SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0897 SAF-RC-075

Waste Site: 100-D-85:2

Date: 2 March 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-85:2
Subject: Wet Chemistry - Data Package No. JP0897-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0897 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
J1V340	1/21/15	Soil	C	See note 1
J1V341	1/21/15	Soil	C	See note 1
J1V342	1/21/15	Soil	C	See note 1
J1V343	1/21/15	Soil	C	See note 1
J1V344	1/21/15	Soil	C	See note 1
J1V345	1/21/15	Soil	C	See note 1
J1V346	1/21/15	Soil	C	See note 1
J1V347	1/21/15	Soil	C	See note 1
J1V348	1/21/15	Soil	C	See note 1
J1V349	1/21/15	Soil	C	See note 1
J1V350	1/21/15	Soil	C	See note 1
J1V351	1/21/15	Soil	C	See note 1
J1V352	1/21/15	Soil	C	See note 1

1 – IC anions by 300.0, nitrate/nitrite by 353.2 and chromium VI by 7196.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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: 30 days for chromium VI; 28 days for nitrate/nitrite, chloride, fluoride, bromide, sulfate; and 48 hours for nitrate, nitrite and orthophosphate.

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".

Due to the holding time being exceeded by greater than twice the limit, all detected nitrate, nitrate and orthophosphate results were qualified as estimates and flagged "J".

Due to the holding time being exceeded by greater than twice the limit, all undetected nitrate, nitrate and orthophosphate results were qualified as rejected and flagged "UR".

All other 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.

Due to method blank contamination, all chloride results were qualified as undetected and flagged "U".

All other 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 (J1V349/J1V352) 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 (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package JP0897 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 73%.

MAJOR DEFICIENCIES

The following major deficiencies were noted:

- Due to the holding time being exceeded by greater than twice the limit, all undetected nitrate, nitrate and orthophosphate results were qualified as rejected and flagged "UR".

Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by greater than twice the limit, all detected pH, nitrate, nitrate and orthophosphate results were qualified as estimates and flagged "J".

- Due to method blank contamination, all chloride results were qualified as undetected and flagged "U".

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*.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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: JP0897	**REVIEWER: ELR**	**Project: 100-D-85:2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate	J	All (except J1V347 & J1V350)	Hold time
Nitrate	UR	J1V347, J1V350	Hold time
Nitrite	UR	All	Hold time
Orthophosphate	UR	J1V340, J1V343 J1V344, J1V345 J1V346, J1V347 J1V349, J1V350 J1V351, J1V352	Hold time
Orthophosphate	J	J1V341, J1V342 J1V348	Hold time
Chloride	U	All	Method blank contamination

* - 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: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V340**

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Lab Sample ID: 280-64693-1
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 01/21/2015 1010
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	0.76	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2026						DryWt Corrected: Y
Chloride-Soluble	7.7	C U	mg/Kg	2.0	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Nitrate as N-Soluble	0.83	B J	mg/Kg	0.32	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U R	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Sulfate-Soluble	7.3		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y
Fluoride-Soluble	1.1	B	mg/Kg	0.83	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2002						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.0		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V341**

Lab Sample ID: 280-64693-2
Client Matrix: Solid

% Moisture: 5.2

V 3/1/15

Date Sampled: 01/21/2015 1016
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.37	U	mg/Kg	0.37	0.77	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2032						DryWt Corrected: Y
Chloride-Soluble	8.1	C U	mg/Kg	2.1	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Nitrate as N-Soluble	1.0	B J	mg/Kg	0.32	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Orthophosphate as P-Soluble	2.2	B J	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Sulfate-Soluble	8.8		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Fluoride-Soluble	1.1	B	mg/Kg	0.84	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V342**

Lab Sample ID: 280-64693-3
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 01/21/2015 1023
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.37	U	mg/Kg	0.37	0.77	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2034						DryWt Corrected: Y
Chloride-Soluble	14.1	C U	mg/Kg	2.0	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Nitrate as N-Soluble	1.1	B J	mg/Kg	0.32	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Orthophosphate as P-Soluble	2.2	B J	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Sulfate-Soluble	7.7		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y
Fluoride-Soluble	1.0	B	mg/Kg	0.84	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2122						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.6		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V343**

Lab Sample ID: 280-64693-4
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/21/2015 1004
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.37	U	mg/Kg	0.37	0.77	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2036						DryWt Corrected: Y
Chloride-Soluble	8.0	C	mg/Kg	2.1	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Nitrate as N-Soluble	0.68	B	mg/Kg	0.32	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U	mg/Kg	0.34	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Sulfate-Soluble	8.1		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y
Fluoride-Soluble	1.2	B	mg/Kg	0.84	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2142						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.3		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V344**

Lab Sample ID: 280-64693-5
Client Matrix: Solid

% Moisture: 4.5

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Date Sampled: 01/21/2015 0957
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	0.76	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2038						DryWt Corrected: Y
Chloride-Soluble	8.2	C U	mg/Kg	2.0	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Nitrate as N-Soluble	0.67	B J	mg/Kg	0.32	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U R	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Sulfate-Soluble	1.7	U	mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y
Fluoride-Soluble	1.1	B	mg/Kg	0.83	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2202						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.5		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V345**

Lab Sample ID: 280-64693-6
Client Matrix: Solid
% Moisture: 3.7

Date Sampled: 01/21/2015 0952
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.35	U	mg/Kg	0.35	0.74	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2052						DryWt Corrected: Y
Chloride-Soluble	7.8	C U	mg/Kg	2.0	4.9	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Nitrate as N-Soluble	0.78	B J	mg/Kg	0.31	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Bromide-Soluble	0.38	U	mg/Kg	0.38	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Nitrite as N-Soluble	0.33	U R	mg/Kg	0.33	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.2	U R	mg/Kg	1.2	4.9	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Sulfate-Soluble	15.5		mg/Kg	1.7	4.9	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y
Fluoride-Soluble	1.2	B	mg/Kg	0.81	4.9	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2221						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	3.7		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V346**

Lab Sample ID: 280-64693-7
Client Matrix: Solid

% Moisture: 6.1

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Date Sampled: 01/21/2015 0945
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	0.76	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2054						DryWt Corrected: Y
Chloride-Soluble	8.2	C U	mg/Kg	2.0	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Nitrate as N-Soluble	0.68	B J	mg/Kg	0.32	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Bromide-Soluble	0.39	U	mg/Kg	0.39	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U R	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Sulfate-Soluble	8.7		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y
Fluoride-Soluble	1.2	B	mg/Kg	0.83	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2321						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	6.1		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V347**

Lab Sample ID: 280-64693-8
Client Matrix: Solid

% Moisture: 5.6

Date Sampled: 01/21/2015 0939
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.37	U	mg/Kg	0.37	0.77	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2056						DryWt Corrected: Y
Chloride-Soluble	8.0	C U	mg/Kg	2.1	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Nitrate as N-Soluble	0.32	U R	mg/Kg	0.32	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U R	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Sulfate-Soluble	7.4		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y
Fluoride-Soluble	1.5	B	mg/Kg	0.84	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/26/2015 2341						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.6		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V348**

Lab Sample ID: 280-64693-9
Client Matrix: Solid

% Moisture: 6.1

Date Sampled: 01/21/2015 0932
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	0.76	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2058						DryWt Corrected: Y
Chloride-Soluble	8.1	C U	mg/Kg	2.0	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Nitrate as N-Soluble	0.76	B J	mg/Kg	0.32	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Bromide-Soluble	0.40	U	mg/Kg	0.40	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Nitrite as N-Soluble	0.34	U R	mg/Kg	0.34	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.9	B J	mg/Kg	1.3	5.1	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Sulfate-Soluble	7.4		mg/Kg	1.7	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y
Fluoride-Soluble	1.4	B	mg/Kg	0.84	5.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0001						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	6.1		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V349**

Lab Sample ID: 280-64693-10
Client Matrix: Solid

% Moisture: 7.9

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.38	U	mg/Kg	0.38	0.80	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2100						DryWt Corrected: Y
Chloride-Soluble	8.9	C U	mg/Kg	2.1	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Nitrate as N-Soluble	0.70	B J	mg/Kg	0.33	2.7	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Bromide-Soluble	0.41	U	mg/Kg	0.41	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Nitrite as N-Soluble	0.36	U R	mg/Kg	0.36	2.7	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U R	mg/Kg	1.3	5.3	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Sulfate-Soluble	1.8	U	mg/Kg	1.8	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y
Fluoride-Soluble	1.2	B	mg/Kg	0.87	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0021						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	7.9		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V350**

Lab Sample ID: 280-64693-11
Client Matrix: Solid

% Moisture: 4.3

3/11/15

Date Sampled: 01/21/2015 0919
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	0.75	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2102						DryWt Corrected: Y
Chloride-Soluble	7.8	C U	mg/Kg	2.0	5.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Nitrate as N-Soluble	0.31	U R	mg/Kg	0.31	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Bromide-Soluble	0.39	U	mg/Kg	0.39	2.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Nitrite as N-Soluble	0.33	U R	mg/Kg	0.33	2.5	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.2	U R	mg/Kg	1.2	5.0	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Sulfate-Soluble	1.7	U	mg/Kg	1.7	5.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y
Fluoride-Soluble	1.3	B	mg/Kg	0.82	5.0	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0041						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.3		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V351**

Lab Sample ID: 280-64693-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 01/21/2015 0926
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.37	U	mg/Kg	0.37	0.78	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2104						DryWt Corrected: Y
Chloride-Soluble	8.4	C	mg/Kg	2.1	5.2	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Nitrate as N-Soluble	0.71	B	mg/Kg	0.33	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Bromide-Soluble	0.41	U	mg/Kg	0.41	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Nitrite as N-Soluble	0.35	U	mg/Kg	0.35	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U	mg/Kg	1.3	5.2	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Sulfate-Soluble	7.2		mg/Kg	1.8	5.2	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y
Fluoride-Soluble	1.3	B	mg/Kg	0.85	5.2	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0101						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.3		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

General Chemistry

Client Sample ID: **J1V352**

Lab Sample ID: 280-64693-13
Client Matrix: Solid

% Moisture: 7.1

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate Nitrite as N-Soluble	0.38	U	mg/Kg	0.38	0.79	1.0	353.2
Analysis Batch: 280-261736	Analysis Date: 01/26/2015 2106						DryWt Corrected: Y
Chloride-Soluble	8.7	C U	mg/Kg	2.1	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Nitrate as N-Soluble	0.71	B J	mg/Kg	0.33	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Bromide-Soluble	0.41	U	mg/Kg	0.41	2.1	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Nitrite as N-Soluble	0.36	U R	mg/Kg	0.36	2.6	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U N R	mg/Kg	1.3	5.3	1.0	9056M
Analysis Batch: 280-261612	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Sulfate-Soluble	6.9		mg/Kg	1.8	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y
Fluoride-Soluble	1.2	B	mg/Kg	0.87	5.3	1.0	9056M
Analysis Batch: 280-261613	Analysis Date: 01/27/2015 0121						DryWt Corrected: Y

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	7.1		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-261545	Analysis Date: 01/24/2015 1307						DryWt Corrected: N

Sample Results Summary

Date: 29-Jan-15

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64493

SDG No: JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022035	NI63_LSC								
5022041	7196_CR6								
J1V340									
	M512F1AA	HEXCHROME	2.82E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M512F1AP	HEXCHROME	2.17E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	26.1
J1V341									
	M512Q1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V342									
	M512R1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V343									
	M512T1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V344									
	M512V1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V345									
	M512W1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V346									
	M512X1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V347									
	M51201AA	HEXCHROME	1.75E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V348									
	M51211AA	HEXCHROME	1.79E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V349									
	M51221AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V350									
	M51231AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V351									
	M51241AA	HEXCHROME	1.73E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V352									
	M51251AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 224

3/8/15

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 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

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64693-1

SDG #: JP0897
SAF#: RC-075

Date SDG Closed: January 23, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V340	280-64693-1	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V341	280-64693-2	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V342	280-64693-3	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V343	280-64693-4	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V344	280-64693-5	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V345	280-64693-6	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V346	280-64693-7	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V347	280-64693-8	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V348	280-64693-9	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V349	280-64693-10	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V350	280-64693-11	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V351	280-64693-12	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V352	280-64693-13	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V353	280-64693-14	6010/7471	6010B/7471A

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 1/23/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.6° C.

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

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-261490 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1V340, J1V343, J1V345 and J1V347 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Magnesium, Aluminum, Barium and Iron are present in the method blank associated with batch 280-261490. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V340; therefore, control limits are not applicable.

No other anomalies were encountered.

GENERAL CHEMISTRY - MCAWW 353.2 - NITRATE NITRITE as N
No anomalies were encountered.

GENERAL CHEMISTRY - SW846 9056M - ANIONS
Chloride is present in the method blank associated with batch 280-261613 at 7.32 mg/kg, which is greater than the project specific reporting limit (PSRL) of 5 mg/kg. TestAmerica's practical quantitation limit (PQL) for Chloride is 30 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL.

The Matrix Spike performed on sample J1V352 exhibited the percent recovery outside the control limits for Orthophosphate as P, 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-075-464	Page 1 of 3

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

Preservation	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G/P	aG	G/P	
No. of Container(s)	1	1	1	
Volume	250mL	250mL	250mL	
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

280-64893 Chain of Custody

Sample No.	Matrix	Sample Date	Sample Time									
J1V340	SOIL	01/21/15	1010	X	X	X						
J1V341	SOIL	01/21/15	1016	X	X	X						
J1V342	SOIL	01/21/15	1023	X	X	X						
J1V343	SOIL	01/21/15	1004	X	X	X						
J1V344	SOIL	01/21/15	0957	X	X	X						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez C. Martinez	1027 01/21/15
C. Martinez C. Martinez	01/21/15	C. Bingham Cindy	1-21-15 1615
C. Bingham Cindy	1-21-15 1630	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle, fridge #2A	0810 1-22-15	C. Bingham Cindy	1-22-15 0810
C. Bingham Cindy WCH	1-22-15 0830	Fed Ex	1-22-15 0830
			0830 28Jan15

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) {Mercury}

0.11RS105 23Jan15 transferred by [illegible]

REVIEWED BY J. Edmundson/[illegible] DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

Preservation	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	G/P								
No. of Container(s)	1	1	1								
Volume	250mL	250mL	250mL								
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2								

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
J1V345	SOIL	01/21/15	0952	X	X	X							
J1V346	SOIL	01/21/15	0945	X	X	X							
J1V347	SOIL	01/21/15	0939	X	X	X							
J1V348	SOIL	01/21/15	0932	X	X	X							
J1V349	SOIL	01/21/15	0913	X	X	X							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez / C. Martinez	1027 01/21/15
C. Martinez / C. Martinez	1615 01/21/15	C. Bingham CMB	1615 1-21-15
C. Bingham CMB	1-21-15 1630	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle fridge #2A	0810 1-22-15	C. Bingham CMB	1-22-15 0810
C. Bingham CMB WCH	1-22-15 0830	Fed Ex	1-22-15 0830
			0930 22Jan15

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

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY J. Edmondson/Vanmal DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G/P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2									

Sample No.	Matrix	Sample Date	Sample Time										
J1V350	SOIL	01/21/15	0919	X	X	X							
J1V351	SOIL	01/21/15	0926	X	X	X							
J1V352	SOIL 01/21/15	01/21/15	0913	X	X	X							
J1V353	SOIL	01/21/15	0907	X	n/A	n/A							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Quincy Stowe	1027 1-21-15	S.Martinez/S.Martinez	1027 01/21/15
Relinquished By/Removed From: S.Martinez/S.Martinez	1615 01/21/15	C.Bingham	1615 1-21-15
Relinquished By/Removed From: C.Bingham	1-21-15 1630	1060 Battelle, fridge #2A	1630 1-21-15
Relinquished By/Removed From: 1060 Battelle, fridge #2A	0810 1-22-15	C.Bingham	1-22-15 0810
Relinquished By/Removed From: C.Bingham WCH	1-22-15 0830	Fed Ex	1-22-15 0830
Relinquished By/Removed From:			0930 23Jan15
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) (Mercury)

REVIEWED BY T.Edmundson/Vadmie DATE 1-22-15

JP0897

WCH-EE-011

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

January 29, 2015

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	January 22, 2015
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0897
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On January 22, 2015, thirteen soil samples were received at TestAmerica for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V340	M512F	SOIL	1/22/15
J1V341	M512Q	SOIL	1/22/15
J1V342	M512R	SOIL	1/22/15
J1V343	M512T	SOIL	1/22/15
J1V344	M512V	SOIL	1/22/15
J1V345	M512W	SOIL	1/22/15
J1V346	M512X	SOIL	1/22/15
J1V347	M5120	SOIL	1/22/15
J1V348	M5121	SOIL	1/22/15
J1V349	M5122	SOIL	1/22/15
J1V350	M5123	SOIL	1/22/15
J1V351	M5124	SOIL	1/22/15
J1V352	M5125	SOIL	1/22/15

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 analyses were:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001
Uranium 234, 235 and 238 by method RL-ALP-015
Americium-241 by method RL-ALP-001
Gas Proportional Counting
Strontium-90 by method RL-GPC-010
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Nickel-63 by method RL-LCS-017
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

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001:
Sample J1V349 had no tracer recovery in the original batch; it was reanalyzed in batch 5027050 for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V340) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V341) results are within contractual requirements.

Americium 241 by method RL-ALP-001:
Sample J1V349 had no tracer recovery in the original batch; it was reanalyzed in batch 5027052 for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V340) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-010:
The LCS, batch blank, samples and sample duplicate (J1V344) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The CRDL was not met for some of the analytes. Except as noted, the LCS, batch blank, samples and sample duplicate (J1V343) results are within contractual requirements.

Liquid Scintillation Counting
Nickel-63 by method RL-LCS-017:
The LCS recovery is below the acceptance criteria; it was recounted and the recovery was confirmed. The batch blank and duplicate agreement is within the acceptance limits and the sample results are less than one tenth the CRDL. There is no indication of low method bias as represented by the successful tracer recoveries. A reanalysis is available upon request. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V342) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1V340) and sample matrix spike (J1V340) 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-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA
Other Labs Shipped To: TestAmerica Denver			

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	125mL	125mL	1000mL							
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 – Total Sr	See item (2) in Special Instructions							

Sample No.		Matrix	Sample Date	Sample Time										
J1V340	MS12F	SOIL	01/21/15	1010	X	X	X	X						
J1V341	MS12Q	SOIL	01/21/15	1016	X	X	X	X						
J1V342	MS12R	SOIL	01/21/15	1023	X	X	X	X						
J1V343	MS12T	SOIL	01/21/15	1004	X	X	X	X						
J1V344	MS12V	SOIL	01/21/15	0957	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	1615 01/21/15	C. Bingham	1615 1-21-15
C. Bingham	1630 1-21-15	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle, fridge #2A	0810 1-22-15	C. Bingham	0810 1-22-15
C. Bingham WH	1340 1-22-15	J. Friesz, TARS	1340 1/22/15

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

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

JSA220430
Due 1-29-15

REVIEWED BY T. Edmundson/Edmundson DATE 1-22-15

SDG:

JP0897

J5A220430

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	125mL	125mL	1000mL							
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 – Total Sr	See item (2) in Special Instructions							

Sample No.	Matrix	Sample Date	Sample Time										
J1V345 M512W	SOIL	01/21/15	0952	X	X	X	X						
J1V346 M512X	SOIL	01/21/15	0945	X	X	X	X						
J1V347 M512O	SOIL	01/21/15	0939	X	X	X	X						
J1V348 M512J	SOIL	01/21/15	0932	X	X	X	X						
J1V349 M512Z	SOIL	01/21/15	0913	X	X	X	X						

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez C. Martinez	1027 01/21/15
C. Martinez C. Martinez	01/21/15 1615	C. Bingham	1-21-15 1615
C. Bingham	1-21-15 1630	1060 Battelle fridge #2A	1630 1-21-15
1060 Battelle fridge #2A	1-21-15 0810	C. Bingham	1-22-15 0810
C. Bingham	1-22-15 1340	J. Friesz, TARL	1/22/15 1340

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

JSA220430
JP0897
1-29-15

REVIEWED BY J. Edmundson Vaughn DATE 1-22-15

JP0897

WCH-EE-011

TestAmerica Laboratories, Inc.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	125mL	125mL	1000mL							
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 -- Total Sr	See item (2) in Special Instructions							

Sample No.	Matrix	Sample Date	Sample Time										
J1V350 m5123	SOIL	01/21/15	0919	X	X	X	X						
J1V351 m5124	SOIL	01/21/15	0926	X	X	X	X						
J1V352 m5125	SOIL	01/21/15	0913	X	X	X	X						
~~J1V353 01/21/15~~	~~SOIL~~												

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Quincy Stowe	Date/Time: 1027 1-21-15	Received By/Stored In: C. Martinez/C. Martinez	Date/Time: 1027 01/21/15
Relinquished By/Removed From: C. Martinez/C. Martinez	Date/Time: 01/21/15 1615	Received By/Stored In: C. Bingham	Date/Time: 1-21-15 1615
Relinquished By/Removed From: C. Bingham	Date/Time: 1-21-15 1630	Received By/Stored In: 1060 Battelle, fridge #2A	Date/Time: 1630 1-21-15
Relinquished By/Removed From: 1060 Battelle, fridge #2A	Date/Time: 0810 1-22-15	Received By/Stored In: C. Bingham	Date/Time: 1-22-15 0810
Relinquished By/Removed From: C. Bingham	Date/Time: 1-22-15 1340	Received By/Stored In: J. Friesz, TARI	Date/Time: 1/22/15 1340
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

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

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

J5A220430
Due 1-29-15

REVIEWED BY J. Edmundson via email DATE 1-22-15

JP0897

J5A220430

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT:	100-D-8512	DATA PACKAGE:	JP0897
VALIDATOR:	ELR	LAB: TAL	DATE: 2/28/15
		SDG:	JP0897

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					
J1U340	J1U341	J1U342	J1U343	J1U344	J1U345
J1U346	J1U347	J1U348	J1U349	J1U350	J1U351
J1U352					
					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: Chloride - U all

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 PAS

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: nitrate nitrite & ortho >2x – J/UR all

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

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	MB 280-261710/2-A	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2024	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Result	Qual	MDL	RL
Nitrate Nitrite as N-Soluble	0.36	U	0.36	0.75

Method Reporting Limit Check - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	MRL 280-261736/18	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	100 mL
Analysis Date:	01/26/2015 1842	Units:	mg/L	Final Weight/Volume:	100 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate Nitrite as N-Soluble	0.100	0.0828	83	50 - 150	B

Lab Control Sample - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	LCS 280-261710/1-A	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2022	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate Nitrite as N-Soluble	49.2	49.41	100	90 - 110	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2030	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate Nitrite as N-Soluble	0.36	U	40.3	40.21	100	90 - 110	

Matrix Spike - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2110	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate Nitrite as N-Soluble	0.38	U	42.1	41.53	99	90 - 110	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2028	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Nitrate Nitrite as N-Soluble	0.36	U	0.36	NC	10	U

Duplicate - Batch: 280-261736

Method: 353.2
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261736	Instrument ID:	WC_Alp 2
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\012615.RST
Dilution:	1.0	Leach Batch:	280-261710	Initial Weight/Volume:	
Analysis Date:	01/26/2015 2108	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	01/26/2015 1635				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Nitrate Nitrite as N-Soluble	0.38	U	0.38	NC	10	U

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	MB 280-261707/2-A	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0026.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1942	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	01/26/2015 1607				

Analyte	Result	Qual	MDL	RL
Nitrate as N-Soluble	0.31	U	0.31	2.5
Nitrite as N-Soluble	0.34	U	0.34	2.5
Orthophosphate as P-Soluble	1.2	U	1.2	5.0

Method Reporting Limit Check - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	MRL 280-261612/3	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	0011.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 0926	Units:	mg/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.200	0.226	113	50 - 150	B
Nitrite as N-Soluble	0.200	0.223	112	50 - 150	B
Orthophosphate as P-Soluble	0.200	0.268	134	50 - 150	B

Lab Control Sample - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	LCS 280-261707/1-A	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0025.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1922	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	01/26/2015 1607				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	50.0	48.58	97	90 - 110	
Nitrite as N-Soluble	50.0	49.20	98	90 - 110	
Orthophosphate as P-Soluble	50.0	51.08	102	90 - 110	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0029.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 2042	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.83	B	49.9	48.06	95	80 - 120	
Nitrite as N-Soluble	0.34	U	49.9	51.33	103	80 - 120	
Orthophosphate as P-Soluble	1.3	U	49.9	46.24	93	80 - 120	

Matrix Spike - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0045.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/27/2015 0201	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.71	B	52.1	50.20	95	80 - 120	
Nitrite as N-Soluble	0.36	U	52.1	53.14	102	80 - 120	
Orthophosphate as P-Soluble	1.3	U	52.1	40.41	78	80 - 120	N

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0028.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 2022	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Nitrate as N-Soluble	0.83	B	0.837	0.7	15	B
Nitrite as N-Soluble	0.34	U	0.34	NC	15	U
Orthophosphate as P-Soluble	1.3	U	1.3	NC	15	U

Duplicate - Batch: 280-261612

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261612	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0044.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/27/2015 0141	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Nitrate as N-Soluble	0.71	B	0.33	NC	15	U
Nitrite as N-Soluble	0.36	U	0.36	NC	15	U
Orthophosphate as P-Soluble	1.3	U	1.3	NC	15	U

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	MB 280-261707/2-A	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0026.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1942	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	01/26/2015 1607				

Analyte	Result	Qual	MDL	RL
Chloride-Soluble	7.32		2.0	5.0
Bromide-Soluble	0.39	U	0.39	2.0
Sulfate-Soluble	1.7	U	1.7	5.0
Fluoride-Soluble	0.82	U	0.82	5.0

Method Reporting Limit Check - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	MRL 280-261613/3	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	0011.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 0926	Units:	mg/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	2.50	2.30	92	50 - 150	B
Bromide-Soluble	0.200	0.250	125	50 - 150	
Sulfate-Soluble	2.50	2.48	99	50 - 150	B
Fluoride-Soluble	0.200	0.226	113	50 - 150	B

Lab Control Sample - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	LCS 280-261707/1-A	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0025.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1922	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	01/26/2015 1607				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	1000	945.8	95	90 - 110	
Bromide-Soluble	50.0	49.59	99	90 - 110	
Sulfate-Soluble	1000	954.3	95	90 - 110	
Fluoride-Soluble	50.0	49.90	100	90 - 110	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0029.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 2042	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	7.7		250	207.3	80	80 - 120	
Bromide-Soluble	0.40	U	49.9	48.67	97	80 - 120	
Sulfate-Soluble	7.3		250	213.4	83	80 - 120	
Fluoride-Soluble	1.1	B	49.9	47.63	93	80 - 120	

Matrix Spike - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0045.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/27/2015 0201	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	8.7		260	217.9	80	80 - 120	
Bromide-Soluble	0.41	U	52.1	50.94	98	80 - 120	
Sulfate-Soluble	6.9		260	222.4	83	80 - 120	
Fluoride-Soluble	1.2	B	52.1	44.28	83	80 - 120	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0028.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/26/2015 2022	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Chloride-Soluble	7.7		7.74	0	10	C
Bromide-Soluble	0.40	U	0.40	NC	10	U
Sulfate-Soluble	7.3		7.32	0.3	10	
Fluoride-Soluble	1.1	B	1.13	0.8	10	B

Duplicate - Batch: 280-261613

Method: 9056M
Preparation: N/A

Lab Sample ID:	280-64693-13	Analysis Batch:	280-261613	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0044.d
Dilution:	1.0	Leach Batch:	280-261707	Initial Weight/Volume:	5 mL
Analysis Date:	01/27/2015 0141	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	01/26/2015 1607				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Chloride-Soluble	8.7		8.63	0.6	10	C
Bromide-Soluble	0.41	U	0.41	NC	10	U
Sulfate-Soluble	6.9		6.96	0.5	10	
Fluoride-Soluble	1.2	B	1.17	2	10	B

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 29-Jan-15

Report No. : 64493

SDG No.: JP0897

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
M514H1AC	RA-228	6.57E-01 +- 1.8E-01		pCi/g		111%	0.1	1.08E-01
	U-238	1.04E+00 +- 1.7E-01		pCi/g		87%	-0.1	7.76E-02
SRTOT_SEP_PRECIP_GPC								
5022034 BLANK QC,								
M514K1AA	STRONTIUM	9.52E-02 +- 1.8E-01	U	pCi/g	90%			3.93E-01
5022034 LCS,								
M514K1AC	STRONTIUM	4.27E+00 +- 1.1E+00		pCi/g	89%	123%	0.2	3.76E-01
NI63_LSC								
5022035 BLANK QC,								
M514P1AA	NI-63	7.22E-01 +- 8.6E-01	U	pCi/g	86%			1.89E+00
5022035 LCS,								
M514P1AC	NI-63	6.96E+01 +- 3.9E+00		pCi/g	89%	61%	-0.4	1.84E+00
7196_CR6								
5022041 MATRIX SPIKE, J1V340								
M512F1AN	HEXCHROME	2.80E+01 +- 0.0E+00		mg/kg	N/A	88%	-0.1	1.55E-01
5022041 LCS,								
M516P1AC	HEXCHROME	1.87E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
5022041 BLANK QC,								
M516P1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 33

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.5
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 2 March 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-85:2
Subject: Inorganic - Data Package No. JP0897-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0897 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
J1V340	1/21/15	Soil	C	See note 1
J1V341	1/21/15	Soil	C	See note 1
J1V342	1/21/15	Soil	C	See note 1
J1V343	1/21/15	Soil	C	See note 1
J1V344	1/21/15	Soil	C	See note 1
J1V345	1/21/15	Soil	C	See note 1
J1V346	1/21/15	Soil	C	See note 1
J1V347	1/21/15	Soil	C	See note 1
J1V348	1/21/15	Soil	C	See note 1
J1V349	1/21/15	Soil	C	See note 1
J1V350	1/21/15	Soil	C	See note 1
J1V351	1/21/15	Soil	C	See note 1
J1V352	1/21/15	Soil	C	See note 1
J1V353	1/21/15	Soil	C	See note 1

1 - ICP metals (6010B).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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.

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.

Due to method blank contamination, the calcium result in sample J1V353 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1V353) was submitted for analysis. Sixteen analytes were detected in the field blank. Under the WCH statement of work, no qualification is required.

- **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 a matrix spike recovery outside QC limits, all detected calcium (145%) results were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits, all vanadium (131%), antimony (60%) and silicon (20%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (10%) 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 (J1V349/J1T352) 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. JP0897 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 calcium result in sample J1V353 was qualified as undetected and flagged "UJ".
- Due to a matrix spike recovery outside QC limits, all detected calcium (145%) results were qualified as estimates and flagged "J".
- Due to matrix spike recoveries outside QC limits, all vanadium (131%), antimony (60%) and silicon (20%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (10%) 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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: JP0897	**REVIEWER: ELR**	**Project: 100-D-85:2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Vanadium Antimony Silicon	J	All	MS recovery
Calcium	J	All (except J1V353)	MS recovery
Silicon	J	All	LCS recovery
Calcium	UJ	J1V353	Method blank contamination

* - 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: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V340**

Lab Sample ID: 280-64693-1
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 01/21/2015 1010
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.08 g
Analysis Date:	01/26/2015 1703			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

r 3/8/15

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.96	U	0.96	1.9
Calcium		6080	J	13.7	48.7
Magnesium		4010	X	3.6	19.5
Manganese		287	X	0.097	0.97
Silicon		222	J	5.5	9.7
Silver		0.16	U	0.16	0.19
Zinc		43.0	X	0.39	0.97

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.08 g
Analysis Date:	01/27/2015 1456			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4540		1.5	4.9
Arsenic		2.2		0.64	0.97
Barium		42.7	X	0.074	0.49
Cadmium		0.10	B	0.040	0.19
Chromium		4.4	X	0.057	0.19
Iron		24300	X	3.7	4.9
Molybdenum		0.25	U	0.25	1.9
Nickel		7.6	X	0.12	3.9
Potassium		634		40.0	292
Selenium		0.84	U	0.84	0.97
Sodium		335		57.5	117

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	5.0			Initial Weight/Volume:	1.08 g
Analysis Date:	01/27/2015 1411			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.9	U J	1.9	2.9
Beryllium		0.66	B	0.16	0.97
Cobalt		11.9		0.49	4.9
Copper		16.0		1.1	4.9
Lead		2.2	B	1.3	2.4
Vanadium		73.6	X J	0.46	9.7

7471A Mercury (CVAA)

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V340**

Lab Sample ID: 280-64693-1
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 01/21/2015 1010
Date Received: 01/23/2015 0930

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.66 g
Analysis Date:	01/28/2015 0847			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

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

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Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V341**

Lab Sample ID: 280-64693-2
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/21/2015 1016
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.10 g
Analysis Date:	01/26/2015 1713			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.2	J	0.36	0.58
Beryllium		0.42		0.032	0.19
Boron		0.94	U	0.94	1.9
Calcium		6220	J	13.5	48.0
Lead		2.7		0.26	0.48
Magnesium		4290	X	3.5	19.2
Manganese		321	X	0.096	0.96
Selenium		0.83	U	0.83	0.96
Silicon		228	J	5.4	9.6
Silver		0.15	U	0.15	0.19
Vanadium		66.6	X J	0.090	1.9
Zinc		42.9	X	0.38	0.96

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.10 g
Analysis Date:	01/27/2015 1507			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4490		1.5	4.8
Arsenic		2.1		0.63	0.96
Barium		56.7	X	0.073	0.48
Cadmium		0.13	B	0.039	0.19
Chromium		5.1	X	0.056	0.19
Cobalt		10.2		0.096	0.96
Copper		14.2		0.21	0.96
Iron		25500	X	3.6	4.8
Molybdenum		0.25	U	0.25	1.9
Nickel		7.7	X	0.12	3.8
Potassium		749		39.3	288
Sodium		291		56.6	115

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.66 g
Analysis Date:	01/28/2015 0854			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

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

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V342**

Lab Sample ID: 280-64693-3
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 01/21/2015 1023
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.19 g
Analysis Date:	01/26/2015 1716			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.86	U	0.86	1.8
Calcium		6760	J	12.4	44.0
Magnesium		4430	X	3.3	17.6
Manganese		308	X	0.088	0.88
Selenium		0.76	U	0.76	0.88
Silicon		248	J	5.0	8.8
Silver		0.14	U	0.14	0.18
Zinc		42.5	X	0.35	0.88

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.19 g
Analysis Date:	01/27/2015 1520			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5040		1.4	4.4
Antimony		1.1	J	0.33	0.53
Arsenic		2.3		0.58	0.88
Barium		51.4	X	0.067	0.44
Beryllium		0.55		0.029	0.18
Cadmium		0.10	B	0.036	0.18
Chromium		5.2	X	0.051	0.18
Cobalt		10.2		0.088	0.88
Copper		13.4		0.19	0.88
Iron		25300	X	3.3	4.4
Lead		2.4		0.24	0.44
Molybdenum		0.23	U	0.23	1.8
Nickel		8.1	X	0.11	3.5
Potassium		788		36.1	264
Sodium		324		52.0	106
Vanadium		64.9	X J	0.083	1.8

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.61 g
Analysis Date:	01/28/2015 0856			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0057	U	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V343**

Lab Sample ID: 280-64693-4
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/21/2015 1004
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	01/26/2015 1718			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		1.0	U	1.0	2.1
Calcium		7560	J	14.7	52.3
Magnesium		4560	X	3.9	20.9
Manganese		371	X	0.10	1.0
Selenium		0.90	U	0.90	1.0
Silicon		288	J	5.9	10.5
Silver		0.17	U	0.17	0.21
Zinc		48.2	X	0.42	1.0

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	01/27/2015 1522			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5310		1.6	5.2
Arsenic		2.8		0.69	1.0
Barium		64.7	X	0.079	0.52
Cadmium		0.15	B	0.043	0.21
Chromium		5.0	X	0.061	0.21
Iron		27900	X	4.0	5.2
Molybdenum		0.27	U	0.27	2.1
Nickel		7.7	X	0.13	4.2
Potassium		768		42.8	314
Sodium		315		61.7	125

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	5.0			Initial Weight/Volume:	1.00 g
Analysis Date:	01/27/2015 1427			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		2.0	U J	2.0	3.1
Beryllium		0.82	B	0.17	1.0
Cobalt		13.2		0.52	5.2
Copper		17.2		1.1	5.2
Lead		2.9		1.4	2.6
Vanadium		83.1	X J	0.49	10.5

7471A Mercury (CVAA)

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V343**

Lab Sample ID: 280-64693-4
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/21/2015 1004
Date Received: 01/23/2015 0930

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.65 g
Analysis Date:	01/28/2015 0859			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0061	B	0.0053	0.016

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TestAmerica Denver

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V344**

Lab Sample ID: 280-64693-5
Client Matrix: Solid

% Moisture: 4.5

Date Sampled: 01/21/2015 0957
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	01/26/2015 1721			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.2	J	0.39	0.62
Beryllium		0.47		0.034	0.21
Boron		1.0	U	1.0	2.1
Calcium		6940	J	14.6	51.8
Lead		3.1		0.28	0.52
Magnesium		4550	X	3.8	20.7
Manganese		313	X	0.10	1.0
Silicon		247	J	5.9	10.4
Silver		0.17	U	0.17	0.21
Vanadium		77.7	X J	0.097	2.1
Zinc		48.5	X	0.41	1.0

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	01/27/2015 1525			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4980		1.6	5.2
Arsenic		2.1		0.68	1.0
Barium		48.2	X	0.079	0.52
Cadmium		0.12	B	0.043	0.21
Chromium		4.5	X	0.060	0.21
Cobalt		11.0		0.10	1.0
Copper		15.1		0.23	1.0
Iron		26800	X	3.9	5.2
Molybdenum		0.27	U	0.27	2.1
Nickel		8.7	X	0.13	4.1
Potassium		716		42.5	311
Selenium		0.89	U	0.89	1.0
Sodium		383		61.2	124

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.70 g
Analysis Date:	01/28/2015 0901			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0050	U	0.0050	0.015

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V345**

Lab Sample ID: 280-64693-6
Client Matrix: Solid

% Moisture: 3.7

Date Sampled: 01/21/2015 0952
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.07 g
Analysis Date:	01/26/2015 1734			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.95	U	0.95	1.9
Calcium		*6360*	J	*13.7*	*46.5*
Magnesium		4160	X	3.6	19.4
Manganese		301	X	0.097	0.97
Silicon		222	J	5.5	9.7
Zinc		44.4	X	0.39	0.97

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.07 g
Analysis Date:	01/27/2015 1528			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4480		1.5	4.9
Arsenic		2.3		0.64	0.97
Barium		48.9	X	0.074	0.49
Cadmium		0.10	B	0.040	0.19
Chromium		4.7	X	0.056	0.19
Iron		26200	X	3.7	4.9
Molybdenum		0.25	U	0.25	1.9
Nickel		7.5	X	0.12	3.9
Potassium		651		39.8	291
Selenium		0.83	U	0.83	0.97
Silver		0.16	U	0.16	0.19
Sodium		362		57.3	117

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	5.0			Initial Weight/Volume:	1.07 g
Analysis Date:	01/27/2015 1443			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		2.1	B J	1.8	2.9
Beryllium		0.70	B	0.16	0.97
Cobalt		12.4		0.49	4.9
Copper		16.6		1.1	4.9
Lead		1.9	B	1.3	2.4
Vanadium		78.6	X J	0.46	9.7

7471A Mercury (CVAA)

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V345**

Lab Sample ID: 280-64693-6
Client Matrix: Solid

% Moisture: 3.7

Date Sampled: 01/21/2015 0952
Date Received: 01/23/2015 0930

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.61 g
Analysis Date:	01/28/2015 0903			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

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

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Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V346**

Lab Sample ID: 280-64693-7
Client Matrix: Solid
% Moisture: 6.1

Date Sampled: 01/21/2015 0945
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/26/2015 1736
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261749
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26b012615.asc
Initial Weight/Volume: 1.01 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.43		0.035	0.21
Boron		1.0	U	1.0	2.1
Calcium		7250	J	14.9	52.7
Lead		3.0		0.28	0.53
Magnesium		4140	X	3.9	21.1
Manganese		304	X	0.11	1.1
Silicon		283	J	6.0	10.5
Vanadium		64.2	X J	0.099	2.1
Zinc		41.4	X	0.42	1.1

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/27/2015 1530
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261948
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26a012715a.asc
Initial Weight/Volume: 1.01 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5090		1.6	5.3
Antimony		1.1	J	0.40	0.63
Arsenic		2.6		0.70	1.1
Barium		51.8	X	0.080	0.53
Cadmium		0.12	B	0.043	0.21
Chromium		6.1	X	0.061	0.21
Cobalt		9.5		0.11	1.1
Copper		13.4		0.23	1.1
Iron		23200	X	4.0	5.3
Molybdenum		0.27	U	0.27	2.1
Nickel		8.3	X	0.13	4.2
Potassium		788		43.2	316
Selenium		0.91	U	0.91	1.1
Silver		0.17	U	0.17	0.21
Sodium		291		62.2	126

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/28/2015 0910
Prep Date: 01/27/2015 1635

Analysis Batch: 280-262038
Prep Batch: 280-261780

Instrument ID: MT_034
Lab File ID: 150128ba.txt
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0067	B	0.0058	0.018

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V347**

Lab Sample ID: 280-64693-8
Client Matrix: Solid
% Moisture: 5.6

Date Sampled: 01/21/2015 0939
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/26/2015 1739
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261749
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26b012615.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Boron		0.92	U	0.92	1.9
Calcium		8790	J	13.2	46.9
Magnesium		4580	X	3.5	18.7
Manganese		319	X J	0.094	0.94
Silicon		271		5.3	9.4
Zinc		46.4	X	0.37	0.94

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/27/2015 1544
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261948
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26a012715a.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5590		1.5	4.7
Arsenic		2.7		0.62	0.94
Barium		56.6	X	0.071	0.47
Cadmium		0.13	B	0.038	0.19
Chromium		6.5	X	0.054	0.19
Iron		26200	X	3.6	4.7
Molybdenum		0.24	U	0.24	1.9
Nickel		8.3	X	0.12	3.7
Potassium		759		38.4	281
Selenium		0.81	U	0.81	0.94
Silver		0.15	U	0.15	0.19
Sodium		322		55.3	112

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 5.0
Analysis Date: 01/27/2015 1448
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261948
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26a012715a.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.8	U J	1.8	2.8
Beryllium		0.77	B	0.15	0.94
Cobalt		12.5		0.47	4.7
Copper		17.4		1.0	4.7
Lead		2.3		1.3	2.3
Vanadium		80.5	X J	0.44	9.4

7471A Mercury (CVAA)

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V347**

Lab Sample ID: 280-64693-8
Client Matrix: Solid

% Moisture: 5.6

Date Sampled: 01/21/2015 0939
Date Received: 01/23/2015 0930

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.68 g
Analysis Date:	01/28/2015 0912			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0089	B	0.0052	0.016

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Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V348**

Lab Sample ID: 280-64693-9
Client Matrix: Solid
% Moisture: 6.1

Date Sampled: 01/21/2015 0932
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Analysis Date:	01/26/2015 1741			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.44		0.034	0.21
Boron		1.0	U J	1.0.	2.1
Calcium		7430		14.7	52.2
Lead		3.4		0.28	0.52
Magnesium		4170	X	3.9	20.9
Manganese		300	X J	0.10	1.0
Silicon		425		5.9	10.4
Vanadium		61.5	X J	0.098	2.1
Zinc		42.1	X	0.42	1.0

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Analysis Date:	01/27/2015 1546			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6140	J	1.6	5.2
Antimony		1.1		0.40	0.63
Arsenic		2.7		0.69	1.0
Barium		55.3	X	0.079	0.52
Cadmium		0.11	B	0.043	0.21
Chromium		6.8	X	0.061	0.21
Cobalt		9.4		0.10	1.0
Copper		15.5		0.23	1.0
Iron		23000	X	4.0	5.2
Molybdenum		0.27	U	0.27	2.1
Nickel		8.8	X	0.13	4.2
Potassium		992		42.8	313
Selenium		0.90	U	0.90	1.0
Silver		0.17	U	0.17	0.21
Sodium		336		61.6	125

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.62 g
Analysis Date:	01/28/2015 0915			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0079	B	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V349**

Lab Sample ID: 280-64693-10
Client Matrix: Solid
% Moisture: 7.9

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.17 g
Analysis Date:	01/26/2015 1744			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.39		0.031	0.19
Boron		0.91	U J	0.91	1.9
Calcium		8290		13.1	46.4
Lead		4.0		0.25	0.46
Magnesium		4460	X	3.4	18.6
Manganese		320	X	0.093	0.93
Silicon		426	J	5.3	9.3
Vanadium		47.9	X J	0.087	1.9
Zinc		37.0	X	0.37	0.93

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.17 g
Analysis Date:	01/27/2015 1549			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7250		1.4	4.6
Antimony		0.48	B J	0.35	0.56
Arsenic		3.2		0.61	0.93
Barium		76.0	X	0.071	0.46
Cadmium		0.16	B	0.038	0.19
Chromium		11.3	X	0.054	0.19
Cobalt		7.8		0.093	0.93
Copper		14.3		0.20	0.93
Iron		19500	X	3.5	4.6
Molybdenum		0.24	U	0.24	1.9
Nickel		11.5	X	0.11	3.7
Potassium		1180		38.0	278
Selenium		0.80	U	0.80	0.93
Silver		0.15	U	0.15	0.19
Sodium		185		54.7	111

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.63 g
Analysis Date:	01/28/2015 0917			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0077	B	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V350**

Lab Sample ID: 280-64693-11
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/21/2015 0919
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.19 g
Analysis Date:	01/26/2015 1746			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.44		0.029	0.18
Boron		0.86	U	0.86	1.8
Calcium		7400	J	12.4	43.9
Lead		2.7		0.24	0.44
Magnesium		4130	X	3.2	17.6
Manganese		293	X	0.088	0.88
Silicon		233	J	5.0	8.8
Vanadium		63.2	X J	0.083	1.8
Zinc		41.2	X	0.35	0.88

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.19 g
Analysis Date:	01/27/2015 1551			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5340		1.4	4.4
Antimony		1.2	J	0.33	0.53
Arsenic		2.4		0.58	0.88
Barium		55.6	X	0.067	0.44
Cadmium		0.11	B	0.036	0.18
Chromium		6.7	X	0.051	0.18
Cobalt		9.3		0.088	0.88
Copper		14.6		0.19	0.88
Iron		23200	X	3.3	4.4
Molybdenum		0.23	U	0.23	1.8
Nickel		8.6	X	0.11	3.5
Potassium		757		36.0	263
Selenium		0.75	U	0.75	0.88
Silver		0.14	U	0.14	0.18
Sodium		276		51.8	105

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.64 g
Analysis Date:	01/28/2015 0919			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0060	B	0.0054	0.017

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V351

Lab Sample ID: 280-64693-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 01/21/2015 0926
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	01/26/2015 1749			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.39		0.035	0.21
Boron		1.0	U J	1.0	2.1
Calcium		6840		14.7	52.3
Lead		3.2		0.28	0.52
Magnesium		4340	X	3.9	20.9
Manganese		294	X	0.10	1.0
Silicon		397	J	5.9	10.5
Vanadium		49.6	X J	0.098	2.1
Zinc		37.2	X	0.42	1.0

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	01/27/2015 1554			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7090		1.6	5.2
Antimony		0.55	B J	0.40	0.63
Arsenic		2.8		0.69	1.0
Barium		65.6	X	0.079	0.52
Cadmium		0.13	B	0.043	0.21
Chromium		10.2	X	0.061	0.21
Cobalt		7.8		0.10	1.0
Copper		13.0		0.23	1.0
Iron		19700	X	4.0	5.2
Molybdenum		0.27	U	0.27	2.1
Nickel		11.0	X	0.13	4.2
Potassium		1200		42.9	314
Selenium		0.90	U	0.90	1.0
Silver		0.17	U	0.17	0.21
Sodium		218		61.7	126

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.69 g
Analysis Date:	01/28/2015 0922			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0071	B	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V352**

Lab Sample ID: 280-64693-13
Client Matrix: Solid
% Moisture: 7.1

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-261749	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0			Initial Weight/Volume:	1.14 g
Analysis Date:	01/26/2015 1752			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.42		0.031	0.19
Boron		*0.93*	*U*	*0.93*	*1.9*
Calcium		7830	J	13.3	47.2
Lead		4.0		0.25	0.47
Magnesium		4360	X	3.5	18.9
Manganese		299	X	0.094	0.94
Silicon		384	J	5.3	9.4
Vanadium		48.6	X J	0.089	1.9
Zinc		36.1	X	0.38	0.94

Analysis Method:	6010B	Analysis Batch:	280-261948	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0			Initial Weight/Volume:	1.14 g
Analysis Date:	01/27/2015 1557			Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7320	J	1.5	4.7
Antimony		0.57		0.36	0.57
Arsenic		2.9		0.62	0.94
Barium		72.1	X	0.072	0.47
Cadmium		0.13	B	0.039	0.19
Chromium		11.4	X	0.055	0.19
Cobalt		7.6		0.094	0.94
Copper		14.8		0.20	0.94
Iron		19500	X	3.6	4.7
Molybdenum		0.25	U	0.25	1.9
Nickel		11.5	X	0.12	3.8
Potassium		1180		38.7	283
Selenium		0.81	U	0.81	0.94
Silver		0.15	U	0.15	0.19
Sodium		180		55.7	113

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0			Initial Weight/Volume:	0.61 g
Analysis Date:	01/28/2015 0924			Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.019		0.0059	0.018

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V353

Lab Sample ID: 280-64693-14
Client Matrix: Solid
% Moisture: 0.0

Date Sampled: 01/21/2015 0907
Date Received: 01/23/2015 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/26/2015 1754
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261749
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26b012615.asc
Initial Weight/Volume: 1.04 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.12	B	0.032	0.19
Boron		0.94	U	0.94	1.9
Calcium		48.2	C UJ	13.6	48.1
Lead		0.75		0.26	0.48
Magnesium		39.3	X	3.6	19.2
Manganese		6.7	X	0.096	0.96
Silicon		100	J	5.4	9.6
Vanadium		7.0	X J	0.090	1.9
Zinc		2.0	X	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/27/2015 1559
Prep Date: 01/26/2015 0745

Analysis Batch: 280-261948
Prep Batch: 280-261490

Instrument ID: MT_026
Lab File ID: 26a012715a.asc
Initial Weight/Volume: 1.04 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		221		1.5	4.8
Antimony		0.37	U J	0.37	0.58
Arsenic		1.8		0.63	0.96
Barium		1.8	X	0.073	0.48
Cadmium		0.039	U	0.039	0.19
Chromium		1.5	X	0.056	0.19
Cobalt		0.43	B	0.096	0.96
Copper		1.1		0.21	0.96
Iron		2070	X	3.7	4.8
Molybdenum		0.25	U	0.25	1.9
Nickel		1.3	B X	0.12	3.8
Potassium		51.5	B	39.4	288
Selenium		0.83	U	0.83	0.96
Silver		0.15	U	0.15	0.19
Sodium		56.7	U	56.7	115

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/28/2015 0926
Prep Date: 01/27/2015 1635

Analysis Batch: 280-262038
Prep Batch: 280-261780

Instrument ID: MT_034
Lab File ID: 150128ba.txt
Initial Weight/Volume: 0.65 g
Final Weight/Volume: 50 mL

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64693-1

SDG #: JP0897
SAF#: RC-075

Date SDG Closed: January 23, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V340	280-64693-1	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V341	280-64693-2	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V342	280-64693-3	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V343	280-64693-4	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V344	280-64693-5	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V345	280-64693-6	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V346	280-64693-7	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V347	280-64693-8	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V348	280-64693-9	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V349	280-64693-10	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V350	280-64693-11	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V351	280-64693-12	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V352	280-64693-13	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V353	280-64693-14	6010/7471	6010B/7471A

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 1/23/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.6° C.

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

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-261490 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1V340, J1V343, J1V345 and J1V347 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Magnesium, Aluminum, Barium and Iron are present in the method blank associated with batch 280-261490. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V340; therefore, control limits are not applicable.

No other anomalies were encountered.

GENERAL CHEMISTRY - MCAWW 353.2 - NITRATE NITRITE as N

No anomalies were encountered.

GENERAL CHEMISTRY - SW846 9056M - ANIONS

Chloride is present in the method blank associated with batch 280-261613 at 7.32 mg/kg, which is greater than the project specific reporting limit (PSRL) of 5 mg/kg. TestAmerica's practical quantitation limit (PQL) for Chloride is 30 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL.

The Matrix Spike performed on sample J1V352 exhibited the percent recovery outside the control limits for Orthophosphate as P, 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-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	G/P
No. of Container(s)	1	1	1
Volume	250mL	250mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2

280-64693 Chain of Custody

Sample No.	Matrix	Sample Date	Sample Time			
J1V340	SOIL	01/21/15	1010	X	X	X
J1V341	SOIL	01/21/15	1016	X	X	X
J1V342	SOIL	01/21/15	1023	X	X	X
J1V343	SOIL	01/21/15	1004	X	X	X
J1V344	SOIL	01/21/15	0957	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	01/21/15	C. Bingham	1-21-15 1615
C. Bingham	1-21-15 1630	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle, fridge #2A	0810 1-22-15	C. Bingham	1-22-15 0810
C. Bingham WCH	1-22-15 0830	Fed Ex	1-22-15 0830
			0830 23Jan15

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) {Mercury}

0.11RS105 23Jan15 Transferred by [illegible]

REVIEWED BY T. Edmundson/[illegible] DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G/P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2									

Sample No.	Matrix	Sample Date	Sample Time										
J1V345	SOIL	01/21/15	0952	X	X	X							
J1V346	SOIL	01/21/15	0945	X	X	X							
J1V347	SOIL	01/21/15	0939	X	X	X							
J1V348	SOIL	01/21/15	0932	X	X	X							
J1V349	SOIL	01/21/15	0913	X	X	X							

Page 8 of 8

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	1615 01/21/15	C. Bingham CMB	1615 1-21-15
C. Bingham CMB	1630 1-21-15	1060 Battelle, fridge #12A	1630 1-21-15
1060 Battelle, fridge #12A	0810 1-22-15	C. Bingham CMB	0810 1-22-15
C. Bingham CMB WCH	0830 1-22-15	Fed Ex	0830 1-22-15
		[illegible]	0930 22Jan15

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

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

SPECIAL INSTRUCTIONS

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

REVIEWED BY J. Edmondson/Vanmio DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	G/P								
No. of Container(s)	1	1	1								
Volume	250mL	250mL	250mL								
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2								

Sample No.	Matrix	Sample Date	Sample Time										
J1V350	SOIL	01/21/15	0919	X	X	X							
J1V351	SOIL	01/21/15	0926	X	X	X							
J1V352	SOIL 01/21/15	01/21/15	0913	X	X	X							
J1V353	SOIL	01/21/15	0907	X	n/a	n/a							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	1615 01/21/15	C. Bingham	1615 1-21-15
C. Bingham	1630 1-21-15	1060 Battelle fridge #2A	1630 1-21-15
1060 Battelle fridge #2A	0810 1-22-15	C. Bingham	0810 1-22-15
C. Bingham WCH	0830 1-22-15	fed EX	0830 1-22-15
			09:30 23 Jan 15

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

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

SPECIAL INSTRUCTIONS

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

REVIEWED BY T. Edmundson Vincine DATE 1-22-15

JP0897

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-85:2			DATA PACKAGE: JP0897		
VALIDATOR: ECR		LAB: TAL		DATE: 2/28/15	
			SDG: JP0897		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J1V340	J1V341	J1V342	J1V343	J1V344	
J1V345	J1V346	J1V347	J1V348	J1V349	
J1V350	J1V351	J1V352	J1V353		
				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: Calcium – UJ – SB

FB – 16 detects

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: Calcium (145%) – J all detects MS

MS silicon (20%) antimony (60%) Vanadium (131%) – Ja

no DAS

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: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	*MB 280-261490/1-A*	*Analysis Batch:*	*280-261749*	*Instrument ID:*	*MT_026*
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/26/2015 1658	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Antimony	0.38	U	0.38	0.60
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Calcium	19.89	B	14.1	50.0
Lead	0.27	U	0.27	0.50
Magnesium	5.58	B	3.7	20.0
Manganese	0.10	U	0.10	1.0
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
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: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-261490/1-A	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/27/2015 1406	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.83	B	1.6	5.0
Arsenic	0.66	U	0.66	1.0
Barium	0.181	B	0.076	0.50
Cadmium	0.041	U	0.041	0.20
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	4.42	B	3.8	5.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Sodium	59.0	U	59.0	120

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Lab Control Sample - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-261490/2-A	Analysis Batch:	280-261749	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/26/2015 1701	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	50.0	52.23	104	82 - 110	
Beryllium	5.00	5.03	101	84 - 114	
Boron	100	101.2	101	80 - 120	
Calcium	5000	5129	103	82 - 114	
Lead	50.0	50.10	100	86 - 110	
Magnesium	5000	4792	96	90 - 110	
Manganese	50.0	49.31	99	88 - 110	
Selenium	200	209.0	104	83 - 110	
Silicon	1000	102.8	10	10 - 70	
Silver	5.00	5.16	103	87 - 114	
Vanadium	50.0	51.73	103	88 - 110	
Zinc	50.0	49.07	98	76 - 114	

Lab Control Sample - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-261490/2-A	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/27/2015 1409	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	196.1	98	82 - 116	
Arsenic	100	98.99	99	85 - 110	
Barium	200	207.4	104	87 - 112	
Cadmium	10.0	9.25	92	87 - 110	
Chromium	20.0	20.32	102	84 - 114	
Cobalt	50.0	50.71	101	87 - 110	
Copper	25.0	24.76	99	88 - 110	
Iron	100	106.1	106	87 - 120	
Molybdenum	100	104.5	105	86 - 110	
Nickel	50.0	50.06	100	87 - 110	
Potassium	5000	5193	104	89 - 110	
Sodium	5000	5286	106	90 - 112	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261749	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	01/26/2015 1711	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Boron	0.96	U	90.0	71.66	80	80 - 120	
Calcium	6080		4500	12600	145	43 - 165	
Magnesium	4010		4500	8495	100	64 - 145	
Manganese	287		45.0	384.7	217	40 - 200	4
Silicon	222		900	403.5	20	20 - 200	
Silver	0.16	U	4.50	3.83	85	75 - 141	
Zinc	43.0		45.0	82.00	87	70 - 200	

Matrix Spike - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	01/27/2015 1419	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Antimony	1.9	U	45.0	26.81	60	20 - 200	
Beryllium	0.66	B	4.50	4.91	94	72 - 105	
Cobalt	11.9		45.0	56.87	100	72 - 106	
Copper	16.0		22.5	38.10	98	37 - 187	
Lead	2.2	B	45.0	44.12	93	70 - 200	
Vanadium	73.6		45.0	132.8	131	50 - 169	

Matrix Spike - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	01/27/2015 1504	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	4540		180	6837	1275	50 - 200	4
Arsenic	2.2		90.0	72.67	78	76 - 111	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	01/27/2015 1504	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Barium	42.7		180	218.9	98	52 - 159	
Cadmium	0.10	B	9.00	7.14	78	40 - 130	
Chromium	4.4		18.0	20.48	89	70 - 200	
Iron	24300		90.0	28160	4322	70 - 200	4
Molybdenum	0.25	U	90.0	76.37	85	75 - 103	
Nickel	7.6		45.0	45.47	84	61 - 126	
Potassium	634		4500	4744	91	56 - 172	
Selenium	0.84	U	180	136.1	76	76 - 104	
Sodium	335		4500	4763	98	78 - 111	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261749	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26b012615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.02 g
Analysis Date:	01/26/2015 1708	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Boron	0.96	U	1.0	NC	30	U
Calcium	6080		6788	11	30	
Magnesium	4010		4281	6	30	
Manganese	287		310.1	8	40	
Silicon	222		293.4	28	40	
Silver	0.16	U	0.17	NC	30	U
Zinc	43.0		46.52	8	40	

Duplicate - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	1.02 g
Analysis Date:	01/27/2015 1416	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Antimony	1.9	U	2.0	NC	40	U
Beryllium	0.66	B	0.769	15	30	B
Cobalt	11.9		12.88	8	30	
Copper	16.0		16.24	2	30	
Lead	2.2	B	2.05	8	40	B
Vanadium	73.6		80.97	9	30	

Duplicate - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.02 g
Analysis Date:	01/27/2015 1501	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Aluminum	4540	5146	12	40	
Arsenic	2.2	1.98	8	30	
Barium	42.7	46.82	9	30	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261490

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64693-1	Analysis Batch:	280-261948	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-261490	Lab File ID:	26a012715a.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.02 g
Analysis Date:	01/27/2015 1501	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/26/2015 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Cadmium	0.10	B	0.119	16	30	B
Chromium	4.4		4.63	5	40	
Iron	24300		26320	8	40	
Molybdenum	0.25	U	0.27	NC	30	U
Nickel	7.6		7.89	4	30	
Potassium	634		693.1	9	40	
Selenium	0.84	U	0.89	NC	30	U
Sodium	335		360.1	7	30	

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261780

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-261780/1-A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	01/28/2015 0842	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-261780

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-261780/2-A	Analysis Batch:	280-262038	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	01/28/2015 0845	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.420	101	87 - 111	

Matrix Spike - Batch: 280-261780

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-262038	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.64 g
Analysis Date:	01/28/2015 0852	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0053	U	0.411	0.433	105	87 - 111	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Duplicate - Batch: 280-261780

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-64693-1	Analysis Batch:	280-262038	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-261780	Lab File ID:	150128ba.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.67 g
Analysis Date:	01/28/2015 0849	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/27/2015 1635				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0053	U	0.00542	NC	20	B

Date: 2 March 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-85:2
Subject: PCB - Data Package No. JP0897-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0897 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
J1V340	1/21/15	Soil	C	See note 1
J1V341	1/21/15	Soil	C	See note 1
J1V342	1/21/15	Soil	C	See note 1
J1V343	1/21/15	Soil	C	See note 1
J1V344	1/21/15	Soil	C	See note 1
J1V345	1/21/15	Soil	C	See note 1
J1V346	1/21/15	Soil	C	See note 1
J1V347	1/21/15	Soil	C	See note 1
J1V348	1/21/15	Soil	C	See note 1
J1V349	1/21/15	Soil	C	See note 1
J1V350	1/21/15	Soil	C	See note 1
J1V351	1/21/15	Soil	C	See note 1
J1V352	1/21/15	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 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". 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 (J1V349/J1V352) 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. JP0897 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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: JP0897	REVIEWER: ELR	Project: 100-D-85:2	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V340**

Lab Sample ID: 280-64693-1
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 01/21/2015 1010
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1005			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	79		59 - 130
Tetrachloro-m-xylene	81		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V341**

Lab Sample ID: 280-64693-2
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/21/2015 1016
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1028			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	80		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V342**

Lab Sample ID: 280-64693-3
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 01/21/2015 1023
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1052			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	78		59 - 130
Tetrachloro-m-xylene	80		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V343**

Lab Sample ID: 280-64693-4
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/21/2015 1004
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1115			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.4	U	8.4	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.9	U	4.9	10
Aroclor 1248		4.9	U	4.9	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	79		53 - 128

3/1/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V344**

Lab Sample ID: 280-64693-5
Client Matrix: Solid
% Moisture: 4.5

Date Sampled: 01/21/2015 0957
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1138			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	73		59 - 130
Tetrachloro-m-xylene	79		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V345**

Lab Sample ID: 280-64693-6
Client Matrix: Solid
% Moisture: 3.7

Date Sampled: 01/21/2015 0952
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1201			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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	16
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	77		59 - 130
Tetrachloro-m-xylene	76		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V346

Lab Sample ID: 280-64693-7
Client Matrix: Solid
% Moisture: 6.1

Date Sampled: 01/21/2015 0945
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1225			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	72		59 - 130
Tetrachloro-m-xylene	81		53 - 128

3/1/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: JNV347

Lab Sample ID: 280-64693-8
Client Matrix: Solid

% Moisture: 5.6

Date Sampled: 01/21/2015 0939
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1248			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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	78		59 - 130
Tetrachloro-m-xylene	80		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V348

Lab Sample ID: 280-64693-9
Client Matrix: Solid
% Moisture: 6.1

Date Sampled: 01/21/2015 0932
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1335			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	77		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V349

Lab Sample ID: 280-64693-10
Client Matrix: Solid
% Moisture: 7.9

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1358			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		8.6	U	8.6	18
Aroclor 1232		2.2	U	2.2	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	83		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V350**

Lab Sample ID: 280-64693-11
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/21/2015 0919
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1421			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			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		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	79		53 - 128

3/1/15

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: **J1V351**

Lab Sample ID: 280-64693-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 01/21/2015 0926
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1444			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.4	U	8.4	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.9	U	4.9	10
Aroclor 1248		4.9	U	4.9	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	78		59 - 130
Tetrachloro-m-xylene	78		53 - 128

3/1/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Client Sample ID: J1V352

Lab Sample ID: 280-64693-13
Client Matrix: Solid

% Moisture: 7.1

Date Sampled: 01/21/2015 0913
Date Received: 01/23/2015 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-261509	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/26/2015 1508			Injection Volume:	1 uL
Prep Date:	01/23/2015 1900			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	11
Aroclor 1221		8.5	U	8.5	18
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	79		59 - 130
Tetrachloro-m-xylene	82		53 - 128

3/1/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: *280-64693-1*

SDG #: JP0897
SAF#: RC-075

Date SDG Closed: January 23, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V340	280-64693-1	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V341	280-64693-2	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V342	280-64693-3	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V343	280-64693-4	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V344	280-64693-5	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V345	280-64693-6	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V346	280-64693-7	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V347	280-64693-8	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V348	280-64693-9	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V349	280-64693-10	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V350	280-64693-11	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V351	280-64693-12	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V352	280-64693-13	6010/7471/8082/9056M/353.2	6010B/7471A/8082/9056M/353.2
J1V353	280-64693-14	6010/7471	6010B/7471A

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 1/23/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.6° C.

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

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-261490 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1V340, J1V343, J1V345 and J1V347 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Magnesium, Aluminum, Barium and Iron are present in the method blank associated with batch 280-261490. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V340; therefore, control limits are not applicable.

No other anomalies were encountered.

GENERAL CHEMISTRY - MCAWW 353.2 - NITRATE NITRITE as N
No anomalies were encountered.

GENERAL CHEMISTRY - SW846 9056M - ANIONS
Chloride is present in the method blank associated with batch 280-261613 at 7.32 mg/kg, which is greater than the project specific reporting limit (PSRL) of 5 mg/kg. TestAmerica's practical quantitation limit (PQL) for Chloride is 30 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL.

The Matrix Spike performed on sample J1V352 exhibited the percent recovery outside the control limits for Orthophosphate as P, 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-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G/P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2									

280-64693 Chain of Custody

Sample No.	Matrix	Sample Date	Sample Time										
J1V340	SOIL	01/21/15	1010	X	X	X							
J1V341	SOIL	01/21/15	1016	X	X	X							
J1V342	SOIL	01/21/15	1023	X	X	X							
J1V343	SOIL	01/21/15	1004	X	X	X							
J1V344	SOIL	01/21/15	0957	X	X	X							

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez C. Martinez	1027 01/21/15
C. Martinez C. Martinez	1615 01/21/15	C. Bingham Cindy	1615 1-21-15
C. Bingham Cindy	1630 1-21-15	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle, fridge #2A	0810 1-22-15	C. Bingham Cindy	0810 1-22-15
C. Bingham Cindy	0830 1-22-15	Fed Ex	0830 1-22-15
			8:30 28Jan15

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) {Mercury}

0.1 IPS105 23Jan15
transferred log book

REVIEWED BY J. Edmundson DATE 1-22-15

JP0897

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-464	Page 2 of 3

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		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: None

Special Handling and/or Storage: *Cooling as required*

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G/P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2									

Sample No.	Matrix	Sample Date	Sample Time										
J1V345	SOIL	01/21/15	0952	X	X	X							
J1V346	SOIL	01/21/15	0945	X	X	X							
J1V347	SOIL	01/21/15	0939	X	X	X							
J1V348	SOIL	01/21/15	0932	X	X	X							
J1V349	SOIL	01/21/15	0913	X	X	X							

Page 1 of 8

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	01/21/15 1615	C. Bingham	1-21-15 1615
C. Bingham	1-21-15 1630	1060 Battelle, fridge #2A	1630 1-21-15
1060 Battelle, fridge #2A	1-22-15 0810	C. Bingham	1-22-15 0810
C. Bingham WCH	1-22-15 0830	Fed Ex	1-22-15 0830
			0930 22Jan15

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) (Mercury)

REVIEWED BY J. Edmondson/Vrmaid DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-063	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Commercial Carrier \Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131316		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7days

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G/P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	IC Anions - 9056 Modified; NO2/NO3 - 353.2									

Sample No.	Matrix	Sample Date	Sample Time										
J1V350	SOIL	01/21/15	0919	X	X	X							
J1V351	SOIL	01/21/15	0926	X	X	X							
J1V352	SOIL 01/21/15	01/21/15	0913	X	X	X							
J1V353	SOIL	01/21/15	0907	X	n/A	n/A							

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1027 1-21-15	C. Martinez/C. Martinez	1027 01/21/15
C. Martinez/C. Martinez	1615 01/21/15	C. Bingham	1615 1-21-15
C. Bingham	1630 1-21-15	1060 Battelle fridge #2A	1630 1-21-15
1060 Battelle fridge #2A	0810 1-22-15	C. Bingham	0810 1-22-15
C. Bingham WCH	0830 1-22-15	fed EX	0830 1-22-15
			0930 23Jan15

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) (Mercury)

REVIEWED BY T. Edmundson Vadmine DATE 1-22-15

JP0897

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-85:2			DATA PACKAGE: JP0897		
VALIDATOR: ECR		LAB: TAC		DATE: 2/28/15	
			SDG: JP0897		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1V340	J1V341	J1V342	J1V343	J1V344	J1V345
J1V346	J1V347	J1V348	J1V349	J1V350	J1V351
J1V352					
				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 RB

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 RB

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~~ 5/12/14

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: 280-64693-1
Sdg Number: JP0897

Method Blank - Batch: 280-261509

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-261509/1-A	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-261509	Lab File ID:	01261504.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	01/26/2015 0919	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	01/23/2015 1900			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	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	Acceptance Limits
Decachlorobiphenyl	78	59 - 130
Tetrachloro-m-xylene	76	53 - 128

Lab Control Sample - Batch: 280-261509

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-261509/2-A	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-261509	Lab File ID:	01261505.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	01/26/2015 0942	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	01/23/2015 1900			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	32.4	28.0	87	54 - 132	
Aroclor 1260	32.4	28.6	88	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	77	59 - 130
Tetrachloro-m-xylene	77	53 - 128

Client: Washington Closure Hanford

Job Number: 280-64693-1
Sdg Number: JP0897

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-261509

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-64693-13	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-261509	Lab File ID:	01261520.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.7 g
Analysis Date:	01/26/2015 1531			Final Weight/Volume:	5 mL
Prep Date:	01/23/2015 1900			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-64693-13	Analysis Batch:	280-261609	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-261509	Lab File ID:	01261521.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	01/26/2015 1554			Final Weight/Volume:	5 mL
Prep Date:	01/23/2015 1900			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	89	89	54 - 132	2	26		
Aroclor 1260	92	91	62 - 129	4	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	73	73	59 - 130
Tetrachloro-m-xylene	81	82	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-261509

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-64693-13	Units:	ug/Kg	MSD Lab Sample ID:	280-64693-13
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	01/26/2015 1531			Analysis Date:	01/26/2015 1554
Prep Date:	01/23/2015 1900			Prep Date:	01/23/2015 1900
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	2.9	U	35.1	34.1	31.0	30.5
Aroclor 1260	2.8	U	35.1	34.1	32.2	30.9

Date: 2 March 2015
To: Washington Closure Hanford Inc. (technical representative)
From: *ELR Consulting*
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-85:2
Subject: Radiochemistry - Data Package No. JP0897-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0897 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
J1V340	1/21/15	Soil	C	See note 1
J1V341	1/21/15	Soil	C	See note 1
J1V342	1/21/15	Soil	C	See note 1
J1V343	1/21/15	Soil	C	See note 1
J1V344	1/21/15	Soil	C	See note 1
J1V345	1/21/15	Soil	C	See note 1
J1V346	1/21/15	Soil	C	See note 1
J1V347	1/21/15	Soil	C	See note 1
J1V348	1/21/15	Soil	C	See note 1
J1V349	1/21/15	Soil	C	See note 1
J1V350	1/21/15	Soil	C	See note 1
J1V351	1/21/15	Soil	C	See note 1
J1V352	1/21/15	Soil	C	See note 1

1 – Gamma spectroscopy, alpha spectroscopy, strontium, nickel-63.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 PARAMETERS

· Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

· Preparation (Method) Blanks

Laboratory Blanks

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

All laboratory blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 5%.

Due to the lack of an LCS analysis, all plutonium-238 and uranium-235 results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (61%), all nickel-63 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates.**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike 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 contract required detection limit (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 duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J1V349/J1V352) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0897 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 the lack of an LCS analysis, all plutonium-238 and uranium-235 results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (61%), all nickel-63 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.*

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

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

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

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

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified 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.

Appendix 2

Summary of Data Qualification

RADIOCHEMICAL DATA QUALIFICATION SUMMARY*

SDG: JP0897	**REVIEWER: ELR**	**Project: 100-D-85:2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Plutonium-238 Uranium-235	J	All	No LCS analysis
Nickel-63	J	All	LCS recovery

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

Appendix 3

Annotated Laboratory Reports

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493 — 3/1/15 — **SDG No:** JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022037 PUISO_PLATE_AEA									
J1V340									
	M512F1AJ	Pu-238	5.48E-03 +- 3.1E-02	U J	pCi/g	100%	9.79E-02	1.00E+00	
		PU239/40	-1.83E-03 +- 3.1E-02	U	pCi/g	100%	6.58E-02	1.00E+00	
J1V340 DUP									
	M512F1AL	Pu-238	2.92E-03 +- 3.0E-02	U	pCi/g	98%	1.00E-01	1.00E+00	60.9
		PU239/40	-1.75E-03 +- 2.9E-02	U	pCi/g	98%	6.32E-02	1.00E+00	-4.1
J1V341									
	M512Q1AG	Pu-238	-8.73E-03 +- 3.0E-02	U J	pCi/g	100%	9.19E-02	1.00E+00	
		PU239/40	-1.75E-03 +- 2.9E-02	U	pCi/g	100%	6.29E-02	1.00E+00	
J1V342									
	M512R1AG	Pu-238	-1.01E-02 +- 3.0E-02	U J	pCi/g	100%	9.74E-02	1.00E+00	
		PU239/40	-5.95E-04 +- 3.0E-02	U	pCi/g	100%	5.41E-02	1.00E+00	
J1V343									
	M512T1AG	Pu-238	-1.11E-02 +- 3.3E-02	U J	pCi/g	92%	1.07E-01	1.00E+00	
		PU239/40	3.27E-02 +- 4.7E-02	U	pCi/g	92%	4.43E-02	1.00E+00	
J1V344									
	M512V1AG	Pu-238	5.25E-03 +- 3.0E-02	U J	pCi/g	100%	9.38E-02	1.00E+00	
		PU239/40	1.34E-02 +- 2.9E-02	U	pCi/g	100%	5.87E-02	1.00E+00	
J1V345									
	M512W1AG	Pu-238	2.42E-02 +- 4.1E-02	U J	pCi/g	100%	7.70E-02	1.00E+00	
		PU239/40	-1.73E-03 +- 2.9E-02	U	pCi/g	100%	6.23E-02	1.00E+00	
J1V346									
	M512X1AG	Pu-238	-1.22E-02 +- 3.0E-02	U J	pCi/g	97%	1.02E-01	1.00E+00	
		PU239/40	-2.92E-03 +- 2.9E-02	U	pCi/g	97%	6.98E-02	1.00E+00	
J1V347									
	M51201AG	Pu-238	6.16E-03 +- 2.8E-02	U J	pCi/g	100%	8.66E-02	1.00E+00	
		PU239/40	1.34E-02 +- 2.8E-02	U	pCi/g	100%	5.09E-02	1.00E+00	
J1V348									
	M51211AG	Pu-238	-1.09E-02 +- 3.2E-02	U J	pCi/g	86%	1.04E-01	1.00E+00	
		PU239/40	-6.38E-04 +- 3.2E-02	U	pCi/g	86%	5.81E-02	1.00E+00	
J1V350									
	M51231AG	Pu-238	-2.91E-03 +- 2.9E-02	U J	pCi/g	99%	6.97E-02	1.00E+00	
		PU239/40	0.00E+00 +- 2.9E-02	U	pCi/g	99%	3.94E-02	1.00E+00	
J1V351									
	M51241AG	Pu-238	2.76E-02 +- 4.1E-02	U J	pCi/g	97%	5.78E-02	1.00E+00	
		PU239/40	-2.87E-03 +- 2.9E-02	U	pCi/g	97%	6.88E-02	1.00E+00	
J1V352									
	M51251AG	Pu-238	-4.42E-03 +- 2.8E-02	U J	pCi/g	100%	7.38E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 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.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493

3/1/15

SDG No: JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022037 PUISO_PLATE_AEA									
J1V352									
	M51251AG	PU239/40	-1.11E-03 +- 2.8E-02	U	pCi/g	100%	5.57E-02	1.00E+00	
5022038 AMCMISO_EIE_PLT_AEA									
J1V340									
	M512F1AK	AMERICIUM 241	-1.22E-02 +- 3.9E-02	U	pCi/g	80%	1.22E-01	1.00E+00	
J1V340 DUP									
	M512F1AM	AMERICIUM 241	-1.15E-02 +- 2.9E-02	U	pCi/g	107%	9.85E-02	1.00E+00	-5.9
J1V341									
	M512Q1AH	AMERICIUM 241	2.10E-02 +- 4.2E-02	U	pCi/g	115%	9.01E-02	1.00E+00	
J1V342									
	M512R1AH	AMERICIUM 241	-1.19E-02 +- 3.0E-02	U	pCi/g	101%	1.02E-01	1.00E+00	
J1V343									
	M512T1AH	AMERICIUM 241	4.99E-02 +- 6.1E-02	U	pCi/g	100%	9.84E-02	1.00E+00	
J1V344									
	M512V1AH	AMERICIUM 241	-1.17E-02 +- 3.0E-02	U	pCi/g	102%	1.00E-01	1.00E+00	
J1V345									
	M512W1AH	AMERICIUM 241	-6.37E-03 +- 2.9E-02	U	pCi/g	100%	8.38E-02	1.00E+00	
J1V346									
	M512X1AH	AMERICIUM 241	1.81E-02 +- 4.0E-02	U	pCi/g	108%	9.43E-02	1.00E+00	
J1V347									
	M51201AH	AMERICIUM 241	-1.06E-02 +- 2.8E-02	U	pCi/g	104%	9.46E-02	1.00E+00	
J1V348									
	M51211AH	AMERICIUM 241	-1.12E-02 +- 2.8E-02	U	pCi/g	98%	9.57E-02	1.00E+00	
J1V350									
	M51231AH	AMERICIUM 241	-2.88E-03 +- 2.9E-02	U	pCi/g	105%	6.90E-02	1.00E+00	
J1V351									
	M51241AH	AMERICIUM 241	1.41E-02 +- 2.9E-02	U	pCi/g	95%	5.33E-02	1.00E+00	
J1V352									
	M51251AH	AMERICIUM 241	9.40E-03 +- 2.8E-02	U	pCi/g	110%	7.38E-02	1.00E+00	
5027050 PUISO_PLATE_AEA									
J1V349									
	M51223AG	Pu-238	8.18E-03 +- 4.1E-02	U J	pCi/g	76%	1.29E-01	1.00E+00	
		PU239/40	-1.64E-03 +- 4.1E-02	U	pCi/g	76%	8.23E-02	1.00E+00	
5027052 AMCMISO_EIE_PLT_AEA									
J1V349									
	M51222AH	AMERICIUM 241	4.12E-03 +- 3.0E-02	U	pCi/g	108%	1.02E-01	1.00E+00	
5022036 UISO_IE_PLATE_AEA									
J1V340									
	M512F1AC	U-234	1.98E-01 +- 1.2E-01		pCi/g	83%	6.17E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 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.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493

V 3/1/15

SDG No: JP0897

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022036 UISO_IE_PLATE_AEA									
J1V340									
	M512F1AC	U-235	-1.23E-03 +- 3.1E-02	U J	pCi/g	83%	6.17E-02	1.00E+00	
		U-238	1.37E-01 +- 9.5E-02		pCi/g	83%	6.17E-02	1.00E+00	
J1V341									
	M512Q1AC	U-234	2.30E-01 +- 1.2E-01		pCi/g	90%	6.65E-02	1.00E+00	
		U-235	-5.82E-04 +- 2.9E-02	U J	pCi/g	90%	5.29E-02	1.00E+00	
		U-238	2.32E-01 +- 1.2E-01		pCi/g	90%	5.29E-02	1.00E+00	
J1V341 DUP									
	M512Q1AJ	U-234	1.63E-01 +- 1.0E-01		pCi/g	85%	4.01E-02	1.00E+00	34.5
		U-235	0.00E+00 +- 3.0E-02	U	pCi/g	85%	4.01E-02	1.00E+00	-200.0
		U-238	1.18E-01 +- 8.6E-02		pCi/g	85%	4.01E-02	1.00E+00	65.0
J1V342									
	M512R1AC	U-234	2.29E-01 +- 1.2E-01		pCi/g	93%	3.88E-02	1.00E+00	
		U-235	1.43E-02 +- 2.9E-02	U J	pCi/g	93%	3.88E-02	1.00E+00	
		U-238	1.57E-01 +- 9.9E-02		pCi/g	93%	3.88E-02	1.00E+00	
J1V343									
	M512T1AC	U-234	1.32E-01 +- 9.2E-02		pCi/g	87%	5.96E-02	1.00E+00	
		U-235	1.42E-02 +- 3.0E-02	U J	pCi/g	87%	5.39E-02	1.00E+00	
		U-238	1.92E-01 +- 1.1E-01		pCi/g	87%	5.39E-02	1.00E+00	
J1V344									
	M512V1AC	U-234	1.19E-01 +- 8.7E-02		pCi/g	84%	6.04E-02	1.00E+00	
		U-235	-6.00E-04 +- 3.0E-02	U J	pCi/g	84%	5.46E-02	1.00E+00	
		U-238	8.94E-02 +- 7.5E-02		pCi/g	84%	5.46E-02	1.00E+00	
J1V345									
	M512W1AC	U-234	2.35E-01 +- 1.2E-01		pCi/g	93%	5.59E-02	1.00E+00	
		U-235	0.00E+00 +- 2.8E-02	U J	pCi/g	93%	3.76E-02	1.00E+00	
		U-238	2.77E-01 +- 1.3E-01		pCi/g	93%	5.06E-02	1.00E+00	
J1V346									
	M512X1AC	U-234	1.61E-01 +- 1.1E-01		pCi/g	81%	4.37E-02	1.00E+00	
		U-235	-6.44E-04 +- 3.2E-02	U J	pCi/g	81%	5.86E-02	1.00E+00	
		U-238	1.93E-01 +- 1.2E-01		pCi/g	81%	4.37E-02	1.00E+00	
J1V347									
	M51201AC	U-234	1.22E-01 +- 9.6E-02		pCi/g	71%	7.65E-02	1.00E+00	
		U-235	3.40E-02 +- 5.0E-02	U J	pCi/g	71%	7.12E-02	1.00E+00	
		U-238	1.93E-01 +- 1.2E-01		pCi/g	71%	7.12E-02	1.00E+00	
J1V348									
	M51211AC	U-234	1.44E-01 +- 9.2E-02		pCi/g	95%	6.38E-02	1.00E+00	
		U-235	3.94E-02 +- 4.7E-02	U J	pCi/g	95%	4.86E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 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.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493

V 3/1/15

SDG No: JP0897

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022036 UISO_IE_PLATE_AEA									
J1V348									
	M51211AC	U-238	2.11E-01 +- 1.1E-01		pCi/g	95%	5.76E-02	1.00E+00	
J1V349									
	M51221AC	U-234	1.24E-01 +- 9.7E-02		pCi/g	74%	4.81E-02	1.00E+00	
		U-235	-7.10E-04 +- 3.6E-02	U J	pCi/g	74%	6.46E-02	1.00E+00	
		U-238	1.94E-01 +- 1.2E-01		pCi/g	74%	6.46E-02	1.00E+00	
J1V350									
	M51231AC	U-234	2.27E-01 +- 1.2E-01		pCi/g	84%	4.10E-02	1.00E+00	
		U-235	-6.05E-04 +- 3.0E-02	U J	pCi/g	84%	5.50E-02	1.00E+00	
		U-238	2.71E-01 +- 1.4E-01		pCi/g	84%	5.50E-02	1.00E+00	
J1V351									
	M51241AC	U-234	1.50E-01 +- 9.5E-02		pCi/g	96%	5.51E-02	1.00E+00	
		U-235	0.00E+00 +- 2.7E-02	U J	pCi/g	96%	3.71E-02	1.00E+00	
		U-238	2.33E-01 +- 1.2E-01		pCi/g	96%	3.71E-02	1.00E+00	
J1V352									
	M51251AC	U-234	2.86E-02 +- 4.1E-02	U	pCi/g	88%	5.30E-02	1.00E+00	
		U-235	1.40E-02 +- 2.9E-02	U J	pCi/g	88%	5.30E-02	1.00E+00	
		U-238	2.03E-01 +- 1.1E-01		pCi/g	88%	5.30E-02	1.00E+00	
5022033 GAMMA_GS									
J1V340									
	M512F1AF	AMERICIUM 241	-5.21E-03 +- 5.5E-02	U	pCi/g		9.31E-02	1.00E+00	
		CO-60	-1.27E-02 +- 1.7E-02	U	pCi/g		2.87E-02	5.00E-02	
		CS-137	7.27E-03 +- 2.1E-02	U	pCi/g		3.60E-02	1.00E-01	
		EU-152	-3.01E-02 +- 5.3E-02	U	pCi/g		7.54E-02	1.00E-01	
		EU-154	1.27E-02 +- 6.3E-02	U	pCi/g		1.13E-01	1.00E-01	
		EU-155	2.78E-02 +- 4.4E-02	U	pCi/g		7.68E-02	1.00E-01	
		K-40	1.03E+01 +- 1.4E+00		pCi/g		1.42E-01		
J1V341									
	M512Q1AF	AMERICIUM 241	-3.38E-02 +- 7.9E-02	U	pCi/g		1.30E-01	1.00E+00	
		CO-60	-6.34E-03 +- 1.6E-02	U	pCi/g		2.70E-02	5.00E-02	
		CS-137	2.68E-02 +- 1.8E-02	U	pCi/g		3.22E-02	1.00E-01	
		EU-152	1.06E-01 +- 1.0E-01	U	pCi/g		7.62E-02	1.00E-01	
		EU-154	-4.35E-03 +- 5.1E-02	U	pCi/g		8.81E-02	1.00E-01	
		EU-155	-6.69E-05 +- 5.7E-02	U	pCi/g		9.45E-02	1.00E-01	
		K-40	1.09E+01 +- 1.4E+00		pCi/g		2.04E-01		
J1V342									
	M512R1AF	AMERICIUM 241	-6.80E-03 +- 2.2E-02	U	pCi/g		3.69E-02	1.00E+00	
		CO-60	4.27E-03 +- 1.4E-02	U	pCi/g		2.49E-02	5.00E-02	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 A2002

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Sample Results Summary

Date: 29-Jan-15

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64493 3/1/15 **SDG No:** JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022033 GAMMA_GS									
J1V342									
	M512R1AF	CS-137	2.41E-03 +- 1.5E-02	U	pCi/g		2.54E-02	1.00E-01	
		EU-152	-8.58E-03 +- 3.3E-02	U	pCi/g		5.73E-02	1.00E-01	
		EU-154	8.76E-03 +- 4.3E-02	U	pCi/g		7.75E-02	1.00E-01	
		EU-155	2.75E-02 +- 3.3E-02	U	pCi/g		5.74E-02	1.00E-01	
		K-40	1.02E+01 +- 1.3E+00		pCi/g		1.80E-01		
J1V343									
	M512T1AF	AMERICIUM 241	5.53E-03 +- 1.6E-02	U	pCi/g		2.61E-02	1.00E+00	
		CO-60	1.03E-04 +- 1.3E-02	U	pCi/g		2.33E-02	5.00E-02	
		CS-137	4.36E-01 +- 6.1E-02		pCi/g		2.08E-02	1.00E-01	
		EU-152	2.60E-02 +- 2.8E-02	U	pCi/g		5.00E-02	1.00E-01	
		EU-154	-6.04E-02 +- 4.5E-02	U	pCi/g		6.86E-02	1.00E-01	
		EU-155	4.13E-02 +- 2.3E-02	U	pCi/g		4.06E-02	1.00E-01	
		K-40	9.97E+00 +- 1.2E+00		pCi/g		2.25E-01		
J1V343 DUP									
	M512T1AJ	AMERICIUM 241	5.61E-03 +- 1.4E-02	U	pCi/g		2.43E-02	1.00E+00	1.5
		CO-60	7.61E-03 +- 1.2E-02	U	pCi/g		2.29E-02	5.00E-02	194.7
		CS-137	3.45E-01 +- 4.9E-02		pCi/g		2.03E-02	1.00E-01	23.3
		EU-152	6.35E-02 +- 5.1E-02	U	pCi/g		4.87E-02	1.00E-01	83.6
		EU-154	2.24E-02 +- 3.8E-02	U	pCi/g		7.02E-02	1.00E-01	-435.7
		EU-155	1.62E-02 +- 2.1E-02	U	pCi/g		3.72E-02	1.00E-01	87.4
		K-40	1.05E+01 +- 1.3E+00		pCi/g		1.64E-01		5.5
J1V344									
	M512V1AF	AMERICIUM 241	-9.25E-03 +- 1.5E-02	U	pCi/g		2.49E-02	1.00E+00	
		CO-60	9.53E-03 +- 1.1E-02	U	pCi/g		2.12E-02	5.00E-02	
		CS-137	6.83E-03 +- 1.1E-02	U	pCi/g		1.99E-02	1.00E-01	
		EU-152	1.80E-02 +- 2.5E-02	U	pCi/g		4.39E-02	1.00E-01	
		EU-154	7.58E-03 +- 4.1E-02	U	pCi/g		7.32E-02	1.00E-01	
		EU-155	2.32E-02 +- 2.4E-02	U	pCi/g		4.06E-02	1.00E-01	
		K-40	9.73E+00 +- 1.2E+00		pCi/g		1.55E-01		
J1V345									
	M512W1AF	AMERICIUM 241	3.71E-02 +- 5.6E-02	U	pCi/g		9.63E-02	1.00E+00	
		CO-60	1.48E-02 +- 1.6E-02	U	pCi/g		3.24E-02	5.00E-02	
		CS-137	-1.09E-02 +- 1.9E-02	U	pCi/g		3.06E-02	1.00E-01	
		EU-152	-7.23E-02 +- 5.3E-02	U	pCi/g		7.06E-02	1.00E-01	
		EU-154	1.83E-02 +- 5.9E-02	U	pCi/g		1.08E-01	1.00E-01	
		EU-155	-1.16E-02 +- 4.3E-02	U	pCi/g		7.35E-02	1.00E-01	
		K-40	9.98E+00 +- 1.4E+00		pCi/g		2.31E-01		

TestAmerica Inc

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Sample Results Summary

Date: 29-Jan-15

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64493

3/1/15

SDG No: JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022033 GAMMA_GS									
J1V346									
	M512X1AF	AMERICIUM 241	-5.28E-02 +- 8.0E-02	U	pCi/g		1.31E-01	1.00E+00	
		CO-60	1.73E-02 +- 1.6E-02	U	pCi/g		3.04E-02	5.00E-02	
		CS-137	3.83E-02 +- 1.9E-02	U	pCi/g		3.42E-02	1.00E-01	
		EU-152	-3.31E-02 +- 1.3E-01	U	pCi/g		7.80E-02	1.00E-01	
		EU-154	-1.41E-02 +- 4.9E-02	U	pCi/g		8.38E-02	1.00E-01	
		EU-155	6.16E-02 +- 5.7E-02	U	pCi/g		9.63E-02	1.00E-01	
		K-40	1.17E+01 +- 1.5E+00		pCi/g		2.05E-01		
J1V347									
	M51201AF	AMERICIUM 241	-3.42E-03 +- 2.1E-02	U	pCi/g		3.59E-02	1.00E+00	
		CO-60	2.70E-03 +- 1.3E-02	U	pCi/g		2.32E-02	5.00E-02	
		CS-137	3.63E-03 +- 1.4E-02	U	pCi/g		2.45E-02	1.00E-01	
		EU-152	-2.70E-03 +- 3.4E-02	U	pCi/g		5.82E-02	1.00E-01	
		EU-154	8.11E-03 +- 4.1E-02	U	pCi/g		7.48E-02	1.00E-01	
		EU-155	2.66E-02 +- 3.3E-02	U	pCi/g		5.75E-02	1.00E-01	
		K-40	1.01E+01 +- 1.3E+00		pCi/g		2.03E-01		
J1V348									
	M51211AF	AMERICIUM 241	6.03E-03 +- 6.1E-02	U	pCi/g		1.04E-01	1.00E+00	
		CO-60	-7.83E-03 +- 1.8E-02	U	pCi/g		3.10E-02	5.00E-02	
		CS-137	5.79E-02 +- 2.7E-02		pCi/g		3.38E-02	1.00E-01	
		EU-152	-3.99E-02 +- 5.3E-02	U	pCi/g		7.66E-02	1.00E-01	
		EU-154	3.42E-02 +- 6.0E-02	U	pCi/g		1.11E-01	1.00E-01	
		EU-155	-1.61E-02 +- 4.5E-02	U	pCi/g		7.66E-02	1.00E-01	
		K-40	1.20E+01 +- 1.6E+00		pCi/g		3.11E-01		
J1V349									
	M51221AF	AMERICIUM 241	-4.46E-02 +- 9.1E-02	U	pCi/g		1.50E-01	1.00E+00	
		CO-60	2.19E-02 +- 1.8E-02	U	pCi/g		3.36E-02	5.00E-02	
		CS-137	5.13E-04 +- 1.9E-02	U	pCi/g		3.21E-02	1.00E-01	
		EU-152	5.16E-02 +- 1.3E-01	U	pCi/g		8.33E-02	1.00E-01	
		EU-154	-3.29E-02 +- 5.4E-02	U	pCi/g		9.02E-02	1.00E-01	
		EU-155	-5.95E-03 +- 6.4E-02	U	pCi/g		1.06E-01	1.00E-01	
		K-40	1.40E+01 +- 1.7E+00		pCi/g		2.30E-01		
J1V350									
	M51231AF	AMERICIUM 241	8.15E-03 +- 2.3E-02	U	pCi/g		4.03E-02	1.00E+00	
		CO-60	-6.24E-03 +- 1.3E-02	U	pCi/g		2.26E-02	5.00E-02	
		CS-137	-1.18E-02 +- 1.4E-02	U	pCi/g		2.31E-02	1.00E-01	
		EU-152	-6.51E-03 +- 3.6E-02	U	pCi/g		6.13E-02	1.00E-01	
		EU-154	-6.08E-03 +- 4.2E-02	U	pCi/g		7.35E-02	1.00E-01	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.5 A2002

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Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493

3/1/15

SDG No: JP0897

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022033 GAMMA_GS									
J1V350									
	M51231AF	EU-155	3.55E-02 +- 3.6E-02	U	pCi/g		6.13E-02	1.00E-01	
		K-40	1.09E+01 +- 1.4E+00		pCi/g		2.09E-01		
J1V351									
	M51241AF	AMERICIUM 241	2.35E-02 +- 6.9E-02	U	pCi/g		1.18E-01	1.00E+00	
		CO-60	-3.29E-03 +- 2.1E-02	U	pCi/g		3.67E-02	5.00E-02	
		CS-137	2.95E-03 +- 2.3E-02	U	pCi/g		3.93E-02	1.00E-01	
		EU-152	-6.80E-02 +- 6.0E-02	U	pCi/g		8.45E-02	1.00E-01	
		EU-154	-1.20E-01 +- 6.9E-02	U	pCi/g		1.01E-01	1.00E-01	
		EU-155	4.44E-02 +- 5.2E-02	U	pCi/g		9.15E-02	1.00E-01	
		K-40	1.30E+01 +- 1.8E+00		pCi/g		3.40E-01		
J1V352									
	M51251AF	AMERICIUM 241	-6.79E-02 +- 8.7E-02	U	pCi/g		1.41E-01	1.00E+00	
		CO-60	-5.30E-03 +- 1.6E-02	U	pCi/g		2.77E-02	5.00E-02	
		CS-137	8.85E-03 +- 1.8E-02	U	pCi/g		3.06E-02	1.00E-01	
		EU-152	-3.02E-02 +- 1.5E-01	U	pCi/g		8.59E-02	1.00E-01	
		EU-154	-1.59E-02 +- 5.2E-02	U	pCi/g		8.85E-02	1.00E-01	
		EU-155	2.79E-02 +- 6.3E-02	U	pCi/g		1.05E-01	1.00E-01	
		K-40	1.37E+01 +- 1.7E+00		pCi/g		2.19E-01		
5022034 SRTOT_SEP_PRECIP_GPC									
J1V340									
	M512F1AD	STRONTIUM	1.79E-01 +- 2.0E-01	U	pCi/g	88%	4.05E-01	1.00E+00	
J1V341									
	M512Q1AD	STRONTIUM	-1.46E-01 +- 1.6E-01	U	pCi/g	88%	4.18E-01	1.00E+00	
J1V342									
	M512R1AD	STRONTIUM	-6.31E-02 +- 1.5E-01	U	pCi/g	93%	3.75E-01	1.00E+00	
J1V343									
	M512T1AD	STRONTIUM	3.50E-01 +- 2.2E-01	U	pCi/g	88%	3.96E-01	1.00E+00	
J1V344									
	M512V1AD	STRONTIUM	7.78E-02 +- 1.9E-01	U	pCi/g	88%	4.13E-01	1.00E+00	
J1V344 DUP									
	M512V1AJ	STRONTIUM	3.80E-02 +- 1.6E-01	U	pCi/g	97%	3.62E-01	1.00E+00	68.7
J1V345									
	M512W1AD	STRONTIUM	7.79E-02 +- 1.9E-01	U	pCi/g	92%	4.20E-01	1.00E+00	
J1V346									
	M512X1AD	STRONTIUM	3.96E-02 +- 1.8E-01	U	pCi/g	88%	4.15E-01	1.00E+00	
J1V347									
	M51201AD	STRONTIUM	-8.32E-02 +- 1.7E-01	U	pCi/g	88%	4.31E-01	1.00E+00	

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rptTALRchSaSummary2 V5.3.6.5 A2002

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Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 29-Jan-15

Report No. : 64493

3/1/15

SDG No: JP0897

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5022034 SRTOT_SEP_PRECIP_GPC									
	J1V348								
	M51211AD	STRONTIUM	1.56E-01 +- 1.9E-01	U	pCi/g	98%	4.04E-01	1.00E+00	
	J1V349								
	M51221AD	STRONTIUM	-1.26E-01 +- 1.5E-01	U	pCi/g	88%	4.01E-01	1.00E+00	
	J1V350								
	M51231AD	STRONTIUM	7.84E-02 +- 2.2E-01	U	pCi/g	74%	4.86E-01	1.00E+00	
	J1V351								
	M51241AD	STRONTIUM	1.22E-01 +- 1.9E-01	U	pCi/g	84%	4.07E-01	1.00E+00	
	J1V352								
	M51251AD	STRONTIUM	9.49E-02 +- 1.8E-01	U	pCi/g	88%	3.87E-01	1.00E+00	
5022035 NI63_LSC									
	J1V340								
	M512F1AE	Ni-63	-8.94E-01 +- 1.6E+00	U J	pCi/g	85%	3.83E+00	3.00E+01	
	J1V341								
	M512Q1AE	Ni-63	-2.81E-01 +- 1.7E+00	U J	pCi/g	81%	4.00E+00	3.00E+01	
	J1V342								
	M512R1AE	Ni-63	-3.44E-01 +- 1.6E+00	U J	pCi/g	86%	3.77E+00	3.00E+01	
	J1V342 DUP								
	M512R1AJ	Ni-63	7.74E-01 +- 1.8E+00	U	pCi/g	81%	4.07E+00	3.00E+01	520.4
	J1V343								
	M512T1AE	Ni-63	2.00E+00 +- 1.8E+00	U J	pCi/g	86%	3.92E+00	3.00E+01	
	J1V344								
	M512V1AE	Ni-63	1.00E+00 +- 1.7E+00	U	pCi/g	84%	3.78E+00	3.00E+01	
	J1V345								
	M512W1AE	Ni-63	-1.21E-01 +- 1.6E+00	U	pCi/g	84%	3.87E+00	3.00E+01	
	J1V346								
	M512X1AE	Ni-63	3.46E-02 +- 1.6E+00	U	pCi/g	87%	3.80E+00	3.00E+01	
	J1V347								
	M51201AE	Ni-63	-1.04E-01 +- 1.8E+00	U	pCi/g	78%	4.17E+00	3.00E+01	
	J1V348								
	M51211AE	Ni-63	2.91E-01 +- 1.6E+00	U	pCi/g	90%	3.57E+00	3.00E+01	
	J1V349								
	M51221AE	Ni-63	-6.01E-02 +- 1.7E+00	U	pCi/g	85%	3.91E+00	3.00E+01	
	J1V350								
	M51231AE	Ni-63	-4.67E-01 +- 1.6E+00	U	pCi/g	88%	3.76E+00	3.00E+01	
	J1V351								
	M51241AE	Ni-63	-2.24E-01 +- 1.5E+00	U	pCi/g	90%	3.58E+00	3.00E+01	
	J1V352								
	M51251AE	Ni-63	7.64E-01 +- 1.5E+00	U	pCi/g	95%	3.47E+00	3.00E+01	

TestAmerica Inc

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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

January 29, 2015

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	January 22, 2015
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0897
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On January 22, 2015, thirteen soil samples were received at TestAmerica for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V340	M512F	SOIL	1/22/15
J1V341	M512Q	SOIL	1/22/15
J1V342	M512R	SOIL	1/22/15
J1V343	M512T	SOIL	1/22/15
J1V344	M512V	SOIL	1/22/15
J1V345	M512W	SOIL	1/22/15
J1V346	M512X	SOIL	1/22/15
J1V347	M5120	SOIL	1/22/15
J1V348	M5121	SOIL	1/22/15
J1V349	M5122	SOIL	1/22/15
J1V350	M5123	SOIL	1/22/15
J1V351	M5124	SOIL	1/22/15
J1V352	M5125	SOIL	1/22/15

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 analyses were:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001
Uranium 234, 235 and 238 by method RL-ALP-015
Americium-241 by method RL-ALP-001
Gas Proportional Counting
Strontium-90 by method RL-GPC-010
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Nickel-63 by method RL-LCS-017
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

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001:
Sample J1V349 had no tracer recovery in the original batch; it was reanalyzed in batch 5027050 for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V340) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V341) results are within contractual requirements.

Americium 241 by method RL-ALP-001:
Sample J1V349 had no tracer recovery in the original batch; it was reanalyzed in batch 5027052 for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V340) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-010:
The LCS, batch blank, samples and sample duplicate (J1V344) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The CRDL was not met for some of the analytes. Except as noted, the LCS, batch blank, samples and sample duplicate (J1V343) results are within contractual requirements.

Liquid Scintillation Counting
Nickel-63 by method RL-LCS-017:
The LCS recovery is below the acceptance criteria; it was recounted and the recovery was confirmed. The batch blank and duplicate agreement is within the acceptance limits and the sample results are less than one tenth the CRDL. There is no indication of low method bias as represented by the successful tracer recoveries. A reanalysis is available upon request. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V342) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1V340) and sample matrix spike (J1V340) 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-075-464	Page 1 of 3

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C	None	None	None	
Type of Container	G/P	G/P	G/P	G/P	
No. of Container(s)	1	1	1	1	
Volume	125mL	125mL	125mL	1000mL	
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 – Total Sr	See item (2) in Special Instructions	

Sample No.	Matrix	Sample Date	Sample Time				
J1V340 MS12F	SOIL	01/21/15	1010	X	X	X	X
J1V341 MS12Q	SOIL	01/21/15	1016	X	X	X	X
J1V342 MS12R	SOIL	01/21/15	1023	X	X	X	X
J1V343 MS12T	SOIL	01/21/15	1004	X	X	X	X
J1V344 MS12V	SOIL	01/21/15	0957	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe, Date/Time: 1027 1-21-15	Received By/Stored In: S. Martinez/S. Martinez, Date/Time: 1027 01/21/15
Relinquished By/Removed From: S. Martinez/S. Martinez, Date/Time: 1615 01/21/15	Received By/Stored In: C. Bingham, Date/Time: 1-21-15 1615
Relinquished By/Removed From: C. Bingham, Date/Time: 1-21-15 1630	Received By/Stored In: 1060 Battelle, fridge #2A, Date/Time: 1-21-15 1630
Relinquished By/Removed From: 1060 Battelle, fridge #2A, Date/Time: 1-22-15 0810	Received By/Stored In: C. Bingham, Date/Time: 1-22-15 0810
Relinquished By/Removed From: C. Bingham, WCH, Date/Time: 1-22-15 1340	Received By/Stored In: J. Friesz, TARI, Date/Time: 1/22/15 1340
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

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

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

J5A220430
Due 1-29-15

REVIEWED BY T. Edmundson/Raymond DATE 1-22-15

SDG:

JP0897

J5A220430

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-464	Page 2 of 3

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA
Other Labs Shipped To: TestAmerica Denver			

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C	None	None	None								
Type of Container	G/P	G/P	G/P	G/P								
No. of Container(s)	1	1	1	1								
Volume	125mL	125mL	125mL	1000mL								
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 -- Total Sr	See item (2) in Special Instructions								

Sample No.	Matrix	Sample Date	Sample Time										
J1V345 M512W	SOIL	01/21/15	0952	X	X	X	X						
J1V346 M512X	SOIL	01/21/15	0945	X	X	X	X						
J1V347 M5120	SOIL	01/21/15	0939	X	X	X	X						
J1V348 M5121	SOIL	01/21/15	0932	X	X	X	X						
J1V349 M5122	SOIL	01/21/15	0913	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe — Date/Time: 1-21-15 1027	Received By/Stored In: C. Martinez/C. Martinez — Date/Time: 01/21/15 1027
Relinquished By/Removed From: C. Martinez/C. Martinez — Date/Time: 01/21/15 1615	Received By/Stored In: C. Bingham — Date/Time: 1-21-15 1615
Relinquished By/Removed From: C. Bingham — Date/Time: 1-21-15 1630	Received By/Stored In: 1060 Battelle, fridge #2A — Date/Time: 1-21-15 1630
Relinquished By/Removed From: 1060 Battelle, fridge #2A 22 — Date/Time: 1-22-15 0810	Received By/Stored In: C. Bingham — Date/Time: 1-22-15 0810
Relinquished By/Removed From: C. Bingham — Date/Time: 1-22-15 1340	Received By/Stored In: J. Friesz, TARL — Date/Time: 1/22/15 1340
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:

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

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

JSA220430
JP0897
Due 1-29-15

REVIEWED BY I. Edmundson Vincent DATE 1-22-15

JP0897

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-464 | Page 3 of 3

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-85:2, Verification, Staging pile area		SAF No.: RC-075
Ice Chest No.: WCH-08-032	Field Logbook No.: EL-1662-03	COA: 01D8522000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS: none

Special Handling and/or Storage: Cooling as required

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	125mL	125mL	1000mL							
Sample Analysis	Chromium Hex - 7196	Americium-241; Isotopic Plutonium; Isotopic Uranium	Nickel-63; Strontium-89,90 -- Total Sr	See item (2) in Special Instructions							

Sample No.	Matrix	Sample Date	Sample Time										
J1V350 MS123	SOIL	01/21/15	0919	X	X	X	X						
J1V351 MS124	SOIL	01/21/15	0926	X	X	X	X						
J1V352 MS125	SOIL	01/21/15	0913	X	X	X	X						
~~J1V353 01/21/15~~	~~SOIL~~												

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe — Date/Time: 1-21-15 1027	Received By/Stored In: S. Martinez/S. Martinez — Date/Time: 01/21/15 1027
Relinquished By/Removed From: S. Martinez/S. Martinez — Date/Time: 01/21/15 1615	Received By/Stored In: C. Bingham — Date/Time: 1-21-15 1615
Relinquished By/Removed From: C. Bingham — Date/Time: 1-21-15 1630	Received By/Stored In: 1060 Battelle, fridge #2A — Date/Time: 1-21-15 1630
Relinquished By/Removed From: 1060 Battelle, fridge #2A — Date/Time: 1-22-15 0810	Received By/Stored In: C. Bingham — Date/Time: 1-22-15 0810
Relinquished By/Removed From: C. Bingham MH — Date/Time: 1-22-15 1340	Received By/Stored In: J. Friesz, TARL — Date/Time: 1/22/15 1340
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:

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

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

JSA220430

Due 1-29-15

RECEIVED BY T. Edmundson via email DATE 1-22-15

JP0897

J5A220430

WCH-EE-011

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: 10-30053
NCM Initiated By: Lisa Antonson
Date Opened: 01/28/2015
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Counting
Tests: Gamma by GER
Lot #'s (Sample #'s): J5A220000 (33), J5A220430 (1,10,11,12,13,2,3,4,5,6,7,8,9),
QC Batches: 5022033,

Nonconformance: MDA not met
Subcategory: Data accepted

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	01/28/2015	Samples M512F, M512W, M5121, and M5124 do not meet CRDL for Eu-154 Samples M5122 and M5125 do not meet CRDL for Eu-155. The LCS does not meet CRDL for Eu-152.

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	01/28/2015	None

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Date Printed: 1/28/2015

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-95:2		DATA PACKAGE:	JP0897	
VALIDATOR:	ELR	LAB: TAL		DATE: 2/24/15	
			SDG:	JP0897	
ANALYSES PERFORMED					
☐ Gross Alpha/Beta	☒ Strontium-90	☐ Technetium-99	☒ Alpha Spectroscopy	☒ Gamma Spectroscopy	
☐ Total Uranium	☐ Radium-22	☐ Tritium	Am-63		
SAMPLES/MATRIX					
J1U340	J1U341	J1U342	J1U343	J1U344	J1U345
J1U346	J1U347	J1U348	J1U349	J1U350	J1U351
J1U352					
					Soil

1. Completeness ..... ☐ N/A

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

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

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

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

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

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

Comments: _____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

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

Analytes detected in method blank? ..... Yes No N/A

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

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

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

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

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

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

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

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: Ni-63 – 61% – J all

no U-235 or pu-238 LCS – J all

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

_____

_____

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8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

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9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

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

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

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

Field split sample(s) analyzed? ..... Yes No N/A

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

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

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

Comments: no PAS or FS

49/52

12. Holding Times (All levels)

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

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

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

Results Acceptable? (Levels D, E) Yes No N/A

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

MDA's meet required detection limits? Yes No N/A

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

Comments:

Ore - MH

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

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

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

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

Comments: _____

_____

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_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

QC Results Summary

Date: 29-Jan-15

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 64493 **SDG No.:** JP0897

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
PUISO_PLATE_AEA								
5022037 BLANK QC,								
M514T1AA	*Pu-238*	*-1.75E-03 +- 2.9E-02*	*U*	*pCi/g*	*97%*			*6.29E-02*
	PU239/40	-1.16E-03 +- 2.9E-02	U	pCi/g	97%			5.86E-02
5022037 LCS,								
M514T1AC	PU239/40	5.72E+00 +- 1.2E+00		pCi/g	83%	115%	0.1	7.00E-02
AMCMISO_EIE_PLT_AEA								
5022038 BLANK QC,								
M51431AA	AMERICIUM 241	-1.83E-03 +- 3.1E-02	U	pCi/g	93%			6.58E-02
5022038 LCS,								
M51431AC	AMERICIUM 241	4.17E+00 +- 9.1E-01		pCi/g	95%	90%	-0.1	6.55E-02
PUISO_PLATE_AEA								
5027050 BLANK QC,								
M52401AA	Pu-238	6.52E-03 +- 3.0E-02	U	pCi/g	95%			9.17E-02
	PU239/40	-1.18E-03 +- 3.0E-02	U	pCi/g	95%			5.96E-02
5027050 LCS,								
M52401AC	PU239/40	5.42E+00 +- 1.1E+00		pCi/g	96%	118%	0.2	6.47E-02
AMCMISO_EIE_PLT_AEA								
5027052 BLANK QC,								
M526W1AA	AMERICIUM 241	4.20E-03 +- 2.7E-02	U	pCi/g	97%			8.96E-02
5027052 LCS,								
M526W1AC	AMERICIUM 241	4.57E+00 +- 9.4E-01		pCi/g	106%	109%	0.1	9.07E-02
UISO_IE_PLATE_AEA								
5022036 BLANK QC,								
M514R1AA	U-234	1.32E-02 +- 2.8E-02	U	pCi/g	91%			5.02E-02
	U-235	1.32E-02 +- 2.8E-02	U	pCi/g	91%			5.02E-02
	U-238	0.00E+00 +- 2.8E-02	U	pCi/g	91%			3.74E-02
5022036 LCS,								
M514R1AC	U-234	3.40E+00 +- 7.9E-01		pCi/g	75%	109%	0.1	7.24E-02
	U-238	3.45E+00 +- 8.0E-01		pCi/g	75%	105%	0.1	6.75E-02
GAMMA_GS								
5022033 BLANK QC,								
M514H1AA	AMERICIUM 241	1.40E-02 +- 1.4E-02	U	pCi/g				2.58E-02
	CO-60	5.01E-03 +- 1.1E-02	U	pCi/g				2.07E-02
	CS-137	-9.37E-03 +- 1.1E-02	U	pCi/g				1.74E-02
	EU-152	2.76E-02 +- 2.9E-02	U	pCi/g				5.34E-02
	EU-154	-7.09E-03 +- 3.3E-02	U	pCi/g				5.88E-02
	EU-155	8.30E-03 +- 2.3E-02	U	pCi/g				4.06E-02
	K-40	-3.97E-01 +- 2.9E-01	U	pCi/g				6.03E-01
5022033 LCS,								
M514H1AC	CS-137	1.05E+00 +- 1.4E-01		pCi/g		105%	0.1	3.84E-02
	RA-226	9.76E-01 +- 1.6E-01		pCi/g		86%	-0.1	6.70E-02

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.5
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

QC Results Summary

Date: 29-Jan-15

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 64493

SDG No.: JP0897

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
M514H1AC	RA-228	6.57E-01 +- 1.8E-01		pCi/g		111%	0.1	1.08E-01
	U-238	1.04E+00 +- 1.7E-01		pCi/g		87%	-0.1	7.76E-02
SRTOT_SEP_PRECIP_GPC								
5022034 BLANK QC,								
M514K1AA	STRONTIUM	9.52E-02 +- 1.8E-01	U	pCi/g	90%			3.93E-01
5022034 LCS,								
M514K1AC	STRONTIUM	4.27E+00 +- 1.1E+00		pCi/g	89%	123%	0.2	3.76E-01
NI63_LSC								
5022035 BLANK QC,								
M514P1AA	NI-63	7.22E-01 +- 8.6E-01	U	pCi/g	86%			1.89E+00
5022035 LCS,								
M514P1AC	NI-63	6.96E+01 +- 3.9E+00		pCi/g	89%	61%	-0.4	1.84E+00
7196_CR6								
5022041 MATRIX SPIKE, J1V340								
M512F1AN	HEXCHROME	2.80E+01 +- 0.0E+00		mg/kg	N/A	88%	-0.1	1.55E-01
5022041 LCS,								
M516P1AC	HEXCHROME	1.87E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
5022041 BLANK QC,								
M516P1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 33

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.5
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.