene	13	U	1960	1960	1760	1650	
Fluorene	5.3	U	1960	1960	1670	1570	
Indeno[1,2,3-cd]pyrene	12	U	1960	1960	1850	1680	
Naphthalene	12	U	1960	1960	1710	1610	
Phenanthrene	12	U	1960	1960	1680	1580	
Pyrene	12	U	1960	1960	1760	1650	

Date: 2 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-93
Subject: PCB - Data Package No. JP0798-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0798 prepared by TestAmerica Laboratories (TAL). 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	Analyte
J1TPK8	5/15/14	Soil	C	See note 1
J1TPK9	5/15/14	Soil	C	See note 1
J1TPL0	5/15/14	Soil	C	See note 1
J1TPL1	5/15/14	Soil	C	See note 1
J1TPL2	5/15/14	Soil	C	See note 1
J1TPL3	5/15/14	Soil	C	See note 1
J1TPL4	5/15/14	Soil	C	See note 1
J1TPL5	5/15/14	Soil	C	See note 1
J1TPL6	5/15/14	Soil	C	See note 1
J1TPL7	5/15/14	Soil	C	See note 1
J1TPL8	5/15/14	Soil	C	See note 1
J1TPL9	5/15/14	Soil	C	See note 1
J1TPM0	5/15/14	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Holding times are not applicable for PCB analysis.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). 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 RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPL4/J1TPM0) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. JP0798 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

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 minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0798	REVIEWER: ELR	Project: 100-N-93	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK8**

Lab Sample ID: 280-55577-1
Client Matrix: Solid
% Moisture: 0.3

Date Sampled: 05/15/2014 0827
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2312			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.6	U	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	91		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPK9**

Lab Sample ID: 280-55577-2
Client Matrix: Solid
% Moisture: 2.0

Date Sampled: 05/15/2014 0821
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2249			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.6	U	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	96		59 - 130
Tetrachloro-m-xylene	89		53 - 128

K 5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL0

Lab Sample ID: 280-55577-3
Client Matrix: Solid

% Moisture: 1.7

Date Sampled: 05/15/2014 0652
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2225			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.6	U	2.6	9.5
Aroclor 1221		7.6	U	7.6	16
Aroclor 1232		1.9	U	1.9	9.5
Aroclor 1242		4.4	U	4.4	9.5
Aroclor 1248		4.4	U	4.4	9.5
Aroclor 1254		2.5	U	2.5	9.5
Aroclor 1260		2.5	U	2.5	9.5

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	88		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL1

Lab Sample ID: 280-55577-4
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/15/2014 0724
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2202			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.6	U	2.6	9.5
Aroclor 1221		7.7	U	7.7	16
Aroclor 1232		1.9	U	1.9	9.5
Aroclor 1242		4.4	U	4.4	9.5
Aroclor 1248		4.4	U	4.4	9.5
Aroclor 1254		2.5	U	2.5	9.5
Aroclor 1260		2.5	U	2.5	9.5

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	89		59 - 130
Tetrachloro-m-xylene	86		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL2**

Lab Sample ID: 280-55577-5
Client Matrix: Solid
% Moisture: 2.1

Date Sampled: 05/15/2014 0836
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2139			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.6
Aroclor 1221		7.7	U	7.7	16
Aroclor 1232		1.9	U	1.9	9.6
Aroclor 1242		4.5	U	4.5	9.6
Aroclor 1248		4.5	U	4.5	9.6
Aroclor 1254		2.5	U	2.5	9.6
Aroclor 1260		2.5	U	2.5	9.6

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	99		59 - 130
Tetrachloro-m-xylene	89		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL3

Lab Sample ID: 280-55577-6
Client Matrix: Solid % Moisture: 1.5

Date Sampled: 05/15/2014 0854
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	30.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2115			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	96		59 - 130
Tetrachloro-m-xylene	90		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL4

Lab Sample ID: 280-55577-7
Client Matrix: Solid
% Moisture: 2.9

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2052			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	96		59 - 130
Tetrachloro-m-xylene	88		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL5

Lab Sample ID: 280-55577-8
Client Matrix: Solid
% Moisture: 2.3

Date Sampled: 05/15/2014 0737
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 2028			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.9
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.9
Aroclor 1242		4.6	U	4.6	9.9
Aroclor 1248		4.6	U	4.6	9.9
Aroclor 1254		2.6	U	2.6	9.9
Aroclor 1260		2.6	U	2.6	9.9

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	95		59 - 130
Tetrachloro-m-xylene	88		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL6

Lab Sample ID: 280-55577-9
Client Matrix: Solid
% Moisture: 3.9

Date Sampled: 05/15/2014 0939
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 1941			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	9.9
Aroclor 1221		8.0	U	8.0	16
Aroclor 1232		2.0	U	2.0	9.9
Aroclor 1242		4.6	U	4.6	9.9
Aroclor 1248		4.6	U	4.6	9.9
Aroclor 1254		2.6	U	2.6	9.9
Aroclor 1260		2.6	U	2.6	9.9

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	95		59 - 130
Tetrachloro-m-xylene	90		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL7

Lab Sample ID: 280-55577-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/15/2014 0945
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	32.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 1918			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.6	U	2.6	9.3
Aroclor 1221		7.5	U	7.5	15
Aroclor 1232		1.9	U	1.9	9.3
Aroclor 1242		4.3	U	4.3	9.3
Aroclor 1248		4.3	U	4.3	9.3
Aroclor 1254		2.4	U	2.4	9.3
Aroclor 1260		2.4	U	2.4	9.3

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	91		59 - 130
Tetrachloro-m-xylene	88		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: **J1TPL8**

Lab Sample ID: 280-55577-11
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/15/2014 0956
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 1854			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.6	U	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	88		59 - 130
Tetrachloro-m-xylene	92		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPL9

Lab Sample ID: 280-55577-12
Client Matrix: Solid
% Moisture: 1.4

Date Sampled: 05/15/2014 1003
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 1744			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.8	U	7.8	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.5	U	2.5	9.8
Aroclor 1260		2.5	U	2.5	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	92		59 - 130
Tetrachloro-m-xylene	93		53 - 128

5/31/14

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Client Sample ID: J1TPM0

Lab Sample ID: 280-55577-13
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/15/2014 0711
Date Received: 05/17/2014 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-226309	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/21/2014 1721			Injection Volume:	1 uL
Prep Date:	05/18/2014 0828			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	103		59 - 130
Tetrachloro-m-xylene	93		53 - 128

5/31/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55577-1

SDG #: JP0798
SAF#: RC-189

Date SDG Closed: May 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPK8	280-55577-1	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPK9	280-55577-2	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL0	280-55577-3	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL1	280-55577-4	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL2	280-55577-5	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL3	280-55577-6	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL4	280-55577-7	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL5	280-55577-8	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL6	280-55577-9	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL7	280-55577-10	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL8	280-55577-11	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPL9	280-55577-12	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx
J1TPM0	280-55577-13	6010/7471/8270A/8310/8082/WTPH-D+	6010B/7471A/8270C/8310/8082/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/17/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.8° C, 3.9° C, 5.2° C and 5.6° C.

GC/MS SEMIVOLATILES - SW846 8270C
The MS/MSD performed on sample J1TPK8 exhibited percent recoveries outside the control limits for 2,4-Dinitrophenol, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1TPL8 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-226333 indicates that physical and chemical interferences are present for Cobalt and Zinc. Results have been flagged with an "X".

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-226333. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPK8; therefore, control limits are not applicable.

No other anomalies were encountered.

PERCENT MOISTURE
The duplicate analysis of sample J1TPK8 exceeded the RPD limit, and the associated sample result has been flagged "M".

No other anomalies were encountered.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-1/12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: DMS 5-16-14 ~~A131411~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
				Type of Container: G/P	aG	aG	aG	G
				No. of Container(s): 1	1	1	1	1
				Volume: DMS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL
				Sample Analysis: See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D+
#1TPK8	SOIL	5-15-14	0827	X	X	X	X	X
#1TPK9	SOIL	5-15-14	0821	X	X	X	X	X
J1TPL0	SOIL	5/15/14	0652	X	X	X	X	X
J1TPL1	SOIL	5/15/14	0724	X	X	X	X	X
J1TPL2	SOIL	5-15-14	0838	X	X	X	X	X

Page 15 of 26

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1037 5-15-14	DWSHEA DWSHEA	1037 5/15/14
DWSHEA DWSHEA	1710 5/15/14	SM Sexton	1710 5/15/14
SM Sexton	1715 5/15/14	1060 Battelle Fridge 3C	1715 5/15/14
1060 Battelle Fridge 3C	0715 5/16/14	SM Sexton	5/16/14 0715
SM Sexton	0725 5/16/14	FED EX	
			5-17-14 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

5.3, 3.6, 4.9, 1.8, 2.5 IRGTO3 5/17/14 SO

DMS 5-16-14

REVIEWED BY KW DATE 5/16/14

REVIEWED BY DMS DATE 5/15/14 DMS 5/16/14

JP0798

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-294 | Page 2 of 3

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Date Turnaround:		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER		SAF No.: RC-189
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: EL-1652-~~M~~12 5/14/14 (DWSHEA)	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To:

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	eG	eG	eG	G						
No. of Container(s)	1	1	1	1	1						
Volume	~~250mL~~ 125 (DWS 5/14/14)	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1TPL3	SOIL	5-15-14	0854	X	X	X	X	X					
J1TPL4	SOIL	5-15-14	0711	X	X	X	X	X					
J1TPL5	SOIL	5-15-14	0737	X	X	X	X	X					
J1TPL6	SOIL	5-15-14	0939	X	X	X	X	X					
J1TPL7	SOIL	5-15-14	0945	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/15/14 1710
SM Sexton	5/15/14 1715	1060 Battelle Fridge 3C	5/15/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 5/16/14

JP0798

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-294	Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 DAY	Data Turnaround		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-93, VER	SAF No.: RC-189	
Ice Chest No.: RCC-07-007 (+4 more coolers)	Field Logbook No.: DWSHEA EL-1652-1/12 5/14/14	COA: 000N932000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: SMS 5-16-14 ~~A13141~~ A131141		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	G						
No. of Container(s)	1	1	1	1	1						
Volume	DWS 5/14/14 ~~250mL~~ 125	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
TPL8	SOIL	5-15-14	0956 DWS ~~0951~~ 5/15/14	X	X	X	X	X					
TPL9	SOIL	5-15-14	1003	X	X	X	X	X					
TPM0	SOIL	5-15-14	0711	X	X	X	X	X					

Page 1 of 6

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-15-14 1037	DWSHEA DWSHEA	5/15/14 1037
DWSHEA DWSHEA	5/15/14 1710	SM Sexton	5/5/14 1710
SM Sexton	5/5/14 1715	1060 Battelle Fridge 3C	5/5/14 1715
1060 Battelle Fridge 3C	5/16/14 0715	SM Sexton	5/16/14 0715
SM Sexton	5/16/14 0725	FED EX	
			5-17-14 940

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method: | Disposed By: | Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY KW DATE 5/16/14

REVIEWED BY SMS DATE 5/15/14 SMS 5-16-14

JP0798

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-N-93		DATA PACKAGE:	JP0798	
VALIDATOR:	FELR	LAB: TAL		DATE: 5/31/14	
			SDG:	JP0798	
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1TPK8	J1TPK9	J1TPL0	J1TPL1	J1TPL2	
J1TPL3	J1TPL4	J1TPL5	J1TPL6	J1TPL7	
J1TPL8	J1TPL9	J1TPM0			
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

no FB

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

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

Comments:

no PAS

PCB DATA VALIDATION CHECKLIST

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

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

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

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments:

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Method Blank - Batch: 280-226309

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-226309/1-A	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-226309	Lab File ID:	05210018.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	05/21/2014 1633	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/18/2014 0828			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.7	U	2.7	9.7
Aroclor 1221	7.8	U	7.8	16
Aroclor 1232	1.9	U	1.9	9.7
Aroclor 1242	4.5	U	4.5	9.7
Aroclor 1248	4.5	U	4.5	9.7
Aroclor 1254	2.5	U	2.5	9.7
Aroclor 1260	2.5	U	2.5	9.7

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	102	59 - 130
Tetrachloro-m-xylene	92	53 - 128

Lab Control Sample - Batch: 280-226309

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-226309/2-A	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-226309	Lab File ID:	05210019.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	05/21/2014 1657	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/18/2014 0828			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	33.0	34.2	104	54 - 132	
Aroclor 1260	33.0	35.1	106	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	99	59 - 130
Tetrachloro-m-xylene	91	53 - 128

Client: Washington Closure Hanford

Job Number: 280-55577-1
Sdg Number: JP0798

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226309

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-55577-12	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-226309	Lab File ID:	05210022.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.2 g
Analysis Date:	05/21/2014 1807			Final Weight/Volume:	5 mL
Prep Date:	05/18/2014 0828			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-55577-12	Analysis Batch:	280-226743	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-226309	Lab File ID:	05210023.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.3 g
Analysis Date:	05/21/2014 1831			Final Weight/Volume:	5 mL
Prep Date:	05/18/2014 0828			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aroclor 1016	108	109	54 - 132	0	26		
Aroclor 1260	103	101	62 - 129	3	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	91	89	59 - 130
Tetrachloro-m-xylene	94	93	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-226309

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-55577-12	Units:	ug/Kg	MSD Lab Sample ID:	280-55577-12
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/21/2014 1807			Analysis Date:	05/21/2014 1831
Prep Date:	05/18/2014 0828			Prep Date:	05/18/2014 0828
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Aroclor 1016	2.7	U	32.5	32.4	35.2	35.2
Aroclor 1260	2.5	U	32.5	32.4	33.5	32.7