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 JP0961 SAF-RC-189

Sample Location: 100-N-96

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: Volatile Organics - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	Soil	C	See note 1

1 – Volatile organics by 8260B.

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: Analytes must be analyzed within 14 days of the date of sample collection.

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".

Due to method blank contamination, the acetone results in samples J1V6W0, J1V6W1, J1V6W3, J1V6W5, J1V6W8 were qualified as undetected, raised to the PQL and flagged "U".

Due to method blank contamination, the acetone result in sample J1V6V7 was qualified as undetected and flagged "U".

All other method blank results were acceptable.

<u>Field (equipment) Blanks</u>

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 an LCS recovery outside QC limits, all chloromethane (48%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits, all chloromethane (46%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 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 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.

Due to an RPD outside QC limits, all total xylenes (31%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 were qualified as estimates and flagged "J".

Due to an RPD outside QC limits, the carbon disulfide (37%) and 1,1,1-trichloroethane (34%) results in all samples (except J1V6V6, J1V6V9, J1V6W2 and J1V6W7) were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicate Samples

One set field duplicates (J1V6W1/J1V6W8) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory results. All field duplicate results are 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. JP0961 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 method blank contamination, the acetone results in samples J1V6W0, J1V6W1, J1V6W3, J1V6W5 and J1V6W8 were qualified as undetected, raised to the PQL and flagged "U".

- Due to method blank contamination, the acetone result in sample J1V6V7 was qualified as undetected and flagged "U".

- Due to an LCS recovery outside QC limits, all chloromethane (48%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 were qualified as estimates and flagged "J".

- Due to a matrix spike recovery outside QC limits, all chloromethane (46%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits, all total xylenes (31%) results in samples J1V6V6, J1V6V9, J1V6W2 and J1V6W7 were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits, the carbon disulfide (37%) and 1,1,1-trichloroethane (34%) results in all samples (except J1V6V6, J1V6V9, J1V6W2 and J1V6W7) 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 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

VOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0961	**REVIEWER: ELR**	**Project: 100-N-96**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acetone	U at PQL	J1V6W0, J1V6W1 J1V6W3, J1V6W5 J1V6W8	Method blank contamination
Acetone	U	J1V6V7	Method blank contamination
Chloromethane	J	J1V6V6, J1V6V9 J1V6W2, J1V6W7	LCS & MS recovery
Total xylenes	J	J1V6V6, J1V6V9 J1V6W2, J1V6W7	RPD
Carbon disulfide 1,1,1-trichloroethane	J	All (except J1V6V6, J1V6V9 J1V6W2, J1V6W7)	RPD

* - 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: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3641.D
Dilution:	1.0			Initial Weight/Volume:	5.414 g
Analysis Date:	05/05/2015 2300			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1156				

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Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	19
Benzene	0.44	U	0.44	4.7
Bromodichloromethane	0.21	U	0.21	4.7
Bromoform	0.22	U	0.22	4.7
Bromomethane	0.47	U	0.47	9.4
2-Butanone (MEK)	1.7	U	1.7	9.4
Carbon disulfide	0.39	U	0.39	4.7
Carbon tetrachloride	0.59	U	0.59	4.7
Chlorobenzene	0.51	U T	0.51	4.7
Dibromochloromethane	0.53	U	0.53	4.7
Chloroethane	0.84	U J	0.84	9.4
Chloroform	0.27	U	0.27	4.7
Chloromethane	0.72	U	0.72	9.4
1,1-Dichloroethane	0.20	U	0.20	4.7
1,2-Dichloroethane	0.66	U	0.66	4.7
1,1-Dichloroethene	0.55	U	0.55	4.7
1,2-Dichloroethene, Total	0.37	U	0.37	4.7
1,2-Dichloropropane	0.52	U	0.52	4.7
cis-1,3-Dichloropropene	1.2	U	1.2	4.7
trans-1,3-Dichloropropene	0.63	U	0.63	4.7
Ethylbenzene	0.63	U T	0.63	4.7
2-Hexanone	4.6	U	4.6	19
Methylene Chloride	1.5	U	1.5	4.7
4-Methyl-2-pentanone (MIBK)	4.1	U	4.1	9.4
Styrene	0.59	U T	0.59	4.7
1,1,2,2-Tetrachloroethane	0.57	U	0.57	4.7
Tetrachloroethene	0.55	U T	0.55	4.7
Toluene	0.65	U	0.65	4.7
1,1,1-Trichloroethane	0.49	U	0.49	4.7
1,1,2-Trichloroethane	0.83	U	0.83	4.7
Trichloroethene	0.22	U	0.22	4.7
Vinyl chloride	1.3	U	1.3	4.7
Xylenes, Total	0.57	U T J	0.57	4.7

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	132		58 - 140
Toluene-d8 (Surr)	102		80 - 126
4-Bromofluorobenzene (Surr)	99		76 - 127
Dibromofluoromethane (Surr)	119		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3641.D
Dilution:	1.0			Initial Weight/Volume:	5.414 g
Analysis Date:	05/05/2015 2300			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1156				

Tentatively Identified Compounds **Number TIC's Found: 9**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.92	25	N J
	Unknown	4.07	26	N J
	Unknown	4.39	130	N J
	Unknown	4.64	55	N J
	Unknown	4.75	29	N J
	Unknown	4.83	73	N J
	Unknown	5.05	47	N J
75-02-5	Ethene, fluoro-	6.68	36	N J
	Unknown	8.89	4.8	N J

5/25/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V7**

Lab Sample ID: 280-68739-2
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6571.D
Dilution:	1.0			Initial Weight/Volume:	4.712 g
Analysis Date:	05/07/2015 0749			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1209				

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Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone	36	B U	6.0	22
Benzene	0.52	U	0.52	5.6
Bromodichloromethane	0.25	U	0.25	5.6
Bromoform	0.26	U	0.26	5.6
Bromomethane	0.56	U	0.56	11
2-Butanone (MEK)	2.0	U	2.0	11
Carbon disulfide	0.47	U J	0.47	5.6
Carbon tetrachloride	0.70	U	0.70	5.6
Chlorobenzene	0.60	U	0.60	5.6
Dibromochloromethane	0.64	U	0.64	5.6
Chloroethane	0.99	U	0.99	11
Chloroform	0.32	U	0.32	5.6
Chloromethane	0.86	U	0.86	11
1,1-Dichloroethane	0.23	U	0.23	5.6
1,2-Dichloroethane	0.78	U	0.78	5.6
1,1-Dichloroethene	0.66	U	0.66	5.6
1,2-Dichloroethene, Total	0.44	U	0.44	5.6
1,2-Dichloropropane	0.61	U	0.61	5.6
cis-1,3-Dichloropropene	1.4	U	1.4	5.6
trans-1,3-Dichloropropene	0.75	U	0.75	5.6
Ethylbenzene	0.75	U	0.75	5.6
2-Hexanone	5.5	U	5.5	22
Methylene Chloride	1.8	U	1.8	5.6
4-Methyl-2-pentanone (MIBK)	4.9	U	4.9	11
Styrene	0.70	U	0.70	5.6
1,1,2,2-Tetrachloroethane	0.68	U	0.68	5.6
Tetrachloroethene	0.66	U	0.66	5.6
Toluene	0.77	U	0.77	5.6
1,1,1-Trichloroethane	0.58	U J	0.58	5.6
1,1,2-Trichloroethane	0.98	U	0.98	5.6
Trichloroethene	0.26	U	0.26	5.6
Vinyl chloride	1.5	U	1.5	5.6
Xylenes, Total	0.68	U	0.68	5.6

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	118		58 - 140
Toluene-d8 (Surr)	99		80 - 126
4-Bromofluorobenzene (Surr)	98		76 - 127
Dibromofluoromethane (Surr)	111		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V7**

Lab Sample ID: 280-68739-2
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6571.D
Dilution:	1.0			Initial Weight/Volume:	4.712 g
Analysis Date:	05/07/2015 0749			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1209				

Tentatively Identified Compounds **Number TIC's Found: 10**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
4786-20-3	2-Butenenitrile	4.36	37	N J
29427-58-5	o-Methylisourea hydrogen sulfate	4.90	66	N J
29427-58-5	o-Methylisourea hydrogen sulfate	5.30	59	N J
	Unknown	5.85	6.9	N J
	Unknown	6.73	38	N J
110-82-7	Cyclohexane	7.33	1.0	J N J
	Unknown	8.69	16	N J
541-05-9	Cyclotrisiloxane, hexamethyl-	9.04	10	N J
	Unknown	9.49	6.6	N J
104-76-7	1-Hexanol, 2-ethyl-	13.98	6.4	N J

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid
% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6585.D
Dilution:	1.0			Initial Weight/Volume:	3.659 g
Analysis Date:	05/07/2015 1248			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1203				

5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		7.1	U	7.1	27
Benzene		0.62	U	0.62	6.6
Bromodichloromethane		0.29	U	0.29	6.6
Bromoform		0.31	U	0.31	6.6
Bromomethane		0.66	U	0.66	13
2-Butanone (MEK)		2.4	U	2.4	13
Carbon disulfide		0.56	U J	0.56	6.6
Carbon tetrachloride		0.84	U	0.84	6.6
Chlorobenzene		0.72	U	0.72	6.6
Dibromochloromethane		0.76	U	0.76	6.6
Chloroethane		1.2	U	1.2	13
Chloroform		0.38	U	0.38	6.6
Chloromethane		1.0	U	1.0	13
1,1-Dichloroethane		0.28	U	0.28	6.6
1,2-Dichloroethane		0.93	U	0.93	6.6
1,1-Dichloroethene		1.2	J	0.78	6.6
1,2-Dichloroethene, Total		0.52	U	0.52	6.6
1,2-Dichloropropane		0.73	U	0.73	6.6
cis-1,3-Dichloropropene		1.7	U	1.7	6.6
trans-1,3-Dichloropropene		0.89	U	0.89	6.6
Ethylbenzene		0.89	U	0.89	6.6
2-Hexanone		6.5	U	6.5	27
Methylene Chloride		2.5	J	2.1	6.6
4-Methyl-2-pentanone (MIBK)		5.8	U	5.8	13
Styrene		0.84	U	0.84	6.6
1,1,2,2-Tetrachloroethane		0.81	U	0.81	6.6
Tetrachloroethene		0.78	U	0.78	6.6
Toluene		0.92	U	0.92	6.6
1,1,1-Trichloroethane		0.69	U J	0.69	6.6
1,1,2-Trichloroethane		1.2	U	1.2	6.6
Trichloroethene		0.31	U	0.31	6.6
Vinyl chloride		1.8	U	1.8	6.6
Xylenes, Total		0.81	U	0.81	6.6

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	103		58 - 140
Toluene-d8 (Surr)	100		80 - 126
4-Bromofluorobenzene (Surr)	94		76 - 127
Dibromofluoromethane (Surr)	107		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid
% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6585.D
Dilution:	1.0			Initial Weight/Volume:	3.659 g
Analysis Date:	05/07/2015 1248			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1203				

Tentatively Identified Compounds **Number TIC's Found: 7**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	4.06	11	N J
	Unknown	4.70	13	N J
1000130-39-9	erythro-4-Hydroxyarginine lactone	5.08	12	N J
60-29-7	Ethyl ether	5.22	3.2	J N J
2516-33-8	Cyclopropyl carbinol	5.34	9.2	N J
	Unknown	6.74	27	N J
110-82-7	Cyclohexane	7.35	1.3	J N J

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V9**

Lab Sample ID: 280-68739-4
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3646.D
Dilution:	1.0			Initial Weight/Volume:	4.955 g
Analysis Date:	05/06/2015 0050			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1216				

pr 5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		5.8	J	5.5	20
Benzene		0.48	U	0.48	5.1
Bromodichloromethane		0.22	U	0.22	5.1
Bromoform		0.23	U	0.23	5.1
Bromomethane		0.51	U	0.51	10
2-Butanone (MEK)		1.9	U	1.9	10
Carbon disulfide		0.43	U	0.43	5.1
Carbon tetrachloride		0.64	U	0.64	5.1
Chlorobenzene		0.55	U	0.55	5.1
Dibromochloromethane		0.58	U	0.58	5.1
Chloroethane		0.90	U	0.90	10
Chloroform		0.29	U	0.29	5.1
Chloromethane		0.78	U J	0.78	10
1,1-Dichloroethane		0.21	U	0.21	5.1
1,2-Dichloroethane		0.71	U	0.71	5.1
1,1-Dichloroethene		0.60	U	0.60	5.1
1,2-Dichloroethene, Total		0.40	U	0.40	5.1
1,2-Dichloropropane		0.56	U	0.56	5.1
cis-1,3-Dichloropropene		1.3	U	1.3	5.1
trans-1,3-Dichloropropene		0.68	U	0.68	5.1
Ethylbenzene		0.68	U	0.68	5.1
2-Hexanone		5.0	U	5.0	20
Methylene Chloride		1.6	U	1.6	5.1
4-Methyl-2-pentanone (MIBK)		4.4	U	4.4	10
Styrene		0.64	U	0.64	5.1
1,1,2,2-Tetrachloroethane		0.62	U	0.62	5.1
Tetrachloroethene		0.60	U	0.60	5.1
Toluene		0.70	U	0.70	5.1
1,1,1-Trichloroethane		0.53	U	0.53	5.1
1,1,2-Trichloroethane		0.89	U	0.89	5.1
Trichloroethene		0.23	U	0.23	5.1
Vinyl chloride		1.4	U	1.4	5.1
Xylenes, Total		0.62	U J	0.62	5.1

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	142	*	58 - 140
Toluene-d8 (Surr)	123		80 - 126
4-Bromofluorobenzene (Surr)	117		76 - 127
Dibromofluoromethane (Surr)	130	*	75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V9**

Lab Sample ID: 280-68739-4
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3646.D
Dilution:	1.0			Initial Weight/Volume:	4.955 g
Analysis Date:	05/06/2015 0050			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1216				

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

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
64-18-6	Formic acid	6.69	31	N J

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6575.D
Dilution:	1.0			Initial Weight/Volume:	4.423 g
Analysis Date:	05/07/2015 0910			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1104				

pr 5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone	35	~~6.9~~	~~JB~~ U	6.2	23
Benzene		0.54	U	0.54	5.7
Bromodichloromethane		0.25	U	0.25	5.7
Bromoform		0.26	U	0.26	5.7
Bromomethane		0.57	U	0.57	11
2-Butanone (MEK)		2.1	U	2.1	11
Carbon disulfide		0.48	U J	0.48	5.7
Carbon tetrachloride		0.72	U	0.72	5.7
Chlorobenzene		0.62	U	0.62	5.7
Dibromochloromethane		0.65	U	0.65	5.7
Chloroethane		1.0	U	1.0	11
Chloroform		0.33	U	0.33	5.7
Chloromethane		0.88	U	0.88	11
1,1-Dichloroethane		0.24	U	0.24	5.7
1,2-Dichloroethane		0.80	U	0.80	5.7
1,1-Dichloroethene		0.72	J	0.68	5.7
1,2-Dichloroethene, Total		0.45	U	0.45	5.7
1,2-Dichloropropane		0.63	U	0.63	5.7
cis-1,3-Dichloropropene		1.5	U	1.5	5.7
trans-1,3-Dichloropropene		0.77	U	0.77	5.7
Ethylbenzene		0.77	U	0.77	5.7
2-Hexanone		5.6	U	5.6	23
Methylene Chloride		1.8	U	1.8	5.7
4-Methyl-2-pentanone (MIBK)		5.0	U	5.0	11
Styrene		0.72	U	0.72	5.7
1,1,2,2-Tetrachloroethane		0.70	U	0.70	5.7
Tetrachloroethene		0.68	U	0.68	5.7
Toluene		0.79	U	0.79	5.7
1,1,1-Trichloroethane		0.60	U J	0.60	5.7
1,1,2-Trichloroethane		1.0	U	1.0	5.7
Trichloroethene		0.26	U	0.26	5.7
Vinyl chloride		1.5	U	1.5	5.7
Xylenes, Total		0.70	U	0.70	5.7

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	104		58 - 140
Toluene-d8 (Surr)	101		80 - 126
4-Bromofluorobenzene (Surr)	94		76 - 127
Dibromofluoromethane (Surr)	109		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6575.D
Dilution:	1.0			Initial Weight/Volume:	4.423 g
Analysis Date:	05/07/2015 0910			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1104				

Tentatively Identified Compounds **Number TIC's Found: 3**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
60-29-7	Ethyl ether	5.21	2.8	J N
	Unknown	6.73	25	J N
110-82-7	Cyclohexane	7.34	0.68	J N

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6576.D
Dilution:	1.0			Initial Weight/Volume:	4.136 g
Analysis Date:	05/07/2015 0930			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1111				

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Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		35 ~~8.9~~	J B U	6.6	25
Benzene		0.58	U	0.58	6.1
Bromodichloromethane		0.27	U	0.27	6.1
Bromoform		0.28	U	0.28	6.1
Bromomethane		0.61	U	0.61	12
2-Butanone (MEK)		2.2	U	2.2	12
Carbon disulfide		0.51	U J	0.51	6.1
Carbon tetrachloride		0.77	U	0.77	6.1
Chlorobenzene		0.66	U	0.66	6.1
Dibromochloromethane		0.70	U	0.70	6.1
Chloroethane		1.1	U	1.1	12
Chloroform		0.36	U	0.36	6.1
Chloromethane		0.94	U	0.94	12
1,1-Dichloroethane		0.26	U	0.26	6.1
1,2-Dichloroethane		0.86	U	0.86	6.1
1,1-Dichloroethene		0.72	U	0.72	6.1
1,2-Dichloroethene, Total		0.48	U	0.48	6.1
1,2-Dichloropropane		0.67	U	0.67	6.1
cis-1,3-Dichloropropene		1.6	U	1.6	6.1
trans-1,3-Dichloropropene		0.82	U	0.82	6.1
Ethylbenzene		0.82	U	0.82	6.1
2-Hexanone		6.0	U	6.0	25
Methylene Chloride		2.7	J	2.0	6.1
4-Methyl-2-pentanone (MIBK)		5.3	U	5.3	12
Styrene		0.77	U	0.77	6.1
1,1,2,2-Tetrachloroethane		0.75	U	0.75	6.1
Tetrachloroethene		0.72	U	0.72	6.1
Toluene		0.85	U	0.85	6.1
1,1,1-Trichloroethane		0.64	U J	0.64	6.1
1,1,2-Trichloroethane		1.1	U	1.1	6.1
Trichloroethene		0.28	U	0.28	6.1
Vinyl chloride		1.6	U	1.6	6.1
Xylenes, Total		0.75	U	0.75	6.1

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	110		58 - 140
Toluene-d8 (Surr)	101		80 - 126
4-Bromofluorobenzene (Surr)	97		76 - 127
Dibromofluoromethane (Surr)	110		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6576.D
Dilution:	1.0			Initial Weight/Volume:	4.136 g
Analysis Date:	05/07/2015 0930			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1111				

Tentatively Identified Compounds **Number TIC's Found: 4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	4.04	8.5	N J
60-29-7	Ethyl ether	5.21	3.0	J N
	Unknown	6.72	29	N J
110-82-7	Cyclohexane	7.33	1.6	J N

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Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3649.D
Dilution:	1.0			Initial Weight/Volume:	3.338 g
Analysis Date:	05/06/2015 0157			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1055				

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Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone	9.2	J	8.1	30
Benzene	0.71	U	0.71	7.5
Bromodichloromethane	0.33	U	0.33	7.5
Bromoform	0.35	U	0.35	7.5
Bromomethane	0.75	U	0.75	15
2-Butanone (MEK)	2.8	U	2.8	15
Carbon disulfide	0.63	U	0.63	7.5
Carbon tetrachloride	0.95	U	0.95	7.5
Chlorobenzene	0.81	U	0.81	7.5
Dibromochloromethane	0.86	U	0.86	7.5
Chloroethane	1.3	U	1.3	15
Chloroform	0.44	U	0.44	7.5
Chloromethane	1.2	U J	1.2	15
1,1-Dichloroethane	0.32	U	0.32	7.5
1,2-Dichloroethane	1.1	U	1.1	7.5
1,1-Dichloroethene	0.89	U	0.89	7.5
1,2-Dichloroethene, Total	0.59	U	0.59	7.5
1,2-Dichloropropane	0.83	U	0.83	7.5
cis-1,3-Dichloropropene	1.9	U	1.9	7.5
trans-1,3-Dichloropropene	1.0	U	1.0	7.5
Ethylbenzene	1.0	U	1.0	7.5
2-Hexanone	7.4	U	7.4	30
Methylene Chloride	2.4	U	2.4	7.5
4-Methyl-2-pentanone (MIBK)	6.6	U	6.6	15
Styrene	0.95	U	0.95	7.5
1,1,2,2-Tetrachloroethane	0.92	U	0.92	7.5
Tetrachloroethene	0.89	U	0.89	7.5
Toluene	1.0	U	1.0	7.5
1,1,1-Trichloroethane	0.78	U	0.78	7.5
1,1,2-Trichloroethane	1.3	U	1.3	7.5
Trichloroethene	0.35	U	0.35	7.5
Vinyl chloride	2.0	U	2.0	7.5
Xylenes, Total	0.92	U J	0.92	7.5

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	97		58 - 140
Toluene-d8 (Surr)	117		80 - 126
4-Bromofluorobenzene (Surr)	108		76 - 127
Dibromofluoromethane (Surr)	101		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid
% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3649.D
Dilution:	1.0			Initial Weight/Volume:	3.338 g
Analysis Date:	05/06/2015 0157			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1055				

Tentatively Identified Compounds **Number TIC's Found: 3**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
75-21-8	Ethylene oxide	4.55	420	J N J
78-92-2	sec-Butyl Alcohol	6.70	270	J N J
71-36-3	n-Butanol	7.75	31	J N J

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Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W3**

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6577.D
Dilution:	1.0			Initial Weight/Volume:	4.948 g
Analysis Date:	05/07/2015 0950			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1041				

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DryWt Corrected: Y

Analyte	Result (ug/Kg)	Qualifier	MDL	RL
Acetone	35 ~~10~~ 5/2	J B U	5.5	21
Benzene	0.48	U	0.48	5.1
Bromodichloromethane	0.23	U	0.23	5.1
Bromoform	0.24	U	0.24	5.1
Bromomethane	0.51	U	0.51	10
2-Butanone (MEK)	1.9	U	1.9	10
Carbon disulfide	0.43	U J	0.43	5.1
Carbon tetrachloride	0.65	U	0.65	5.1
Chlorobenzene	0.55	U	0.55	5.1
Dibromochloromethane	0.59	U	0.59	5.1
Chloroethane	0.91	U	0.91	10
Chloroform	0.30	U	0.30	5.1
Chloromethane	0.79	U	0.79	10
1,1-Dichloroethane	0.22	U	0.22	5.1
1,2-Dichloroethane	0.72	U	0.72	5.1
1,1-Dichloroethene	0.73	J	0.61	5.1
1,2-Dichloroethene, Total	0.40	U	0.40	5.1
1,2-Dichloropropane	0.56	U	0.56	5.1
cis-1,3-Dichloropropene	1.3	U	1.3	5.1
trans-1,3-Dichloropropene	0.69	U	0.69	5.1
Ethylbenzene	0.69	U	0.69	5.1
2-Hexanone	5.0	U	5.0	21
Methylene Chloride	3.2	J	1.6	5.1
4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	10
Styrene	0.65	U	0.65	5.1
1,1,2,2-Tetrachloroethane	0.63	U	0.63	5.1
Tetrachloroethene	0.61	U	0.61	5.1
Toluene	0.71	U	0.71	5.1
1,1,1-Trichloroethane	0.53	U J	0.53	5.1
1,1,2-Trichloroethane	0.90	U	0.90	5.1
Trichloroethene	0.24	U	0.24	5.1
Vinyl chloride	1.4	U	1.4	5.1
Xylenes, Total	0.63	U	0.63	5.1

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	107		58 - 140
Toluene-d8 (Surr)	101		80 - 126
4-Bromofluorobenzene (Surr)	96		76 - 127
Dibromofluoromethane (Surr)	108		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W3**

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6577.D
Dilution:	1.0			Initial Weight/Volume:	4.948 g
Analysis Date:	05/07/2015 0950			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1041				

Tentatively Identified Compounds **Number TIC's Found: 5**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	4.06	6.4	N J
1000215-69-6	2-Chloro-1,3-difluoropropane	4.48	5.5	N J
60-29-7	Ethyl ether	5.23	2.5	J N J
	Unknown	6.74	24	N J
110-82-7	Cyclohexane	7.35	2.0	J N J

K 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method: 8260B
Prep Method: 5035
Dilution: 1.0
Analysis Date: 05/07/2015 1011
Prep Date: 04/30/2015 1048

Analysis Batch: 280-276328
Prep Batch: 280-276337

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Instrument ID: VMS_J
Lab File ID: J6578.D
Initial Weight/Volume: 4.493 g
Final Weight/Volume: 5 mL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		6.1	U	6.1	23
Benzene		0.53	U	0.53	5.6
Bromodichloromethane		0.25	U	0.25	5.6
Bromoform		0.26	U	0.26	5.6
Bromomethane		0.56	U	0.56	11
2-Butanone (MEK)		2.1	U	2.1	11
Carbon disulfide		0.47	U J	0.47	5.6
Carbon tetrachloride		0.71	U	0.71	5.6
Chlorobenzene		0.61	U	0.61	5.6
Dibromochloromethane		0.64	U	0.64	5.6
Chloroethane		1.0	U	1.0	11
Chloroform		0.33	U	0.33	5.6
Chloromethane		0.87	U	0.87	11
1,1-Dichloroethane		0.24	U	0.24	5.6
1,2-Dichloroethane		0.79	U	0.79	5.6
1,1-Dichloroethene		0.67	U	0.67	5.6
1,2-Dichloroethene, Total		0.44	U	0.44	5.6
1,2-Dichloropropane		0.62	U	0.62	5.6
cis-1,3-Dichloropropene		1.5	U	1.5	5.6
trans-1,3-Dichloropropene		0.76	U	0.76	5.6
Ethylbenzene		0.76	U	0.76	5.6
2-Hexanone		5.5	U	5.5	23
Methylene Chloride		1.8	U	1.8	5.6
4-Methyl-2-pentanone (MIBK)		4.9	U	4.9	11
Styrene		0.71	U	0.71	5.6
1,1,2,2-Tetrachloroethane		0.69	U	0.69	5.6
Tetrachloroethene		0.67	U	0.67	5.6
Toluene		0.78	U	0.78	5.6
1,1,1-Trichloroethane		0.59	U J	0.59	5.6
1,1,2-Trichloroethane		0.99	U	0.99	5.6
Trichloroethene		0.26	U	0.26	5.6
Vinyl chloride		1.5	U	1.5	5.6
Xylenes, Total		0.69	U	0.69	5.6

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	105		58 - 140
Toluene-d8 (Surr)	101		80 - 126
4-Bromofluorobenzene (Surr)	97		76 - 127
Dibromofluoromethane (Surr)	109		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6578.D
Dilution:	1.0			Initial Weight/Volume:	4.493 g
Analysis Date:	05/07/2015 1011			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1048				

Tentatively Identified Compounds **Number TIC's Found: 4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
60-29-7	Ethyl ether	5.23	2.7	J N J
2516-33-8	Cyclopropyl carbinol	5.37	9.0	N J
	Unknown	6.74	23	N J
110-82-7	Cyclohexane	7.35	0.65	J N J

5/23/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method: 8260B
Prep Method: 5035
Dilution: 1.0
Analysis Date: 05/07/2015 1031
Prep Date: 04/30/2015 1030

Analysis Batch: 280-276328
Prep Batch: 280-276337

Instrument ID: VMS_J
Lab File ID: J6579.D
Initial Weight/Volume: 3.736 g
Final Weight/Volume: 5 mL

5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		35 ~~21~~ 5/m	J B U	7.2	27
Benzene		0.63	U	0.63	6.7
Bromodichloromethane		0.30	U	0.30	6.7
Bromoform		0.31	U	0.31	6.7
Bromomethane		0.67	U	0.67	13
2-Butanone (MEK)		2.5	U	2.5	13
Carbon disulfide		0.56	U J	0.56	6.7
Carbon tetrachloride		0.85	U	0.85	6.7
Chlorobenzene		0.73	U	0.73	6.7
Dibromochloromethane		0.77	U	0.77	6.7
Chloroethane		1.2	U	1.2	13
Chloroform		0.39	U	0.39	6.7
Chloromethane		1.0	U	1.0	13
1,1-Dichloroethane		0.28	U	0.28	6.7
1,2-Dichloroethane		0.94	U	0.94	6.7
1,1-Dichloroethene		0.79	U	0.79	6.7
1,2-Dichloroethene, Total		0.52	U	0.52	6.7
1,2-Dichloropropane		0.74	U	0.74	6.7
cis-1,3-Dichloropropene		1.7	U	1.7	6.7
trans-1,3-Dichloropropene		0.90	U	0.90	6.7
Ethylbenzene		0.90	U	0.90	6.7
2-Hexanone		6.6	U	6.6	27
Methylene Chloride		2.3	J	2.2	6.7
4-Methyl-2-pentanone (MIBK)		5.9	U	5.9	13
Styrene		0.85	U	0.85	6.7
1,1,2,2-Tetrachloroethane		0.82	U	0.82	6.7
Tetrachloroethene		0.79	U	0.79	6.7
Toluene		0.93	U	0.93	6.7
1,1,1-Trichloroethane		0.70	U J	0.70	6.7
1,1,2-Trichloroethane		1.2	U	1.2	6.7
Trichloroethene		0.31	U	0.31	6.7
Vinyl chloride		1.8	U	1.8	6.7
Xylenes, Total		0.82	U	0.82	6.7

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	108		58 - 140
Toluene-d8 (Surr)	102		80 - 126
4-Bromofluorobenzene (Surr)	94		76 - 127
Dibromofluoromethane (Surr)	109		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6579.D
Dilution:	1.0			Initial Weight/Volume:	3.736 g
Analysis Date:	05/07/2015 1031			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1030				

Tentatively Identified Compounds **Number TIC's Found: 7**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	4.04	9.4	J N
	Unknown	4.49	18	J N
	Unknown	5.07	34	J N
60-29-7	Ethyl ether	5.21	3.4	J N
	Unknown	6.74	34	J N
110-82-7	Cyclohexane	7.33	1.0	J N
	Unknown	8.74	6.9	J N

✓ 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: J1V6W6

Lab Sample ID: 280-68739-11
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6580.D
Dilution:	1.0			Initial Weight/Volume:	4.473 g
Analysis Date:	05/07/2015 1051			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1016				

M 5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		6.1	U	6.1	23
Benzene		0.53	U	0.53	5.6
Bromodichloromethane		0.25	U	0.25	5.6
Bromoform		0.26	U	0.26	5.6
Bromomethane		0.56	U	0.56	11
2-Butanone (MEK)		2.1	U	2.1	11
Carbon disulfide		0.47	U J	0.47	5.6
Carbon tetrachloride		0.71	U	0.71	5.6
Chlorobenzene		0.61	U	0.61	5.6
Dibromochloromethane		0.64	U	0.64	5.6
Chloroethane		1.0	U	1.0	11
Chloroform		0.33	U	0.33	5.6
Chloromethane		0.87	U	0.87	11
1,1-Dichloroethane		0.24	U	0.24	5.6
1,2-Dichloroethane		0.79	U	0.79	5.6
1,1-Dichloroethene		0.88	J	0.66	5.6
1,2-Dichloroethene, Total		0.44	U	0.44	5.6
1,2-Dichloropropane		0.62	U	0.62	5.6
cis-1,3-Dichloropropene		1.5	U	1.5	5.6
trans-1,3-Dichloropropene		0.75	U	0.75	5.6
Ethylbenzene		0.75	U	0.75	5.6
2-Hexanone		5.5	U	5.5	23
Methylene Chloride		1.8	U	1.8	5.6
4-Methyl-2-pentanone (MIBK)		4.9	U	4.9	11
Styrene		0.71	U	0.71	5.6
1,1,2,2-Tetrachloroethane		0.69	U	0.69	5.6
Tetrachloroethene		0.66	U	0.66	5.6
Toluene		0.78	U	0.78	5.6
1,1,1-Trichloroethane		0.59	U J	0.59	5.6
1,1,2-Trichloroethane		0.99	U	0.99	5.6
Trichloroethene		0.26	U	0.26	5.6
Vinyl chloride		1.5	U	1.5	5.6
Xylenes, Total		0.69	U	0.69	5.6

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	104		58 - 140
Toluene-d8 (Surr)	104		80 - 126
4-Bromofluorobenzene (Surr)	97		76 - 127
Dibromofluoromethane (Surr)	109		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W6**

Lab Sample ID: 280-68739-11
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6580.D
Dilution:	1.0			Initial Weight/Volume:	4.473 g
Analysis Date:	05/07/2015 1051			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1016				

Tentatively Identified Compounds **Number TIC's Found: 5**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
24309-48-6	Thiocyanic acid, 2-propynyl ester	4.74	13	N J
60-29-7	Ethyl ether	5.23	2.7	J N J
103439-06-1	Benzeneethanamine, 4-fluoro-.beta.,3-dih	5.40	14	N J
	Unknown	6.73	22	N J
110-82-7	Cyclohexane	7.35	0.56	J N J

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method: 8260B
Prep Method: 5035
Dilution: 1.0
Analysis Date: 05/06/2015 0347
Prep Date: 04/30/2015 1023

Analysis Batch: 280-276076
Prep Batch: 280-276099

Instrument ID: VMS_G
Lab File ID: G3654.D
Initial Weight/Volume: 4.04 g
Final Weight/Volume: 5 mL

5/25/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		7.9	J	6.7	25
Benzene		0.58	U	0.58	6.2
Bromodichloromethane		0.27	U	0.27	6.2
Bromoform		0.29	U	0.29	6.2
Bromomethane		0.62	U	0.62	12
2-Butanone (MEK)		2.3	U	2.3	12
Carbon disulfide		0.52	U	0.52	6.2
Carbon tetrachloride		0.78	U	0.78	6.2
Chlorobenzene		0.67	U	0.67	6.2
Dibromochloromethane		0.71	U	0.71	6.2
Chloroethane		1.1	U	1.1	12
Chloroform		0.36	U	0.36	6.2
Chloromethane		0.96	U J	0.96	12
1,1-Dichloroethane		0.26	U	0.26	6.2
1,2-Dichloroethane		0.87	U	0.87	6.2
1,1-Dichloroethene		0.73	U	0.73	6.2
1,2-Dichloroethene, Total		0.49	U	0.49	6.2
1,2-Dichloropropane		0.68	U	0.68	6.2
cis-1,3-Dichloropropene		1.6	U	1.6	6.2
trans-1,3-Dichloropropene		0.83	U	0.83	6.2
Ethylbenzene		0.83	U	0.83	6.2
2-Hexanone		6.1	U	6.1	25
Methylene Chloride		2.0	U	2.0	6.2
4-Methyl-2-pentanone (MIBK)		5.4	U	5.4	12
Styrene		0.78	U	0.78	6.2
1,1,2,2-Tetrachloroethane		0.76	U	0.76	6.2
Tetrachloroethene		0.73	U	0.73	6.2
Toluene		0.86	U	0.86	6.2
1,1,1-Trichloroethane		0.65	U	0.65	6.2
1,1,2-Trichloroethane		1.1	U	1.1	6.2
Trichloroethene		0.29	U	0.29	6.2
Vinyl chloride		1.7	U	1.7	6.2
Xylenes, Total		0.76	U J	0.76	6.2

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	140		58 - 140
Toluene-d8 (Surr)	109		80 - 126
4-Bromofluorobenzene (Surr)	113		76 - 127
Dibromofluoromethane (Surr)	131	*	75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Prep Method:	5035	Prep Batch:	280-276099	Lab File ID:	G3654.D
Dilution:	1.0			Initial Weight/Volume:	4.04 g
Analysis Date:	05/06/2015 0347			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1023				

Tentatively Identified Compounds **Number TIC's Found: 10**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
123-91-1	1,4-Dioxane	8.34	160	J N J
1000214-70-0	5-Bromo-6-methoxy-2-methyl-8-nitroquinol	8.76	60	N J
	Unknown	8.92	77	N J
55570-89-3	1(3H)-Isobenzofuranone, 4(or 5)-(hydroxy	9.01	88	N J
1000145-66-9	Cyclopropanecarbonitrile, 1-methyl-2,2-d	10.28	90	N J
7359-72-0	Benzene, 1,2,3-trichloro-4-methyl-	10.72	140	N J
50-82-8	Benzoic acid, 2,4,5-trichloro-	10.84	91	N J
13939-06-5	Molybdenum hexacarbonyl	11.19	96	N J
588-05-6	Phenol, 3-(2-aminoethyl)-	14.00	140	N J
519-05-1	5,6-Dimethoxyphthalaldehydic acid	14.99	77	N J

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W8**

Lab Sample ID: 280-68739-13
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method: 8260B
Prep Method: 5035
Dilution: 1.0
Analysis Date: 05/07/2015 1308
Prep Date: 04/30/2015 1111

Analysis Batch: 280-276328
Prep Batch: 280-276337

r 5/25/15

Instrument ID: VMS_J
Lab File ID: J6586.D
Initial Weight/Volume: 4.669 g
Final Weight/Volume: 5 mL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acetone		35 ~~0.7~~	J B U	6.0	22
Benzene		0.52	U	0.52	5.5
Bromodichloromethane		0.24	U	0.24	5.5
Bromoform		0.26	U	0.26	5.5
Bromomethane		0.55	U	0.55	11
2-Butanone (MEK)		2.0	U	2.0	11
Carbon disulfide		0.47	U J	0.47	5.5
Carbon tetrachloride		0.70	U	0.70	5.5
Chlorobenzene		0.60	U	0.60	5.5
Dibromochloromethane		0.63	U	0.63	5.5
Chloroethane		0.99	U	0.99	11
Chloroform		0.32	U	0.32	5.5
Chloromethane		0.85	U	0.85	11
1,1-Dichloroethane		0.23	U	0.23	5.5
1,2-Dichloroethane		0.78	U	0.78	5.5
1,1-Dichloroethene		0.65	U	0.65	5.5
1,2-Dichloroethene, Total		0.43	U	0.43	5.5
1,2-Dichloropropane		0.61	U	0.61	5.5
cis-1,3-Dichloropropene		1.4	U	1.4	5.5
trans-1,3-Dichloropropene		0.74	U	0.74	5.5
Ethylbenzene		0.74	U	0.74	5.5
2-Hexanone		5.4	U	5.4	22
Methylene Chloride		1.8	U	1.8	5.5
4-Methyl-2-pentanone (MIBK)		4.8	U	4.8	11
Styrene		0.70	U	0.70	5.5
1,1,2,2-Tetrachloroethane		0.68	U	0.68	5.5
Tetrachloroethene		0.65	U	0.65	5.5
Toluene		0.77	U	0.77	5.5
1,1,1-Trichloroethane		0.58	U J	0.58	5.5
1,1,2-Trichloroethane		0.98	U	0.98	5.5
Trichloroethene		0.26	U	0.26	5.5
Vinyl chloride		1.5	U	1.5	5.5
Xylenes, Total		0.68	U	0.68	5.5

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	107		58 - 140
Toluene-d8 (Surr)	103		80 - 126
4-Bromofluorobenzene (Surr)	98		76 - 127
Dibromofluoromethane (Surr)	109		75 - 121

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W8**

Lab Sample ID: 280-68739-13
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Prep Method:	5035	Prep Batch:	280-276337	Lab File ID:	J6586.D
Dilution:	1.0			Initial Weight/Volume:	4.669 g
Analysis Date:	05/07/2015 1308			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1111				

Tentatively Identified Compounds **Number TIC's Found: 3**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
60-29-7	Ethyl ether	5.21	2.7	J N
	Unknown	6.74	23	J N
110-82-7	Cyclohexane	7.35	0.66	J N

5/25/16

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-68739-1

SDG #: JP0961
SAF#: RC-189

Date SDG Closed: May 5, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V6V6	280-68739-1	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V7	280-68739-2	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V8	280-68739-3	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V9	280-68739-4	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W0	280-68739-5	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W1	280-68739-6	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W2	280-68739-7	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W3	280-68739-8	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W4	280-68739-9	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W5	280-68739-10	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W6	280-68739-11	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W7	280-68739-12	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W8	280-68739-13	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B

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 5/5/2015 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 3.0° C, 4.3° C and 5.8° C.

The Chain of Custody indicates "VOA samples frozen upon collection", and it can be noted that the 5035/8260B VOA samples were placed in the freezer upon receipt at the laboratory. The client was notified on 5/6/2015.

GC/MS VOLATILES - SW846 8260B
The Internal Standard (ISTD) response for samples J1V6V6 and J1V6V7 were outside control limits, low. The samples were reanalyzed until there was no volume remaining; however, all of the internal standards failed low in all of the analyses. Data are reported as is. The laboratory believes this anomaly is due to bad purges caused by leaks around the vial cap.

Samples J1V6V9 and J1V6W7 exhibited surrogate recoveries outside the control limits, biased high. This is an indicator that data may be biased high. As no detectable concentrations are present at levels greater than the reporting limits in the samples, corrective action is deemed unnecessary.

Low levels of Acetone, a common laboratory contaminant, are present in the method blank associated with batch 280-276337. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MS/MSD performed on sample J1V6V6 in batch 280-276099 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". In addition, RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1V6W8 in batch 280-276337 exhibited RPD data outside the control limits. 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
No anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-276084 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-276084. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-276084 and in the Matrix Spike performed on sample J1V6V6 in batch 280-276084. The associated sample results have been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

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 J1V6V6; therefore, control limits are not applicable.

Boton was recovered outside the control limits in the Matrix Spike performed on sample J1V6V6, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier / Fed. Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See USPC

Other Labs Shipped To: TestAmerica Richland

280-68739 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze					
Type of Container	G/P	aG	aG	G	Gs*					
No. of Container(s)	1	1	1	1	5					
Volume	250mL	250mL	250mL	125mL	40mL					
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	*** VOA - 5035/8260 (TCL)					

Sample No.	Matrix	Sample Date	Sample Time										
J1V6V6	SOIL	4/30/15	1156	X	X	X	X	X					
J1V6V7	SOIL	4/30/15	1209	X	X	X	X	X					
J1V6V8	SOIL	4/30/15	1203	X	X	X	X	X					
J1V6V9	SOIL	4/30/15	1216	X	X	X	X	X					
J1V6W0	SOIL	4/30/15	1104	X	X	X	X	X					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Quincy Stowe	4-30-15 1222	Received By/Stored In: C. Martinez/C. Martinez	4/30/15 1222
Relinquished By/Removed From: C. Martinez/C. Martinez	4/30/15 1540	Received By/Stored In: C. Bingham	4-30-15 1540
Relinquished By/Removed From: C. Bingham	4-30-15 1615	Received By/Stored In: 1060 Battelle fridge #3B	4-30-15 1615
Relinquished By/Removed From: 1060 Battelle fridge #3B	5-4-15 0730	Received By/Stored In: C. Bingham	5-4-15 0730
Relinquished By/Removed From: C. Bingham / WCH	5-4-15 0740	Received By/Stored In: Fed Ex	5-4-15
Relinquished By/Removed From:		Received By/Stored In:	5-5-15 10:05
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)

REVIEWED BY Khaled Vaemal DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

*** VOA samples frozen upon collection

JP0961

5.6, 2.8, 1.2, 4.1 IR 5-7-2 Tandeal & MA 5/5/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \Fed EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W1	SOIL	4/30/15	1111	X	X	X	X	X
J1V6W2	SOIL	4/30/15	1055	X	X	X	X	X
J1V6W3	SOIL	4/30/15	1041	X	X	X	X	X
J1V6W4	SOIL	4/30/15	1048	X	X	X	X	X
J1V6W5	SOIL	4/30/15	1030	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1060 Battelle fridge #3B	4-30-15 1615
1060 Battelle fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham WCH	5-4-15 0740	Fed EX	5-4-15
		[illegible]	5-5-15 10:05

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 K. Woodhaemer DATE 5-4-15

** freeze upon receipt. 4/30/15 CMB

VOA samples frozen upon collection

JP0961

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSR

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze							
Type of Container	G/P	aG	aG	G	Gs*							
No. of Container(s)	1	1	1	1	5							
Volume	250mL	250mL	250mL	125mL	40mL							
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	* ** VOA - 5035/8260 (TCL)							

Sample No.	Matrix	Sample Date	Sample Time										
J1V6W6	SOIL	4/30/15	1016	X	X	X	X	X					
J1V6W7	SOIL	4/30/15	1023	X	X	X	X	X					
J1V6W8	SOIL	4/30/15	1111	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	4-30-15 1222	C Martinez/C Martinez	4/30/15 1222
C Martinez/C Martinez	4/30/15 1540	C Bingham	4-30-15 1540
C Bingham	4-30-15 1615	1000 Battelle Fridge #3B	4-30-15 1615
1000 Battelle Fridge #3B	5-4-15 0730	C Bingham	5-4-15 0730
C Bingham	5-4-15 0740	Fed Ex	5-4-15
			5-5-15 10:05

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

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 K. Wood/Via email DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-94			DATA PACKAGE: JP0961		
VALIDATOR: FLR		LAB: TAL		DATE: 5/25/15	
			SDG: JP0961		

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

SAMPLES/MATRIX				
J1U6V6	J1U6V7	J1U6V8	J1U6V9	J1U6W0
J1U6W1	J1U6W2	J1U6W3	J1U6W4	J1U6W5
J1U6W6	J1U6W7	J1U6W8		
				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: 28 - acetone - U all PQL NN
V7 - U - acetone

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: LCS - chloromethane - 76 - J all assoc
AS - chloromethane - 76 - J all assoc

no PA

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: total xylenes - 76 - J all (31%)
Carbon disulfide (37%) 1,1,1-trichloroethane (34%) -28 - J all assoc

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: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276337

Method: 8260B
Preparation: 5035

Lab Sample ID:	MB 280-276337/1-A	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Client Matrix:	Solid	Prep Batch:	280-276337	Lab File ID:	J6570.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 g
Analysis Date:	05/07/2015 0720	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/07/2015 0731				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acetone	6.22	J	5.4	20
Benzene	0.47	U	0.47	5.0
Bromodichloromethane	0.22	U	0.22	5.0
Bromoform	0.23	U	0.23	5.0
Bromomethane	0.50	U	0.50	10
2-Butanone (MEK)	1.8	U	1.8	10
Carbon disulfide	0.42	U	0.42	5.0
Carbon tetrachloride	0.63	U	0.63	5.0
Chlorobenzene	0.54	U	0.54	5.0
Dibromochloromethane	0.57	U	0.57	5.0
Chloroethane	0.89	U	0.89	10
Chloroform	0.29	U	0.29	5.0
Chloromethane	0.77	U	0.77	10
1,1-Dichloroethane	0.21	U	0.21	5.0
1,2-Dichloroethane	0.70	U	0.70	5.0
1,1-Dichloroethene	0.59	U	0.59	5.0
1,2-Dichloroethene, Total	0.39	U	0.39	5.0
1,2-Dichloropropane	0.55	U	0.55	5.0
cis-1,3-Dichloropropene	1.3	U	1.3	5.0
trans-1,3-Dichloropropene	0.67	U	0.67	5.0
Ethylbenzene	0.67	U	0.67	5.0
2-Hexanone	4.9	U	4.9	20
Methylene Chloride	1.6	U	1.6	5.0
4-Methyl-2-pentanone (MIBK)	4.4	U	4.4	10
Styrene	0.63	U	0.63	5.0
1,1,2,2-Tetrachloroethane	0.61	U	0.61	5.0
Tetrachloroethene	0.59	U	0.59	5.0
Toluene	0.69	U	0.69	5.0
1,1,1-Trichloroethane	0.52	U	0.52	5.0
1,1,2-Trichloroethane	0.88	U	0.88	5.0
Trichloroethene	0.23	U	0.23	5.0
Vinyl chloride	1.3	U	1.3	5.0
Xylenes, Total	0.61	U	0.61	5.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	101	58 - 140
Toluene-d8 (Surr)	101	80 - 126
4-Bromofluorobenzene (Surr)	93	76 - 127
Dibromofluoromethane (Surr)	107	75 - 121

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Method Blank TICs- Batch: 280-276337

Cas Number	Analyte	RT	Est. Result (ug/	Qual
492-39-7	Cathine	4.93	15.9	N J
2919-23-5	Cyclobutanol	5.32	9.89	N J
	Unknown	6.73	20.0	J N
66-25-1	Hexanal	9.42	11.4	N J
142-96-1	n-Butyl ether	9.93	8.30	N J
590-01-2	Propanoic acid, butyl ester	10.40	7.80	N J
	Unknown	12.31	11.0	J N
	Unknown	12.68	28.5	J N
103-09-3	Acetic acid, 2-ethylhexyl ester	12.92	42.3	N J
105-68-0	1-Butanol, 3-methyl-, propanoate	13.98	24.9	N J

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Lab Control Sample - Batch: 280-276337

Method: 8260B
Preparation: 5035

Lab Sample ID:	LCS 280-276337/2-A	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Client Matrix:	Solid	Prep Batch:	280-276337	Lab File ID:	J6569.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 g
Analysis Date:	05/07/2015 0659	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/07/2015 0731				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	200	220	110	65 - 150	
Benzene	50.0	51.1	102	75 - 135	
Bromodichloromethane	50.0	54.4	109	73 - 135	
Bromoform	50.0	57.9	116	77 - 135	
Bromomethane	50.0	52.1	104	52 - 135	
2-Butanone (MEK)	200	214	107	45 - 177	
Carbon disulfide	50.0	49.9	100	45 - 150	
Carbon tetrachloride	50.0	59.5	119	69 - 138	
Chlorobenzene	50.0	53.0	106	78 - 135	
Dibromochloromethane	50.0	55.4	111	77 - 135	
Chloroethane	50.0	49.6	99	51 - 145	
Chloroform	50.0	53.9	108	73 - 123	
Chloromethane	50.0	49.0	98	41 - 138	
1,1-Dichloroethane	50.0	52.1	104	70 - 135	
1,2-Dichloroethane	50.0	54.8	110	69 - 135	
1,1-Dichloroethene	50.0	53.0	106	79 - 135	
1,2-Dichloroethene, Total	100	105	105	78 - 135	
1,2-Dichloropropane	50.0	49.4	99	72 - 121	
cis-1,3-Dichloropropene	50.0	51.4	103	71 - 135	
trans-1,3-Dichloropropene	50.0	56.6	113	71 - 135	
Ethylbenzene	50.0	55.2	110	73 - 125	
2-Hexanone	200	258	129	67 - 150	
Methylene Chloride	50.0	50.2	100	76 - 136	
4-Methyl-2-pentanone (MIBK)	200	226	113	69 - 150	
Styrene	50.0	51.1	102	76 - 135	
1,1,2,2-Tetrachloroethane	50.0	50.6	101	65 - 135	
Tetrachloroethene	50.0	54.0	108	76 - 135	
Toluene	50.0	52.0	104	77 - 122	
1,1,1-Trichloroethane	50.0	55.1	110	70 - 135	
1,1,2-Trichloroethane	50.0	53.7	107	78 - 135	
Trichloroethene	50.0	55.5	111	77 - 135	
Vinyl chloride	50.0	49.1	98	43 - 145	
Xylenes, Total	100	102	102	76 - 135	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	105	58 - 140
Toluene-d8 (Surr)	102	80 - 126
4-Bromofluorobenzene (Surr)	96	76 - 127
Dibromofluoromethane (Surr)	109	75 - 121

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276337

Method: 8260B
Preparation: 5035

MS Lab Sample ID:	280-68739-13	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Client Matrix:	Solid	Prep Batch:	280-276337	Lab File ID:	J6582.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	4.077 g
Analysis Date:	05/07/2015 1147			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1111				5 mL
Leach Date:	N/A				

MSD Lab Sample ID:	280-68739-13	Analysis Batch:	280-276328	Instrument ID:	VMS_J
Client Matrix:	Solid	Prep Batch:	280-276337	Lab File ID:	J6583.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	4.387 g
Analysis Date:	05/07/2015 1207			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1111				5 mL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acetone	90	115	65 - 150	16	28		
Benzene	108	89	75 - 135	26	20		*
Bromodichloromethane	112	101	73 - 135	18	20		
Bromoform	117	113	77 - 135	11	20		
Bromomethane	111	98	52 - 135	20	22		
2-Butanone (MEK)	125	167	45 - 177	22	32		
Carbon disulfide	116	86	45 - 150	37	24		*
Carbon tetrachloride	126	101	69 - 138	29	20		*
Chlorobenzene	109	93	78 - 135	23	20		*
Dibromochloromethane	112	107	77 - 135	12	20		
Chloroethane	109	94	51 - 145	22	22		
Chloroform	113	97	73 - 123	22	20		*
Chloromethane	105	93	41 - 138	20	25		
1,1-Dichloroethane	111	91	70 - 135	27	20		*
1,2-Dichloroethane	116	106	69 - 135	16	20		
1,1-Dichloroethene	104	94	79 - 135	18	20		
1,2-Dichloroethene, Total	113	92	78 - 135	27	20		*
1,2-Dichloropropane	104	91	72 - 121	20	20		
cis-1,3-Dichloropropene	104	94	71 - 135	17	20		
trans-1,3-Dichloropropene	116	108	71 - 135	14	20		
Ethylbenzene	109	88	73 - 125	28	20		*
2-Hexanone	106	112	67 - 150	2	29		
Methylene Chloride	115	97	76 - 136	24	21		*
4-Methyl-2-pentanone (MIBK)	114	116	69 - 150	5	25		
Styrene	106	91	76 - 135	23	20		*
1,1,2,2-Tetrachloroethane	110	105	65 - 135	12	21		
Tetrachloroethene	113	93	76 - 135	27	20		*
Toluene	112	91	77 - 122	28	20		*
1,1,1-Trichloroethane	124	95	70 - 135	34	20		*
1,1,2-Trichloroethane	110	105	78 - 135	12	20		
Trichloroethene	115	95	77 - 135	26	20		*
Vinyl chloride	102	91	43 - 145	19	24		
Xylenes, Total	109	89	76 - 135	27	20		*

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	104	109	58 - 140
Toluene-d8 (Surr)	99	102	80 - 126
4-Bromofluorobenzene (Surr)	99	101	76 - 127
Dibromofluoromethane (Surr)	106	109	75 - 121

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276337

Method: 8260B
Preparation: 5035

MS Lab Sample ID: 280-68739-13
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/07/2015 1147
Prep Date: 04/30/2015 1111
Leach Date: N/A

Units: ug/Kg

MSD Lab Sample ID: 280-68739-13
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/07/2015 1207
Prep Date: 04/30/2015 1111
Leach Date: N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Acetone	9.7	J	254	236	239	282	
Benzene	0.52	U	63.5	59.1	68.3	52.7	*
Bromodichloromethane	0.24	U	63.5	59.1	71.4	59.5	
Bromoform	0.26	U	63.5	59.1	74.4	66.7	
Bromomethane	0.55	U	63.5	59.1	70.5	57.7	
2-Butanone (MEK)	2.0	U	254	236	317	393	
Carbon disulfide	0.47	U	63.5	59.1	73.4	50.6	*
Carbon tetrachloride	0.70	U	63.5	59.1	79.8	59.6	*
Chlorobenzene	0.60	U	63.5	59.1	69.4	55.0	*
Dibromochloromethane	0.63	U	63.5	59.1	70.9	63.0	
Chloroethane	0.99	U	63.5	59.1	69.2	55.3	
Chloroform	0.32	U	63.5	59.1	71.6	57.4	*
Chloromethane	0.85	U	63.5	59.1	67.0	54.7	
1,1-Dichloroethane	0.23	U	63.5	59.1	70.4	53.8	*
1,2-Dichloroethane	0.78	U	63.5	59.1	73.8	62.8	
1,1-Dichloroethene	0.65	U	63.5	59.1	66.4	55.2	
1,2-Dichloroethene, Total	0.43	U	127	118	143	109	*
1,2-Dichloropropane	0.61	U	63.5	59.1	65.9	53.8	
cis-1,3-Dichloropropene	1.4	U	63.5	59.1	66.0	55.7	
trans-1,3-Dichloropropene	0.74	U	63.5	59.1	73.4	63.6	
Ethylbenzene	0.74	U	63.5	59.1	69.1	52.1	*
2-Hexanone	5.4	U	254	236	271	265	
Methylene Chloride	1.8	U	63.5	59.1	73.1	57.4	*
4-Methyl-2-pentanone (MIBK)	4.8	U	254	236	290	275	
Styrene	0.70	U	63.5	59.1	67.4	53.6	*
1,1,2,2-Tetrachloroethane	0.68	U	63.5	59.1	69.8	61.8	
Tetrachloroethene	0.65	U	63.5	59.1	72.0	54.8	*
Toluene	0.77	U	63.5	59.1	71.1	53.9	*
1,1,1-Trichloroethane	0.58	U	63.5	59.1	78.7	55.9	*
1,1,2-Trichloroethane	0.98	U	63.5	59.1	69.8	62.0	
Trichloroethene	0.26	U	63.5	59.1	73.0	56.0	*
Vinyl chloride	1.5	U	63.5	59.1	65.0	53.6	
Xylenes, Total	0.68	U	127	118	138	105	*

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276099

Method: 8260B
Preparation: 5035

Lab Sample ID:	MB 280-276099/1-A	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Client Matrix:	Solid	Prep Batch:	280-276099	Lab File ID:	G3633.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 g
Analysis Date:	05/05/2015 2000	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/05/2015 1800				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acetone	5.4	U	5.4	20
Benzene	0.47	U	0.47	5.0
Bromodichloromethane	0.22	U	0.22	5.0
Bromoform	0.23	U	0.23	5.0
Bromomethane	0.50	U	0.50	10
2-Butanone (MEK)	1.8	U	1.8	10
Carbon disulfide	0.42	U	0.42	5.0
Carbon tetrachloride	0.63	U	0.63	5.0
Chlorobenzene	0.54	U	0.54	5.0
Dibromochloromethane	0.57	U	0.57	5.0
Chloroethane	0.89	U	0.89	10
Chloroform	0.29	U	0.29	5.0
Chloromethane	0.77	U	0.77	10
1,1-Dichloroethane	0.21	U	0.21	5.0
1,2-Dichloroethane	0.70	U	0.70	5.0
1,1-Dichloroethene	0.59	U	0.59	5.0
1,2-Dichloroethene, Total	0.39	U	0.39	5.0
1,2-Dichloropropane	0.55	U	0.55	5.0
cis-1,3-Dichloropropene	1.3	U	1.3	5.0
trans-1,3-Dichloropropene	0.67	U	0.67	5.0
Ethylbenzene	0.67	U	0.67	5.0
2-Hexanone	4.9	U	4.9	20
Methylene Chloride	1.6	U	1.6	5.0
4-Methyl-2-pentanone (MIBK)	4.4	U	4.4	10
Styrene	0.63	U	0.63	5.0
1,1,2,2-Tetrachloroethane	0.61	U	0.61	5.0
Tetrachloroethene	0.59	U	0.59	5.0
Toluene	0.69	U	0.69	5.0
1,1,1-Trichloroethane	0.52	U	0.52	5.0
1,1,2-Trichloroethane	0.88	U	0.88	5.0
Trichloroethene	0.23	U	0.23	5.0
Vinyl chloride	1.3	U	1.3	5.0
Xylenes, Total	0.61	U	0.61	5.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	123	58 - 140
Toluene-d8 (Surr)	105	80 - 126
4-Bromofluorobenzene (Surr)	102	76 - 127
Dibromofluoromethane (Surr)	113	75 - 121

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Method Blank TICs- Batch: 280-276099

Cas Number	Analyte	RT	Est. Result (ug/	Qual
	Unknown	5.29	6.24	N J
	Unknown	6.68	31.3	N J
	Unknown	9.69	7.30	N J
141-32-2	2-Propenoic acid, butyl ester	10.79	7.20	N J
590-01-2	Propanoic acid, butyl ester	10.89	8.22	N J
124-13-0	Octanal	12.20	5.56	N J
	Unknown	13.31	10.9	N J
103-09-3	Acetic acid, 2-ethylhexyl ester	13.58	36.0	N J
1000245-68-1	4-(Prop-2-enoyloxy)octane	14.58	6.51	N J
1000139-90-4	1-Butoxy-2-ethylhexane	14.64	5.71	N J

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Lab Control Sample - Batch: 280-276099

Method: 8260B
Preparation: 5035

Lab Sample ID:	LCS 280-276099/2-A	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Client Matrix:	Solid	Prep Batch:	280-276099	Lab File ID:	G3632.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 g
Analysis Date:	05/05/2015 1938	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/05/2015 1800				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	200	185	93	65 - 150	
Benzene	50.0	52.5	105	75 - 135	
Bromodichloromethane	50.0	60.2	120	73 - 135	
Bromoform	50.0	57.8	116	77 - 135	
Bromomethane	50.0	27.7	55	52 - 135	
2-Butanone (MEK)	200	168	84	45 - 177	
Carbon disulfide	50.0	50.4	101	45 - 150	
Carbon tetrachloride	50.0	65.7	131	69 - 138	
Chlorobenzene	50.0	48.4	97	78 - 135	
Dibromochloromethane	50.0	53.6	107	77 - 135	
Chloroethane	50.0	34.5	69	51 - 145	
Chloroform	50.0	56.6	113	73 - 123	
Chloromethane	50.0	24.0	48	41 - 138	
1,1-Dichloroethane	50.0	52.4	105	70 - 135	
1,2-Dichloroethane	50.0	58.3	117	69 - 135	
1,1-Dichloroethene	50.0	48.9	98	79 - 135	
1,2-Dichloroethene, Total	100	104	104	78 - 135	
1,2-Dichloropropane	50.0	50.1	100	72 - 121	
cis-1,3-Dichloropropene	50.0	47.3	95	71 - 135	
trans-1,3-Dichloropropene	50.0	62.8	126	71 - 135	
Ethylbenzene	50.0	54.0	108	73 - 125	
2-Hexanone	200	161	81	67 - 150	
Methylene Chloride	50.0	47.0	94	76 - 136	
4-Methyl-2-pentanone (MIBK)	200	183	91	69 - 150	
Styrene	50.0	49.6	99	76 - 135	
1,1,2,2-Tetrachloroethane	50.0	44.7	89	65 - 135	
Tetrachloroethene	50.0	51.9	104	76 - 135	
Toluene	50.0	58.9	118	77 - 122	
1,1,1-Trichloroethane	50.0	58.3	117	70 - 135	
1,1,2-Trichloroethane	50.0	55.8	112	78 - 135	
Trichloroethene	50.0	59.1	118	77 - 135	
Vinyl chloride	50.0	29.9	60	43 - 145	
Xylenes, Total	100	105	105	76 - 135	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	86	58 - 140
Toluene-d8 (Surr)	100	80 - 126
4-Bromofluorobenzene (Surr)	92	76 - 127
Dibromofluoromethane (Surr)	85	75 - 121

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276099

Method: 8260B
Preparation: 5035

MS Lab Sample ID:	280-68739-1	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Client Matrix:	Solid	Prep Batch:	280-276099	Lab File ID:	G3658.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	2.638 g
Analysis Date:	05/06/2015 0516			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1156				5 mL
Leach Date:	N/A				

MSD Lab Sample ID:	280-68739-1	Analysis Batch:	280-276076	Instrument ID:	VMS_G
Client Matrix:	Solid	Prep Batch:	280-276099	Lab File ID:	G3643.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	2.721 g
Analysis Date:	05/05/2015 2343			Final Weight/Volume:	5 mL
Prep Date:	04/30/2015 1156				5 mL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acetone	88	108	65 - 150	17	28		
Benzene	91	105	75 - 135	11	20		
Bromodichloromethane	114	122	73 - 135	4	20		
Bromoform	97	109	77 - 135	9	20		
Bromomethane	57	76	52 - 135	26	22		*
2-Butanone (MEK)	94	97	45 - 177	0	32		
Carbon disulfide	82	98	45 - 150	15	24		
Carbon tetrachloride	108	127	69 - 138	13	20		
Chlorobenzene	74	95	78 - 135	21	20	T	*
Dibromochloromethane	94	106	77 - 135	9	20		
Chloroethane	66	86	51 - 145	23	22		*
Chloroform	106	117	73 - 123	7	20		
Chloromethane	46	62	41 - 138	25	25		
1,1-Dichloroethane	95	106	70 - 135	8	20		
1,2-Dichloroethane	117	123	69 - 135	2	20		
1,1-Dichloroethene	81	97	79 - 135	16	20		
1,2-Dichloroethene, Total	90	104	78 - 135	11	20		
1,2-Dichloropropane	93	105	72 - 121	9	20		
cis-1,3-Dichloropropene	76	89	71 - 135	13	20		
trans-1,3-Dichloropropene	109	123	71 - 135	8	20		
Ethylbenzene	70	98	73 - 125	30	20	T	*
2-Hexanone	71	93	67 - 150	24	29		
Methylene Chloride	89	95	76 - 136	4	21		
4-Methyl-2-pentanone (MIBK)	87	108	69 - 150	18	25		
Styrene	65	90	76 - 135	28	20	T	*
1,1,2,2-Tetrachloroethane	70	86	65 - 135	17	21		
Tetrachloroethene	68	92	76 - 135	27	20	T	*
Toluene	94	115	77 - 122	18	20		
1,1,1-Trichloroethane	105	120	70 - 135	10	20		
1,1,2-Trichloroethane	103	113	78 - 135	6	20		
Trichloroethene	103	118	77 - 135	11	20		
Vinyl chloride	54	71	43 - 145	24	24		
Xylenes, Total	69	97	76 - 135	31	20	T	*

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	89	88	58 - 140
Toluene-d8 (Surr)	102	104	80 - 126
4-Bromofluorobenzene (Surr)	97	98	76 - 127
Dibromofluoromethane (Surr)	91	90	75 - 121

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276099

Method: 8260B
Preparation: 5035

MS Lab Sample ID:	280-68739-1	Units: ug/Kg	MSD Lab Sample ID:	280-68739-1
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	05/06/2015 0516		Analysis Date:	05/05/2015 2343
Prep Date:	04/30/2015 1156		Prep Date:	04/30/2015 1156
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual		MSD Result/Qual	
Acetone	5.0	U	385	373	340		403	
Benzene	0.44	U	96.3	93.4	87.5		97.9	
Bromodichloromethane	0.21	U	96.3	93.4	110		114	
Bromoform	0.22	U	96.3	93.4	93.1		101	
Bromomethane	0.47	U	96.3	93.4	54.8		71.1	*
2-Butanone (MEK)	1.7	U	385	373	362		363	
Carbon disulfide	0.39	U	96.3	93.4	78.6		91.3	
Carbon tetrachloride	0.59	U	96.3	93.4	104		119	
Chlorobenzene	0.51	U	96.3	93.4	71.4	T	88.6	*
Dibromochloromethane	0.53	U	96.3	93.4	90.3		99.0	
Chloroethane	0.84	U	96.3	93.4	63.9		80.5	*
Chloroform	0.27	U	96.3	93.4	102		109	
Chloromethane	0.72	U	96.3	93.4	44.7		57.7	
1,1-Dichloroethane	0.20	U	96.3	93.4	91.2		98.9	
1,2-Dichloroethane	0.66	U	96.3	93.4	112		115	
1,1-Dichloroethene	0.55	U	96.3	93.4	77.7		90.9	
1,2-Dichloroethene, Total	0.37	U	193	187	174		195	
1,2-Dichloropropane	0.52	U	96.3	93.4	89.6		98.1	
cis-1,3-Dichloropropene	1.2	U	96.3	93.4	73.1		83.0	
trans-1,3-Dichloropropene	0.63	U	96.3	93.4	105		115	
Ethylbenzene	0.63	U	96.3	93.4	67.5	T	91.3	*
2-Hexanone	4.6	U	385	373	274		348	
Methylene Chloride	1.5	U	96.3	93.4	85.5		88.8	
4-Methyl-2-pentanone (MIBK)	4.1	U	385	373	335		403	
Styrene	0.59	U	96.3	93.4	63.1	T	84.0	*
1,1,2,2-Tetrachloroethane	0.57	U	96.3	93.4	67.8		80.3	
Tetrachloroethene	0.55	U	96.3	93.4	65.6	T	85.8	*
Toluene	0.65	U	96.3	93.4	90.3		108	
1,1,1-Trichloroethane	0.49	U	96.3	93.4	101		112	
1,1,2-Trichloroethane	0.83	U	96.3	93.4	99.2		105	
Trichloroethene	0.22	U	96.3	93.4	98.9		111	
Vinyl chloride	1.3	U	96.3	93.4	52.1		66.2	
Xylenes, Total	0.57	U	193	187	133	T	182	*

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: Inorganic - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	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 (48%) and silicon (4%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (7%) 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 (J1V6W1/J1V6W8) 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 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0961 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 (48%) and silicon (4%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (7%) 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

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0961	REVIEWER: ELR	Project: 100-N-96	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Antimony Silicon	J	All	MS 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: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 1930
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7260	X	1.5	5.0
Antimony		0.38	U J	0.38	0.60
Arsenic		2.3		0.66	1.0
Barium		52.8	X	0.076	0.50
Beryllium		0.30		0.033	0.20
Cadmium		0.041	U	0.041	0.20
Calcium		4810	X	14.0	49.8
Chromium		8.5	X	0.058	0.20
Cobalt		6.8	X	0.10	1.0
Copper		16.2		0.22	1.0
Iron		17800	X	3.8	5.0
Lead		3.7		0.27	0.50
Manganese		253	X	0.10	1.0
Molybdenum		0.29	B	0.26	2.0
Potassium		1150		40.9	299
Selenium		0.86	U	0.86	1.0
Silver		0.16	U	0.16	0.20
Vanadium		40.1	X	0.094	2.0
Zinc		34.5	X	0.40	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1333
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.3	B N	0.98	2.0
Magnesium		3790	X	3.7	19.9
Nickel		10.1		0.12	4.0
Silicon		249	N J	5.6	10
Sodium		271		58.8	120

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2143
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.53 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0064	U	0.0064	0.020

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: J1V6V7

Lab Sample ID: 280-68739-2
Client Matrix: Solid

% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 1940
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

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Analyte (DryWt Corrected: Y)	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum	6800	X	1.5	4.9
Antimony	0.37	U J	0.37	0.58
Arsenic	2.3		0.64	0.97
Barium	58.0	X	0.074	0.49
Beryllium	0.28		0.032	0.19
Cadmium	0.040	U	0.040	0.19
Calcium	5040	X	13.7	48.7
Chromium	7.3	X	0.057	0.19
Cobalt	6.5	X	0.097	0.97
Copper	16.1		0.21	0.97
Iron	17800	X	3.7	4.9
Lead	4.6		0.26	0.49
Manganese	245	X	0.097	0.97
Molybdenum	0.25	U	0.25	1.9
Potassium	1270		40.0	292
Selenium	0.84	U	0.84	0.97
Silver	0.16	U	0.16	0.19
Vanadium	40.3	X	0.092	1.9
Zinc	35.9	X	0.39	0.97

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1343
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte (DryWt Corrected: Y)	Result (mg/Kg)	Qualifier	MDL	RL
Boron	1.1	B	0.96	1.9
Magnesium	3410	X	3.6	19.5
Nickel	8.6		0.12	3.9
Silicon	205	N J	5.5	9.7
Sodium	253		57.5	117

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2150
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.55 g
Final Weight/Volume: 50 mL

Analyte (DryWt Corrected: Y)	Result (mg/Kg)	Qualifier	MDL	RL
Mercury	0.0063	U	0.0063	0.020

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid

% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 1943
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

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Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6340	X	1.3	4.1
Antimony		0.31	U J	0.31	0.49
Arsenic		1.9		0.54	0.82
Barium		52.6	X	0.063	0.41
Beryllium		0.27		0.027	0.16
Cadmium		0.034	U	0.034	0.16
Calcium		4120	X	11.6	41.1
Chromium		6.9	X	0.048	0.16
Cobalt		7.0	X	0.082	0.82
Copper		15.2		0.18	0.82
Iron		17700	X	3.1	4.1
Lead		3.2		0.22	0.41
Manganese		256	X	0.082	0.82
Molybdenum		0.21	U	0.21	1.6
Potassium		1080		33.7	247
Selenium		0.71	U	0.71	0.82
Silver		0.13	U	0.13	0.16
Vanadium		38.3	X	0.077	1.6
Zinc		31.7	X	0.33	0.82

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1346
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.84	B	0.81	1.6
Magnesium		3340	X	3.0	16.5
Nickel		8.8		0.10	3.3
Silicon		200	N J	4.7	8.2
Sodium		243		48.5	98.7

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2152
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.57 g
Final Weight/Volume: 50 mL

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

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: J1V6V9

Lab Sample ID: 280-68739-4
Client Matrix: Solid
% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 1946
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6840	X	1.3	4.3
Antimony		0.32	U J	0.32	0.51
Arsenic		2.0		0.56	0.85
Barium		54.0	X	0.065	0.43
Beryllium		0.29		0.028	0.17
Cadmium		0.035	U	0.035	0.17
Calcium		5250	X	12.0	42.6
Chromium		6.5	X	0.049	0.17
Cobalt		7.3	X	0.085	0.85
Copper		17.9		0.19	0.85
Iron		17800	X	3.2	4.3
Lead		3.6		0.23	0.43
Manganese		258	X	0.085	0.85
Molybdenum		0.22	U	0.22	1.7
Potassium		1120		35.0	256
Selenium		0.73	U	0.73	0.85
Silver		0.14	U	0.14	0.17
Vanadium		38.3	X	0.080	1.7
Zinc		33.8	X	0.34	0.85

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1348
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.93	B	0.84	1.7
Magnesium		3830	X	3.2	17.1
Nickel		9.5		0.10	3.4
Silicon		175	N J	4.8	8.5
Sodium		315		50.3	102

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2154
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.59 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0067	B	0.0057	0.017

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 1948
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5660	X	1.5	4.8
Antimony		0.36	U J	0.36	0.57
Arsenic		2.2		0.63	0.96
Barium		48.2	X	0.073	0.48
Beryllium		0.23		0.032	0.19
Cadmium		0.039	U	0.039	0.19
Calcium		6150	X	13.5	47.9
Chromium		6.8	X	0.056	0.19
Cobalt		6.5	X	0.096	0.96
Copper		15.5		0.21	0.96
Iron		16400	X	3.6	4.8
Lead		3.6		0.26	0.48
Manganese		233	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Potassium		956		39.2	287
Selenium		0.82	U	0.82	0.96
Silver		0.15	U	0.15	0.19
Vanadium		38.6	X	0.090	1.9
Zinc		34.3	X	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1351
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.94	U	0.94	1.9
Magnesium		3140	X	3.5	19.1
Nickel		8.1		0.12	3.8
Silicon		177	N J	5.4	9.6
Sodium		311		56.5	115

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2157
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.55 g
Final Weight/Volume: 50 mL

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

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2002
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.16 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9510	X	1.4	4.4
Antimony		0.33	U J	0.33	0.52
Arsenic		3.4		0.58	0.87
Barium		83.3	X	0.066	0.44
Beryllium		0.36		0.029	0.17
Cadmium		0.042	B	0.036	0.17
Calcium		4250	X	12.3	43.7
Chromium		13.1	X	0.051	0.17
Cobalt		7.3	X	0.087	0.87
Copper		18.1		0.19	0.87
Iron		18400	X	3.3	4.4
Lead		5.0		0.24	0.44
Manganese		344	X	0.087	0.87
Molybdenum		0.23	U	0.23	1.7
Potassium		1830		35.8	262
Selenium		0.75	U	0.75	0.87
Silver		0.14	U	0.14	0.17
Vanadium		37.9	X	0.082	1.7
Zinc		36.4	X	0.35	0.87

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1404
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.16 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.5	B	0.86	1.7
Magnesium		4150	X	3.2	17.5
Nickel		12.9		0.11	3.5
Silicon		212	N J	4.9	8.7
Sodium		172		51.6	105

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2159
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.53 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0073	B	0.0063	0.020

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2004
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

5/25/15

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5160	X	1.4	4.6
Antimony		0.35	U J	0.35	0.55
Arsenic		1.9		0.61	0.92
Barium		58.5	X	0.070	0.46
Beryllium		0.20		0.030	0.18
Cadmium		0.038	U	0.038	0.18
Calcium		4910	X	13.0	46.1
Chromium		6.5	X	0.053	0.18
Cobalt		7.1	X	0.092	0.92
Copper		16.1		0.20	0.92
Iron		17500	X	3.5	4.6
Lead		2.5		0.25	0.46
Manganese		316	X	0.092	0.92
Molybdenum		0.24	U	0.24	1.8
Potassium		872		37.8	277
Selenium		0.79	U	0.79	0.92
Silver		0.15	U	0.15	0.18
Vanadium		41.4	X	0.087	1.8
Zinc		32.5	X	0.37	0.92

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1407
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.90	U	0.90	1.8
Magnesium		3640	X	3.4	18.4
Nickel		9.0		0.11	3.7
Silicon		130	N J	5.2	9.2
Sodium		308		54.4	111

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2201
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.53 g
Final Weight/Volume: 50 mL

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

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: J1V6W3

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2007
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7350	X	1.5	5.0
Antimony		0.38	U J	0.38	0.60
Arsenic		2.6		0.66	1.0
Barium		60.2	X	0.076	0.50
Beryllium		0.27		0.033	0.20
Cadmium		0.041	U	0.041	0.20
Calcium		6220	X	14.0	49.8
Chromium		9.8	X	0.058	0.20
Cobalt		6.7	X	0.10	1.0
Copper		15.2		0.22	1.0
Iron		17300	X	3.8	5.0
Lead		3.6		0.27	0.50
Manganese		295	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Potassium		1280		40.9	299
Selenium		0.86	U	0.86	1.0
Silver		0.16	U	0.16	0.20
Vanadium		39.4	X	0.094	2.0
Zinc		36.1	X	0.40	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1410
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.1	B	0.98	2.0
Magnesium		3980	X	3.7	19.9
Nickel		11.0		0.12	4.0
Silicon		233	N J	5.6	10
Sodium		278		58.8	120

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2211
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.55 g
Final Weight/Volume: 50 mL

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

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2010
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.12 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8210	X	1.4	4.5
Antimony		0.34	U J	0.34	0.54
Arsenic		3.0		0.60	0.91
Barium		58.5	X	0.069	0.45
Beryllium		0.30		0.030	0.18
Cadmium		0.037	U	0.037	0.18
Calcium		5520	X	12.8	45.3
Chromium		9.5	X	0.053	0.18
Cobalt		7.1	X	0.091	0.91
Copper		17.2		0.20	0.91
Iron		18300	X	3.4	4.5
Lead		4.5		0.24	0.45
Manganese		290	X	0.091	0.91
Molybdenum		0.24	U	0.24	1.8
Potassium		1450		37.1	272
Selenium		0.78	U	0.78	0.91
Silver		0.14	U	0.14	0.18
Vanadium		40.5	X	0.085	1.8
Zinc		38.7	X	0.36	0.91

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1412
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.12 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.2	B	0.89	1.8
Magnesium		4000	X	3.4	18.1
Nickel		10.9		0.11	3.6
Silicon		239	N J	5.1	9.1
Sodium		299		53.5	109

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2213
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.56 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0083	B	0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2013
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		1710	X	1.6	5.0
Antimony		0.38	U J	0.38	0.60
Arsenic		0.73	B	0.66	1.0
Barium		17.3	X	0.076	0.50
Beryllium		0.11	B	0.033	0.20
Cadmium		0.041	U	0.041	0.20
Calcium		2850	X	14.2	50.2
Chromium		1.0	X	0.058	0.20
Cobalt		5.6	X	0.10	1.0
Copper		9.6		0.22	1.0
Iron		12000	X	3.8	5.0
Lead		1.6		0.27	0.50
Manganese		116	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Potassium		274	B	41.2	301
Selenium		0.86	U	0.86	1.0
Silver		0.16	U	0.16	0.20
Vanadium		18.6	X	0.094	2.0
Zinc		18.8	X	0.40	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1415
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.98	U	0.98	2.0
Magnesium		2180	X	3.7	20.1
Nickel		4.1		0.12	4.0
Silicon		63.8	N J	5.7	10.0
Sodium		181		59.2	121

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2215
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.51 g
Final Weight/Volume: 50 mL

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

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W6**

Lab Sample ID: 280-68739-11
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2015
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

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Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4800	X	1.3	4.3
Antimony		0.32	U J	0.32	0.51
Arsenic		1.9		0.56	0.85
Barium		37.5	X	0.065	0.43
Beryllium		0.19		0.028	0.17
Cadmium		0.035	U	0.035	0.17
Calcium		5810	X	12.0	42.7
Chromium		7.0	X	0.050	0.17
Cobalt		7.2	X	0.085	0.85
Copper		17.0		0.19	0.85
Iron		18400	X	3.2	4.3
Lead		2.7		0.23	0.43
Manganese		245	X	0.085	0.85
Molybdenum		0.22	U	0.22	1.7
Potassium		821		35.0	256
Selenium		0.73	U	0.73	0.85
Silver		0.14	U	0.14	0.17
Vanadium		45.3	X	0.080	1.7
Zinc		34.8	X	0.34	0.85

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1418
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.84	U	0.84	1.7
Magnesium		3630	X	3.2	17.1
Nickel		8.9		0.11	3.4
Silicon		145	N J	4.8	8.5
Sodium		234		50.4	102

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2217
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.51 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0066	U	0.0066	0.020

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2018
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

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Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8000	X	1.5	4.9
Antimony		0.37	U J	0.37	0.59
Arsenic		2.9		0.64	0.98
Barium		77.3	X	0.074	0.49
Beryllium		0.30		0.032	0.20
Cadmium		0.040	U	0.040	0.20
Calcium		4220	X	13.8	48.8
Chromium		10.4	X	0.057	0.20
Cobalt		7.1	X	0.098	0.98
Copper		15.7		0.21	0.98
Iron		18000	X	3.7	4.9
Lead		4.1		0.26	0.49
Manganese		290	X	0.098	0.98
Molybdenum		0.25	U	0.25	2.0
Potassium		1350		40.0	293
Selenium		0.84	U	0.84	0.98
Silver		0.16	U	0.16	0.20
Vanadium		42.1	X	0.092	2.0
Zinc		36.7	X	0.39	0.98

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1421
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.0	B	0.96	2.0
Magnesium		3970	X	3.6	19.5
Nickel		11.0		0.12	3.9
Silicon		264	N J	5.5	9.8
Sodium		208		57.6	117

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2220
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.57 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0065	B	0.0059	0.018

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W8**

Lab Sample ID: 280-68739-13
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/06/2015 2020
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276374
Prep Batch: 280-276084

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Instrument ID: MT_026
Lab File ID: 26d050615.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		10200	X	1.5	4.8
Antimony		0.36	U J	0.36	0.57
Arsenic		3.1		0.63	0.95
Barium		84.8	X	0.072	0.48
Beryllium		0.36		0.031	0.19
Cadmium		0.039	U	0.039	0.19
Calcium		4040	X	13.4	47.5
Chromium		14.3	X	0.055	0.19
Cobalt		7.9	X	0.095	0.95
Copper		19.5		0.21	0.95
Iron		19200	X	3.6	4.8
Lead		5.4		0.26	0.48
Manganese		366	X	0.095	0.95
Molybdenum		0.25	U	0.25	1.9
Potassium		1960		39.0	285
Selenium		0.82	U	0.82	0.95
Silver		0.15	U	0.15	0.19
Vanadium		38.7	X	0.089	1.9
Zinc		38.6	X	0.38	0.95

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/07/2015 1423
Prep Date: 05/06/2015 0830

Analysis Batch: 280-276595
Prep Batch: 280-276084

Instrument ID: MT_026
Lab File ID: 26a050715a.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.4	B	0.93	1.9
Magnesium		4620	X	3.5	19.0
Nickel		14.3		0.12	3.8
Silicon		192	N J	5.4	9.5
Sodium		177		56.1	114

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/06/2015 2222
Prep Date: 05/06/2015 1500

Analysis Batch: 280-276397
Prep Batch: 280-276198

Instrument ID: MT_033
Lab File ID: 150506af.TXT
Initial Weight/Volume: 0.56 g
Final Weight/Volume: 50 mL

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-68739-1

SDG #: JP0961
SAF#: RC-189

Date SDG Closed: May 5, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V6V6	280-68739-1	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V7	280-68739-2	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V8	280-68739-3	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V9	280-68739-4	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W0	280-68739-5	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W1	280-68739-6	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W2	280-68739-7	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W3	280-68739-8	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W4	280-68739-9	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W5	280-68739-10	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W6	280-68739-11	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W7	280-68739-12	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W8	280-68739-13	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B

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 5/5/2015 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 3.0° C, 4.3° C and 5.8° C.

The Chain of Custody indicates "VOA samples frozen upon collection", and it can be noted that the 5035/8260B VOA samples were placed in the freezer upon receipt at the laboratory. The client was notified on 5/6/2015.

GC/MS VOLATILES - SW846 8260B
The Internal Standard (ISTD) response for samples J1V6V6 and J1V6V7 were outside control limits, low. The samples were reanalyzed until there was no volume remaining; however, all of the internal standards failed low in all of the analyses. Data are reported as is. The laboratory believes this anomaly is due to bad purges caused by leaks around the vial cap.

Samples J1V6V9 and J1V6W7 exhibited surrogate recoveries outside the control limits, biased high. This is an indicator that data may be biased high. As no detectable concentrations are present at levels greater than the reporting limits in the samples, corrective action is deemed unnecessary.

Low levels of Acetone, a common laboratory contaminant, are present in the method blank associated with batch 280-276337. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MS/MSD performed on sample J1V6V6 in batch 280-276099 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". In addition, RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1V6W8 in batch 280-276337 exhibited RPD data outside the control limits. 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
No anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-276084 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-276084. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-276084 and in the Matrix Spike performed on sample J1V6V6 in batch 280-276084. The associated sample results have been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

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 J1V6V6; therefore, control limits are not applicable.

Boton was recovered outside the control limits in the Matrix Spike performed on sample J1V6V6, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG

Project Designation: 100N Field Remediation

Ice Chest No.: WCH-08-032

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-N-96 (excavation, verification)

Field Logbook No.: EL-1652-12

COA: 000N962000

Offsite Property No.: A131409

Project Coordinator: KESSNER, JH

SAF No.: RC-189

Price Code: 8B

Data Turnaround: 7 days

Method of Shipment: Commercial Carrier \ Fed Ex

Bill of Lading/Air Bill No.: See OSPC

280-68739 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V8V6	SOIL	4/30/15	1156	X	X	X	X	X
J1V8V7	SOIL	4/30/15	1209	X	X	X	X	X
J1V8V8	SOIL	4/30/15	1203	X	X	X	X	X
J1V6V9	SOIL	4/30/15	1216	X	X	X	X	X
J1V6W0	SOIL	4/30/15	1104	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle, fridge #3B	1615 4-30-15
1060 Battelle, fridge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	0740 5-4-15	Fed Ex	5-4-15
			5-5-15 10:05

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 K. Wood Vincent DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

5.6, 2.8, 1.2, 4.1 IRS 40.2 Tentatively NTP 5/5/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \Fed EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To: TestAmerica Richland			

Price Code: 8B

Data Turnaround: 7 days

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W1	SOIL	4/30/15	1111	X	X	X	X	X
J1V6W2	SOIL	4/30/15	1055	X	X	X	X	X
J1V6W3	SOIL	4/30/15	1041	X	X	X	X	X
J1V6W4	SOIL	4/30/15	1048	X	X	X	X	X
J1V6W5	SOIL	4/30/15	1030	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Nancy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle, Fridge #3B	1615 4-30-15
1060 Battelle, Fridge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	0740 5-4-15	Fed EX	5-4-15
			5-5-15 10:05

Sign/Print Names

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 K. Woodhaemo DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

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

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG

Project Designation: 100N Field Remediation

Ice Chest No.: WCH-08-032

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-N-96 (excavation, verification)

Field Logbook No.: EL-1652-12

COA: 000N962000

Offsite Property No.: A131409

Project Coordinator: KESSNER, JH

SAF No.: RC-189

Price Code: 8B

Data Turnaround: 7 days

Method of Shipment: Commercial Carrier \ Fed Ex

Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Ga*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W6	SOIL	4/30/15	1016	X	X	X	X	X
J1V6W7	SOIL	4/30/15	1023	X	X	X	X	X
J1V6W8	SOIL	4/30/15	1111	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4-30-15 1222	C. Martinez C. Martinez	4/30/15 1222
C. Martinez C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1000 Battelle fridge #3B	4-30-15 1615
1000 Battelle fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham	5-4-15 0740	Fed Ex	5-4-15
			5-5-15 10:05

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 K. Wood Vinemal DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-KW-94			DATA PACKAGE: JP0961		
VALIDATOR: ECR	LAB: TAL			DATE: 5/24/15	
			SDG: JP0961		

ANALYSES PERFORMED

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

SAMPLES/MATRIX

J1V6V6	J1V6V7	J1V6V8	J1V6V9	J1V6W0	J1V6W1
J1V6W2	J1V6W3	J1V6W4	J1V6W5	J1V6W6	J1V6W7
J1V6W8					
					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 (7%) - J all
MS - antim (48%) silicon (4%) - J all

no PAS

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: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-276084/1-A	Analysis Batch:	280-276374	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26d050615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	05/06/2015 1925	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
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	0.147	B	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Cadmium	0.041	U	0.041	0.20
Calcium	22.45	B	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	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silver	0.16	U	0.16	0.20
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Method Blank - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-276084/1-A	Analysis Batch:	280-276595	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26a050715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	05/07/2015 1327	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Boron	0.98	U	0.98	2.0
Magnesium	6.65	B	3.7	20.0
Nickel	0.12	U	0.12	4.0
Silicon	5.7	U	5.7	10.0
Sodium	59.0	U	59.0	120

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Lab Control Sample - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-276084/2-A	Analysis Batch:	280-276374	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26d050615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	05/06/2015 1928	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	189.4	95	82 - 116	
Antimony	50.0	48.59	97	82 - 110	
Arsenic	100	101.1	101	85 - 110	
Barium	200	193.1	97	87 - 112	
Beryllium	5.00	4.68	94	84 - 114	
Cadmium	10.0	8.99	90	87 - 110	
Calcium	5000	4809	96	82 - 114	
Chromium	20.0	20.90	104	84 - 114	
Cobalt	50.0	46.95	94	87 - 110	
Copper	25.0	26.04	104	88 - 110	
Iron	100	95.52	96	87 - 120	
Lead	50.0	47.79	96	86 - 110	
Manganese	50.0	47.38	95	88 - 110	
Molybdenum	100	109.5	109	86 - 110	
Potassium	5000	4980	100	89 - 110	
Selenium	200	196.3	98	83 - 110	
Silver	5.00	4.97	99	87 - 114	
Vanadium	50.0	48.44	97	88 - 110	
Zinc	50.0	45.45	91	76 - 114	

Lab Control Sample - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-276084/2-A	Analysis Batch:	280-276595	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26a050715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	05/07/2015 1330	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Boron	100	90.94	91	80 - 120	
Magnesium	5000	4485	90	90 - 110	
Nickel	50.0	45.31	91	87 - 110	
Silicon	1000	67.98	7	10 - 70	N
Sodium	5000	4924	98	90 - 112	

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276374	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26d050615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.06 g
Analysis Date:	05/06/2015 1938	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7260		192	9696	1272	50 - 200	4
Antimony	0.38	U	47.9	23.01	48	20 - 200	
Arsenic	2.3		95.9	87.60	89	76 - 111	
Barium	52.8		192	230.8	93	52 - 159	
Beryllium	0.30		4.79	4.28	83	72 - 105	
Cadmium	0.041	U	9.59	7.67	80	40 - 130	
Calcium	4810		4790	10140	111	43 - 165	
Chromium	8.5		19.2	28.10	102	70 - 200	
Cobalt	6.8		47.9	46.48	83	72 - 106	
Copper	16.2		24.0	40.66	102	37 - 187	
Iron	17800		95.9	19550	1809	70 - 200	4
Lead	3.7		47.9	42.82	82	70 - 200	
Manganese	253		47.9	324.2	150	40 - 200	4
Molybdenum	0.29	B	95.9	90.03	94	75 - 103	
Potassium	1150		4790	5729	95	56 - 172	
Selenium	0.86	U	192	162.7	85	76 - 104	
Silver	0.16	U	4.79	4.23	88	75 - 141	
Vanadium	40.1		47.9	86.32	96	50 - 169	
Zinc	34.5		47.9	74.75	84	70 - 200	

Matrix Spike - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276595	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26a050715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.06 g
Analysis Date:	05/07/2015 1340	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Boron	1.3	B	95.9	76.15	78	80 - 120	N
Magnesium	3790		4790	8133	90	64 - 145	
Nickel	10.1		47.9	49.03	81	61 - 126	
Silicon	249		959	290.8	4	20 - 200	N
Sodium	271		4790	4761	94	78 - 111	

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Duplicate - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276374	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26d050615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.07 g
Analysis Date:	05/06/2015 1935	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	7260		7299	0.6	40	
Antimony	0.38	U	0.36	NC	40	U
Arsenic	2.3		2.78	18	30	
Barium	52.8		57.72	9	30	
Beryllium	0.30		0.308	4	30	
Cadmium	0.041	U	0.039	NC	30	U
Calcium	4810		4997	4	30	
Chromium	8.5		9.09	7	40	
Cobalt	6.8		7.32	7	30	
Copper	16.2		17.28	6	30	
Iron	17800		18940	6	40	
Lead	3.7		3.86	5	40	
Manganese	253		272.6	8	40	
Molybdenum	0.29	B	0.25	NC	30	U
Potassium	1150		1225	6	40	
Selenium	0.86	U	0.82	NC	30	U
Silver	0.16	U	0.15	NC	30	U
Vanadium	40.1		43.59	8	30	
Zinc	34.5		36.69	6	40	

Duplicate - Batch: 280-276084

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276595	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-276084	Lab File ID:	26a050715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.07 g
Analysis Date:	05/07/2015 1338	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/06/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Boron	1.3	B	1.25	3	30	B
Magnesium	3790		3832	1	30	
Nickel	10.1		11.25	11	30	
Silicon	249		247.3	0.6	40	N
Sodium	271		244.0	11	30	

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276198

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-276198/1-A	Analysis Batch:	280-276397	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-276198	Lab File ID:	150506af.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/06/2015 2131	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/06/2015 1500				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-276198

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-276198/2-A	Analysis Batch:	280-276397	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-276198	Lab File ID:	150506af.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/06/2015 2141	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/06/2015 1500				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.426	102	87 - 111	

Matrix Spike - Batch: 280-276198

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276397	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-276198	Lab File ID:	150506af.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.51 g
Analysis Date:	05/06/2015 2147	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/06/2015 1500				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0064	U	0.498	0.473	95	87 - 111	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Duplicate - Batch: 280-276198

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-68739-1	Analysis Batch:	280-276397	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-276198	Lab File ID:	150506af.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.52 g
Analysis Date:	05/06/2015 2145	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/06/2015 1500				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0064	U	0.0065	NC	20	U

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: Diesel Range Organic - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	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-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 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 (J1V6W1/J1V6W8) 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. JP0961 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: JP0961	REVIEWER: ELR	Project: 100-N-96	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: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080014.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/08/2015 1250			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		2300	J	970	3900
C10-C28		1200	J	660	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	76		49 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V7**

Lab Sample ID: 280-68739-2
Client Matrix: Solid

% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080015.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/08/2015 1315			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3100	J	1000	4000
C10-C28		1800	J	680	4000

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

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid

% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080016.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/08/2015 1339			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		950	U	950	3800
C10-C28		650	U	650	3800

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

V 5/28/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V9**

Lab Sample ID: 280-68739-4
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-277044	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276929	Lab File ID:	05120007.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/12/2015 1133			Final Weight/Volume:	1 mL
Prep Date:	05/11/2015 1517			Injection Volume:	1 uL

DryWt Corrected: Y

Analyte	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36	4100		970	3900
C10-C28	3200	J	660	3900

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

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid
% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080018.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/08/2015 1427			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			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	72		49 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080019.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	05/08/2015 1452			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4200		980	3900
C10-C28		1400	J	670	3900

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

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080021.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/08/2015 1604			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		960	U	960	3900
C10-C28		650	U	650	3900

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

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W3**

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

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

Analysis Method: NWTPH-Dx
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 05/08/2015 1628
Prep Date: 05/06/2015 1600

Analysis Batch: 280-276553
Prep Batch: 280-276162

Instrument ID: SGC_U2a
Lab File ID: 05080022.D
Initial Weight/Volume: 31.8 g
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		960	U	960	3800
C10-C28		650	U	650	3800

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

✓ 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080023.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/08/2015 1653			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3100	J	1000	4000
C10-C28		1400	J	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	79		49 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080024.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	05/08/2015 1717			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

DryWt Corrected: Y

Analyte	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36	960	U	960	3900
C10-C28	650	U	650	3900

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

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W6**

Lab Sample ID: 280-68739-11
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080025.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	05/08/2015 1741			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			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	74		49 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080026.D
Dilution:	1.0			Initial Weight/Volume:	31.2 g
Analysis Date:	05/08/2015 1805			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		960	U	960	3900
C10-C28		660	U	660	3900

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

5/25/15

Analytical Data

Job Number: 280-68739-1
Sdg Number: JP0961

Client: Washington Closure Hanford

Client Sample ID: **J1V6W8**

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

Lab Sample ID: 280-68739-13
Client Matrix: Solid

% Moisture: 3.5

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-276162	Lab File ID:	05080027.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	05/08/2015 1829			Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3700	J	1000	4000
C10-C28		1600	J	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	77		49 - 115

MS/25k

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-68739-1

SDG #: JP0961
SAF#: RC-189

Date SDG Closed: May 5, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V6V6	280-68739-1	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V7	280-68739-2	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V8	280-68739-3	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V9	280-68739-4	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W0	280-68739-5	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W1	280-68739-6	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W2	280-68739-7	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W3	280-68739-8	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W4	280-68739-9	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W5	280-68739-10	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W6	280-68739-11	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W7	280-68739-12	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W8	280-68739-13	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B

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 5/5/2015 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 3.0° C, 4.3° C and 5.8° C.

The Chain of Custody indicates "VOA samples frozen upon collection", and it can be noted that the 5035/8260B VOA samples were placed in the freezer upon receipt at the laboratory. The client was notified on 5/6/2015.

GC/MS VOLATILES - SW846 8260B
The Internal Standard (ISTD) response for samples J1V6V6 and J1V6V7 were outside control limits, low. The samples were reanalyzed until there was no volume remaining; however, all of the internal standards failed low in all of the analyses. Data are reported as is. The laboratory believes this anomaly is due to bad purges caused by leaks around the vial cap.

Samples J1V6V9 and J1V6W7 exhibited surrogate recoveries outside the control limits, biased high. This is an indicator that data may be biased high. As no detectable concentrations are present at levels greater than the reporting limits in the samples, corrective action is deemed unnecessary.

Low levels of Acetone, a common laboratory contaminant, are present in the method blank associated with batch 280-276337. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MS/MSD performed on sample J1V6V6 in batch 280-276099 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". In addition, RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1V6W8 in batch 280-276337 exhibited RPD data outside the control limits. 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
No anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-276084 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-276084. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-276084 and in the Matrix Spike performed on sample J1V6V6 in batch 280-276084. The associated sample results have been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

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 J1V6V6; therefore, control limits are not applicable.

Boton was recovered outside the control limits in the Matrix Spike performed on sample J1V6V6, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \ Fed. Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

280-68739 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V8V6	SOIL	4/30/15	1156	X	X	X	X	X
J1V8V7	SOIL	4/30/15	1209	X	X	X	X	X
J1V8V8	SOIL	4/30/15	1203	X	X	X	X	X
J1V6V9	SOIL	4/30/15	1216	X	X	X	X	X
J1V6W0	SOIL	4/30/15	1104	X	X	X	X	X

Page 1 of 6

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle, Fridge #3B	1615 4-30-15
1060 Battelle, Fridge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	0740 5-4-15	Fed EX	5-4-15
			5-5-15 10:05

Sign/Print Names

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

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 K. Wood Vineman DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

5.6, 2.8, 1.2, 4.1 IRS 70.2 Terminal & MP 5/5/15

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector	STOWE, QG
Company Contact	Joan Kessner
Telephone No.	375-4688
Project Coordinator	KESSNER, JH
Price Code	8 B
Data Turnaround	7 days
Project Designation	100N Field Remediation
Sampling Location	100-N-96 (excavation, verification)
SAF No.	RC-189
Ice Chest No.	WCH-08-032
Field Logbook No.	EL-1652-12
COA	000N962000
Method of Shipment	Commercial Carrier Fed EX
Shipped To	TestAmerica Denver
Offsite Property No.	A131409
Bill of Lading/Air Bill No.	See OSPC
Other Labs Shipped To	TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze					
Type of Container	G/P	aG	aG	G	Gr*					
No. of Container(s)	1	1	1	1	5					
Volume	250mL	250mL	250mL	125mL	40mL					
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)					

Sample No.	Matrix	Sample Date	Sample Time										
J1V6W1	SOIL	4/30/15	1111	X	X	X	X	X					
J1V6W2	SOIL	4/30/15	1055	X	X	X	X	X					
J1V6W3	SOIL	4/30/15	1041	X	X	X	X	X					
J1V6W4	SOIL	4/30/15	1048	X	X	X	X	X					
J1V6W5	SOIL	4/30/15	1030	X	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1060 Battelle Fridge #38	4-30-15 1615
1060 Battelle Fridge #38	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham WCH	5-4-15 0740	Fed Ex	5-4-15
			5-5-15 10:05

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 K. Woollaeme DATE 5-4-15

* freeze upon receipt. 4/30/15 JMB

** VOA samples frozen upon collection

JP0961

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSR

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W6	SOIL	4/30/15	1016	X	X	X	X	X
J1V6W7	SOIL	4/30/15	1023	X	X	X	X	X
J1V6W8	SOIL	4/30/15	1111	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	4-30-15 1222	C. Martinez C. Martinez	4/30/15 1222
C. Martinez C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1060 Battelle fridge #3B	4-30-15 1615
1060 Battelle fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham WCH	5-4-15 0740	Fed Ex	5-4-15
			5-5-15 10:05

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 K. Wood Vinemal DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-N-96		DATA PACKAGE:	JP0961	
VALIDATOR:	ELR	LAB: TAL		DATE: 5/24/0	
			SDG:	JP0961	

ANALYSES PERFORMED

8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:

J1V6V6 J1V6V7 J1V6V8 J1V6V9 J1V6W0 J1V6W1
J1V6W2 J1V6W3 J1V6W4 J1V6W5 J1V6W6 J1V6W7
J1V6W8

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: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276162

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-276162/1-A	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276162	Lab File ID:	05080011.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	05/08/2015 1138	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	990	U	990	4000
C10-C28	670	U	670	4000

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

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-276162

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-276162/2-A	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276162	Lab File ID:	05080012.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/08/2015 1202	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-276162/18-A	Analysis Batch:	280-276553	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276162	Lab File ID:	05080013.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	05/08/2015 1226	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/06/2015 1600			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	78	84	57 - 115	7	23		
C10-C28	78	84	53 - 115	7	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	66	73	49 - 115

Job Number: 280-68739-1
Sdg Number: JP0961

Client: Washington Closure Hanford

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-276162

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID: LCS 280-276162/2-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/08/2015 1202
Prep Date: 05/06/2015 1600
Leach Date: N/A

Units: ug/Kg

LCSD Lab Sample ID: LCSD 280-276162/18-A
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/08/2015 1226
Prep Date: 05/06/2015 1600
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	65600	65400	51100	55100
C10-C28	65600	65400	50900	54900

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276162

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID: 280-68739-13
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/08/2015 1854
Prep Date: 05/06/2015 1600
Leach Date: N/A

Analysis Batch: 280-276553
Prep Batch: 280-276162
Leach Batch: N/A

Instrument ID: SGC_U2a
Lab File ID: 05080028.D
Initial Weight/Volume: 30.6 g
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

MSD Lab Sample ID: 280-68739-13
Client Matrix: Solid
Dilution: 1.0
Analysis Date: 05/08/2015 1918
Prep Date: 05/06/2015 1600
Leach Date: N/A

Analysis Batch: 280-276553
Prep Batch: 280-276162
Leach Batch: N/A

Instrument ID: SGC_U2a
Lab File ID: 05080029.D
Initial Weight/Volume: 30.5 g
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	81	84	57 - 115	4	23		
C10-C28	81	84	56 - 115	4	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	76	75	49 - 115

Quality Control Results

Job Number: 280-68739-1
Sdg Number: JP0961

Client: Washington Closure Hanford

Method: NWTPH-Dx
Preparation: 3550C

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276162

Units: ug/Kg

MS Lab Sample ID:	280-68739-13	MSD Lab Sample ID:	280-68739-13
Client Matrix:	Solid	Client Matrix:	Solid
Dilution:	1.0	Dilution:	1.0
Analysis Date:	05/08/2015 1854	Analysis Date:	05/08/2015 1918
Prep Date:	05/06/2015 1600	Prep Date:	05/06/2015 1600
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	3700	J	67700	68000	58600	60800
C10-C28	1600	J	67700	68000	56700	59000

Quality Control Results

Job Number: 280-68739-1
Sdg Number: JP0961

Client: Washington Closure Hanford

Method Blank - Batch: 280-276929

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-276929/1-A	Analysis Batch:	280-277044	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276929	Lab File ID:	05120005.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	05/12/2015 1045	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/11/2015 1517			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	990	U	990	4000
C10-C28	670	U	670	4000

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

Lab Control Sample - Batch: 280-276929

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	LCS 280-276929/2-A	Analysis Batch:	280-277044	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276929	Lab File ID:	05120006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	05/12/2015 1109	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/11/2015 1517			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
C10-C36	66200	58100	88	57 - 115	
C10-C28	66200	57800	87	53 - 115	

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

Job Number: 280-68739-1
Sdg Number: JP0961

Client: Washington Closure Hanford

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276929

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-68739-4	Analysis Batch:	280-277044	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276929	Lab File ID:	05120008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.9 g
Analysis Date:	05/12/2015 1158			Final Weight/Volume:	1 mL
Prep Date:	05/11/2015 1517			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-68739-4	Analysis Batch:	280-277044	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-276929	Lab File ID:	05120009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	05/12/2015 1222			Final Weight/Volume:	1 mL
Prep Date:	05/11/2015 1517			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	81	86	57 - 115	9	23		
C10-C28	82	86	56 - 115	9	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	69	76	49 - 115

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276929

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-68739-4	Units: ug/Kg	MSD Lab Sample ID: 280-68739-4
Client Matrix:	Solid		Client Matrix: Solid
Dilution:	1.0		Dilution: 1.0
Analysis Date:	05/12/2015 1158		Analysis Date: 05/12/2015 1222
Prep Date:	05/11/2015 1517		Prep Date: 05/11/2015 1517
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	4100		63100	66400	55400	60900
C10-C28	3200	J	63100	66400	54800	60200

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: Polyaromatic Hydrocarbon - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	Soil	C	See note 1

1 – PAH 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 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 (J1V6W1/J1V6W8) 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. JP0961 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: JP0961	REVIEWER: ELR	Project: 100-N-96	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: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0010			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.6	U	9.6	96
Acenaphthylene		8.7	U	8.7	96
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		6.9	U	6.9	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	96
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	92		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V7**

Lab Sample ID: 280-68739-2
Client Matrix: Solid

% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0142			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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)	82		72 - 115

MS 5/25/15

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid

% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0212			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.6	U	9.6	96
Acenaphthylene		8.6	U	8.6	96
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		4.0	U	4.0	14
Benzo[g,h,i]perylene		6.9	U	6.9	29
Benzo[k]fluoranthene		3.8	U	3.8	14
Chrysene		4.7	U	4.7	38
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		12	U	12	38
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	96
Phenanthrene		12	U	12	38
Pyrene		12	U	12	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	87		72 - 115

MS 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V9**

Lab Sample ID: 280-68739-4
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0243			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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)	91		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0313			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.8	U	8.8	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	29
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	93		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0344			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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)	93		72 - 115

M 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0445			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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)	90		72 - 115

W 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W3**

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0515			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.8	U	8.8	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		7.0	U	7.0	29
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	90		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0546			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	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)	94		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0616			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.8	U	8.8	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	29
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	90		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W6**

Lab Sample ID: 280-68739-11
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0647			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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		4.1	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	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)	90		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid
% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.9 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0717			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.5	U	9.5	95
Acenaphthylene		8.5	U	8.5	95
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		3.0	U	3.0	14
Benzo[a]pyrene		6.1	U	6.1	14
Benzo[b]fluoranthene		4.0	U	4.0	14
Benzo[g,h,i]perylene		6.8	U	6.8	28
Benzo[k]fluoranthene		3.7	U	3.7	14
Chrysene		4.6	U	4.6	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	95
Phenanthrene		11	U	11	38
Pyrene		11	U	11	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	93		72 - 115

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W8**

Lab Sample ID: 280-68739-13
Client Matrix: Solid
% Moisture: 3.5

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-276150	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/08/2015 0748			Injection Volume:	20 uL
Prep Date:	05/06/2015 1040			Result Type:	PRIMARY

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)	95		72 - 115

JK 5/28/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-68739-1

SDG #: JP0961
SAF#: RC-189

Date SDG Closed: May 5, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V6V6	280-68739-1	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V7	280-68739-2	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V8	280-68739-3	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V9	280-68739-4	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W0	280-68739-5	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W1	280-68739-6	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W2	280-68739-7	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W3	280-68739-8	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W4	280-68739-9	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W5	280-68739-10	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W6	280-68739-11	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W7	280-68739-12	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W8	280-68739-13	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B

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 5/5/2015 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 3.0° C, 4.3° C and 5.8° C.

The Chain of Custody indicates "VOA samples frozen upon collection", and it can be noted that the 5035/8260B VOA samples were placed in the freezer upon receipt at the laboratory. The client was notified on 5/6/2015.

GC/MS VOLATILES - SW846 8260B
The Internal Standard (ISTD) response for samples J1V6V6 and J1V6V7 were outside control limits, low. The samples were reanalyzed until there was no volume remaining; however, all of the internal standards failed low in all of the analyses. Data are reported as is. The laboratory believes this anomaly is due to bad purges caused by leaks around the vial cap.

Samples J1V6V9 and J1V6W7 exhibited surrogate recoveries outside the control limits, biased high. This is an indicator that data may be biased high. As no detectable concentrations are present at levels greater than the reporting limits in the samples, corrective action is deemed unnecessary.

Low levels of Acetone, a common laboratory contaminant, are present in the method blank associated with batch 280-276337. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MS/MSD performed on sample J1V6V6 in batch 280-276099 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". In addition, RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1V6W8 in batch 280-276337 exhibited RPD data outside the control limits. 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
No anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-276084 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-276084. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-276084 and in the Matrix Spike performed on sample J1V6V6 in batch 280-276084. The associated sample results have been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

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 J1V6V6; therefore, control limits are not applicable.

Boton was recovered outside the control limits in the Matrix Spike performed on sample J1V6V6, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

280-68739 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6V6	SOIL	4/30/15	1156	X	X	X	X	X
J1V6V7	SOIL	4/30/15	1209	X	X	X	X	X
J1V6V8	SOIL	4/30/15	1203	X	X	X	X	X
J1V6V9	SOIL	4/30/15	1216	X	X	X	X	X
J1V6W0	SOIL	4/30/15	1104	X	X	X	X	X

Page 14 of 15

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C Martinez/C Martinez	1222 4/30/15
C Martinez/C Martinez	1540 4/30/15	C Bingham	1540 4-30-15
C Bingham	1615 4-30-15	1060 Battelle, fridge #3B	1615 4-30-15
1060 Battelle, fridge #3B	0730 5-4-15	C Bingham	0730 5-4-15
C Bingham WCH	0740 5-4-15	Fed EX	5-4-15
			5-5-15 10:05

Sign/Print Names

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

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 K Wood Vaeme DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

5.6, 2.8, 1.2, 4.1 IRS 10.2 Transfer 5/5/15

26

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \Fed EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs**
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	*** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W1	SOIL	4/30/15	1111	X	X	X	X	X
J1V6W2	SOIL	4/30/15	1055	X	X	X	X	X
J1V6W3	SOIL	4/30/15	1041	X	X	X	X	X
J1V6W4	SOIL	4/30/15	1048	X	X	X	X	X
J1V6W5	SOIL	4/30/15	1030	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tracy Stowe	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1060 Battelle, Fridge #3B	4-30-15 1615
1060 Battelle, Fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham WCH	5-4-15 0740	Fed EX	5-4-15
		[illegible]	5-5-15 10:05

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 K. Woodhaemo DATE 5.4.15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131409		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Ga*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6W6	SOIL	4/30/15	1016	X	X	X	X	X
J1V6W7	SOIL	4/30/15	1023	X	X	X	X	X
J1V6W8	SOIL	4/30/15	1111	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	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1060 Battelle fridge #3B	4-30-15 1615
1060 Battelle fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham WCH	5-4-15 0740	Fed Ex	5-4-15
		[signature]	5-5-15 10:05

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 K. Wood Vlaemad DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-96			DATA PACKAGE: JP0961		
VALIDATOR: ELR		LAB: TAL		DATE: 5/24/05	
			SDG: JP0961		

ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:				
J1U6V6	J1V6V7	J1V6V8	J1U6V9	J1V6W0
J1U6W1	J1V6W2	J1V6W3	J1V634	J1V6W5
J1U6W6	J1V6W7	J1V6W8		
				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 PB

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

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276150

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-276150/1-A	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-276150	Lab File ID:	G0507026.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	05/07/2015 2309	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/06/2015 1040			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	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	3.1	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	99
Phenanthrene	12	U	12	39
Pyrene	12	U	12	39

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	85	72 - 115

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Lab Control Sample - Batch: 280-276150

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-276150/2-A	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-276150	Lab File ID:	G0507027.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/07/2015 2339	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/06/2015 1040			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1970	1560	79	75 - 116	
Acenaphthylene	1970	1540	78	66 - 115	
Anthracene	1970	1530	78	71 - 115	
Benzo[a]anthracene	1970	1680	86	77 - 120	
Benzo[a]pyrene	1970	1680	85	69 - 115	
Benzo[b]fluoranthene	1970	1640	83	56 - 115	
Benzo[g,h,i]perylene	1970	1830	93	72 - 120	
Benzo[k]fluoranthene	1970	1700	86	76 - 115	
Chrysene	1970	1650	84	79 - 115	
Dibenzo(a,h)anthracene	1970	1640	83	72 - 115	
Fluoranthene	1970	1660	84	77 - 115	
Fluorene	1970	1730	88	77 - 115	
Indeno[1,2,3-cd]pyrene	1970	1670	85	78 - 115	
Naphthalene	1970	1590	81	68 - 120	
Phenanthrene	1970	1610	82	75 - 115	
Pyrene	1970	1750	89	72 - 115	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	83	72 - 115

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276150

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-68739-1	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-276150	Lab File ID:	G0507029.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	05/08/2015 0041			Final Weight/Volume:	4 mL
Prep Date:	05/06/2015 1040			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-68739-1	Analysis Batch:	280-276338	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-276150	Lab File ID:	G0507030.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.7 g
Analysis Date:	05/08/2015 0111			Final Weight/Volume:	4 mL
Prep Date:	05/06/2015 1040			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	83	81	75 - 116	5	20		
Acenaphthylene	80	78	66 - 115	4	20		
Anthracene	79	77	71 - 115	4	20		
Benzo[a]anthracene	89	86	77 - 120	4	20		
Benzo[a]pyrene	83	86	69 - 115	2	20		
Benzo[b]fluoranthene	85	84	56 - 115	3	20		
Benzo[g,h,i]perylene	94	94	72 - 120	1	20		
Benzo[k]fluoranthene	87	87	76 - 115	2	20		
Chrysene	87	84	79 - 115	5	20		
Dibenzo(a,h)anthracene	83	84	72 - 115	0	20		
Fluoranthene	86	83	77 - 115	4	20		
Fluorene	89	87	77 - 115	4	20		
Indeno[1,2,3-cd]pyrene	86	86	78 - 115	1	20		
Naphthalene	84	82	68 - 120	3	20		
Phenanthrene	83	81	75 - 115	4	20		
Pyrene	90	88	72 - 115	4	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Terphenyl-d14 (SUR)	89	83	72 - 115

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276150

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-68739-1	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	05/08/2015 0041		
Prep Date:	05/06/2015 1040		
Leach Date:	N/A		

MSD Lab Sample ID:	280-68739-1
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	05/08/2015 0111
Prep Date:	05/06/2015 1040
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	9.6	U	2010	1990	1670	1620
Acenaphthylene	8.7	U	2010	1990	1610	1550
Anthracene	2.9	U	2010	1990	1590	1540
Benzo[a]anthracene	3.1	U	2010	1990	1780	1700
Benzo[a]pyrene	6.2	U	2010	1990	1670	1720
Benzo[b]fluoranthene	4.1	U	2010	1990	1710	1660
Benzo[g,h,i]perylene	6.9	U	2010	1990	1880	1870
Benzo[k]fluoranthene	3.8	U	2010	1990	1750	1720
Chrysene	4.7	U	2010	1990	1750	1670
Dibenzo(a,h)anthracene	11	U	2010	1990	1670	1670
Fluoranthene	13	U	2010	1990	1730	1660
Fluorene	5.1	U	2010	1990	1790	1720
Indeno[1,2,3-cd]pyrene	12	U	2010	1990	1720	1710
Naphthalene	12	U	2010	1990	1690	1630
Phenanthrene	12	U	2010	1990	1660	1600
Pyrene	12	U	2010	1990	1810	1740

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: PCB - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	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 (J1V6W1/J1V6W8) 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. JP0961 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: JP0961	REVIEWER: ELR	Project: 100-N-96	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: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V6**

Lab Sample ID: 280-68739-1
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 04/30/2015 1156
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1142			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	83		59 - 130
Tetrachloro-m-xylene	76		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V7**

Lab Sample ID: 280-68739-2
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 04/30/2015 1209
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1205			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	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	84		59 - 130
Tetrachloro-m-xylene	74		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V8**

Lab Sample ID: 280-68739-3
Client Matrix: Solid

% Moisture:

Date Sampled: 04/30/2015 1203
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1315			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.6	U	2.6	9.3
Aroclor 1221		7.4	U	7.4	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	79		59 - 130
Tetrachloro-m-xylene	71		53 - 128

K 5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6V9**

Lab Sample ID: 280-68739-4
Client Matrix: Solid

% Moisture: 0.6

Date Sampled: 04/30/2015 1216
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1338			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	84		59 - 130
Tetrachloro-m-xylene	67		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W0**

Lab Sample ID: 280-68739-5
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1104
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1401			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	78		59 - 130
Tetrachloro-m-xylene	76		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W1**

Lab Sample ID: 280-68739-6
Client Matrix: Solid

% Moisture: 1.4

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1424			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	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	82		59 - 130
Tetrachloro-m-xylene	75		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W2**

Lab Sample ID: 280-68739-7
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 04/30/2015 1055
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	31.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1448			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	76		59 - 130
Tetrachloro-m-xylene	67		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W3**

Lab Sample ID: 280-68739-8
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 04/30/2015 1041
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1511			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	75		59 - 130
Tetrachloro-m-xylene	67		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W4**

Lab Sample ID: 280-68739-9
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 04/30/2015 1048
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1534			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	80		59 - 130
Tetrachloro-m-xylene	72		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W5**

Lab Sample ID: 280-68739-10
Client Matrix: Solid

% Moisture: 0.4

Date Sampled: 04/30/2015 1030
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	31.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1557			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	82		59 - 130
Tetrachloro-m-xylene	65		53 - 128

5/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W6**

Lab Sample ID: 280-68739-11
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 04/30/2015 1016
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1620			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	85		59 - 130
Tetrachloro-m-xylene	76		53 - 128

MS 12 5/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W7**

Lab Sample ID: 280-68739-12
Client Matrix: Solid
% Moisture: 0.6

Date Sampled: 04/30/2015 1023
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1644			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	79		59 - 130
Tetrachloro-m-xylene	72		53 - 128

ms/25/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Client Sample ID: **J1V6W8**

Lab Sample ID: 280-68739-13
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 04/30/2015 1111
Date Received: 05/05/2015 1005

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-276203	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/09/2015 1707			Injection Volume:	1 uL
Prep Date:	05/06/2015 1330			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	79		59 - 130
Tetrachloro-m-xylene	72		53 - 128

5/25/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-68739-1

SDG #: JP0961
SAF#: RC-189

Date SDG Closed: May 5, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V6V6	280-68739-1	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V7	280-68739-2	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V8	280-68739-3	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6V9	280-68739-4	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W0	280-68739-5	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W1	280-68739-6	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W2	280-68739-7	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W3	280-68739-8	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W4	280-68739-9	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W5	280-68739-10	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W6	280-68739-11	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W7	280-68739-12	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B
J1V6W8	280-68739-13	6010/7471/8082/8310/WTPH-D+/5035-8260	6010B/7471A/8082/8310/NWTPH-Dx/5035-8260B

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 5/5/2015 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 3.0° C, 4.3° C and 5.8° C.

The Chain of Custody indicates "VOA samples frozen upon collection", and it can be noted that the 5035/8260B VOA samples were placed in the freezer upon receipt at the laboratory. The client was notified on 5/6/2015.

GC/MS VOLATILES - SW846 8260B
The Internal Standard (ISTD) response for samples J1V6V6 and J1V6V7 were outside control limits, low. The samples were reanalyzed until there was no volume remaining; however, all of the internal standards failed low in all of the analyses. Data are reported as is. The laboratory believes this anomaly is due to bad purges caused by leaks around the vial cap.

Samples J1V6V9 and J1V6W7 exhibited surrogate recoveries outside the control limits, biased high. This is an indicator that data may be biased high. As no detectable concentrations are present at levels greater than the reporting limits in the samples, corrective action is deemed unnecessary.

Low levels of Acetone, a common laboratory contaminant, are present in the method blank associated with batch 280-276337. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MS/MSD performed on sample J1V6V6 in batch 280-276099 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". In addition, RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1V6W8 in batch 280-276337 exhibited RPD data outside the control limits. 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
No anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-276084 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-276084. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-276084 and in the Matrix Spike performed on sample J1V6V6 in batch 280-276084. The associated sample results have been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

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 J1V6V6; therefore, control limits are not applicable.

Boton was recovered outside the control limits in the Matrix Spike performed on sample J1V6V6, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Page 1 of 3

Collector: STOWE, QG

Project Designation: 100N Field Remediation

Ice Chest No.: WCH-08-032

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-N-96 (excavation, verification)

Field Logbook No.: EL-1652-12

COA: 000N962000

Offsite Property No.: A131409

Project Coordinator: KESSNER, JH

SAF No.: RC-189

Price Code: 8B

Data Turnaround: 7 days

Method of Shipment: Commercial Carrier \ Fed Ex

Bill of Lading/Air Bill No.: See OSPC

280-68739 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	5
Volume	250mL	250mL	250mL	125mL	40mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)

Sample No.	Matrix	Sample Date	Sample Time					
J1V6V6	SOIL	4/30/15	1156	X	X	X	X	X
J1V6V7	SOIL	4/30/15	1209	X	X	X	X	X
J1V6V8	SOIL	4/30/15	1203	X	X	X	X	X
J1V6V9	SOIL	4/30/15	1216	X	X	X	X	X
J1V6W0	SOIL	4/30/15	1104	X	X	X	X	X

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CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle, Fridge #3B	1615 4-30-15
1060 Battelle, Fridge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	0740 5-4-15	Fed Ex	5-4-15
			5-5-15 10:05

Sign/Print Names

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 K Wood Vincent DATE 5-4-15

*** freeze upon receipt. 4/30/15 CMB

VOA samples frozen upon collection

JP0961

5.6, 2.8, 1.2, 4.1 IRS 70.2 Terminal & MP 5/5/15

FINAL SAMPLE DISPOSITION

Disposal Method

Disposed By

Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG

Project Designation: 100N Field Remediation

Ice Chest No.: WCH-08-032

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-N-96 (excavation, verification)

Field Logbook No.: EL-1652-12

COA: 000N962000

Offsite Property No.: A131409

Project Coordinator: KESSNER, JH

SAF No.: RC-189

Price Code: 8 B

Data Turnaround: 7 days

Method of Shipment: Commercial Carrier \Fed EX

Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze					
Type of Container	G/P	aG	aG	G	Gs*					
No. of Container(s)	1	1	1	1	5					
Volume	250mL	250mL	250mL	125mL	40mL					
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)					

Sample No.	Matrix	Sample Date	Sample Time										
J1V6W1	SOIL	4/30/15	1111	X	X	X	X	X					
J1V6W2	SOIL	4/30/15	1055	X	X	X	X	X					
J1V6W3	SOIL	4/30/15	1041	X	X	X	X	X					
J1V6W4	SOIL	4/30/15	1048	X	X	X	X	X					
J1V6W5	SOIL	4/30/15	1030	X	X	X	X	X					

Page 1 of 2

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle, Fridge #3B	1615 4-30-15
1060 Battelle, Fridge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	0740 5-4-15	Fed EX	5-4-15
			5-5-15 10:05

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 K. Woodhaemer DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG

Project Designation: 100N Field Remediation

Ice Chest No.: WCH-08-032

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-N-96 (excavation, verification)

Field Logbook No.: EL-1652-12

COA: 000N962000

Offsite Property No.: A131409

Project Coordinator: KESSNER, JH

SAF No.: RC-189

Price Code: 8B

Data Turnaround: 7 days

Method of Shipment: Commercial Carrier / Fed Ex

Bill of Lading/Air Bill No.: See OSR

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Freeze
Type of Container				G/P	aG	aG	G	Gs*
No. of Container(s)				1	1	1	1	5
Volume				250mL	250mL	250mL	125mL	40mL
Sample Analysis				See Item (1) in Special Instructions	PCBs - 8082	PAHs - 8310	TPH-Diesel Range - WTPH-D +	** VOA - 5035/8260 (TCL)
J1V6W6	SOIL	4/30/15	1016	X	X	X	X	X
J1V6W7	SOIL	4/30/15	1023	X	X	X	X	X
J1V6W8	SOIL	4/30/15	1111	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	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1000 Battelle Fridge #3B	4-30-15 1615
1000 Battelle Fridge #3B	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham	5-4-15 0740	Fed Ex	5-4-15
			5-5-15 10:05

Disposed By: Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method

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 K. Wood/Internal DATE 5-4-15

* freeze upon receipt. 4/30/15 CMB

** VOA samples frozen upon collection

JP0961

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-96			DATA PACKAGE: JP0961		
VALIDATOR: ECR		LAB: TAL		DATE: 5/24/15	
			SDG: JP0961		

ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		

SAMPLES/MATRIX					
J1V6V6	J1V6V7	J1V6V8	J1V6V9	J1V6W0	
J1V6W1	J1V6W2	J1V6W3	J1V6W4	J1V6W5	J1V6W6
J1V6W7	J1V6W8				
					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: 280-68739-1
Sdg Number: JP0961

Method Blank - Batch: 280-276203

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-276203/1-A	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-276203	Lab File ID:	05091504.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	05/09/2015 1055	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/06/2015 1330			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	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	2.5	U	2.5	9.8
Aroclor 1260	2.5	U	2.5	9.8

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	88	59 - 130
Tetrachloro-m-xylene	79	53 - 128

Lab Control Sample - Batch: 280-276203

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-276203/2-A	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-276203	Lab File ID:	05091505.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	05/09/2015 1119	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/06/2015 1330			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	33.1	26.9	81	54 - 132	
Aroclor 1260	33.1	28.6	86	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	82	59 - 130
Tetrachloro-m-xylene	76	53 - 128

Client: Washington Closure Hanford

Job Number: 280-68739-1
Sdg Number: JP0961

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276203

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-68739-2	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-276203	Lab File ID:	05091508.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	05/09/2015 1228			Final Weight/Volume:	5 mL
Prep Date:	05/06/2015 1330			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-68739-2	Analysis Batch:	280-276754	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-276203	Lab File ID:	05091509.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.5 g
Analysis Date:	05/09/2015 1252			Final Weight/Volume:	5 mL
Prep Date:	05/06/2015 1330			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	84	83	54 - 132	0	26		
Aroclor 1260	72	76	62 - 129	6	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	82	75	59 - 130
Tetrachloro-m-xylene	71	66	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-276203

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-68739-2	Units:	ug/Kg	MSD Lab Sample ID:	280-68739-2
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/09/2015 1228			Analysis Date:	05/09/2015 1252
Prep Date:	05/06/2015 1330			Prep Date:	05/06/2015 1330
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	2.8	U	33.3	33.4	27.9	27.9
Aroclor 1260	2.6	U	33.3	33.4	24.0	25.4

Date: 26 May 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Site 100-N-96
Subject: Wet Chemistry - Data Package No. JP0961-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0961 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
J1V6V6	4/30/15	Soil	C	See note 1
J1V6V7	4/30/15	Soil	C	See note 1
J1V6V8	4/30/15	Soil	C	See note 1
J1V6V9	4/30/15	Soil	C	See note 1
J1V6W0	4/30/15	Soil	C	See note 1
J1V6W1	4/30/15	Soil	C	See note 1
J1V6W2	4/30/15	Soil	C	See note 1
J1V6W3	4/30/15	Soil	C	See note 1
J1V6W4	4/30/15	Soil	C	See note 1
J1V6W5	4/30/15	Soil	C	See note 1
J1V6W6	4/30/15	Soil	C	See note 1
J1V6W7	4/30/15	Soil	C	See note 1
J1V6W8	4/30/15	Soil	C	See note 1

1 – Chromium VI by 7196A.

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 30 days for chromium VI.

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 Blanks

Method blank analyses are performed 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. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

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

All 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 (J1V6W1/J1V6W8) was 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 (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package JP0961 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.*

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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0961	REVIEWER: ELR	Project: 100-N-96	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

Date: 07-May-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 65671

SDG No: JP0961

Batch	Client Id / Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5125015	7196_CR6								
	J1V6V6								
	M6QLM1AA	HEXCHROME	2.40E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M6QLM1AF	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	43.0
	J1V6V7								
	M6QLN1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6V8								
	M6QLP1AA	HEXCHROME	4.21E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6V9								
	M6QLQ1AA	HEXCHROME	3.19E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W0								
	M6QLR1AA	HEXCHROME	2.80E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W1								
	M6QLT1AA	HEXCHROME	1.97E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W2								
	M6QLV1AA	HEXCHROME	2.96E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W3								
	M6QLW1AA	HEXCHROME	2.18E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W4								
	M6QLX1AA	HEXCHROME	2.18E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W5								
	M6QL01AA	HEXCHROME	2.77E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W6								
	M6QL11AA	HEXCHROME	2.37E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W7								
	M6QL21AA	HEXCHROME	3.19E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V6W8								
	M6QL31AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 14

pr 5/25/15

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.8 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

May 7, 2015

Attention: Joan Kessner

SAF Number	:	RC-189
Date SDG Closed	:	May 4, 2015
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0961
Data Deliverable	:	7-Day / Summary

CASE NARRATIVE

I. Introduction

On May 4, 2015, thirteen soil samples were received at TestAmerica for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V6V6	M6QLM	SOIL	5/04/15
J1V6V7	M6QLN	SOIL	5/04/15
J1V6V8	M6QLP	SOIL	5/04/15
J1V6V9	M6QLQ	SOIL	5/04/15
J1V6W0	M6QLR	SOIL	5/04/15
J1V6W1	M6QLT	SOIL	5/04/15
J1V6W2	M6QLV	SOIL	5/04/15
J1V6W3	M6QLW	SOIL	5/04/15
J1V6W4	M6QLX	SOIL	5/04/15
J1V6W5	M6QL0	SOIL	5/04/15
J1V6W6	M6QL1	SOIL	5/04/15
J1V6W7	M6QL2	SOIL	5/04/15
J1V6W8	M6QL3	SOIL	5/04/15

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A:
The LCS, batch blank, samples, sample duplicate (J1V6V6) and sample matrix spike (J1V6V6) results are within contractual requirements.

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

Reviewed and approved:

Rhonda Wagar
Project Manager

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: SML-159	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C										
Type of Container	G/P										
No. of Container(s)	1										
Volume	125mL										
Sample Analysis	Chromium Hex - 7196										
Sample No.	Matrix	Sample Date	Sample Time								
J1V6V6 M6QLM	SOIL	4/30/15	1156	X							
J1V6V7 M6QLN	SOIL	4/30/15	1209	X							
J1V6V8 M6QLP	SOIL	4/30/15	1203	X							
J1V6V9 M6QLQ	SOIL	4/30/15	1216	X							
J1V6W0 M6QLR	SOIL	4/30/15	1104	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	S. Martinez/S. Martinez	1222 4/30/15
S. Martinez/S. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1060 Battelle Lodge #3B	1615 4-30-15
1060 Battelle Lodge #3B	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham WCH	1445 5-4-15	J. Friesz, TARL	1445 5/4/15

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

SPECIAL INSTRUCTIONS

J5E040423
Due 5-11-15

REVIEWED BY K. Woodhaemel DATE 5-4-15

SDS:

JP0961

J5E040423

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: SML-159	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C
Type of Container	G/P
No. of Container(s)	1
Volume	125mL
Sample Analysis	Chromium Hex - 7196

Sample No.	Matrix	Sample Date	Sample Time	
J1V6W1 m6QLT	SOIL	4/30/15	1111	X
J1V6W2 m6QLV	SOIL	4/30/15	1055	X
J1V6W3 m6QLW	SOIL	4/30/15	1041	X
J1V6W4 m6QLX	SOIL	4/30/15	1048	X
J1V6W5 m6QLD	SOIL	4/30/15	1030	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1222 4-30-15	C. Martinez/C. Martinez	1222 4/30/15
C. Martinez/C. Martinez	1540 4/30/15	C. Bingham	1540 4-30-15
C. Bingham	1615 4-30-15	1000 Battelle, trailer #38	1615 4-30-15
1000 Battelle, trailer #38	0730 5-4-15	C. Bingham	0730 5-4-15
C. Bingham	1445 5-4-15	J. Friesz, TARL	1445 5/4/15

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

SPECIAL INSTRUCTIONS

JSE040423
Due 5-11-15

REVIEWED BY K. Wood Hanford DATE 5-4-15

JP0961

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-310

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-96 (excavation, verification)		SAF No.: RC-189
Ice Chest No.: SML-159	Field Logbook No.: EL-1652-12	COA: 000N962000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS: N/A

Special Handling and/or Storage: Cooling as required

Preservation	Cool 4C											
Type of Container	G/P											
No. of Container(s)	1											
Volume	125mL											
Sample Analysis	Chromium Hex - 7196											

Sample No.	Matrix	Sample Date	Sample Time										
J1V6W6 M6QL1	SOIL	4/30/15	1016	X									
J1V6W7 M6QL2	SOIL	4/30/15	1023	X									
J1V6W8 M6QL3	SOIL	4/30/15	1111	X									

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4-30-15 1222	C. Martinez/C. Martinez	4/30/15 1222
C. Martinez/C. Martinez	4/30/15 1540	C. Bingham	4-30-15 1540
C. Bingham	4-30-15 1615	1000 Battelle, Fridge #38	4-30-15 1615
1000 Battelle, Fridge #38	5-4-15 0730	C. Bingham	5-4-15 0730
C. Bingham / WCH	5-4-15 1445	J. Friesz, TARL	5/4/15 1445

Sign/Print Names

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

SPECIAL INSTRUCTIONS

JSE040423
Due 5-11-15

REVIEWED BY Kwood Vorema
DATE 5-4-15

JP0961

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-96			DATA PACKAGE: JP096		
VALIDATOR: ELR		LAB: TAL		DATE: 5/24/05	
			SDG: JP096		

ANALYSES PERFORMED

Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX

J1V6V6	J1V6V7	J1V6V8	J1V6V9	J1V6W0
J1V6W1	J1V6W2	J1V6W3	J1V6W4	J1V6W5
J1V6V6	J1V6W7	J1V6W8		
				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)

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:

GENERAL CHEMISTRY 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)

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

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

Spike 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 CHEMISTRY 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. HOLDING TIMES (all levels)

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. 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

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 07-May-15

Report No. : 65671

SDG No.: JP0961

Batch Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
7196_CR6								
5125015 MATRIX SPIKE, J1V6V6								
M6QLM1AC	HEXCHROME	2.41E+01 +- 0.0E+00		mg/kg	N/A	79%	-0.2	1.55E-01
5125015 LCS,								
M6QM11AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
5125015 BLANK QC,								
M6QM11AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 3

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.8
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mde/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

REVIEW COMMENT RECORD (RCR)

1. Date 05/14/15	2. Review No.
3. Project No. ERDF Groundwater – March 2015	4. Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG J02172	ERDF	RL Weiss	WCH - S&DM	Fermi 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss Reviewer/Point of Contract 05/14/15 Date R. L. Weiss Author/Originator	Reviewer/Point of Contact Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry, Page 3; The field blank (J30HX7) was used as the duplicate for Tc-99, U-KPA, and Total-Ra in addition to the noted use for I-129 and Gross Alpha.		Can R	