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 1/30/13
INITIAL/DATE

COMMENTS:

SDG JP0443 SAF-RC-206

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-C-7:1 (South Ramp Stockpile)

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 19 *Pages*

Report No.: 54367

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.
JP0443	RC-206	J1R8W9	J3A220431-1	MXXN81AA	9MXXN810	3022060
		J1R8X0	J3A220431-2	MXXN91AA	9MXXN910	3022060

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

January 28, 2013

Attention: Joan Kessner

SAF Number	:	RC-206
Date SDG Closed	:	January 22, 2013
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	JP0443
Data Deliverable	:	24– Hour / Summary

CASE NARRATIVE

I. Introduction

On January 22, 2013, two 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
J1R8W9	MXXN8	SOIL	1/22/13
J1R8X0	MXXN9	SOIL	1/22/13

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.

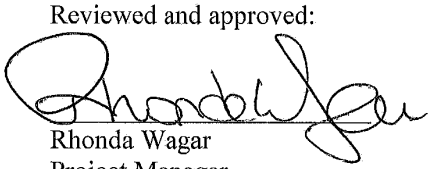
QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1R8W9) and the sample matrix spike (J1R8W9) 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

Date: 28-Jan-13

TestAmerica TARL

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

Report No. : 54367 **SDG No:** JP0443

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
3022060	7196_CR6								
	J1R8W9								
	MXXN81AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	MXXN81AD	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	3.50E-01	0.0
	J1R8X0								
	MXXN91AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 3

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

Date: 28-Jan-13

TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 54367 **SDG No.:** JP0443

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
7196_CR6								
3022060 MATRIX SPIKE, J1R8W9								
MXXN81AC	HEXCHROME	2.53E+01 +- 0.0E+00		mg/kg	N/A	84%	-0.2	1.55E-01
3022060 LCS,								
MXXTK1AC	HEXCHROME	1.64E+01 +- 0.0E+00		mg/kg	N/A	86%	-0.1	1.55E-01
3022060 BLANK QC,								
MXXTK1AA	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: 28-Jan-13

Lab Name: TestAmerica | **SDG:** JP0443 | **Collection Date:** 1/22/2013 10:00:00 AM

Lot-Sample No.: J3A220431-1 | **Report No. :** 54367 | **Received Date:** 1/22/2013 3:19:00 PM

Client Sample ID: J1R8W9 | **COC No. :** RC-206-075 | **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: 3022060	7196_CR6			**Work Order:** MXXN81AA			**Report DB ID:** 9MXXN810					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	1/22/13 06:30 p		2.4975	
							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: 28-Jan-13

Lab Name: TestAmerica | **SDG:** JP0443 | **Collection Date:** 1/22/2013 10:05:00 AM

Lot-Sample No.: J3A220431-2 | **Report No. :** 54367 | **Received Date:** 1/22/2013 3:19:00 PM

Client Sample ID: J1R8X0 | **COC No. :** RC-206-075 | **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: 3022060	7196_CR6			**Work Order:** MXXN91AA			**Report DB ID:** 9MXXN910					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	*1.*	1/22/13 06:30 p		2.4918	
							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: 28-Jan-13

DUPLICATE RESULTS

Lab Name: TestAmerica | **SDG:** JP0443 | **Collection Date:** 1/22/2013 10:00:00 AM

Lot-Sample No.: J3A220431-1 | **Report No. :** 54367 | **Received Date:** 1/22/2013 3:19:00 PM

Client Sample ID: J1R8W9 | **COC No. :** RC-206-075 | **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: 3022060	7196_CR6			**Work Order:** MXXN81AD		**Report DB ID:** MXXN81ER			**Orig Sa DB ID:** 9MXXN810			
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	1/22/13 06:30 p		2.4936	
	1.55E-01	U	**RPD**	**0.0**		3.50E-01		N/A			g	

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

TestAmerica
rptSTLRchDupV5.
2.23 A2002

RPD - Relative Percent Difference.

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

BLANK RESULTS

Date: 28-Jan-13

Lab Name: TestAmerica

Matrix: SOIL

SDG: JP0443

Report No. : 54367

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: 3022060	7196_CR6			**Work Order:** MXXTK1AA		**Report DB ID:** MXXTK1AB						
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	1/22/13 06:30 p		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: 28-Jan-13

Lab Name: TestAmerica **SDG:** JP0443

Matrix: SOIL **Report No. :** 54367

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: 3022060	7196_CR6			**Work Order:**	MXXTK1AC		**Report DB ID:**	MXXTK1AS					
HEXCHROME	1.64E+01			0.0E+00	1.55E-01	mg/kg	N/A	1.90E+01		86%	1/22/13 06:30 p	2.5	
							Rec Limits:	80	120	-0.1		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: 28-Jan-13

Lab Name: TestAmerica **SDG:** JP0443

Lot-Sample No.: J3A220431-1, J1R8W9 **Report No. :** 54367 **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: 3022060	**Work Order:** MXXN81AC			**Report DB ID:** MXXN81CW			**Orig Sa DB ID:** 9MXXN810					
HEXCHROME	2.53E+01			0.0E+00	1.55E-01	mg/kg	N/A	84.12%	3.01E+01	1/22/13 06:30 p	2.5077	7196_CR6
	1.55E-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
THE LEADER IN ENVIRONMENTAL TESTING

Richland Laboratory
Data Review Check List
Hexavalent Chromium

Batch Number(s): 3022060	Lab Sample Numbers or SDG: ~~J01677~~ JP0443
Method/Test/Parameter: Cr+6 ☐ RL-WC-003(Aqueous) ☒ RL-WC-004(Solid)	RW 1/23/13

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

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

Analyst [signature] Date 1/23/13 2nd Review [signature] Date 1/23/13

CG-231 Rev. 5/12

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-206-075	Page 1 of 1
Collector R. Brackett	**Company Contact** J. Kessner	**Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH	**Price Code** ~~8L~~ S 1/16/13 **Data Turnaround** ~~21 Days~~ DH 1/22/13 Quick Turn
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - F	**Sampling Location** 100-C-7:1 (South Ramp Stockpile)		**SAF No.** RC-206	
Ice Chest No. NA	**Field Logbook No.** EL-1655-~~0708~~ BF 1-22-13	**COA** R00C712000	**Method of Shipment** ~~Fed Ex~~ AJ 1-22-13 Hand Deliver	
Shipped To Richland ~~Denver~~ 1-22-13 CMS TestAmerica Incorporated, ~~Richland~~ DH 1/14/13	**Offsite Property No.** NA		**Bill of Lading/Air Bill No.** ~~See OSPC~~ AJ 1-22-13 NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 degrees centigrade

J3A220431 RW 1/23/13

~~J0109~~ Due 1-23-13 JP0443

J3A220431

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.	Chromium Hex - 7196									

CMS 1-22

Sample No.	Matrix *	Sample Date	Sample Time								
J1R8W6	~~SOIL~~ DH 1/14/13										
J1R8W7	SOIL										
J1R8W9 MXXN8	SOIL	1-22-13	1000	X	X						
J1R8X0 MXXN9	SOIL	1-22-13	1005	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BOB BRACKETT RBB	1-22-13 1010	Don Heidelberg	1/22/13 1010
Don Heidelberg	1/22/13 1300	CMS	1-22-13 1300
CMS	1-22-13 1519	S. Bock / TALR	1-22-13 1519

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 AJ DATE 1-22-13

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 1-22-13 / 1512 Container GM Screen Result: (Airlock) .6 Initials [ ]
Sample GM Screen Result (Sample Receiving) .6 Initials [ ]

Client: WCH SDG #: ~~Solvent~~ JP0443 NA [ ] SAF #: RC-206 NA [ ]

Lot Number: 320A220431 PW 1/23/13

Chain of Custody # RC-206-075

Shipping Container ID: hand deliv. NA [ ] Air Bill Number: _____ NA [ ]

Samples received inside shipping container/cooler/box Yes [ ] 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 [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: 2.4 °C Ice packs NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: 2 x 125 mLp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
9. Samples have:
   - ____ tape
   - [ ] custody seals
   - ____ hazard labels
   - [ ] appropriate sample labels
10. Matrix:
    - [ ] A (FLT, Wipe, Solid, Soil)
    - ____ S (Air, Niosh 7400)
    - ____ I (Water)
    - ____ T (Biological, Ni-63)
11. Samples:
    - [ ] are in good condition
    - ____ are broken
    - ____ Other
    - ____ are leaking
    - ____ have air bubbles (Only for samples requiring no head space)
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [ ]
    (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 [ ]
14. Description of anomalies (include sample numbers): NA [ ]

LS-023, Rev. 15, 07/11

See over for additional information.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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: _____ Date: 1-22-13

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is

Project Manager _____ Date 1/22/13

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

1-22-13

1-22-13

JBA220481 1/22/13

LS-023, Rev. 15, 07/11

See over for additional information.

1/23/2013 5:33:20 AM

Sample Preparation/Analysis

Balance Id:

127642, Washington Closure Hanford LLC
Washington Closure Hanford LLC

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)

Pipet #:

AnalyDueDate: 01/23/2013

5I CLIENT: HANFORD

Sep1 DT/Tm Tech:

Batch: 3022060 SOIL mg/kg

PM, Quote: RW2, 88144

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: DWEA, 3022060 DWEA,

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 MXXN8-1-AA													
J3A220431-1-SAMP													
01/22/2013 10:00			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
2 MXXN8-1-AC-S													
J3A220431-1-MS													
01/22/2013 10:00			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
3 MXXN8-1-AD-X													
J3A220431-1-DUP													
01/22/2013 10:00			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
4 MXXN9-1-AA													
J3A220431-2-SAMP													
01/22/2013 10:05			AmtRec: 1X125MLP		#Containers: 1				Scr:		Alpha:		Beta:
5 MXXTK-1-AA-B													
J3A220000-60-BLK													
01/23/2013 05:33 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
6 MXXTK-1-AC-C													
J3A220000-60-LCS													
01/23/2013 05:33 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

Sample Preparation/Analysis

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

AnalyDueDate: 01/23/2013

Batch: 3022060 **mg/kg**
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:

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Washington Closure Hanford LLC, RW2, 88144

MXXN81AA-SAMP Constituent List:
HEXCHROME RDL:0.1548 mg/kg LCL:80 UCL:120 RPD:20
MXXN81AC-MS Constituent List:
HEXCHROME RDL:0.35 mg/kg LCL:75 UCL:125 RPD:20
MXXTK1AA-BLK:
HEXCHROME RDL:0.1548 mg/kg LCL: UCL: RPD:
MXXTK1AC-LCS:
HEXCHROME RDL:0.35 mg/kg LCL:80 UCL:120 RPD:20

MXXN81AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXXN81AC-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXXTK1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXXTK1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 280-38075-1

SDG Number: JP0443

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
1/29/2013 8:18 PM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
01/29/2013

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.

Table of Contents

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-38075-1

SDG #: JP0443
SAF#: RC-206

Date SDG Closed: January 23, 2013
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1R8W9	280-38075-1	6010/7471	6010B/7471A
J1R8X0	280-38075-2	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 1/23/2013 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.8º C.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-157041 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. Due to matrix interferences resulting in internal standard failures, sample J1R8W9 required a 5X dilution prior to the analysis of Aluminum, Barium, Beryllium, Calcium, Iron, Potassium, Silicon and sodium. The reporting limits have been adjusted relative to the dilution required.

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 J1R8W9; therefore, control limits are not applicable.

Silver was recovered outside the control limits in the Matrix Spike performed on sample J1R8W9, 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.

DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

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.
	N	Recovery exceeds upper or lower control limits
	X	Serial dilution in the analytical batch indicates that physical and chemical interferences are present.

SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-38075-1	J1R8W9	Solid	01/22/2013 1000	01/23/2013 0900
280-38075-2	J1R8X0	Solid	01/22/2013 1005	01/23/2013 0900

METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

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: 280-38075-1
Sdg Number: JP0443

Method	Analyst	Analyst ID
SW846 6010B	Harre, John K	JKH
SW846 7471A	Mooney, Joseph C	JM
ASTM D-2216	Benson, Alex F	AFB

SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Client Sample ID: **J1R8W9**

Lab Sample ID: 280-38075-1
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/22/2013 1000
Date Received: 01/23/2013 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-157386	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0			Initial Weight/Volume:	1.12 g
Analysis Date:	01/25/2013 2230			Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.36	U	0.36	0.56
Arsenic		1.6		0.62	0.94
Boron		0.92	U	0.92	1.9
Cadmium		0.14	B	0.039	0.19
Chromium		2.4		0.054	0.19
Cobalt		8.3	X	0.094	0.94
Copper		18.6	X	0.20	0.94
Lead		2.7		0.25	0.47
Magnesium		3730	X	3.5	18.8
Manganese		263	X	0.094	0.94
Molybdenum		0.24	U	0.24	1.9
Nickel		5.5		0.12	3.8
Selenium		0.81	U	0.81	0.94
Silver		0.15	U N	0.15	0.19
Vanadium		47.2	X	0.088	1.9
Zinc		35.2	X	0.37	0.94

Analysis Method:	6010B	Analysis Batch:	280-157613	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-157041	Lab File ID:	25A3012813.asc
Dilution:	5.0			Initial Weight/Volume:	1.12 g
Analysis Date:	01/28/2013 1703			Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4650		7.3	23.5
Barium		57.4		0.36	2.3
Beryllium		0.15	U	0.15	0.94
Calcium		6250		66.2	235
Iron		26200		17.8	23.5
Potassium		681	B	193	1410
Silicon		119		26.6	47.0
Sodium		353	B	277	564

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-157443	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.62 g
Analysis Date:	01/25/2013 1705			Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				

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

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Client Sample ID: **J1R8X0**

Lab Sample ID: 280-38075-2
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 01/22/2013 1005
Date Received: 01/23/2013 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-157386	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	01/25/2013 2240			Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4080		1.5	4.8
Antimony		0.37	U	0.37	0.58
Arsenic		1.6		0.64	0.97
Barium		46.4		0.073	0.48
Beryllium		0.032	U	0.032	0.19
Boron		0.95	U	0.95	1.9
Cadmium		0.14	B	0.040	0.19
Calcium		5630		13.6	48.3
Chromium		3.4		0.056	0.19
Cobalt		8.3	X	0.097	0.97
Copper		14.8	X	0.21	0.97
Iron		22100		3.7	4.8
Lead		2.4		0.26	0.48
Magnesium		3480	X	3.6	19.3
Manganese		271	X	0.097	0.97
Molybdenum		0.25	U	0.25	1.9
Nickel		4.7		0.12	3.9
Potassium		595		39.6	290
Selenium		0.83	U	0.83	0.97
Silicon		153		5.5	9.7
Silver		0.15	U	0.15	0.19
Sodium		340		57.0	116
Vanadium		58.9	X	0.091	1.9
Zinc		38.6	X	0.38	0.97

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-157443	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.60 g
Analysis Date:	01/25/2013 1712			Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				

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

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

General Chemistry

Client Sample ID: **J1R8W9**

Lab Sample ID: 280-38075-1
Client Matrix: Solid

Date Sampled: 01/22/2013 1000
Date Received: 01/23/2013 0900

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.9		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-157023 Analysis Date: 01/24/2013 0843 DryWt Corrected: N

General Chemistry

Client Sample ID: **J1R8X0**

Lab Sample ID: 280-38075-2
Client Matrix: Solid

Date Sampled: 01/22/2013 1005
Date Received: 01/23/2013 0900

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

Analysis Batch: 280-157023 Analysis Date: 01/24/2013 0843 DryWt Corrected: N

QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Method Blank - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-157041/1-A	Analysis Batch:	280-157386	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 g
Analysis Date:	01/25/2013 2225	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

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

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Lab Control Sample - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-157041/2-A	Analysis Batch:	280-157386	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 g
Analysis Date:	01/25/2013 2228	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	182.7	91	82 - 116	
Antimony	50.0	51.92	104	82 - 110	
Arsenic	100	101.6	102	85 - 110	
Barium	200	200.0	100	87 - 112	
Beryllium	5.00	4.81	96	84 - 114	
Boron	100	95.51	96	81 - 110	
Cadmium	10.0	9.86	99	87 - 110	
Calcium	5000	4690	94	82 - 114	
Chromium	20.0	19.35	97	84 - 114	
Cobalt	50.0	48.82	98	87 - 110	
Copper	25.0	25.06	100	88 - 110	
Iron	100	94.02	94	87 - 120	
Lead	50.0	48.88	98	86 - 110	
Magnesium	5000	4785	96	90 - 110	
Manganese	50.0	47.34	95	88 - 110	
Molybdenum	100	96.07	96	86 - 110	
Nickel	50.0	49.13	98	87 - 110	
Potassium	5000	4868	97	89 - 110	
Selenium	200	194.3	97	83 - 110	
Silicon	1000	159.6	16	10 - 70	
Silver	5.00	4.61	92	87 - 114	
Sodium	5000	5226	105	90 - 112	
Vanadium	50.0	49.11	98	88 - 110	
Zinc	50.0	45.20	90	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Matrix Spike - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157386	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.14 g
Analysis Date:	01/25/2013 2237	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Antimony	0.36	U	46.1	29.88	65	20 - 200	
Arsenic	1.6		92.3	79.92	85	76 - 111	
Boron	0.92	U	92.3	72.12	78	75 - 107	
Cadmium	0.14	B	9.23	7.90	84	40 - 130	
Chromium	2.4		18.5	18.20	86	70 - 200	
Cobalt	8.3		46.1	46.79	83	72 - 106	
Copper	18.6		23.1	35.31	73	37 - 187	
Lead	2.7		46.1	39.21	79	70 - 200	
Magnesium	3730		4610	7986	92	64 - 145	
Manganese	263		46.1	339.1	164	40 - 200	4
Molybdenum	0.24	U	92.3	74.32	81	75 - 103	
Nickel	5.5		46.1	43.03	81	61 - 126	
Selenium	0.81	U	185	148.1	80	76 - 104	
Silver	0.15	U	4.61	3.25	70	75 - 141	N
Vanadium	47.2		46.1	95.46	105	50 - 169	
Zinc	35.2		46.1	71.33	78	70 - 200	

Matrix Spike - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157613	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A3012813.asc
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	1.14 g
Analysis Date:	01/28/2013 1710	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	4650		185	5996	727	50 - 200	4
Barium	57.4		185	238.6	98	52 - 159	
Beryllium	0.15	U	4.61	4.12	89	72 - 105	
Calcium	6250		4610	11880	122	43 - 165	
Iron	26200		92.3	29380	3416	70 - 200	4
Potassium	681	B	4610	5395	102	56 - 172	
Silicon	119		923	388.4	29	20 - 200	
Sodium	353	B	4610	5385	109	78 - 111	

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Duplicate - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157386	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A4012513.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	01/25/2013 2235	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Antimony	0.36	U	0.36	NC	40	U
Arsenic	1.6		1.39	12	30	
Boron	0.92	U	0.93	NC	30	U
Cadmium	0.14	B	0.118	14	30	B
Chromium	2.4		2.75	14	40	
Cobalt	8.3		8.53	3	30	
Copper	18.6		16.20	14	30	
Lead	2.7		2.41	13	40	
Magnesium	3730		3375	10	30	
Manganese	263		275.2	4	40	
Molybdenum	0.24	U	0.25	NC	30	U
Nickel	5.5		5.95	8	30	
Selenium	0.81	U	0.82	NC	30	U
Silver	0.15	U	0.15	NC	30	U
Vanadium	47.2		48.42	2	30	
Zinc	35.2		33.95	4	40	

Duplicate - Batch: 280-157041

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157613	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-157041	Lab File ID:	25A3012813.asc
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	01/28/2013 1707	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/25/2013 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	4650		5027	8	40	
Barium	57.4		57.24	0.3	30	
Beryllium	0.15	U	0.16	NC	30	U
Calcium	6250		6130	2	30	
Iron	26200		25050	5	40	
Potassium	681	B	754.9	10	40	B
Silicon	119		139.0	15	40	
Sodium	353	B	416.5	16	30	B

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Method Blank - Batch: 280-157250

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-157250/1-A	Analysis Batch:	280-157443	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	01/25/2013 1700	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-157250

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-157250/2-A	Analysis Batch:	280-157443	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	01/25/2013 1702	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				
Leach Date:	N/A				

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

Matrix Spike - Batch: 280-157250

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157443	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.58 g
Analysis Date:	01/25/2013 1709	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0056	U	0.453	0.459	101	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Duplicate - Batch: 280-157250

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157443	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-157250	Lab File ID:	130125aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.58 g
Analysis Date:	01/25/2013 1707	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/25/2013 1200				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0056	U	0.0060	NC	20	U

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

Duplicate - Batch: 280-157023

Method: D-2216
Preparation: N/A

Lab Sample ID:	280-38075-1	Analysis Batch:	280-157023	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:	01/24/2013 0843	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	4.9	5.6	12	20	

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 280-157041					
LCS 280-157041/2-A	Lab Control Sample	T	Solid	3050B	
MB 280-157041/1-A	Method Blank	T	Solid	3050B	
280-38075-1	J1R8W9	T	Solid	3050B	
280-38075-1DU	Duplicate	T	Solid	3050B	
280-38075-1MS	Matrix Spike	T	Solid	3050B	
280-38075-2	J1R8X0	T	Solid	3050B	
Prep Batch: 280-157250					
LCS 280-157250/2-A	Lab Control Sample	T	Solid	7471A	
MB 280-157250/1-A	Method Blank	T	Solid	7471A	
280-38075-1	J1R8W9	T	Solid	7471A	
280-38075-1DU	Duplicate	T	Solid	7471A	
280-38075-1MS	Matrix Spike	T	Solid	7471A	
280-38075-2	J1R8X0	T	Solid	7471A	
Analysis Batch:280-157386					
LCS 280-157041/2-A	Lab Control Sample	T	Solid	6010B	280-157041
MB 280-157041/1-A	Method Blank	T	Solid	6010B	280-157041
280-38075-1	J1R8W9	T	Solid	6010B	280-157041
280-38075-1DU	Duplicate	T	Solid	6010B	280-157041
280-38075-1MS	Matrix Spike	T	Solid	6010B	280-157041
280-38075-2	J1R8X0	T	Solid	6010B	280-157041
Analysis Batch:280-157443					
LCS 280-157250/2-A	Lab Control Sample	T	Solid	7471A	280-157250
MB 280-157250/1-A	Method Blank	T	Solid	7471A	280-157250
280-38075-1	J1R8W9	T	Solid	7471A	280-157250
280-38075-1DU	Duplicate	T	Solid	7471A	280-157250
280-38075-1MS	Matrix Spike	T	Solid	7471A	280-157250
280-38075-2	J1R8X0	T	Solid	7471A	280-157250
Analysis Batch:280-157613					
280-38075-1	J1R8W9	T	Solid	6010B	280-157041
280-38075-1DU	Duplicate	T	Solid	6010B	280-157041
280-38075-1MS	Matrix Spike	T	Solid	6010B	280-157041

Report Basis
T = Total

Client: Washington Closure Hanford

Job Number: 280-38075-1
Sdg Number: JP0443

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:280-157023					
280-38075-1	J1R8W9	T	Solid	D-2216	
280-38075-1DU	Duplicate	T	Solid	D-2216	
280-38075-2	J1R8X0	T	Solid	D-2216	

Report Basis
T = Total