SAF-RC-206
Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites – Full Soil Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 2/26/13
INITIAL/DATE

COMMENTS:

SDG J01699 SAF-RC-206

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-C-7:1 (SPA3 Verification)

Analytical Data Package Prepared For

Washington Closure Hanford

Radiochemical Analysis By

TestAmerica

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 26 *Pages*

Report No.: 54576

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J01699	RC-206	J1RDP5	J3B070431-1	MX3TT1AA	9MX3TT10	3042043
		J1RDP6	J3B070431-2	MX3TX1AA	9MX3TX10	3042043
		J1RDP7	J3B070431-3	MX3T01AA	9MX3T010	3042043
		J1RDR1	J3B070431-6	MX3T31AA	9MX3T310	3042043
		J1RDR4	J3B070431-7	MX3T41AA	9MX3T410	3042043
		J1RDR6	J3B070431-4	MX3T11AA	9MX3T110	3042043
		J1RDR7	J3B070431-5	MX3T21AA	9MX3T210	3042043

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

February 18, 2013

Attention: Joan Kessner

SAF Number	:	RC-206
Date SDG Closed	:	February 7, 2013
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	J01699
Data Deliverable	:	15– Day / Summary

CASE NARRATIVE

I. Introduction

On February 7, 2013, seven soil samples were received at TestAmerica for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1RDP5	MX3TT	SOIL	2/07/13
J1RDP6	MX3TX	SOIL	2/07/13
J1RDP7	MX3T0	SOIL	2/07/13
J1RDR1	MX3T3	SOIL	2/07/13
J1RDR4	MX3T4	SOIL	2/07/13
J1RDR6	MX3T1	SOIL	2/07/13
J1RDR7	MX3T2	SOIL	2/07/13

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:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1RDP5) and the sample matrix spike (J1RDP5) 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

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica TARL

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

Date: 18-Feb-13

Report No. : 54576

SDG No: J01699

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
3042043	7196_CR6								
	J1RDP5								
	MX3TT1AA	HEXCHROME	2.65E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	MX3TT1AD	HEXCHROME	3.28E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	3.50E-01	21.2
	J1RDP6								
	MX3TX1AA	HEXCHROME	2.33E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1RDP7								
	MX3T01AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1RDR1								
	MX3T31AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1RDR4								
	MX3T41AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1RDR6								
	MX3T11AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1RDR7								
	MX3T21AA	HEXCHROME	4.15E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 8

TestAmerica

rptSTLRchSaSummary2 V5.2.23 A2002

RPD - Relative Percent Difference.

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

QC Results Summary

TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Date: 18-Feb-13

Report No. : 54576

SDG No.: J01699

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
7196_CR6								
3042043 MATRIX SPIKE, J1RDP5								
MX3TT1AC	HEXCHROME	2.38E+01 +- 0.0E+00		mg/kg	N/A	79%	-0.2	1.55E-01
3042043 LCS,								
MX4JG1AC	HEXCHROME	1.82E+01 +- 0.0E+00		mg/kg	N/A	96%	0.0	1.55E-01
3042043 BLANK QC,								
MX4JG1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 3

TestAmerica

rptSTLRchQcSummary V5.2.23 A2002

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

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

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	**TestAmerica**	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:10:00 AM
Lot-Sample No.:	**J3B070431-1**	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	**J1RDP5**	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX3TT1AA		**Report DB ID:**	9MX3TT10				
HEXCHROME	**2.65E-01**			0.0E+00	1.55E-01	mg/kg	N/A	*(1.7)*	2/14/13 08:40 a		2.509	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	TestAmerica	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:15:00 AM
Lot-Sample No.:	J3B070431-2	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	J1RDP6	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX3TX1AA		**Report DB ID:**	9MX3TX10				
HEXCHROME	**2.33E-01**			0.0E+00	1.55E-01	mg/kg	N/A	*(1.5)*	2/14/13 08:40 a		2.5099	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	TestAmerica	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:20:00 AM
Lot-Sample No.:	J3B070431-3	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	J1RDP7	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX3T01AA		**Report DB ID:**	9MX3T010				
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	2/14/13 08:40 a		2.51	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	**TestAmerica**	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:30:00 AM
Lot-Sample No.:	**J3B070431-6**	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	**J1RDR1**	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX3T31AA		**Report DB ID:**	9MX3T310				
HEXCHROME	**1.55E-01**	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	2/14/13 08:40 a		2.5083	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	TestAmerica	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:35:00 AM
Lot-Sample No.:	J3B070431-7	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	J1RDR4	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:** MX3T41AA			**Report DB ID:** 9MX3T410					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	2/14/13 08:40 a		2.505	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	TestAmerica	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:40:00 AM
Lot-Sample No.:	J3B070431-4	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	J1RDR6	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:** MX3T11AA			**Report DB ID:** 9MX3T110					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	2/14/13 08:40 a		2.5097	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 18-Feb-13

Lab Name:	**TestAmerica**	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:10:00 AM
Lot-Sample No.:	**J3B070431-5**	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	**J1RDR7**	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:** MX3T21AA			**Report DB ID:** 9MX3T210					
HEXCHROME	**4.15E-01**			0.0E+00	1.55E-01	mg/kg	N/A	*(2.7)*	2/14/13 08:40 a		2.5034	
							1.55E-01	*N/A*			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 18-Feb-13

DUPLICATE RESULTS

Lab Name:	**TestAmerica**	**SDG:**	J01699	**Collection Date:**	2/7/2013 8:10:00 AM
Lot-Sample No.:	**J3B070431-1**	**Report No. :**	54576	**Received Date:**	2/7/2013 11:10:00 AM
Client Sample ID:	**J1RDP5**	**COC No. :**	RC-206-081	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:** MX3TT1AD		**Report DB ID:** MX3TT1ER			**Orig Sa DB ID:** 9MX3TT10			
HEXCHROME	3.28E-01			0.0E+00	1.55E-01	mg/kg	N/A	(2.1)	2/14/13 08:40 a		2.5083	
	2.65E-01		**RPD**	**21.2**		3.50E-01		N/A			g	

No. of Results: 1 **Comments:**

TestAmerica **RPD** - Relative Percent Difference.

rptSTLRchDupV5.2.23 A2002 **MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.**

FORM II

BLANK RESULTS

Date: 18-Feb-13

Lab Name: TestAmerica

Matrix: SOIL

SDG: J01699

Report No. : 54576

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX4JG1AA	**Report DB ID:**	MX4JG1AB					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	2/14/13 08:40 a		2.5	
						1.55E-01		N/A			g	

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.23 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 18-Feb-13

Lab Name: TestAmerica

Matrix: SOIL

SDG: J01699

Report No. : 54576

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3042043	7196_CR6			**Work Order:**	MX4JG1AC		**Report DB ID:**	MX4JG1AS					
HEXCHROME	1.82E+01			0.0E+00	1.55E-01	mg/kg	N/A	1.90E+01		96%	2/14/13 08:40 a	2.5	
							Rec Limits:	80	120	0.0		g	

No. of Results: 1 **Comments:**

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

rptSTLRchLcs
V5.2.23 A2002

FORM II

MATRIX SPIKE RESULTS

Date: 18-Feb-13

Lab Name: TestAmerica **SDG:** J01699

Lot-Sample No.: J3B070431-1, J1RDP5 **Report No. :** 54576 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3042043	**Work Order:** MX3TT1AC			**Report DB ID:** MX3TT1CW			**Orig Sa DB ID:** 9MX3TT10					
HEXCHROME	2.38E+01			0.0E+00	1.55E-01	mg/kg	N/A	79.14%	3.01E+01	2/14/13 08:40 a	2.5063	7196_CR6
	2.65E-01										g	

Number of Results: 1

Comments:

TestAmerica
rptSTLRchMs
V5.2.23 A2002

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

TestAmerica
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Richland Laboratory
Data Review Check List
Hexavalent Chromium

Batch Number(s):	3042043	Lab Sample Numbers or SDG:	J01699
Method/Test/Parameter: Cr+6 ☐ RL-WC-003(Aqueous) ☒ RL-WC-004(Solid)			

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Initial Calibration 1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient greater than 0.97?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within 10% of expected?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			✓
B. Continuing Calibration 1. CCV analyzed at required frequency and all parameters within 10% of expected?	✓			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			✓
C. Sample Analysis 1. Were any samples with concentrations above the linear range diluted and reanalyzed?			✓	✓
2. Were all sample holding times met?	✓			✓
D. QC Samples 1. All results for the preparation blank below limits?	✓			✓
2. LCS percent recovery within 85-115%	✓			✓
3. $PbCrO_4$ percent recovery within 75-125%?	✓			✓
4. Sample and Duplicate within 20% (aqueous) or 35% (solid) RPD?	✓			✓
5. MS or MS/MSD recoveries within 85-115% (aqueous) or 75-125% (solid)?	✓			✓
6. On MS failure, PDMS within 85-115%?			✓	✓
E. Other 1. Are all nonconformances included and noted?			✓	✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response or list NCM number:

Analyst [signature] Date 2/15/13 2nd Review [signature] Date 2/15/13

CG-231 Rev 1 5/12

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-206-081	Page 1 of 2
Collector R. Brackett	Company Contact J. Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 02/07/13 Data Turnaround ~~21 Days~~ 15/15 8C
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - F	Sampling Location 100-C-7:1 (SPA3 verification)		SAF No. RC-206	
Ice Chest No. NA	Field Logbook No. EL-1655-08	COA R00C712000	Method of Shipment ~~Fed Ex~~ DF 2-7-13 Hand Deliver	
Shipped To TestAmerica Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. ~~See OSPG~~ NA DF 2-7-13	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 degrees centigrade

J3B070431

J01699
Due 2-22-13

J3B070431

Preservation				Cool 4C	Cool 4C							
Type of Container				G/P	G/P							
No. of Container(s)				1	1							
Volume				125mL	125mL							
				See item (1) in Special Instructions. DF 2-7-13	Chromium Hex - 7196							
Sample No.	Matrix *	Sample Date	Sample Time									
J1RDP5 MX3TT	SOIL	02/07/13	0810	X	X							
J1RDP6 MX3TX	SOIL	02/07/13	0815	X	X							
J1RDP7 MX3TO	SOIL	02/07/13	0820	X	X							
~~J1RDP8~~	SOIL											
J1RDP9 02/07/13	~~SOIL~~											

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From Kas Brackett	Date/Time 0845 2-7-13	Received By/Stored In C. Martinez / C. Martinez	Date/Time 0845 02/07/13
Relinquished By/Removed From C. Martinez / C. Martinez	Date/Time 1017 02/07/13	Received By/Stored In A. Freier A. Freier	Date/Time 1017 2-7-13
Relinquished By/Removed From WCH A. Freier A. Freier	Date/Time 1110 2-7-13	Received By/Stored In Julie Bock / Bock TALR	Date/Time 1110 2-7-13
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	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} DF 2-7-13

REVIEWED BY BK DATE 2-7-13

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

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-206-081	Page 2 of 2
Collector R. Brackett	Company Contact J. Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 02/07/13 Data Turnaround ~~21 Days~~ 15/15 8C
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - F	Sampling Location 100-C-7:1 (SPA3 verification)		SAF No. RC-206	
Ice Chest No. NA	Field Logbook No. EL-1655-08	COA R00C712000	Method of Shipment ~~Fed Ex~~ AJ 2-7-13 Hand Deliver	
Shipped To TestAmerica Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. ~~See OSPC~~ AJ 2-7-13 NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 degrees centigrade

J3B070431

J01699

Due 2-22-13

Preservation	Cool 4C	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	125mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions. AJ 2-7-13	Chromium Hex - 7196									

Sample No.	Matrix *	Sample Date	Sample Time									
~~J1RDR5~~	~~SOIL~~ 02/07/13											
J1RDR6 MX3T1	SOIL	02/07/13	0840	X	X							
J1RDR7 MX3T2	SOIL	02/07/13	0810	X	X							
J1RDR1MX3T3	soil	02/07/13	0830	X	X							
J1RDR4MX3T4	soil	02/07/13	0835	X	X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From Rob Brackett RB	Date/Time 0845 2-7-13	Received By/Stored In C. Martinez / C. Martinez	Date/Time 0845 02/07/13
Relinquished By/Removed From C. Martinez / C. Martinez	Date/Time 1017 02/07/13	Received By/Stored In A. Freier A. Freier	Date/Time 1017 2-7-13
Relinquished By/Removed From A. Freier A. Freier WCH	Date/Time 1110 2-7-13	Received By/Stored In J. Bock / Bock TALR	Date/Time 2-7-13 1110
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	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 BR DATE 2-7-13

Matrix *

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

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

WCH-EE-011

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Sample Check-in List

Date/Time Received: 2-7-13 | 1110 Container GM Screen Result: (Airlock) .4 Initials [B]
Sample GM Screen Result (Sample Receiving) .4 Initials [B]

Client: WCH SDG #: JD1699 NA [ ] SAF #: RC-206 NA [ ]

Lot Number: J3B070431

Chain of Custody # RC-206-081

Shipping Container ID: hand delivered NA [W] Air Bill Number: NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.

No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: 4.0 °C on Ice NA [ ]
4. Vermiculite/packing materials is NA [B] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 7
7. Containers received: 7 x 125mLp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have:
   - ____ tape
   - [B] custody seals
   - ____ hazard labels
   - [B] appropriate sample labels
10. Matrix:
    - [B] A (FLT, Wipe, Solid, Soil)
    - ____ S (Air, Niosh 7400)
    - ____ I (Water)
    - ____ T (Biological, Ni-63)
11. Samples:
    - [B] are in good condition
    - ____ are broken
    - ____ are leaking
    - ____ have air bubbles (Only for samples requiring no head space)
    - ____ Other
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [B]
    (If acidification is necessary, then document sample ID, initial pH, amount of HNO_3 added and pH after addition on table overleaf)

    RPL ID # of preservative used : N/A
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]

LS-023, Rev. 15, 07/11 See over for additional information.

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15. Sample Location, Sample Collector Listed on COC? * Yes [✓] No [ ]
*For documentation only. No corrective action needed.

16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [✓] Client/Courier unpack cooler.

Sample Custodian: Jane Bock Date: 2-7-13

Client Informed on _____ by _____ Person contacted _____

[✓] No action necessary; process as is

Project Manager Brando Wyatt Date 2/8/13

SAMPLE ID	Initial pH	Acid Amt	Final pH	SAMPLE ID	Initial pH	Acid Amt	Final pH

JB 2-7-13 JBock 2-7-13

J3B 070431 [signature] 8/13

LS-023, Rev. 15, 07/11

See over for additional information.

2/12/2013 8:58:17 AM

Sample Preparation/Analysis

127642, Washington Closure Hanford LLC
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

AnalyDueDate: 02/22/2013

Batch: 3042043 SOIL mg/kg PM, Quote: RW2, 27038
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 MX3TT-1-AA J3B070431-1-SAMP 02/07/2013 08:10			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
2 MX3TT-1-AC-S J3B070431-1-MS 02/07/2013 08:10			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
3 MX3TT-1-AD-X J3B070431-1-DUP 02/07/2013 08:10			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
4 MX3TT-1-AE-S J3B070431-1-MS 02/07/2013 08:10			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
5 MX3TX-1-AA J3B070431-2-SAMP 02/07/2013 08:15			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
6 MX3T0-1-AA J3B070431-3-SAMP 02/07/2013 08:20			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
7 MX3T1-1-AA J3B070431-4-SAMP 02/07/2013 08:40			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 7

ICOC v4.8.49

2/12/2013 8:58:18 AM

Sample Preparation/Analysis

127642, Washington Closure Hanford LLC , Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

AnalyDueDate: 02/22/2013

Batch: 3042043 SOIL mg/kg PM, Quote: RW2, 27038
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 MX3T2-1-AA J3B070431-5-SAMP 02/07/2013 08:10			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
9 MX3T3-1-AA J3B070431-6-SAMP 02/07/2013 08:30			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
10 MX3T4-1-AA J3B070431-7-SAMP 02/07/2013 08:35			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
11 MX4JG-1-AA-B J3B110000-43-BLK 02/12/2013 08:58 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
12 MX4JG-1-AC-C J3B110000-43-LCS 02/12/2013 08:58 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

MX3TT1AA-SAMP Constituent List:
HEXCHROME RDL:.1548 mg/kg LCL:80 UCL:120 RPD:20

2/12/2013 8:58:18 AM

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Balance Id:

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

AnalyDueDate: 02/22/2013

Batch: 3042043 mg/kg
SEQ Batch, Test: None

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

```
MX3TT1AC-MS Constituent List:
  HEXCHROME   RDL:0.35      mg/kg    LCL:75     UCL:125    RPD:20
MX3TT1AE-MS:
  HEXCHROME   RDL:0.35      mg/kg    LCL:75     UCL:125    RPD:20
MX4JG1AA-BLK:
  HEXCHROME   RDL:.1548     mg/kg    LCL:       UCL:       RPD:
MX4JG1AC-LCS:
  HEXCHROME   RDL:0.35      mg/kg    LCL:80     UCL:120    RPD:20

MX3TT1AA-SAMP Calc Info:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MX3TT1AC-MS Calc Info:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MX3TT1AE-MS:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MX4JG1AA-BLK:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MX4JG1AC-LCS:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
```

ANALYTICAL REPORT

Job Number: 280-38704-1

SDG Number: J01699

Job Description: SAF# RC-206

For:
Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Project Manager II
2/25/2013 12:00 PM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
02/25/2013

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-38704-1

SDG #: J01699
SAF#: RC-206

Date SDG Closed: February 8, 2013
Data Deliverable: 15 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1RDP5	280-38704-1	6010/7471	6010B/7471A
J1RDP6	280-38704-2	6010/7471	6010B/7471A
J1RDP7	280-38704-3	6010/7471	6010B/7471A
J1RDR6	280-38704-4	6010/7471	6010B/7471A
J1RDR7	280-38704-5	6010/7471	6010B/7471A
J1RDR1	280-38704-6	6010/7471	6010B/7471A
J1RDR4	280-38704-7	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 2/8/2013 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-159574 indicates that physical and chemical interferences are present for Calcium, Iron, Nickel, Silicon and Zinc. Results have been flagged with an "X".

Low levels of Chromium, Iron and Zinc are present at levels greater than half the reporting limits in the method blank associated with batch 280-159574. As the associated sample amounts are twenty times greater than the method blank concentrations, 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 J1RDP5; therefore, control limits are not applicable.

No other anomalies were encountered.

DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Lab Section	Qualifier	Description
Metals		
	U	Analyzed for but not detected.
	B	Estimated result. Result is less than the RL, but greater than MDL
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	X	Serial dilution in the analytical batch indicates that physical and chemical interferences are present.

SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-38704-1	J1RDP5	Solid	02/07/2013 0810	02/08/2013 0930
280-38704-2	J1RDP6	Solid	02/07/2013 0815	02/08/2013 0930
280-38704-3	J1RDP7	Solid	02/07/2013 0820	02/08/2013 0930
280-38704-4	J1RDR6	Solid	02/07/2013 0840	02/08/2013 0930
280-38704-5	J1RDR7	Solid	02/07/2013 0810	02/08/2013 0930
280-38704-6	J1RDR1	Solid	02/07/2013 0830	02/08/2013 0930
280-38704-7	J1RDR4	Solid	02/07/2013 0835	02/08/2013 0930

METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Metals (ICP)	TAL DEN	SW846 6010B	
Preparation, Metals	TAL DEN		SW846 3050B
Mercury (CVAA)	TAL DEN	SW846 7471A	
Preparation, Mercury	TAL DEN		SW846 7471A
ASTM D-2216	TAL DEN	ASTM D-2216	

Lab References:

TAL DEN = TestAmerica Denver

Method References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Method	Analyst	Analyst ID
SW846 6010B	Bowen, Heidi E	HEB
SW846 7471A	Fredette, Nick	NF
ASTM D-2216	Benson, Alex F	AFB

SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDP5**

Lab Sample ID: 280-38704-1
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 02/07/2013 0810
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.20 g
Analysis Date:	02/18/2013 1512			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7860		1.4	4.4
Antimony		0.34	U	0.34	0.53
Arsenic		2.7		0.58	0.88
Barium		61.0		0.067	0.44
Beryllium		0.39		0.029	0.18
Boron		1.3	B	0.87	1.8
Cadmium		0.047	B	0.036	0.18
Calcium		3840	X	12.5	44.2
Chromium		10.8		0.051	0.18
Cobalt		8.2		0.088	0.88
Iron		22500	X	3.4	4.4
Lead		4.3		0.24	0.44
Magnesium		4730		3.3	17.7
Manganese		347		0.088	0.88
Molybdenum		0.25	B	0.23	1.8
Nickel		10.8	X	0.11	3.5
Potassium		1630		36.3	265
Selenium		0.76	U	0.76	0.88
Silicon		326	X	5.0	8.8
Silver		0.14	U	0.14	0.18
Sodium		204		52.2	106
Vanadium		59.8		0.083	1.8
Zinc		44.5	X	0.35	0.88

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.20 g
Analysis Date:	02/19/2013 1226			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		14.2		0.19	0.88

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.65 g
Analysis Date:	02/14/2013 2025			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

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

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDP6**

Lab Sample ID: 280-38704-2
Client Matrix: Solid
% Moisture: 8.7

Date Sampled: 02/07/2013 0815
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.16 g
Analysis Date:	02/18/2013 1531			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7320		1.5	4.7
Antimony		0.36	U	0.36	0.57
Arsenic		3.1		0.62	0.94
Barium		61.8		0.072	0.47
Beryllium		0.30		0.031	0.19
Boron		1.6	B	0.93	1.9
Cadmium		0.060	B	0.039	0.19
Calcium		10000	X	13.3	47.2
Chromium		11.0		0.055	0.19
Cobalt		5.7		0.094	0.94
Iron		16600	X	3.6	4.7
Lead		3.6		0.26	0.47
Magnesium		4320		3.5	18.9
Manganese		267		0.094	0.94
Molybdenum		0.25	U	0.25	1.9
Nickel		10.2	X	0.12	3.8
Potassium		1070		38.7	283
Selenium		0.81	U	0.81	0.94
Silicon		442	X	5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		224		55.7	113
Vanadium		42.5		0.089	1.9
Zinc		37.0	X	0.38	0.94

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.16 g
Analysis Date:	02/19/2013 1245			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		12.4		0.20	0.94

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.69 g
Analysis Date:	02/14/2013 2028			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

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

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDP7**

Lab Sample ID: 280-38704-3
Client Matrix: Solid
% Moisture: 3.9

Date Sampled: 02/07/2013 0820
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/18/2013 1533			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5880		1.6	5.2
Antimony		0.40	U	0.40	0.62
Arsenic		2.1		0.69	1.0
Barium		54.6		0.079	0.52
Beryllium		0.31		0.034	0.21
Boron		1.1	B	1.0	2.1
Cadmium		0.078	B	0.043	0.21
Calcium		7260	X	14.7	52.1
Chromium		8.7		0.060	0.21
Cobalt		8.0		0.10	1.0
Iron		20600	X	4.0	5.2
Lead		3.5		0.28	0.52
Magnesium		4440		3.9	20.8
Manganese		332		0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		8.5	X	0.13	4.2
Potassium		1140		42.7	312
Selenium		0.90	U	0.90	1.0
Silicon		495	X	5.9	10.4
Silver		0.17	U	0.17	0.21
Sodium		261		61.4	125
Vanadium		59.0		0.098	2.1
Zinc		44.0	X	0.41	1.0

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/19/2013 1248			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		17.5		0.23	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.54 g
Analysis Date:	02/14/2013 2039			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

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

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDR6**

Lab Sample ID: 280-38704-4
Client Matrix: Solid
% Moisture: 5.3

Date Sampled: 02/07/2013 0840
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.03 g
Analysis Date:	02/18/2013 1536			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7760		1.6	5.1
Antimony		0.39	U	0.39	0.62
Arsenic		2.4		0.68	1.0
Barium		81.6		0.078	0.51
Beryllium		0.37		0.034	0.21
Boron		2.0	B	1.0	2.1
Cadmium		0.084	B	0.042	0.21
Calcium		5340	X	14.5	51.3
Chromium		9.2		0.059	0.21
Cobalt		7.8		0.10	1.0
Iron		22300	X	3.9	5.1
Lead		6.8		0.28	0.51
Magnesium		4550		3.8	20.5
Manganese		351		0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		9.8	X	0.13	4.1
Potassium		1610		42.0	308
Selenium		0.88	U	0.88	1.0
Silicon		412	X	5.8	10.3
Silver		0.16	U	0.16	0.21
Sodium		262		60.5	123
Vanadium		56.2		0.096	2.1
Zinc		50.5	X	0.41	1.0

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.03 g
Analysis Date:	02/19/2013 1250			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		14.0		0.22	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.64 g
Analysis Date:	02/14/2013 2042			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

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

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDR7**

Lab Sample ID: 280-38704-5
Client Matrix: Solid
% Moisture: 6.1

Date Sampled: 02/07/2013 0810
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Analysis Date:	02/18/2013 1538			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9160		1.6	5.2
Antimony		0.40	U	0.40	0.63
Arsenic		2.8		0.69	1.0
Barium		69.0		0.079	0.52
Beryllium		0.45		0.034	0.21
Boron		1.2	B	1.0	2.1
Cadmium		0.063	B	0.043	0.21
Calcium		4450	X	14.7	52.2
Chromium		11.8		0.061	0.21
Cobalt		9.2		0.10	1.0
Iron		25700	X	4.0	5.2
Lead		5.1		0.28	0.52
Magnesium		5330		3.9	20.9
Manganese		397		0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		11.6	X	0.13	4.2
Potassium		1910		42.8	313
Selenium		0.90	U	0.90	1.0
Silicon		381	X	5.9	10.4
Silver		0.17	U	0.17	0.21
Sodium		247		61.6	125
Vanadium		65.3		0.098	2.1
Zinc		52.0	X	0.42	1.0

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Analysis Date:	02/19/2013 1252			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		17.0		0.23	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.66 g
Analysis Date:	02/14/2013 2044			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0054	U	0.0054	0.016

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDR1**

Lab Sample ID: 280-38704-6
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 02/07/2013 0830
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/18/2013 1540			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7700		1.6	5.3
Antimony		0.40	U	0.40	0.63
Arsenic		2.5		0.70	1.1
Barium		79.1		0.080	0.53
Beryllium		0.40		0.035	0.21
Boron		2.6		1.0	2.1
Cadmium		0.096	B	0.043	0.21
Calcium		6280	X	14.9	52.9
Chromium		10.1		0.061	0.21
Cobalt		8.5		0.11	1.1
Iron		23200	X	4.0	5.3
Lead		6.0		0.29	0.53
Magnesium		5300		3.9	21.2
Manganese		358		0.11	1.1
Molybdenum		0.28	U	0.28	2.1
Nickel		11.7	X	0.13	4.2
Potassium		1840		43.4	317
Selenium		0.91	U	0.91	1.1
Silicon		453	X	6.0	10.6
Silver		0.17	U	0.17	0.21
Sodium		313		62.4	127
Vanadium		61.2		0.099	2.1
Zinc		51.1	X	0.42	1.1

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/19/2013 1255			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		16.2		0.23	1.1

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.71 g
Analysis Date:	02/14/2013 2046			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0069	B	0.0049	0.015

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Client Sample ID: **J1RDR4**

Lab Sample ID: 280-38704-7
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 02/07/2013 0835
Date Received: 02/08/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-160980	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/18/2013 1543			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7620		1.6	5.3
Antimony		0.40	U	0.40	0.63
Arsenic		2.0		0.69	1.1
Barium		57.6		0.080	0.53
Beryllium		0.30		0.035	0.21
Boron		1.3	B	1.0	2.1
Cadmium		0.084	B	0.043	0.21
Calcium		6690	X	14.8	52.6
Chromium		8.5		0.061	0.21
Cobalt		7.9		0.11	1.1
Iron		19300	X	4.0	5.3
Lead		3.7		0.28	0.53
Magnesium		4790		3.9	21.1
Manganese		270		0.11	1.1
Molybdenum		0.27	U	0.27	2.1
Nickel		9.9	X	0.13	4.2
Potassium		1340		43.2	316
Selenium		0.91	U	0.91	1.1
Silicon		430	X	6.0	10.5
Silver		0.17	U	0.17	0.21
Sodium		566		62.1	126
Vanadium		43.6		0.099	2.1
Zinc		41.6	X	0.42	1.1

Analysis Method:	6010B	Analysis Batch:	280-161047	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	02/19/2013 1257			Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Copper		16.7		0.23	1.1

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.62 g
Analysis Date:	02/14/2013 2048			Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				

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

General Chemistry

Client Sample ID: **J1RDP5**

Lab Sample ID: 280-38704-1
Client Matrix: Solid

Date Sampled: 02/07/2013 0810
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.8		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDP6**

Lab Sample ID: 280-38704-2
Client Matrix: Solid

Date Sampled: 02/07/2013 0815
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	8.7		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDP7**

Lab Sample ID: 280-38704-3
Client Matrix: Solid

Date Sampled: 02/07/2013 0820
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	3.9		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDR6**

Lab Sample ID: 280-38704-4
Client Matrix: Solid

Date Sampled: 02/07/2013 0840
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.3		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDR7**

Lab Sample ID: 280-38704-5
Client Matrix: Solid

Date Sampled: 02/07/2013 0810
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	6.1		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDR1**

Lab Sample ID: 280-38704-6
Client Matrix: Solid

Date Sampled: 02/07/2013 0830
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.5		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1RDR4**

Lab Sample ID: 280-38704-7
Client Matrix: Solid

Date Sampled: 02/07/2013 0835
Date Received: 02/08/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	5.0		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-160678 Analysis Date: 02/16/2013 0845 DryWt Corrected: N

QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Method Blank - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-159574/1-A	Analysis Batch:	280-160980	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	02/18/2013 1507	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.112	B	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Iron	4.07	B	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.703	B	0.40	1.0

Method Blank - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-159574/1-A	Analysis Batch:	280-161047	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	02/19/2013 1222	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Copper	0.22	U	0.22	1.0

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Lab Control Sample - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-159574/2-A	Analysis Batch:	280-160980	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	02/18/2013 1510	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	194.9	97	82 - 116	
Antimony	50.0	49.65	99	82 - 110	
Arsenic	100	102.4	102	85 - 110	
Barium	200	201.6	101	87 - 112	
Beryllium	5.00	4.90	98	84 - 114	
Boron	100	100.1	100	81 - 110	
Cadmium	10.0	9.80	98	87 - 110	
Calcium	5000	5064	101	82 - 114	
Chromium	20.0	19.32	97	84 - 114	
Cobalt	50.0	48.10	96	87 - 110	
Iron	100	103.8	104	87 - 120	
Lead	50.0	49.64	99	86 - 110	
Magnesium	5000	5114	102	90 - 110	
Manganese	50.0	49.43	99	88 - 110	
Molybdenum	100	98.08	98	86 - 110	
Nickel	50.0	47.92	96	87 - 110	
Potassium	5000	5257	105	89 - 110	
Selenium	200	205.5	103	83 - 110	
Silicon	1000	193.7	19	10 - 70	
Silver	5.00	5.47	109	87 - 114	
Sodium	5000	5235	105	90 - 112	
Vanadium	50.0	49.92	100	88 - 110	
Zinc	50.0	52.30	105	76 - 114	

Lab Control Sample - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-159574/2-A	Analysis Batch:	280-161047	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	02/19/2013 1224	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Copper	25.0	24.90	100	88 - 110	

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Matrix Spike - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38704-1	Analysis Batch:	280-160980	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	02/18/2013 1519	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7860		181	9710	1019	50 - 200	4
Antimony	0.34	U	45.4	25.06	55	20 - 200	
Arsenic	2.7		90.7	85.28	91	76 - 111	
Barium	61.0		181	229.1	93	52 - 159	
Beryllium	0.39		4.54	4.31	87	72 - 105	
Boron	1.3	B	90.7	82.22	89	75 - 107	
Cadmium	0.047	B	9.07	8.11	89	40 - 130	
Calcium	3840		4540	9044	115	43 - 165	
Chromium	10.8		18.1	26.88	88	70 - 200	
Cobalt	8.2		45.4	47.48	87	72 - 106	
Iron	22500		90.7	23860	1556	70 - 200	4
Lead	4.3		45.4	44.12	88	70 - 200	
Magnesium	4730		4540	9290	100	64 - 145	
Manganese	347		45.4	410.4	141	40 - 200	4
Molybdenum	0.25	B	90.7	78.09	86	75 - 103	
Nickel	10.8		45.4	49.24	85	61 - 126	
Potassium	1630		4540	6023	97	56 - 172	
Selenium	0.76	U	181	167.6	92	76 - 104	
Silicon	326		907	541.0	24	20 - 200	
Silver	0.14	U	4.54	4.48	99	75 - 141	
Sodium	204		4540	4565	96	78 - 111	
Vanadium	59.8		45.4	104.9	100	50 - 169	
Zinc	44.5		45.4	86.22	92	70 - 200	

Matrix Spike - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38704-1	Analysis Batch:	280-161047	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	02/19/2013 1233	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Copper	14.2	22.7	35.80	95	37 - 187	

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Duplicate - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38704-1	Analysis Batch:	280-160980	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021813.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	02/18/2013 1517	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	7860		8411	7	40	
Antimony	0.34	U	0.39	NC	40	U
Arsenic	2.7		2.59	4	30	
Barium	61.0		64.40	5	30	
Beryllium	0.39		0.415	7	30	
Boron	1.3	B	1.22	5	30	B
Cadmium	0.047	B	0.0541	14	30	B
Calcium	3840		4036	5	30	
Chromium	10.8		11.53	6	40	
Cobalt	8.2		8.47	4	30	
Iron	22500		23200	3	40	
Lead	4.3		4.40	3	40	
Magnesium	4730		4810	2	30	
Manganese	347		356.5	3	40	
Molybdenum	0.25	B	0.27	NC	30	U
Nickel	10.8		11.04	2	30	
Potassium	1630		1754	7	40	
Selenium	0.76	U	0.88	NC	30	U
Silicon	326		382.5	16	40	
Silver	0.14	U	0.16	NC	30	U
Sodium	204		201.9	1	30	
Vanadium	59.8		61.62	3	30	
Zinc	44.5		45.60	2	40	

Duplicate - Batch: 280-159574

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38704-1	Analysis Batch:	280-161047	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-159574	Lab File ID:	26a021913.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	02/19/2013 1231	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	02/16/2013 1000				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Copper	14.2	14.98	5	30	

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Method Blank - Batch: 280-160243

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-160243/1-A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	02/14/2013 2021	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-160243

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-160243/2-A	Analysis Batch:	280-160567	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	02/14/2013 2023	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.411	99	87 - 111	

Matrix Spike - Batch: 280-160243

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-38704-2	Analysis Batch:	280-160567	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.55 g
Analysis Date:	02/14/2013 2037	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0053	U	0.498	0.481	96	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Duplicate - Batch: 280-160243

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-38704-2	Analysis Batch:	280-160567	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-160243	Lab File ID:	130214aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.65 g
Analysis Date:	02/14/2013 2030	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	02/14/2013 1445				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0053	U	0.0056	NC	20	U

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

Duplicate - Batch: 280-160678

Method: D-2216
Preparation: N/A

Lab Sample ID:	280-38704-1	Analysis Batch:	280-160678	Instrument ID:	No Equipment
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	02/16/2013 0845	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	5.8	6.1	5	20	

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 280-159574					
LCS 280-159574/2-A	Lab Control Sample	T	Solid	3050B	
MB 280-159574/1-A	Method Blank	T	Solid	3050B	
280-38704-1	J1RDP5	T	Solid	3050B	
280-38704-1DU	Duplicate	T	Solid	3050B	
280-38704-1MS	Matrix Spike	T	Solid	3050B	
280-38704-2	J1RDP6	T	Solid	3050B	
280-38704-3	J1RDP7	T	Solid	3050B	
280-38704-4	J1RDR6	T	Solid	3050B	
280-38704-5	J1RDR7	T	Solid	3050B	
280-38704-6	J1RDR1	T	Solid	3050B	
280-38704-7	J1RDR4	T	Solid	3050B	
Prep Batch: 280-160243					
LCS 280-160243/2-A	Lab Control Sample	T	Solid	7471A	
MB 280-160243/1-A	Method Blank	T	Solid	7471A	
280-38704-1	J1RDP5	T	Solid	7471A	
280-38704-2	J1RDP6	T	Solid	7471A	
280-38704-2DU	Duplicate	T	Solid	7471A	
280-38704-2MS	Matrix Spike	T	Solid	7471A	
280-38704-3	J1RDP7	T	Solid	7471A	
280-38704-4	J1RDR6	T	Solid	7471A	
280-38704-5	J1RDR7	T	Solid	7471A	
280-38704-6	J1RDR1	T	Solid	7471A	
280-38704-7	J1RDR4	T	Solid	7471A	
Analysis Batch:280-160567					
LCS 280-160243/2-A	Lab Control Sample	T	Solid	7471A	280-160243
MB 280-160243/1-A	Method Blank	T	Solid	7471A	280-160243
280-38704-1	J1RDP5	T	Solid	7471A	280-160243
280-38704-2	J1RDP6	T	Solid	7471A	280-160243
280-38704-2DU	Duplicate	T	Solid	7471A	280-160243
280-38704-2MS	Matrix Spike	T	Solid	7471A	280-160243
280-38704-3	J1RDP7	T	Solid	7471A	280-160243
280-38704-4	J1RDR6	T	Solid	7471A	280-160243
280-38704-5	J1RDR7	T	Solid	7471A	280-160243
280-38704-6	J1RDR1	T	Solid	7471A	280-160243
280-38704-7	J1RDR4	T	Solid	7471A	280-160243

Client: Washington Closure Hanford

Job Number: 280-38704-1
Sdg Number: J01699

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Analysis Batch:280-160980					
LCS 280-159574/2-A	Lab Control Sample	T	Solid	6010B	280-159574
MB 280-159574/1-A	Method Blank	T	Solid	6010B	280-159574
280-38704-1	J1RDP5	T	Solid	6010B	280-159574
280-38704-1DU	Duplicate	T	Solid	6010B	280-159574
280-38704-1MS	Matrix Spike	T	Solid	6010B	280-159574
280-38704-2	J1RDP6	T	Solid	6010B	280-159574
280-38704-3	J1RDP7	T	Solid	6010B	280-159574
280-38704-4	J1RDR6	T	Solid	6010B	280-159574
280-38704-5	J1RDR7	T	Solid	6010B	280-159574
280-38704-6	J1RDR1	T	Solid	6010B	280-159574
280-38704-7	J1RDR4	T	Solid	6010B	280-159574
Analysis Batch:280-161047					
LCS 280-159574/2-A	Lab Control Sample	T	Solid	6010B	280-159574
MB 280-159574/1-A	Method Blank	T	Solid	6010B	280-159574
280-38704-1	J1RDP5	T	Solid	6010B	280-159574
280-38704-1DU	Duplicate	T	Solid	6010B	280-159574
280-38704-1MS	Matrix Spike	T	Solid	6010B	280-159574
280-38704-2	J1RDP6	T	Solid	6010B	280-159574
280-38704-3	J1RDP7	T	Solid	6010B	280-159574
280-38704-4	J1RDR6	T	Solid	6010B	280-159574
280-38704-5	J1RDR7	T	Solid	6010B	280-159574
280-38704-6	J1RDR1	T	Solid	6010B	280-159574
280-38704-7	J1RDR4	T	Solid	6010B	280-159574

Report Basis
T = Total

General Chemistry				
Analysis Batch:280-160678				
280-38704-1	J1RDP5	T	Solid	D-2216
280-38704-1DU	Duplicate	T	Solid	D-2216
280-38704-2	J1RDP6	T	Solid	D-2216
280-38704-3	J1RDP7	T	Solid	D-2216
280-38704-4	J1RDR6	T	Solid	D-2216
280-38704-5	J1RDR7	T	Solid	D-2216
280-38704-6	J1RDR1	T	Solid	D-2216
280-38704-7	J1RDR4	T	Solid	D-2216

Report Basis
T = Total