# SAF-RC-148
# 300 Area D4 Waste Sites – Soil Full Protocol
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt H4-21 KW 12/20/12
INITIAL/DATE

**COMMENTS:**

**SDG JP0428 SAF-RC-148**

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

**Sample Location/Waste Site: 300-15**

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* 46 *Pages*

**Report No.: 54002**

**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. |
|---|---|---|---|---|---|---|
| JP0428 | RC-148 | J1R4F8 | J2L100414-1 | MXJL71AD | 9MXJL710 | 2345076 |
| | | J1R4F8 | J2L100414-1 | MXJL71AA | 9MXJL710 | 2345077 |
| | | J1R4F8 | J2L100414-1 | MXJL71AC | 9MXJL710 | 2345078 |
| | | J1R4F8 | J2L100414-1 | MXJL71AE | 9MXJL710 | 2345079 |

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

December 17, 2012

Attention: Joan Kessner

| | | |
|---|---|---|
| SAF Number | : | RC-148 |
| Date SDG Closed | : | December 10, 2012 |
| Number of Samples | : | One (1) |
| Sample Type | : | Soil |
| SDG Number | : | JP0428 |
| Data Deliverable | : | 7– Day / Summary |

## CASE NARRATIVE

### I. Introduction

On December 10, 2012, one soil sample was received at TestAmerica for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

| WCH ID# | TARL ID# | MATRIX | DATE OF RECEIPT |
|---|---|---|---|
| J1R4F8 | MXJL7 | SOIL | 12/10/12 |

### II. Sample Receipt

The sample was 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:

**Gas Proportional Counting**
Gross Alpha by method RL-GPC-001
Gross Beta by method RL-GPC-001
**Gamma Spectroscopy**
Gamma Spec by method RL-GAM-001
**Laser Induced Phosphorimetry**
Total Uranium by method RL-KPA-003

## 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

**Gas Proportional Counting**

Gross Alpha by method RL-GPC-001:
The LCS, batch blank, sample and sample duplicate (J1R4F8) results are within contractual requirements.

Gross Beta by method RL-GPC-001:
The LCS, batch blank, sample and sample duplicate (J1R4F8) results are within contractual requirements.

**Gamma Spectroscopy**

Gamma Spec by method RL-GAM-001:
The LCS recovery was not within the acceptance limits on the original count. The LCS was recounted for an acceptable recovery. Except as noted; the LCS, batch blank, sample and sample duplicate (J1R4F8) results are within contractual requirements.

**Total Uranium**

Total Uranium by method RL-KPA-003:
One of the LCS recovered below the acceptance limits, the other LCS recovery was within the acceptance criteria. All other batch QC was within the acceptance limits. Except as noted; the LCS, batch blank, sample, sample duplicate (J1R4F8) and sample matrix spike (J1R4F8) 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. |

**TestAmerica**
**rptGeneralInfo v3.72**

# Sample Results Summary

## TestAmerica TARL

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

**Date:** 17-Dec-12

**Report No. :** 54002

**SDG No:** JP0428

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| **2345079 UTOT_KPA** | | | | | | | | | |
| **J1R4F8** | | | | | | | | | |
| | MXJL71AE | TOTAL-URANIUM | 1.19E+00 +- 1.4E-01 | | ug/g | | 1.31E-01 | 1.00E+00 | |
| **J1R4F8 DUP** | | | | | | | | | |
| | MXJL71AJ | TOTAL-URANIUM | 1.22E+00 +- 1.4E-01 | | ug/g | | 1.32E-01 | 1.00E+00 | 3.0 |
| **2345076 GAMMA_GS** | | | | | | | | | |
| **J1R4F8** | | | | | | | | | |
| | MXJL71AD | AMERICIUM 241 | -4.56E-03 +- 1.0E-01 | U | pCi/g | | 1.66E-01 | | |
| | | CE-144 | -4.31E-02 +- 7.5E-02 | U | pCi/g | | 1.22E-01 | | |
| | | CO-60 | -4.12E-03 +- 1.5E-02 | U | pCi/g | | 2.57E-02 | 5.00E-02 | |
| | | CS-134 | 2.45E-02 +- 1.6E-02 | U | pCi/g | | 3.04E-02 | | |
| | | CS-137 | 1.76E-02 +- 1.4E-02 | U | pCi/g | | 2.59E-02 | 1.00E-01 | |
| | | EU-152 | -1.89E-02 +- 3.6E-02 | U | pCi/g | | 5.92E-02 | 1.00E-01 | |
| | | EU-154 | -2.70E-02 +- 4.4E-02 | U | pCi/g | | 7.36E-02 | 1.00E-01 | |
| | | EU-155 | 1.10E-02 +- 3.9E-02 | U | pCi/g | | 6.75E-02 | 1.00E-01 | |
| | | RA-226 | 3.89E-01 +- 6.9E-02 | | pCi/g | | 4.29E-02 | | |
| | | RA-228 | 6.74E-01 +- 1.6E-01 | | pCi/g | | 8.37E-02 | | |
| | | RU-106 | 6.48E-04 +- 1.1E-01 | U | pCi/g | | 1.86E-01 | | |
| | | SB-125 | 1.30E-02 +- 3.3E-02 | U | pCi/g | | 5.87E-02 | | |
| | | U-235 | 1.08E-02 +- 7.6E-02 | U | pCi/g | | 1.26E-01 | | |
| | | U-238-TH | -5.17E-02 +- 5.8E-01 | U | pCi/g | | 9.56E-01 | | |
| | | ZN-65 | -6.61E-03 +- 3.6E-02 | U | pCi/g | | 5.11E-02 | | |
| **J1R4F8 DUP** | | | | | | | | | |
| | MXJL71AF | AMERICIUM 241 | -6.71E-03 +- 1.9E-02 | U | pCi/g | | 3.05E-02 | | -38.2 |
| | | CE-144 | 1.70E-02 +- 5.1E-02 | U | pCi/g | | 8.59E-02 | | -460.2 |
| | | CO-60 | -7.67E-03 +- 1.4E-02 | U | pCi/g | | 2.32E-02 | 5.00E-02 | -60.3 |
| | | CS-134 | 2.87E-02 +- 1.6E-02 | U | pCi/g | | 2.93E-02 | | 16.1 |
| | | CS-137 | 3.94E-03 +- 1.3E-02 | U | pCi/g | | 2.23E-02 | 1.00E-01 | 126.7 |
| | | EU-152 | -2.53E-03 +- 2.7E-02 | U | pCi/g | | 4.63E-02 | 1.00E-01 | -152.6 |
| | | EU-154 | -2.08E-02 +- 4.7E-02 | U | pCi/g | | 7.82E-02 | 1.00E-01 | -25.7 |
| | | EU-155 | 1.73E-02 +- 2.6E-02 | U | pCi/g | | 4.43E-02 | 1.00E-01 | 45.0 |
| | | RA-226 | 4.15E-01 +- 6.9E-02 | | pCi/g | | 3.61E-02 | | 6.6 |
| | | RA-228 | 7.10E-01 +- 1.3E-01 | | pCi/g | | 8.14E-02 | | 5.3 |
| | | RU-106 | -4.37E-03 +- 1.0E-01 | U | pCi/g | | 1.77E-01 | | -269.7 |
| | | SB-125 | -1.32E-02 +- 2.7E-02 | U | pCi/g | | 4.57E-02 | | -26778.5 |
| | | U-235 | 2.32E-02 +- 5.5E-02 | U | pCi/g | | 9.21E-02 | | 73.1 |
| | | U-238-TH | 4.43E-01 +- 1.9E-01 | | pCi/g | | 2.40E-01 | | 252.8 |
| | | ZN-65 | 2.27E-02 +- 3.6E-02 | U | pCi/g | | 5.62E-02 | | 364.4 |
| **2345077 9310_ALPHABETA_GPC** | | | | | | | | | |

TestAmerica

rptSTLRchSaSummary2 V5.2.22 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.

# Sample Results Summary

## TestAmerica TARL

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

**Date:** 17-Dec-12

**Report No. :** 54002

**SDG No:** JP0428

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| **2345077 9310_ALPHABETA_GPC** | | | | | | | | | |
| **J1R4F8** | | | | | | | | | |
| | MXJL71AA | ALPHA | 7.11E+00 +- 4.6E+00 | | pCi/g | 100% | 6.31E+00 | 1.00E+01 | |
| **J1R4F8 DUP** | | | | | | | | | |
| | MXJL71AG | ALPHA | 1.19E+01 +- 5.4E+00 | | pCi/g | 100% | 5.43E+00 | 1.00E+01 | 50.1 |
| **2345078 9310_ALPHABETA_GPC** | | | | | | | | | |
| **J1R4F8** | | | | | | | | | |
| | MXJL71AC | BETA | 2.19E+01 +- 3.4E+00 | | pCi/g | 100% | 2.35E+00 | 1.50E+01 | |
| **J1R4F8 DUP** | | | | | | | | | |
| | MXJL71AH | BETA | 2.23E+01 +- 3.4E+00 | | pCi/g | 100% | 2.31E+00 | 1.50E+01 | 1.7 |

**No. of Results:** 36

**TestAmerica** **RPD** - Relative Percent Difference.

**rptSTLRchSaSum mary2 V5.2.22 A2002**

# QC Results Summary

**Date:** 17-Dec-12

## TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

**Report No. :** 54002

**SDG No.:** JP0428

| Batch Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDL |
|---|---|---|---|---|---|---|---|---|
| **UTOT_KPA** | | | | | | | | |
| 2345079 BLANK QC, | | | | | | | | |
| MXJMV1AA | TOTAL-URANIUM | 2.12E-03 +- 2.2E-04 | U | ug/g | | | | 1.36E-01 |
| 2345079 LCS, | | | | | | | | |
| MXJMV1AC | TOTAL-URANIUM | 9.67E-01 +- 1.1E-01 | | ug/g | | 105% | 0.0 | 1.36E-01 |
| MXJMV1AD | TOTAL-URANIUM | 5.31E+00 +- 6.3E-01 | | ug/g | | 54% | -0.5 | 1.32E-01 |
| 2345079 MATRIX SPIKE, J1R4F8 | | | | | | | | |
| MXJL71AK | TOTAL-URANIUM | 1.01E+01 +- 1.2E+00 | | ug/g | | 103% | 0.0 | 1.32E-01 |
| **GAMMA_GS** | | | | | | | | |
| 2345076 BLANK QC, | | | | | | | | |
| MXJMQ1AA | AMERICIUM 241 | 1.57E-02 +- 4.1E-02 | U | pCi/g | | | | 7.10E-02 |
| | CE-144 | 2.83E-02 +- 5.4E-02 | U | pCi/g | | | | 9.39E-02 |
| | CO-60 | -4.56E-03 +- 1.1E-02 | U | pCi/g | | | | 1.84E-02 |
| | CS-134 | 8.75E-03 +- 1.2E-02 | U | pCi/g | | | | 2.17E-02 |
| | CS-137 | 6.64E-04 +- 1.1E-02 | U | pCi/g | | | | 2.00E-02 |
| | EU-152 | -1.23E-02 +- 3.0E-02 | U | pCi/g | | | | 5.12E-02 |
| | EU-154 | -5.05E-04 +- 3.0E-02 | U | pCi/g | | | | 5.51E-02 |
| | EU-155 | 2.30E-02 +- 2.8E-02 | U | pCi/g | | | | 5.06E-02 |
| | RA-226 | 1.11E-01 +- 4.2E-02 | U | pCi/g | | | | 5.73E-02 |
| | RA-228 | 4.10E-02 +- 4.1E-02 | U | pCi/g | | | | 7.78E-02 |
| | RU-106 | 1.03E-02 +- 9.8E-02 | U | pCi/g | | | | 1.73E-01 |
| | SB-125 | -9.41E-03 +- 2.6E-02 | U | pCi/g | | | | 4.37E-02 |
| | U-235 | -3.98E-03 +- 5.7E-02 | U | pCi/g | | | | 9.73E-02 |
| | U-238-TH | -8.33E-02 +- 2.8E-01 | U | pCi/g | | | | 4.68E-01 |
| | ZN-65 | -3.32E-02 +- 2.3E-02 | U | pCi/g | | | | 3.43E-02 |
| 2345076 LCS, | | | | | | | | |
| MXJMQ2AC | CS-137 | 1.02E+00 +- 1.3E-01 | | pCi/g | | 98% | 0.0 | 2.61E-02 |
| | RA-226 | 9.63E-01 +- 1.3E-01 | | pCi/g | | 85% | -0.2 | 4.36E-02 |
| | RA-228 | 8.70E-01 +- 1.6E-01 | | pCi/g | | 114% | 0.1 | 8.33E-02 |
| | U-238 | 9.95E-01 +- 1.3E-01 | | pCi/g | | 83% | -0.2 | 4.29E-02 |
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 2345077 BLANK QC, | | | | | | | | |
| MXJMR1AA | ALPHA | -2.11E-01 +- 1.7E+00 | U | pCi/g | 100% | | | 3.25E+00 |
| 2345077 LCS, | | | | | | | | |
| MXJMR1AC | ALPHA | 7.56E+01 +- 2.0E+01 | | pCi/g | 100% | 84% | -0.2 | 3.02E+00 |
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 2345078 BLANK QC, | | | | | | | | |
| MXJMT1AA | BETA | 3.89E-01 +- 9.9E-01 | U | pCi/g | 100% | | | 1.82E+00 |
| 2345078 LCS, | | | | | | | | |
| MXJMT1AC | BETA | 6.29E+01 +- 8.5E+00 | | pCi/g | 100% | 93% | -0.1 | 1.75E+00 |

**No. of Results:** 27

TestAmerica
rptSTLRchQcSummary V5.2.22
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:** 17-Dec-12

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica** | **SDG:** | JP0428 | **Collection Date:** | 12/7/2012 9:05:00 AM |
| **Lot-Sample No.:** | **J2L100414-1** | **Report No. :** | 54002 | **Received Date:** | 12/10/2012 1:50:00 PM |
| **Client Sample ID:** | **J1R4F8** | **COC No. :** | RC-148-077 | **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:** 2345076 | GAMMA_GS | | | **Work Order:** | MXJL71AD | | **Report DB ID:** | 9MXJL710 | | | | |
| AMERICIUM 241 | **-4.56E-03** | U | 1.0E-01 | 1.0E-01 | 1.66E-01 | pCi/g | | *-0.03* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | | *-0.09* | | | g | |
| CE-144 | **-4.31E-02** | U | 7.5E-02 | 7.5E-02 | 1.22E-01 | pCi/g | | *-0.35* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | | *-(1.1)* | | | g | |
| CO-60 | **-4.12E-03** | U | 1.5E-02 | 1.5E-02 | 2.57E-02 | pCi/g | | *-0.16* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | 5.00E-02 | *-0.55* | | | g | |
| CS-134 | **2.45E-02** | U | 1.6E-02 | 1.6E-02 | 3.04E-02 | pCi/g | | *0.8* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | | *(3.)* | | | g | |
| CS-137 | **1.76E-02** | U | 1.4E-02 | 1.4E-02 | 2.59E-02 | pCi/g | | *0.68* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | 1.00E-01 | *(2.5)* | | | g | |
| EU-152 | **-1.89E-02** | U | 3.6E-02 | 3.6E-02 | 5.92E-02 | pCi/g | | *-0.32* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | 1.00E-01 | *-(1.1)* | | | g | |
| EU-154 | **-2.70E-02** | U | 4.4E-02 | 4.4E-02 | 7.36E-02 | pCi/g | | *-0.37* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | 1.00E-01 | *-(1.2)* | | | g | |
| EU-155 | **1.10E-02** | U | 3.9E-02 | 3.9E-02 | 6.75E-02 | pCi/g | | *0.16* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | 1.00E-01 | *0.56* | | | g | |
| RA-226 | **3.89E-01** | | 6.9E-02 | 6.9E-02 | 4.29E-02 | pCi/g | | *(9.1)* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | | *(11.3)* | | | g | |
| RA-228 | **6.74E-01** | | 1.6E-01 | 1.6E-01 | 8.37E-02 | pCi/g | | *(8.1)* | 12/11/12 09:32 p | | 383.6 | GER11$1 |
| | | | | | | | | *(8.5)* | | | g | |

**TestAmerica**
**rptSTLRchSample**
**V5.2.22 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:** 17-Dec-12

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica | **SDG:** | JP0428 | **Collection Date:** | 12/7/2012 9:05:00 AM |
| **Lot-Sample No.:** | J2L100414-1 | **Report No. :** | 54002 | **Received Date:** | 12/10/2012 1:50:00 PM |
| **Client Sample ID:** | J1R4F8 | **COC No. :** | RC-148-077 | **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RU-106 | 6.48E-04 | U | 1.1E-01 | 1.1E-01 | 1.86E-01 | pCi/g | | 0.<br>0.01 | 12/11/12 09:32 p | | 383.6<br>g | GER11$1 |
| SB-125 | 1.30E-02 | U | 3.3E-02 | 3.3E-02 | 5.87E-02 | pCi/g | | 0.22<br>0.78 | 12/11/12 09:32 p | | 383.6<br>g | GER11$1 |
| U-235 | 1.08E-02 | U | 7.6E-02 | 7.6E-02 | 1.26E-01 | pCi/g | | 0.09<br>0.28 | 12/11/12 09:32 p | | 383.6<br>g | GER11$1 |
| U-238-TH | -5.17E-02 | U | 5.8E-01 | 5.8E-01 | 9.56E-01 | pCi/g | | -0.05<br>-0.18 | 12/11/12 09:32 p | | 383.6<br>g | GER11$1 |
| ZN-65 | -6.61E-03 | U | 3.6E-02 | 3.6E-02 | 5.11E-02 | pCi/g | | -0.13<br>-0.37 | 12/11/12 09:32 p | | 383.6<br>g | GER11$1 |
| **Batch:** 2345077 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJL71AA | | **Report DB ID:** 9MXJL710 | | | | | |
| ALPHA | 7.11E+00 | | 4.2E+00 | 4.6E+00 | 6.31E+00 | pCi/g<br>2.80E+00 | 100%<br>1.00E+01 | (1.1)<br>(3.1) | 12/13/12 12:07 p | | 0.0507<br>g | GPC21A |
| **Batch:** 2345078 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJL71AC | | **Report DB ID:** 9MXJL710 | | | | | |
| BETA | 2.19E+01 | | 2.1E+00 | 3.4E+00 | 2.35E+00 | pCi/g<br>1.14E+00 | 100%<br>1.50E+01 | (9.3)<br>(13.) | 12/13/12 11:53 a | | 0.2003<br>g | GPC26A |
| **Batch:** 2345079 | UTOT_KPA | | | **Work Order:** | MXJL71AE | | **Report DB ID:** 9MXJL710 | | | | | |
| TOTAL-URANIUM | 1.19E+00 | | 0.0E+00 | 1.4E-01 | 1.31E-01 | ug/g<br>4.64E-02 | <br>1.00E+00 | (9.1)<br>(16.9) | 12/13/12 05:51 p | | 0.00105<br>ML | KPAW3 |

**No. of Results:** 18 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.22 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: 17-Dec-12

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica** | **SDG:** | JP0428 | **Collection Date:** | 12/7/2012 9:05:00 AM |
| **Lot-Sample No.:** | **J2L100414-1** | **Report No. :** | 54002 | **Received Date:** | 12/10/2012 1:50:00 PM |
| **Client Sample ID:** | **J1R4F8 DUP** | **COC No. :** | RC-148-077 | **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:** 2345076 | GAMMA_GS | | | **Work Order:** MXJL71AF | | **Report DB ID:** MXJL71FR | | | **Orig Sa DB ID:** 9MXJL710 | | | |
| AMERICIUM 241 | -6.71E-03 | U | 1.9E-02 | 1.9E-02 | 3.05E-02 | pCi/g | | -0.22 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -4.56E-03 | U | **RPD** | **-38.2** | | | | -0.72 | | | g | |
| CE-144 | 1.70E-02 | U | 5.1E-02 | 5.1E-02 | 8.59E-02 | pCi/g | | 0.2 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -4.31E-02 | U | **RPD** | **-460.2** | | | | 0.67 | | | g | |
| CO-60 | -7.67E-03 | U | 1.4E-02 | 1.4E-02 | 2.32E-02 | pCi/g | | -0.33 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -4.12E-03 | U | **RPD** | **-60.3** | | 5.00E-02 | | -(1.1) | | | g | |
| CS-134 | 2.87E-02 | U | 1.6E-02 | 1.6E-02 | 2.93E-02 | pCi/g | | 0.98 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 2.45E-02 | U | **RPD** | **16.1** | | | | (3.7) | | | g | |
| CS-137 | 3.94E-03 | U | 1.3E-02 | 1.3E-02 | 2.23E-02 | pCi/g | | 0.18 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 1.76E-02 | U | **RPD** | **126.7** | | 1.00E-01 | | 0.62 | | | g | |
| EU-152 | -2.53E-03 | U | 2.7E-02 | 2.7E-02 | 4.63E-02 | pCi/g | | -0.05 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -1.89E-02 | U | **RPD** | **-152.6** | | 1.00E-01 | | -0.19 | | | g | |
| EU-154 | -2.08E-02 | U | 4.7E-02 | 4.7E-02 | 7.82E-02 | pCi/g | | -0.27 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -2.70E-02 | U | **RPD** | **-25.7** | | 1.00E-01 | | -0.89 | | | g | |
| EU-155 | 1.73E-02 | U | 2.6E-02 | 2.6E-02 | 4.43E-02 | pCi/g | | 0.39 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 1.10E-02 | U | **RPD** | **45.0** | | 1.00E-01 | | (1.4) | | | g | |
| RA-226 | 4.15E-01 | | 6.9E-02 | 6.9E-02 | 3.61E-02 | pCi/g | | (11.5) | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 3.89E-01 | | **RPD** | **6.6** | | | | (12.) | | | g | |
| RA-228 | 7.10E-01 | | 1.3E-01 | 1.3E-01 | 8.14E-02 | pCi/g | | (8.7) | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 6.74E-01 | | **RPD** | **5.3** | | | | (10.8) | | | g | |
| RU-106 | -4.37E-03 | U | 1.0E-01 | 1.0E-01 | 1.77E-01 | pCi/g | | -0.02 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 6.48E-04 | U | **RPD** | **-269.7** | | | | -0.09 | | | g | |

TestAmerica
rptSTLRchDupV5.
2.22 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

Date: 17-Dec-12

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica** | **SDG:** | JP0428 | **Collection Date:** | 12/7/2012 9:05:00 AM |
| **Lot-Sample No.:** | **J2L100414-1** | **Report No. :** | 54002 | **Received Date:** | 12/10/2012 1:50:00 PM |
| **Client Sample ID:** | **J1R4F8 DUP** | **COC No. :** | RC-148-077 | **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB-125 | -1.32E-02 | U | 2.7E-02 | 2.7E-02 | 4.57E-02 | pCi/g | | -0.29 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 1.30E-02 | U | **RPD** | **-26778.5** | | | | -0.96 | | | g | |
| U-235 | 2.32E-02 | U | 5.5E-02 | 5.5E-02 | 9.21E-02 | pCi/g | | 0.25 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | 1.08E-02 | U | **RPD** | **73.1** | | | | 0.85 | | | g | |
| U-238-TH | 4.43E-01 | | 1.9E-01 | 1.9E-01 | 2.40E-01 | pCi/g | | (1.8) | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -5.17E-02 | U | **RPD** | **252.8** | | | | (4.6) | | | g | |
| ZN-65 | 2.27E-02 | U | 3.6E-02 | 3.6E-02 | 5.62E-02 | pCi/g | | 0.4 | 12/12/12 08:05 a | | 383.6 | GER18$1 |
| | -6.61E-03 | U | **RPD** | **364.4** | | | | (1.3) | | | g | |
| **Batch:** 2345077 | 9310_ALPHABETA_GPC | | | **Work Order:** MXJL71AG | | **Report DB ID:** MXJL71GR | | | **Orig Sa DB ID:** 9MXJL710 | | | |
| ALPHA | 1.19E+01 | | 4.5E+00 | 5.4E+00 | 5.43E+00 | pCi/g | 100% | (2.2) | 12/13/12 12:07 p | | 0.0503 | GPC21B |
| | 7.11E+00 | | **RPD** | **50.1** | | 1.00E+01 | | (4.4) | | | g | |
| **Batch:** 2345078 | 9310_ALPHABETA_GPC | | | **Work Order:** MXJL71AH | | **Report DB ID:** MXJL71HR | | | **Orig Sa DB ID:** 9MXJL710 | | | |
| BETA | 2.23E+01 | | 2.1E+00 | 3.4E+00 | 2.31E+00 | pCi/g | 100% | (9.6) | 12/13/12 11:53 a | | 0.2006 | GPC26B |
| | 2.19E+01 | | **RPD** | **1.7** | | 1.50E+01 | | (13.1) | | | g | |
| **Batch:** 2345079 | UTOT_KPA | | | **Work Order:** MXJL71AJ | | **Report DB ID:** MXJL71JR | | | **Orig Sa DB ID:** 9MXJL710 | | | |
| TOTAL-URANIUM | 1.22E+00 | | 0.0E+00 | 1.4E-01 | 1.32E-01 | ug/g | | (9.2) | 12/13/12 05:54 p | | 0.00104 | KPAW3 |
| | 1.19E+00 | | **RPD** | **3.0** | | 1.00E+00 | | (16.9) | | | ML | |

**No. of Results:** 18 **Comments:**

**TestAmerica**
**rptSTLRchDupV5.2.22 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:** 17-Dec-12

**Lab Name:** TestAmerica

**Matrix:** SOIL

**SDG:** JP0428

**Report No. :** 54002

| 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:** 2345079 | UTOT_KPA | | | **Work Order:** | MXJMV1AA | | **Report DB ID:** | MXJMV1AB | | | | |
| TOTAL-URANIUM | 2.12E-03 | U | 0.0E+00 | 2.2E-04 | 1.36E-01 | ug/g | | 0.02 | 12/13/12 06:02 p | | 0.00101 | KPAW3 |
| | | | | | 4.82E-02 | 1.00E+00 | | (19.4) | | | ML | |
| **Batch:** 2345076 | GAMMA_GS | | | **Work Order:** | MXJMQ1AA | | **Report DB ID:** | MXJMQ1AB | | | | |
| AMERICIUM 241 | 1.57E-02 | U | 4.1E-02 | 4.1E-02 | 7.10E-02 | pCi/g | | 0.22 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | | | 0.78 | | | g | |
| CE-144 | 2.83E-02 | U | 5.4E-02 | 5.4E-02 | 9.39E-02 | pCi/g | | 0.3 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | | | (1.1) | | | g | |
| CO-60 | -4.56E-03 | U | 1.1E-02 | 1.1E-02 | 1.84E-02 | pCi/g | | -0.25 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | 5.00E-02 | | -0.85 | | | g | |
| CS-134 | 8.75E-03 | U | 1.2E-02 | 1.2E-02 | 2.17E-02 | pCi/g | | 0.4 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | | | (1.5) | | | g | |
| CS-137 | 6.64E-04 | U | 1.1E-02 | 1.1E-02 | 2.00E-02 | pCi/g | | 0.03 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | 1.00E-01 | | 0.12 | | | g | |
| EU-152 | -1.23E-02 | U | 3.0E-02 | 3.0E-02 | 5.12E-02 | pCi/g | | -0.24 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | 1.00E-01 | | -0.81 | | | g | |
| EU-154 | -5.05E-04 | U | 3.0E-02 | 3.0E-02 | 5.51E-02 | pCi/g | | -0.01 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | 1.00E-01 | | -0.03 | | | g | |
| EU-155 | 2.30E-02 | U | 2.8E-02 | 2.8E-02 | 5.06E-02 | pCi/g | | 0.45 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | 1.00E-01 | | (1.6) | | | g | |
| RA-226 | 1.11E-01 | U | 4.2E-02 | 4.2E-02 | 5.73E-02 | pCi/g | | (1.9) | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | | | (5.3) | | | g | |
| RA-228 | 4.10E-02 | U | 4.1E-02 | 4.1E-02 | 7.78E-02 | pCi/g | | 0.53 | 12/11/12 10:56 p | | 348.0 | GER10$1 |
| | | | | | | | | (2.) | | | g | |

TestAmerica
rptSTLRchBlank
V5.2.22 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

## BLANK RESULTS

**Date:** 17-Dec-12

**Lab Name:** TestAmerica

**Matrix:** SOIL

**SDG:** JP0428

**Report No. :** 54002

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RU-106 | 1.03E-02 | U | 9.8E-02 | 9.8E-02 | 1.73E-01 | pCi/g | | 0.06<br>0.21 | 12/11/12 10:56 p | | 348.0<br>g | GER10$1 |
| SB-125 | -9.41E-03 | U | 2.6E-02 | 2.6E-02 | 4.37E-02 | pCi/g | | -0.22<br>-0.73 | 12/11/12 10:56 p | | 348.0<br>g | GER10$1 |
| U-235 | -3.98E-03 | U | 5.7E-02 | 5.7E-02 | 9.73E-02 | pCi/g | | -0.04<br>-0.14 | 12/11/12 10:56 p | | 348.0<br>g | GER10$1 |
| U-238-TH | -8.33E-02 | U | 2.8E-01 | 2.8E-01 | 4.68E-01 | pCi/g | | -0.18<br>-0.6 | 12/11/12 10:56 p | | 348.0<br>g | GER10$1 |
| ZN-65 | -3.32E-02 | U | 2.3E-02 | 2.3E-02 | 3.43E-02 | pCi/g | | -0.97<br>-(2.9) | 12/11/12 10:56 p | | 348.0<br>g | GER10$1 |
| **Batch:** 2345077 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJMR1AA | | **Report DB ID:** | MXJMR1AB | | | | |
| ALPHA | -2.11E-01 | U | 1.7E+00 | 1.7E+00 | 3.25E+00<br>1.47E+00 | pCi/g<br>1.00E+01 | 100% | -0.07<br>-0.25 | 12/13/12 12:07 p | | 0.0508<br>g | GPC21C |
| **Batch:** 2345078 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJMT1AA | | **Report DB ID:** | MXJMT1AB | | | | |
| BETA | 3.89E-01 | U | 9.9E-01 | 9.9E-01 | 1.82E+00<br>8.76E-01 | pCi/g<br>1.50E+01 | 100% | 0.21<br>0.78 | 12/13/12 11:53 a | | 0.201<br>g | GPC26C |

**No. of Results:** 18 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.22 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:** 17-Dec-12

**Lab Name:** TestAmerica

**Matrix:** SOIL

**SDG:** JP0428

**Report No. :** 54002

| 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:** 2345079 | UTOT_KPA | | | **Work Order:** | MXJMV1AC | | **Report DB ID:** | MXJMV1CS | | | | | |
| TOTAL-URANIUM | 9.67E-01 | | 0.0E+00 | 1.1E-01 | 1.36E-01 | ug/g | | 9.25E-01 | 4.9E-03 | 105% | 12/13/12 06:04 p | 0.00101 | KPAW3 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.0 | | ML | |
| **Batch:** 2345079 | UTOT_KPA | | | **Work Order:** | MXJMV1AD | | **Report DB ID:** | MXJMV1DS | | | | | |
| TOTAL-URANIUM | 5.31E+00 | | 0.0E+00 | 6.3E-01 | 1.32E-01 | ug/g | | 9.80E+00 | 5.2E-02 | 54% | 12/13/12 06:10 p | 0.00104 | KPAW3 |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.5 | | ML | |
| **Batch:** 2345076 | GAMMA_GS | | | **Work Order:** | MXJMQ2AC | | **Report DB ID:** | MXJMQ2CS | | | | | |
| CS-137 | 1.02E+00 | | 1.3E-01 | 1.3E-01 | 2.61E-02 | pCi/g | | 1.04E+00 | 1.1E-02 | 98% | 12/13/12 11:59 a | 350.1 | GER16$1 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.0 | | g | |
| RA-226 | 9.63E-01 | | 1.3E-01 | 1.3E-01 | 4.36E-02 | pCi/g | | 1.14E+00 | 1.2E-02 | 85% | 12/13/12 11:59 a | 350.1 | GER16$1 |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.2 | | g | |
| RA-228 | 8.70E-01 | | 1.6E-01 | 1.6E-01 | 8.33E-02 | pCi/g | | 7.66E-01 | 7.9E-03 | 114% | 12/13/12 11:59 a | 350.1 | GER16$1 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.1 | | g | |
| U-238 | 9.95E-01 | | 1.3E-01 | 1.3E-01 | 4.29E-02 | pCi/g | | 1.20E+00 | 1.2E-02 | 83% | 12/13/12 11:59 a | 350.1 | GER16$1 |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.2 | | g | |
| **Batch:** 2345077 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJMR1AC | | **Report DB ID:** | MXJMR1CS | | | | | |
| ALPHA | 7.56E+01 | | 6.1E+00 | 2.0E+01 | 3.02E+00 | pCi/g | 100% | 9.04E+01 | 9.1E-01 | 84% | 12/13/12 12:07 p | 0.0507 | GPC22A |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.2 | | g | |
| **Batch:** 2345078 | 9310_ALPHABETA_GPC | | | **Work Order:** | MXJMT1AC | | **Report DB ID:** | MXJMT1CS | | | | | |
| BETA | 6.29E+01 | | 2.6E+00 | 8.5E+00 | 1.75E+00 | pCi/g | 100% | 6.78E+01 | 2.6E+00 | 93% | 12/13/12 11:53 a | 0.2009 | GPC26D |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.1 | | g | |

**No. of Results:** 8 **Comments:**

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

**rptSTLRchLcs**
**V5.2.22 A2002**

# FORM II

## MATRIX SPIKE RESULTS

**Date:** 17-Dec-12

**Lab Name:** TestAmerica **SDG:** JP0428

**Lot-Sample No.:** J2L100414-1, J1R4F8 **Report No. :** 54002 **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:** 2345079 | **Work Order:** MXJL71AK | | | **Report DB ID:** MXJL71KW | | | **Orig Sa DB ID:** 9MXJL710 | | | | | |
| TOTAL-URANIUM | 1.01E+01 | | 0.0E+00 | 1.2E+00 | 1.32E-01 | ug/g | | 103.04% | 9.77E+00 | 12/13/12 05:59 p | 0.00104 | UTOT_KPA |
| | 1.19E+00 | | | | | | | | 5.1E-02 | | ML | KPAW3 |

**Number of Results:** 1

**Comments:**

TestAmerica
rptSTLRchMs
V5.2.22 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

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/14/2012 1:08:46 PM

**Lot No., Due Date:** J2L100414; 12/17/2012
**Client, Site:** 127642; S00X235B00 HANFORD
**QC Batch No., Method Test:** 2345077; RALPHA-A Alpha by GPC-Am
**SDG, Matrix:** JP0428; SOIL

| | Yes | No | N/A |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | ✓ | | |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | ✓ | | |
| 2.2 Are the QC appropriate for the analysis included in the batch? | ✓ | | |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | ✓ | | |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | | | ✓ |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | ✓ | | |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | ✓ | | |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | | | ✓ |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | | | ✓ |
| 3.5 Are the sample yields and MDAs within contract limits? | ✓ | | |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | ✓ | | |
| 4.2 Were analysis volumes entered correctly? | ✓ | | |
| 4.3 Were Yields entered correctly? | | | ✓ |
| 4.4 Were spectra reviewed/meet contractual requirements? | | | ✓ |
| 4.5 Were raw counts reviewed for anomalies? | ✓ | | |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | | | ✓ |
| 5.2 Are all required forms filled out? | ✓ | | |
| 5.3 Was the correct methodology used? | ✓ | | |
| 5.4 Was transcription checked? | ✓ | | |
| 5.5 Were all calculations checked at a minimum frequency? | ✓ | | |
| 5.6 Are worksheet entries complete and correct? | ✓ | | |

RW 12/14/12

6.0 Comments on any No response:
NCM 10-22437 RW 12/14/12

First Level [signature] Date 12/14/12

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 2345077

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | | | ✓ |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | ✓ |
| 2. Are all required forms filled out? | ✓ | | |
| 3. Was the correct methodology used? | ✓ | | |
| 4. Was transcription checked? | ✓ | | |
| 5. Were all calculations checked at a minimum frequency? | ✓ | | |
| 6. Were units checked? | ✓ | | |

Comments on any "No" response: CRDL= 10.0pCi/g

Second Level Review: [signature] Date: 12/14/12

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/14/2012 12:37:57 PM

**Lot No., Due Date:** J2L100414; 12/17/2012
**Client, Site:** 127642; S00X235B00 HANFORD
**QC Batch No., Method Test:** 2345078; RBETA-SR Beta by GPC-Sr/Y
**SDG, Matrix:** JP0428; SOIL

| | | | |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | Yes ✓ | No | N/A |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | Yes ✓ | No | N/A |
| 2.2 Are the QC appropriate for the analysis included in the batch? | Yes ✓ | No | N/A |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | Yes ✓ | No | N/A |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | Yes | No | N/A ✓ |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | Yes ✓ | No | N/A |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | Yes ✓ | No | N/A |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | Yes | No | N/A ✓ |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | Yes ✓ | No | N/A |
| 3.5 Are the sample yields and MDAs within contract limits? | Yes ✓ | No | N/A |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | Yes ✓ | No | N/A |
| 4.2 Were analysis volumes entered correctly? | Yes ✓ | No | N/A |
| 4.3 Were Yields entered correctly? | Yes | No | N/A ✓ |
| 4.4 Were spectra reviewed/meet contractual requirements? | Yes | No | N/A ✓ |
| 4.5 Were raw counts reviewed for anomalies? | Yes ✓ | No | N/A |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | Yes | No | N/A ✓ |
| 5.2 Are all required forms filled out? | Yes ✓ | No | N/A |
| 5.3 Was the correct methodology used? | Yes ✓ | No | N/A |
| 5.4 Was transcription checked? | Yes ✓ | No | N/A |
| 5.5 Were all calculations checked at a minimum frequency? | Yes | No | N/A ✓ |
| 5.6 Are worksheet entries complete and correct? | Yes ✓ | No | N/A |

6.0 Comments on any No response:

**First Level** Thomas DM [illegible] **Date** 12/14/12

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 2345078

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | | | ✓ |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | ✓ |
| 2. Are all required forms filled out? | ✓ | | |
| 3. Was the correct methodology used? | ✓ | | |
| 4. Was transcription checked? | ✓ | | |
| 5. Were all calculations checked at a minimum frequency? | ✓ | | |
| 6. Were units checked? | ✓ | | |

Comments on any "No" response: CRDL = 15.0 pCi/g

Second Level Review: Rhonda W Jones Date: 12/14/12

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist
RADIOCHEMISTRY, First Level Review

12/17/2012 12:55:51 PM

**Lot No., Due Date:** J2L100414; 12/17/2012
**Client, Site:** 127642; S00X235B00 HANFORD
**QC Batch No., Method Test:** 2345076; RGAMMA Gamma by GER
**SDG, Matrix:** JP0428; SOIL

| | | | |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | ✓ Yes | No | N/A |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | ✓ Yes | No | N/A |
| 2.2 Are the QC appropriate for the analysis included in the batch? | ✓ Yes | No | N/A |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | ✓ Yes | No | N/A |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | Yes | No | ✓ N/A |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | ✓ Yes | No | N/A |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | Yes | ✓ No | N/A |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | Yes | No | ✓ N/A |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | ✓ Yes | No | N/A |
| 3.5 Are the sample yields and MDAs within contract limits? | ✓ Yes | No | N/A |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | ✓ Yes | No | N/A |
| 4.2 Were analysis volumes entered correctly? | ✓ Yes | No | N/A |
| 4.3 Were Yields entered correctly? | Yes | No | ✓ N/A |
| 4.4 Were spectra reviewed/meet contractual requirements? | ✓ Yes | No | N/A |
| 4.5 Were raw counts reviewed for anomalies? | ✓ Yes | No | N/A |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | ✓ Yes | No | N/A |
| 5.2 Are all required forms filled out? | ✓ Yes | No | N/A |
| 5.3 Was the correct methodology used? | ✓ Yes | No | N/A |
| 5.4 Was transcription checked? | ✓ Yes | No | N/A |
| 5.5 Were all calculations checked at a minimum frequency? | Yes | No | ✓ N/A |
| 5.6 Are worksheet entries complete and correct? | ✓ Yes | No | N/A |

6.0 Comments on any No response:
NCM 10-22449

First Level Lisa Antoson Date 12/17/12

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 2341596

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | | | ✓ |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | ✓ | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | ✓ | | |
| 2. Are all required forms filled out? | ✓ | | |
| 3. Was the correct methodology used? | ✓ | | |
| 4. Was transcription checked? | ✓ | | |
| 5. Were all calculations checked at a minimum frequency? | ✓ | | |
| 6. Were units checked? | ✓ | | |

Comments on any "No" response: SRDL = 0.1 pCi/g
See NCM #: 10-22449

Second Level Review: [signature] Date: 12/17/12

LS-038B, Rev. 10, 9/07

# Clouseau
# Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: 10-22449
NCM Initiated By: Lisa Antonson
Date Opened: 12/17/2012
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Counting
Tests: Gamma by GER
Lot #'s (Sample #'s): J2L100000 (76), J2L100414 (1),
QC Batches: 2345076,

Nonconformance: LCS result out of limits
Subcategory: Other (explanation required)

## Problem Description / Root Cause

| Name | Date | Description |
|---|---|---|
| Lisa Antonson | 12/17/2012 | The LCS was recovered low for U-238 and high for Ra-228 in the original count. A recount brought it within limits. |

## Corrective Action

| Name | Date | Corrective Action |
|---|---|---|
| Lisa Antonson | 12/17/2012 | The LCS was recounted |

## Client Notification Summary

| Client | Project Manager | Notified | Response | How Notified | Note | Response | Response Note |
|---|---|---|---|---|---|---|---|

## Quality Assurance Verification

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

## Approval History

| Date Approved | Approved By | Position |
|---|---|---|

Date Printed: 12/17/2012

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/17/2012 9:58:36 AM

**Lot No., Due Date:** J2L100414; 12/17/2012
**Client, Site:** 127642; S00X235B00 HANFORD
**QC Batch No., Method Test:** 2345079; RUNAT UNat by KPA
**SDG, Matrix:** JP0428; SOIL

| | Yes | No | N/A |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | ✓ | | |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | ✓ | | |
| 2.2 Are the QC appropriate for the analysis included in the batch? | ✓ | | |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | ✓ | | |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | | | ✓ |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | ✓ | | |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | | | ✓ |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | ✓ | | |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | ✓ | | |
| 3.5 Are the sample yields and MDAs within contract limits? | ✓ | | |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | ✓ | | |
| 4.2 Were analysis volumes entered correctly? | ✓ | | |
| 4.3 Were Yields entered correctly? | ✓ | | |
| 4.4 Were spectra reviewed/meet contractual requirements? | ✓ | | |
| 4.5 Were raw counts reviewed for anomalies? | ✓ | | |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | ✓ | | |
| 5.2 Are all required forms filled out? | ✓ | | |
| 5.3 Was the correct methodology used? | ✓ | | |
| 5.4 Was transcription checked? | ✓ | | |
| 5.5 Were all calculations checked at a minimum frequency? | ✓ | | |
| 5.6 Are worksheet entries complete and correct? | ✓ | | |

6.0 Comments on any No response:
NCM #: 10-22448

**First Level** [signature] **Date** 12/17/12

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 234879

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | | | ✓ |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | ✓ | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | ✓ | | |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | ✓ | | |
| 2. Are all required forms filled out? | ✓ | | |
| 3. Was the correct methodology used? | ✓ | | |
| 4. Was transcription checked? | ✓ | | |
| 5. Were all calculations checked at a minimum frequency? | ✓ | | |
| 6. Were units checked? | ✓ | | |

Comments on any "No" response: CRDL = 1.0 ug/g
SENCMT: 10-22448

Second Level Review: [signature] Date: 8/17/12

LS-038B, Rev. 10, 9/07

# Clouseau
# Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-22448**
NCM Initiated By: Tabitha Liebrecht
Date Opened: 12/17/2012
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Counting
Tests: UNat by KPA
Lot #'s (Sample #'s): J2L100000 (79), J2L100414 (1),
QC Batches: 2345079,

Nonconformance: LCS result out of limits
Subcategory: Analyte was recovered low in the LCS

## Problem Description / Root Cause

| Name | Date | Description |
|---|---|---|
| Tabitha Liebrecht | 12/17/2012 | LCS recovery was low. |

## Corrective Action

| Name | Date | Corrective Action |
|---|---|---|
| Tabitha Liebrecht | 12/17/2012 | Notitfied PM. Client will accept one passing LCS. |

## Client Notification Summary

| Client | Project Manager | Notified | Response | How Notified | Note | Response | Response Note |
|---|---|---|---|---|---|---|---|

## Quality Assurance Verification

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

## Approval History

| Date Approved | Approved By | Position |
|---|---|---|

Date Printed: 12/17/2012

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-148-077 | Page 1 of 2 |
|---|---|---|---|
| **Collector** M. Simonds | **Company Contact** Joan Kessner **Telephone No.** 509-375-4688 | **Project Coordinator** KESSNER, JH | **Price Code** 8L/B MAB 12-3-12 **Data Turnaround** ~~21~~ Days 7 MAB 12-3-12 |
| **Project Designation** 300 Area D4 Waste Sites - Soil Full Protocol | **Sampling Location** 300-15 | **SAF No.** RC-148 | |
| **Ice Chest No.** NA | **Field Logbook No.** EL-1665 **COA** R300152000 | **Method of Shipment** ~~Fed Ex~~ 12-10-12 CMB NAND DEL. | |
| **Shipped To** TestAmerica Incorporated, Richland | **Offsite Property No.** NA | **Bill of Lading/Air Bill No.** See ~~OSPC~~ 12-10-12 CMB NA | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
~~Potential~~ Radioactive < DOT limits
12-10-12 CMB

**Special Handling and/or Storage**
~~Cool 4C~~ NONE MAB 12-3-12

J2L100414
JP0428
Due 12-17-12

J2L100414

| Preservation | Cool 4C | Cool 4C | None | Cool 4C | Cool 4C | Freeze | Cool 4C | Cool 4C | None | None |
|---|---|---|---|---|---|---|---|---|---|---|
| Type of Container | G/P | G/P | G/P | aG | aG | Gs* | aG | aG | G/P | G/P |
| No. of Container(s) | 1 | 0 | 0 | 0 | 1 | 5 | 1 | 1 | 1 | 0 |
| Volume | 120mL | 60mL | 60mL | 60mL | 120mL | 40mL | SOK 11-26-12 ~~120mL~~ 250mL | 120mL | 500ml | 60mL |
| | See item (1) in Special Instructions. | IC Anions - 300.0; NO2/NO3 - 353.2 | pH (Soil) - 9045 | Total Cyanide - 9010; Sulfides - 9030 | TPH-Diesel Range - WTPH-D + MAB 12-7-12 | VOA - 5035/8260 (TCL) | Semi-VOA - 8270A (TCL) | PCBs - 8082 RCF 35053 | See item (2) in Special Instructions. | Gross Alpha & Gross Beta |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1R4F8 MXSL7 | SOIL | 12-7-12 | 0905 | | | | | | | | | ✓ | ✓ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| LVL MIRANDA SIMMONS MSS | 12/7/12 1515 | MA Bamberger MA Bamberger | 12-7-12 1515 |
| MA Bamberger MA Bamberger | 12-7-12 1615 | 1060 Battelle Ref 3C | 12-7-12 1615 * |
| 1060 Battelle #3 | 12-10-12 0700 | A. Freier A. Freier | 12-10-12 0700 |
| WCH A. Freier A. Freier | 12-10-12 1350 | J. Bock J. Bock TALE | 12-10-12 1350 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**
~~VOAs frozen upon collection~~ AS 12-10-12

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, ~~Boron,~~ Cadmium, Calcium, Chromium, Cobalt, Copper, ~~Iron, Lead, Thallium,~~ Magnesium, Manganese, Molybdenum, Nickel, Potassium, ~~Selenium,~~ Silicon, Silver, Sodium, Uranium, Vanadium, Zinc, ~~Zirconium~~}; Mercury - 7471 - (CV)
(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

JP0428

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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 |

REVIEWED BY MAB DATE 12-10-12

WCH-EE-011

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-148-077 | Page 2 of 2 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Collector** M. Simonds | **Company Contact** Joan Kessner | **Telephone No.** 509-375-4688 | **Project Coordinator** KESSNER, JH |
| **Price Code** 8LB MAB 12-3-12 | **Data Turnaround** ~~21~~ Days 7 MAB 12-3-12 | | |
| **Project Designation** 300 Area D4 Waste Sites - Soil Full Protocol | **Sampling Location** 300-15 | | **SAF No.** RC-148 |
| **Ice Chest No.** NA | **Field Logbook No.** EL-1665 | **COA** R300152000 | **Method of Shipment** ~~Fed Ex~~ Hand deliver 12-10-12 CMB |
| **Shipped To** TestAmerica Incorporated, Richland | **Offsite Property No.** NA | | **Bill of Lading/Air Bill No.** ~~See OSPC~~ 12-10-12 CMB NA |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

~~Potential~~ Radioactive < DOT limits 12-10-12 CMB

**Special Handling and/or Storage**

~~Cool 4C~~ None MAB 12-3-12

J2L100414

JP0428

Due 12-17-12

**SAMPLE ANALYSIS**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Preservation** | None | None | | | | | | | | | | | |
| **Type of Container** | G/P | G/P | | | | | | | | | | | |
| **No. of Container(s)** | 1 | 1 | | | | | | | | | | | |
| **Volume** | 60mL | 60g | | | | | | | | | | | |
| | Total Uranium | RCF GEA Shipping Screen MAB 12-3-12 | | | | | | | | | | | |
| | | | | | | | | | RCF 35093 | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
| J1R4F8 MXJLN | SOIL | 12-7-12 | 0905 | ✓ | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| LVI Miranda Simonds | 12/7/12 1515 | MA Bamberger MA Bamberger | 1515 12-7-12 |
| MA Bamberger MA Bamberger | 1615 12-7-12 | 1060 Battelle Ref. 3C | 1615 * 12-7-12 |
| 1060 Battelle #3 12-10-12 | 0700 | A. Freier A. Freier | 0700 12-10-12 |
| WCH A. Freier A. Freier | 1350 12-10-12 | J. Bock J. Bock TALR | 12-10-12 1350 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

~~VOAs frozen upon collection.~~ AA 12-10-12

REVIEWED BY CMB DATE 12-10-12

JP0428

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

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

Analysis Report for RCF35053

J1R6L5 SAF:RC-148 300PS/300-15

DU-3

# GAMMA SPECTRUM ANALYSIS

| | |
|---|---|
| Sample Identification | : RCF35053 |
| Sample Description | : J1R6L5 SAF:RC-148 300PS/300-15 |
| Sample Type | : 80g pillbox |
| Sample Size | : 6.600E+01 grams |
| Facility | : Default |
| Sample Taken On | : 12/5/2012 9:00:00AM |
| Acquisition Started | : 12/5/2012 11:44:39AM |
| Procedure | : 80 Gram Pill Box |
| Operator | : RCT |
| Detector Name | : NEWBEGE |
| Geometry | : 80 Gram Pill Box |
| Live Time | : 1800.0 seconds |
| Real Time | : 1800.2 seconds |
| Dead Time | : 0.01 % |
| Peak Locate Threshold | : 3.00 |
| Peak Locate Range (in channels) | : 40 - 4096 |
| Peak Area Range (in channels) | : 40 - 4096 |
| Identification Energy Tolerance | : 1.000 keV |
| Energy Calibration Used Done On | : 7/18/2012 |
| Efficiency Calibration Used Done On | : 3/9/2012 |
| Efficiency Calibration Description | : NBEGE 80gPB EC030712 SN85269-238 |
| Sample Number | : 29542 |

# INTERFERENCE CORRECTED REPORT

| Nuclide Name | Nuclide Id Confidence | Wt mean Activity (pCi/grams) | Wt mean Activity Uncertainty | Comments |
|---|---|---|---|---|
| K-40 | 0.942 | 1.87E+01 | 4.02E+00 | |
| PB-212 | 0.708 | 6.55E-01 | 1.57E-01 | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Sample Check-in List

Date/Time Received: 12-10-12 / 1350 Container GM Screen Result: (Airlock) .06 Initials [JB]
Sample GM Screen Result (Sample Receiving) .06 Initials [JB]

Client: WCH SDG #: JP0428 NA [ ] SAF #: RC-148 NA [ ]

Lot Number: J2L100414

Chain of Custody # RC-148-077

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

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

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [JB] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 1
7. Containers received: 1 x 500 mLp; 1 x 60 mLAG
8. Sample holding times exceeded? NA [ ] Yes [ ] No [JB]
9. Samples have:
   - ____tape
   - [JB] custody seals
   - ____hazard labels
   - [JB] appropriate sample labels
10. Matrix:
    - [JB] A (FLT, Wipe, Solid, Soil)
    - ____S (Air, Niosh 7400)
    - ____I (Water)
    - ____T (Biological, Ni-63)
11. Samples:
    - [JB] 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 [JB]
    (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 : _____
13. Were any anomalies identified in sample receipt? Yes [ ] No [JB]
14. Description of anomalies (include sample numbers): NA [JB] _____

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:______________________________________________

______________________________________________

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

Sample Custodian: [signature] Date: 12-10-12

Client Informed on__________ by__________ Person contacted__________

[X] No action necessary; process as is

Project Manager [signature] Date 12/10/12

| SAMPLE ID | Initial pH | Acid Amt | Final pH | SAMPLE ID | Initial pH | Acid Amt | Final pH |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

J2L100414 PW 12/10/12

LS-023, Rev. 15, 07/11

See over for additional information.

12/13/2012 9:45:49 AM

# Sample Preparation/Analysis

Balance Id:B145441330

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

AY Gross Alpha Prp PRP003/GPC007
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

AnalyDueDate: 12/17/2012

Sep1 DT/Tm Tech:

Batch: 2345077 SOIL pCi/g PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LoeberL

| 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 MXJL7-1-AA<br>J2L100414-1-SAMP<br>12/07/2012 09:05 | | | 0.0507g,in<br>AmtRec: 1X500MLP;1X60MLAG | 0.0507g<br>#Containers: 2 | | | 1.5<br>Scr: | 50.7mg<br>Alpha: | 240 | 21A | 1407 | 12/13/12 | Beta: |
| 2 MXJL7-1-AG-X<br>J2L100414-1-DUP<br>12/07/2012 09:05 | | | 0.0503g,in<br>AmtRec: 1X500MLP;1X60MLAG | 0.0503g<br>#Containers: 2 | | | Scr: | 50.3mg<br>Alpha: | | 21B | | | Beta: |
| 3 MXJMR-1-AA-B<br>J2L100000-77-BLK<br>12/11/2012 10:15 pd | | | 0.0508g,in<br>AmtRec: | 0.0508g<br>#Containers: 1 | | | Scr: | 0.0mg<br>Alpha: | | 21C | | | Beta: |
| 4 MXJMR-1-AC-C<br>J2L100000-77-LCS<br>12/11/2012 10:15 pd | | | 0.0507g,in<br>AmtRec: | 0.0507g<br>#Containers: 1 | ASD5437<br>07/26/12,pd<br>04/04/05,r | | Scr: | 0.4mg<br>Alpha: | | 22A | | | Beta: |

**Comments:** MXJMR-BLK P-12-00452," S-12-00228"," LL12/13/12"

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

22437

MXJL71AA-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| ALPHA | RDL:1.00E+01 | pCi/g | LCL: | UCL: | RPD: |
| MXJMR1AA-BLK: | | | | | |
| ALPHA | RDL:1.00E+01 | pCi/g | LCL: | UCL: | RPD: |
| MXJMR1AC-LCS: | | | | | |
| Am-241 | RDL: | pCi/g | LCL:70 | UCL:130 | RPD:35 |

12/13/2012 9:45:50 AM

# Sample Preparation/Analysis

AY Gross Alpha Prp PRP003/GPC007
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

Balance Id:B145441330

Pipet #: _____

AnalyDueDate: 12/17/2012

Sep1 DT/Tm Tech:

Batch: 2345077 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LoeberL

| 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: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

```
MXJL71AA-SAMP Calc Info:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
MXJMR1AA-BLK:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
MXJMR1AC-LCS:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

12/14/2012 12:52:49 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/15/2011, 12/19/2012, Batch: '2345077', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| **2345077** | | | | | | |
| *AC* | | **Rev1C** | **WoodT** | 12/11/2012 6:57:06 | | |
| *SC* | | | davilan | IsBatched | 12/11/2012 10:19:04 AM | ICOC_RADCALC v4.8.49 |
| *SC* | | | WoodT | InPrep | 12/11/2012 6:57:06 PM | RL-PRP-003 REVISION 3 |
| *SC* | | | WoodT | Prep1C | 12/11/2012 6:57:58 PM | RL-PRP-003 REVISION 3 |
| *SC* | | | LoeberL | Prep2C | 12/13/2012 9:59:54 AM | RL-GPC-007 REVISION 2 |
| *SC* | | | ClarkR | InCnt1 | 12/13/2012 10:03:17 AM | RL-CI-006 REVISION 3 |
| *SC* | | | ClarkR | CalcC | 12/13/2012 2:45:37 PM | RL-CI-006 REVISION 3 |
| *SC* | | | mcginnist | Rev1C | 12/14/2012 12:52:43 PM | RL-DR-001 Rev 2 |
| *AC* | | | **WoodT** | 12/11/2012 6:57:58 | | |
| *AC* | | | **LoeberL** | 12/13/2012 9:59:54 | | |
| *AC* | | | **ClarkR** | 12/13/2012 10:03:17 | | |
| *AC* | | | **ClarkR** | 12/13/2012 2:45:37 | | |
| *AC* | | | **mcginnist** | 12/14/2012 12:52:43 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 6

ICOCFractions v4.8.44

12/13/2012 9:45:38 AM

# Sample Preparation/Analysis

Balance Id:B145441330

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

BB Gross Beta Prp PRP003/GPC007
S8 Gross Beta by GPC using Sr/Y-90 curve
5I CLIENT: HANFORD

**PRIORITY**

Pipet #: _____

**AnalyDueDate: 12/17/2012**

Sep1 DT/Tm Tech:

**Batch: 2345078 SOIL pCi/g PM, Quote: RW2, 27038**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 2345076 AXTA, 2345077 AYS7, 2345078 BBS8, 2345079 7ZSS,

Prep Tech: LoeberL

| 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 MXJL7-1-AC<br>J2L100414-1-SAMP<br>12/07/2012 09:05 | | | 0.2003g,in<br>AmtRec: 1X500MLP;1X60MLAG | 0.2003g<br>#Containers: 2 | | | 1.5 | 200.3mg | 200 | 26A<br>Scr: | 1332<br>Alpha: | 12/13/12 cm<br>Beta: | |
| 2 MXJL7-1-AH-X<br>J2L100414-1-DUP<br>12/07/2012 09:05 | | | 0.2006g,in<br>AmtRec: 1X500MLP;1X60MLAG | 0.2006g<br>#Containers: 2 | | | | 200.6mg | | 26B<br>Scr: | Alpha: | Beta: | |
| 3 MXJMT-1-AA-B<br>J2L100000-78-BLK<br>12/11/2012 10:15 pd | | | 0.201g,in<br>AmtRec: | 0.201g<br>#Containers: 1 | | | | 0.0mg | | 26C<br>Scr: | Alpha: | Beta: | |
| 4 MXJMT-1-AC-C<br>J2L100000-78-LCS<br>12/11/2012 10:15 pd | | | 0.2009g,in<br>AmtRec: | 0.2009g<br>#Containers: 1 | BESD2425<br>11/08/12,pd<br>10/01/01,r | | | 0.4mg | | 26D<br>Scr: | Alpha: | Beta: | |

**Comments:** MXJMT-BLK P-12-00452," S-12-00228"," LL12/13/12"

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

MXJL71AC-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| BETA | RDL:1.50E+01 | pCi/g | LCL: | UCL: | RPD: |
| MXJMT1AA-BLK: | | | | | |
| BETA | RDL:1.50E+01 | pCi/g | LCL: | UCL: | RPD: |
| MXJMT1AC-LCS: | | | | | |
| Sr-90 | RDL: | pCi/g | LCL:70 | UCL:130 | RPD:35 |

12/13/2012 9:45:38 AM

# Sample Preparation/Analysis

Balance Id:1120373922,B145441330

BB Gross Beta Prp PRP003/GPC007
S8 Gross Beta by GPC using Sr/Y-90 curve
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 12/17/2012

Sep1 DT/Tm Tech:

Batch: 2345078 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LoeberL

| 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: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

```
MXJL71AC-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
MXJMT1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
MXJMT1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

12/14/2012 1:14:57 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/15/2011, 12/19/2012, Batch: '2345078', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| **2345078** | | | | | | |
| *AC* | | **Rev1C** | **WoodT** | 12/11/2012 6:57:13 | | |
| *SC* | | | davilan | IsBatched | 12/11/2012 10:19:07 AM | ICOC_RADCALC v4.8.49 |
| *SC* | | | WoodT | InPrep | 12/11/2012 6:57:13 PM | RL-PRP-003 REVISION 3 |
| *SC* | | | WoodT | Prep1C | 12/11/2012 6:58:10 PM | RL-PRP-003 REVISION 3 |
| *SC* | | | LoeberL | Prep2C | 12/13/2012 10:00:04 AM | RL-GPC-007 REVISION 2 |
| *SC* | | | ClarkR | InCnt1 | 12/13/2012 10:03:24 AM | RL-CI-006 REVISION 3 |
| *SC* | | | ClarkR | CalcC | 12/13/2012 2:35:23 PM | RL-CI-006 REVISION 3 |
| *SC* | | | mcginnist | Rev1C | 12/14/2012 12:36:30 PM | RL-DR-001 Rev 2 |
| *AC* | | | **WoodT** | 12/11/2012 6:58:10 | | |
| *AC* | | | **LoeberL** | 12/13/2012 10:00:04 | | |
| *AC* | | | **ClarkR** | 12/13/2012 10:03:24 | | |
| *AC* | | | **ClarkR** | 12/13/2012 2:35:23 | | |
| *AC* | | | **mcginnist** | 12/14/2012 12:36:30 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 6

ICOCFractions v4.8.44

BH I SOIL

12/11/2012 6:28:17 PM

# Sample Preparation/Analysis

Balance Id:1120421763

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

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

**PRIORITY**

Pipet #: _____

**AnalyDueDate: 12/17/2012**

Sep1 DT/Tm Tech:

**Batch: 2345076 SOIL pCi/g PM, Quote: RW2, 27038**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 2345076 AXTA, 2345077 AYS7, 2345078 BBS8, 2345079 7ZSS,

Prep Tech: ,WoodT

| 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 MXJL7-1-AD<br>J2L100414-1-SAMP<br>12/07/2012 09:05 | | | 383.60g,in<br>AmtRec: 1X500MLP;1X60MLAG | 383.60g<br>#Containers: 2 | | | | SOW | 300 | G11<br>Scr: | 0052<br>Alpha: | 12/11/2012<br>Beta: | |
| 2 MXJL7-1-AF-X<br>J2L100414-1-DUP<br>12/07/2012 09:05 | | | ISV<br>AmtRec: 1X500MLP;1X60MLAG | #Containers: 2 | | | | | | G18<br>Scr: | 1125<br>Alpha: | 12/12/12 GSH<br>Beta: | |
| 3 MXJMQ-1-AA-B<br>J2L100000-76-BLK<br>12/11/2012 10:15 pd | | | 348.00g,in<br>AmtRec: | 348.00g<br>#Containers: 1 | OSBK | | | | | G10<br>Scr: | 0216<br>Alpha: | ~~12/12/12~~ 12/11/2012<br>Beta: | |
| 4 MXJMQ-1-AC-C<br>J2L100000-76-LCS<br>12/11/2012 10:15 pd | | | 350.10g,in<br>AmtRec: | 350.10g<br>#Containers: 1 | QC20009<br>08/04/09,pd<br>00/01/09,r | | | | | G14<br>Scr: | 0217<br>Alpha: | 12/11/2012<br>Beta: | |

**Comments:** MXJMQ-BLK "Comments MXJL7 Not enough sample for a duplicate, please recount on a seperate detector 12/11/12 tgw"

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

MXJL71AD-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Co-60 | RDL:5.00E-02 | pCi/g | LCL: | UCL: | RPD: | Cs-137 | RDL:1.00E-01 | pCi/g | LCL:70 | UCL:130 | RPD:35 |
| Cs-137DA | RDL:1.00E-01 | pCi/g | LCL:70 | UCL:130 | RPD:35 | Eu-152 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: |
| Eu-154 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-155 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: |

MXJMQ1AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Co-60 | RDL:5.00E-02 | pCi/g | LCL: | UCL: | RPD: | Cs-137 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: |



TestAmerica Laboratories, Inc.

12/11/2012 6:28:18 PM

# Sample Preparation/Analysis

Balance Id:1120421763

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 12/17/2012

Sep1 DT/Tm Tech:

Batch: 2345076 pCi/g

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT

| 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 (24hr) | On \| Off Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cs-137DA | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-152 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: |
| Eu-154 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-155 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: |

MXJMQ1AC-LCS:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cs-137 | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 | Cs-137DA | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 |
| K-40 | RDL:-- | pCi/g | LCL:70 | UCL:130 | RPD:35 | Ra-226 | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 |
| RA-228 | RDL:0.2 | pCi/g | LCL:70 | UCL:130 | RPD:35 | RA-228DA | RDL:0.2 | pCi/g | LCL:70 | UCL:130 | RPD:35 |
| U-238 | RDL: | pCi/g | LCL:70 | UCL:130 | RPD:35 | | | | | | |

MXJL71AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

MXJMQ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

MXJMQ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

*** RE-COUNT REQUEST ***

DUE DATE 12/17/12

CUSTOMER WCH

ANALYSIS Gamma

MATRIX Soil

LOT NUMBER J2L100114

SAMPLE DELIVERY GROUP

OLD BATCH NUMBER 23450716

NEW BATCH NUMBER

| LAB SAMPLE ID | CLIENT ID | REASON FOR REQUEST & ANALYSIS COMMENTS |
|---|---|---|
| 1) mxJmQ1AC | | U238 7490, Ra228-1290 |
| 2) | | Please recount 200. |
| 3) | | |
| 4) | | |
| 5) | | |
| 6) | | |
| 7) | | |
| 8) | | |
| 9) | | |
| 10) | | |
| 11) | | |
| 12) | | |
| 13) | | |
| 14) | | |
| 15) | | |
| 16) | | |
| 17) | | |
| 18) | | |
| 19) | | |
| 20) | | |

RC-126 Rev 6, 9/10

12/13/2012 11:40:41 AM

# Sample Preparation/Analysis

Balance Id:1120421763

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

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 12/17/2012**

Sep1 DT/Tm Tech:

**Batch: 2345076** SOIL pCi/g PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 2345076 AXTA, 2345077 AYS7, 2345078 BBS8, 2345079 7ZSS,

Prep Tech: LoeberL,WoodT

| 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 MXJL7-1-AD<br>J2L100414-1-SAMP<br>12/07/2012 09:05 | | | 383.60g,in<br>AmtRec: 1X500MLP;1X60MLAG | 383.60g<br>#Containers: 2 | | | | | | | | | |
| 2 MXJL7-1-AF-X<br>J2L100414-1-DUP<br>12/07/2012 09:05 | | | AmtRec: 1X500MLP;1X60MLAG | #Containers: 2 | | | | | | | | | |
| 3 MXJMQ-1-AA-B<br>J2L100000-76-BLK<br>12/11/2012 10:15 pd | | | 348.00g,in<br>AmtRec: | 348.00g<br>#Containers: 1 | OSBK | | | | | | | | |
| 4 MXJMQ-1-AC-C<br>J2L100000-76-LCS<br>12/11/2012 10:15 pd | | | 350.10g,in<br>AmtRec: | 350.10g<br>#Containers: 1 | QC20009<br>08/04/09,pd<br>09/01/09,r | | | | | | | | |
| 5 MXJMQ-2-AC-C<br>J2L100000-76-LCS<br>12/13/2012 11:40 pd | | | 350.10g<br>AmtRec: | 350.10g<br>#Containers: 1 | QC20009 | | S200 | 200 | 416 | 1519 | | 12/13/12 cm | |

Scr: Alpha: Beta:

**Comments:** MXJMQ-BLK "Comments MXJL7 Not enough sample for a duplicate, please recount on a seperate detector 12/11/12 tgw"

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

MXJL71AD-SAMP Constituent List:

12/13/2012 11:40:41 AM

# Sample Preparation/Analysis

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Balance Id:

Pipet #:

AnalyDueDate: 12/17/2012

Sep1 DT/Tm Tech:

Batch: 2345076 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

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: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Co-60 | RDL:5.00E-02 | pCi/g | LCL: | UCL: | RPD: | Cs-137 | | RDL:1.00E-01 | pCi/g | LCL:70 | UCL:130 | RPD:35 | |
| Cs-137DA | RDL:1.00E-01 | pCi/g | LCL:70 | UCL:130 | RPD:35 | Eu-152 | | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | |
| Eu-154 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-155 | | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | |
| MXJMQ1AA-BLK: | | | | | | | | | | | | | |
| Co-60 | RDL:5.00E-02 | pCi/g | LCL: | UCL: | RPD: | Cs-137 | | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | |
| Cs-137DA | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-152 | | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | |
| Eu-154 | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | Eu-155 | | RDL:1.00E-01 | pCi/g | LCL: | UCL: | RPD: | |
| MXJMQ1AC-LCS: | | | | | | | | | | | | | |
| Cs-137 | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 | Cs-137DA | | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 | |
| K-40 | RDL:-- | pCi/g | LCL:70 | UCL:130 | RPD:35 | Ra-226 | | RDL:0.1 | pCi/g | LCL:70 | UCL:130 | RPD:35 | |
| RA-228 | RDL:0.2 | pCi/g | LCL:70 | UCL:130 | RPD:35 | RA-228DA | | RDL:0.2 | pCi/g | LCL:70 | UCL:130 | RPD:35 | |
| U-238 | RDL: | pCi/g | LCL:70 | UCL:130 | RPD:35 | | | | | | | | |
| MXJMQ2AC-LCS: | | | | | | | | | | | | | |

MXJL71AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMQ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMQ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMQ2AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

12/17/2012 12:38:19 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/18/2011, 12/22/2012, Batch: '2345076', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 2345076 | | | | | | |
| AC | | Rev1C | WoodT | 12/11/2012 6:20:19 | | |
| SC | | | davilan | IsBatched | 12/11/2012 10:18:59 AM | ICOC_RADCALC v4.8.49 |
| SC | | | WoodT | InPrep | 12/11/2012 6:20:19 PM | RL-PRP-003 REVISION 3 |
| SC | | | WoodT | Prep1C | 12/11/2012 6:55:37 PM | RL-GAM-001 REVISION 3 |
| SC | | | WoodT | InPrep2 | 12/11/2012 6:56:29 PM | RL-PRP-003 REVISION 3 |
| SC | | | WoodT | Prep2C | 12/11/2012 6:56:37 PM | RL-PRP-003 REVISION 3 |
| SC | | | DawkinsO | InCnt1 | 12/11/2012 8:39:10 PM | RL-CI-007 REV. 2 |
| SC | | | HiattC | CalcC | 12/12/2012 11:40:09 AM | RL-CI-007 REV. 2 |
| SC | | | ClarkR | CalcC | 12/13/2012 3:24:30 PM | RL-CI-007 REV. 2 |
| SC | | | antonsonl | Rev1C | 12/17/2012 12:35:26 PM | RL-DR-001 Rev 2 |
| AC | | | WoodT | 12/11/2012 6:55:37 | | |
| AC | | | WoodT | 12/11/2012 6:56:29 | | |
| AC | | | WoodT | 12/11/2012 6:56:37 | | |
| AC | | | DawkinsO | 12/11/2012 8:39:10 | | |
| AC | | | HiattC | 12/12/2012 11:40:09 | | |
| AC | | | ClarkR | 12/13/2012 3:24:30 | | |
| AC | | | antonsonl | 12/17/2012 12:35:26 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 8

ICOCFractions v4.8.44

12/13/2012 7:52:54 AM

# Sample Preparation/Analysis

Balance Id:1120373922

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

7Z Unat_Laser Prp PRP003/PRP005, Sep KPA00
SS Total Uranium by KPA
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

**AnalyDueDate: 12/17/2012**

Sep1 DT/Tm Tech:

**Batch: 2345079 SOIL ug/g** PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

| 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 **MXJL7-1-AE** J2L100414-1-SAMP 12/07/2012 09:05 | | | 1.05g,in | 1.05g | AmtRec: 1X500MLP;1X60MLAG | #Containers: 2 | | | Scr: | | Alpha: | | Beta: |
| 2 **MXJL7-1-AJ-X** J2L100414-1-DUP 12/07/2012 09:05 | | | 1.04g,in | 1.04g | AmtRec: 1X500MLP;1X60MLAG | #Containers: 2 | | | Scr: | | Alpha: | | Beta: |
| 3 **MXJL7-1-AK-S** J2L100414-1-MS 12/07/2012 09:05 | | | 1.04g,in | 1.04g | UNSI2209 02/28/12,pd 02/01/86,r AmtRec: 1X500MLP;1X60MLAG | #Containers: 2 | | | Scr: | | Alpha: | | Beta: |
| 4 **MXJMV-1-AA-B** J2L100000-79-BLK 12/11/2012 10:15 pd | | | 1.01g,in | 1.01g | AmtRec: | #Containers: 1 | | | Scr: | | Alpha: | | Beta: |
| 5 **MXJMV-1-AC-C** J2L100000-79-LCS 12/11/2012 10:15 pd | | | 1.01g,in | 1.01g | UNSF5662 11/27/12,pd 02/01/86,r AmtRec: | #Containers: 1 | | | Scr: | | Alpha: | | Beta: |
| 6 **MXJMV-1-AD-C** J2L100000-79-LCS 12/11/2012 10:15 pd | | | 1.04g,in | 1.04g | UNSI2210 02/28/12,pd 02/01/86,r AmtRec: | #Containers: 1 | | | Scr: | | Alpha: | | Beta: |

Final Volume 10 ml

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: 6

ICOC v4.8.49

12/13/2012 7:52:55 AM

# Sample Preparation/Analysis

7Z Unat_Laser Prp PRP003/PRP005, Sep KPA001
SS Total Uranium by KPA
5I CLIENT: HANFORD

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT

AnalyDueDate: 12/17/2012

**Batch: 2345079** ug/g
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: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:** MXJMV-BLK "Comments S-12-00143",P-12-00601,P-12-00579,S-12-00228

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

MXJL71AE-SAMP Constituent List:
Uranium RDL:1.00E+00 ug/g LCL:70 UCL:130 RPD:35
MXJL71AK-MS:

MXJMV1AA-BLK:
Uranium RDL:1.00E+00 ug/g LCL: UCL: RPD:
MXJMV1AC-LCS:
Uranium RDL:1 ug/g LCL:70 UCL:130 RPD:35
MXJMV1AD-LCS:
Uranium RDL:1 ug/g LCL:70 UCL:130 RPD:35

MXJL71AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJL71AK-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMV1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMV1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
MXJMV1AD-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

12/17/2012 1:33:42 PM

# ICOC Fraction Transfer/Status Report

ByDate: 11/17/2012, 12/18/2012, Batch: '2345079', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **2345079** | | | | | | |
| *AC* | | **Rev1C** | **WoodT** | 12/11/2012 6:57:37 | | |
| *SC* | | | davilan | IsBatched | 12/11/2012 10:19:12 AM | ICOC_RADCALC v4.8.49 |
| *SC* | | | WoodT | InPrep | 12/11/2012 6:57:37 PM | RL-PRP-003 REVISION 3 |
| *SC* | | | WattN | Prep2C | 12/13/2012 11:19:19 AM | RL-KPA-001 REVISION 2 |
| *SC* | | | PettyDP | Cnt1C | 12/13/2012 6:27:50 PM | RL-KPA-003 REVISION 2 |
| *SC* | | | liebrechtt | Rev1C | 12/17/2012 9:37:11 AM | RL-DR-001 Rev 4 |
| *AC* | | | **WattN** | 12/13/2012 11:19:19 | | |
| *AC* | | | **PettyDP** | 12/13/2012 6:27:50 | | |
| *AC* | | | **liebrechtt** | 12/17/2012 9:37:11 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.8.49

# ANALYTICAL REPORT

Job Number: 280-36891-1

SDG Number: JP0428

Job Description: SAF# RC-148

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

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Project Manager II
12/17/2012 4:40 PM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
12/17/2012

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

Cover Title Page . . . . . 1
Report Narrative . . . . . 3
Data Qualifiers . . . . . 5
Sample Summary . . . . . 7
Method Summary . . . . . 8
Method / Analyst Summary . . . . . 9
Sample Results . . . . . 10
Sample Datasheets . . . . . 11
QC Results . . . . . 21
Qc Reports . . . . . 22
Qc Association Summary . . . . . 59
Client Chain of Custody . . . . . 64
Sample Receipt Checklist . . . . . 66

# CASE NARRATIVE

## Client: Washington Closure Hanford

## Project: WASHINGTON CLOSURE HANFORD

## Report Number: 280-36891-1

**SDG #: JP0428**
**SAF#: RC-148**

**Date SDG Closed: December 12, 2012**
**Data Deliverable: 3 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J1R4F8 | 280-36891-1 | 6010/7471/300.0/353.2/9045/9010/9030/ WTPH-D+/8260/8270A/8082 | 6010B/6020/7471A/9056M/353.2/9045C/9012A/9034/ NWTPH-Dx/8260B/8270C/8082 |

*The Uranium, Anions, Cyanide and Sulfide method substitutions noted above, as agreed to by all parties, have no technical impact on the data.*

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 sample was received on 12/12/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

Sample J1R4F8, requesting 5035/8260B VOA analysis, was received at the laboratory at a temperature of 4.6º C and was received after the recommended 48 hour sample holding time had expired; however, it can be noted that the chain-of-custody indicates that VOAs were frozen upon collection. The client was notified on 12/13/2012.

The chain-of-custody requests a 7 day TAT; however, as instructed by the client, sample J1R4F8 was logged for a 3 business day TAT.

**GC/MS VOLATILES - SW846 8260B**
Low levels of Bromoform and Carbon disulfide are present in the method blank associated with batch 280-151932. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

The MSD aliquot of the MS/MSD performed on sample J1R4F8 exhibited a percent recovery outside the control limits for Bromoform, and the associated sample result has been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**GC/MS SEMIVOLATILES - SW846 8270C**
The MSD aliquot of the MS/MSD performed on sample J1R4F8 exhibited percent recoveries outside the control limits for 4,6-Dinitro-2-methylphenol and 2,4-Dinitrophenol, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

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

**GC SEMIVOLATILES - NWTPH-Dx - DRO**
Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-151882. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a “B”.

No other anomalies were encountered.

**TOTAL METALS - SW846 6010B/6020/7471A**
Serial dilution of a digestate in batch 280-151903 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an “X”.

Low levels of Barium, Calcium, Zinc and Uranium are present in the method blanks associated with batches 280-151903 and 280-151901, respectively. Because the concentrations in the method blanks are not present at levels greater than half the reporting limit, 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 J1R4F8; therefore, control limits are not applicable.

The duplicate analysis of sample J1R4F8 exhibited RPD data outside the control limits for Uranium, and the associated sample result has been flagged “M”. 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.

**GENERAL CHEMISTRY - MCAWW 353.2 - NITRATE+NITRITE**
No anomalies were encountered.

**GENERAL CHEMISTRY - SW846 9012A - TOTAL CYANIDE**
The Matrix Spike performed on sample J1R4F8 exhibited the percent recovery outside the control limits, 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.

**GENERAL CHEMISTRY - SW846 9034 - SULFIDE**
No anomalies were encountered.

**GENERAL CHEMISTRY - SW846 9056M - ANIONS**
The Orthophosphate as P Matrix Spike performed on sample J1R4F8 exhibited the percent recovery outside the control limits, 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.

**GENERAL CHEMISTRY - SW846 9045C - PH**
SU = standard units

No anomalies were encountered.

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | U | Analyzed for but not detected. |
| | J | Indicates an Estimated Value for TICs |
| | T | MS, MSD: Recovery exceeds upper or lower control limits. |
| | N | Presumptive evidence of material. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| GC/MS Semi VOA | | |
| | U | Analyzed for but not detected. |
| | J | Indicates an Estimated Value for TICs |
| | T | MS, MSD: Recovery exceeds upper or lower control limits. |
| | N | Presumptive evidence of material. |
| GC Semi VOA | | |
| | B | Analyte was found in the associated method blank as well as in the sample. |
| | U | Analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| 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. |
| | M | Sample duplicate precision not met. |
| | X | Serial dilution in the analytical batch indicates that physical and chemical interferences are present. |

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

| Lab Section | Qualifier | Description |
|---|---|---|
| General Chemistry | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | N | MS, MSD: Spike recovery exceeds upper or lower control limits. |

# SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-36891-1 | J1R4F8 | Solid | 12/07/2012 0905 | 12/12/2012 0930 |

# METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Solid** | | | |
| Volatile Organic Compounds (GC/MS) | TAL DEN | SW846 8260B | |
| Closed System Purge and Trap | TAL DEN | | SW846 5035 |
| Semivolatile Organic Compounds (GC/MS) | TAL DEN | SW846 8270C | |
| Ultrasonic Extraction | TAL DEN | | SW846 3550C |
| Polychlorinated Biphenyls (PCBs) by Gas Chromatography | TAL DEN | SW846 8082 | |
| Ultrasonic Extraction | TAL DEN | | SW846 3550C |
| Northwest - Semi-Volatile Petroleum Products (GC) | TAL DEN | NWTPH NWTPH-Dx | |
| Ultrasonic Extraction | TAL DEN | | SW846 3550C |
| Metals (ICP) | TAL DEN | SW846 6010B | |
| Preparation, Metals | TAL DEN | | SW846 3050B |
| Metals (ICP/MS) | TAL DEN | SW846 6020 | |
| Preparation, Metals | TAL DEN | | SW846 3050B |
| Mercury (CVAA) | TAL DEN | SW846 7471A | |
| Preparation, Mercury | TAL DEN | | SW846 7471A |
| Nitrogen, Nitrate-Nitrite | TAL DEN | MCAWW 353.2 | |
| Deionized Water Leaching Procedure | TAL DEN | | ASTM DI Leach |
| Total Cyanide (Automated Colorimetric] | TAL DEN | SW846 9012A | |
| Cyanide, Total and/or Amenable, Distillation | TAL DEN | | SW846 9012A |
| Sulfide, Acid Soluble and Insoluble (Titrimetric) | TAL DEN | SW846 9034 | |
| Sulfide, Distillation (Acid Soluble and Insoluble) | TAL DEN | | SW846 9030B |
| pH | TAL DEN | SW846 9045C | |
| Deionized Water Leaching Procedure | TAL DEN | | ASTM DI Leach |
| Anions, Ion Chromatography | TAL DEN | SW846 9056M | |
| Deionized Water Leaching Procedure | TAL DEN | | ASTM DI Leach |
| ASTM D-2216 | TAL DEN | ASTM D-2216 | |

**Lab References:**

TAL DEN = TestAmerica Denver

**Method References:**

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NWTPH = Northwest Total Petroleum Hydrocarbon

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: 280-36891-1
Sdg Number: JP0428

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Hubbs, Lisa M | LMH |
| SW846 8270C | Hoffman, Michael G | MGH |
| SW846 8082 | Jackson, Todd D | TDJ |
| NWTPH NWTPH-Dx | Birdsell, Matthew R | MRB |
| SW846 6010B | Harre, John K | JKH |
| SW846 6020 | Trudell, Lynn-Anne | LT |
| SW846 7471A | Mooney, Joseph C | JM |
| MCAWW 353.2 | Scott, Samantha J | SJS |
| SW846 9012A | Kilker, Lorelei M | LMK |
| SW846 9034 | Graham, Shane | SG |
| SW846 9045C | Ayala, Delaina | DA |
| SW846 9056M | Phan, Thu L | TLP |
| ASTM D-2216 | Benson, Alex F | AFB |

# SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Prep Method: | 5035 | Prep Batch: | 280-151932 | Lab File ID: | g2_3700.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.743 g |
| Analysis Date: | 12/14/2012 1852 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acetone | | 6.3 | U | 6.3 | 23 |
| Benzene | | 0.55 | U | 0.55 | 5.9 |
| Bromodichloromethane | | 0.26 | U | 0.26 | 5.9 |
| Bromoform | | 0.27 | U T | 0.27 | 5.9 |
| Bromomethane | | 0.59 | U | 0.59 | 12 |
| 2-Butanone (MEK) | | 2.1 | U | 2.1 | 12 |
| Carbon disulfide | | 0.49 | U | 0.49 | 5.9 |
| Carbon tetrachloride | | 0.74 | U | 0.74 | 5.9 |
| Chlorobenzene | | 0.63 | U | 0.63 | 5.9 |
| Dibromochloromethane | | 0.67 | U | 0.67 | 5.9 |
| Chloroethane | | 1.0 | U | 1.0 | 12 |
| Chloroform | | 0.34 | U | 0.34 | 5.9 |
| Chloromethane | | 0.90 | U | 0.90 | 12 |
| 1,1-Dichloroethane | | 0.25 | U | 0.25 | 5.9 |
| 1,2-Dichloroethane | | 0.82 | U | 0.82 | 5.9 |
| 1,1-Dichloroethene | | 0.69 | U | 0.69 | 5.9 |
| 1,2-Dichloroethene, Total | | 0.46 | U | 0.46 | 5.9 |
| 1,2-Dichloropropane | | 0.64 | U | 0.64 | 5.9 |
| cis-1,3-Dichloropropene | | 1.5 | U | 1.5 | 5.9 |
| trans-1,3-Dichloropropene | | 0.78 | U | 0.78 | 5.9 |
| Ethylbenzene | | 0.78 | U | 0.78 | 5.9 |
| 2-Hexanone | | 5.7 | U | 5.7 | 23 |
| Methylene Chloride | | 1.9 | U | 1.9 | 5.9 |
| 4-Methyl-2-pentanone (MIBK) | | 5.1 | U | 5.1 | 12 |
| Styrene | | 0.74 | U | 0.74 | 5.9 |
| 1,1,2,2-Tetrachloroethane | | 0.71 | U | 0.71 | 5.9 |
| Tetrachloroethene | | 0.69 | U | 0.69 | 5.9 |
| Toluene | | 0.81 | U | 0.81 | 5.9 |
| 1,1,1-Trichloroethane | | 0.61 | U | 0.61 | 5.9 |
| 1,1,2-Trichloroethane | | 1.0 | U | 1.0 | 5.9 |
| Trichloroethene | | 0.27 | U | 0.27 | 5.9 |
| Vinyl chloride | | 1.6 | U | 1.6 | 5.9 |
| Xylenes, Total | | 0.71 | U | 0.71 | 5.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 88 | | 58 - 140 |
| Toluene-d8 (Surr) | 102 | | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 102 | | 76 - 127 |
| Dibromofluoromethane (Surr) | 91 | | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Prep Method: | 5035 | Prep Batch: | 280-151932 | Lab File ID: | g2_3700.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.743 g |
| Analysis Date: | 12/14/2012 1852 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found:** **6**

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| 101-84-8 | Diphenyl ether | 10.21 | 250 | N J |
| 629-50-5 | Tridecane | 10.99 | 6.3 | N J |
| 1120-21-4 | Undecane | 11.97 | 6.6 | N J |
| 4630-20-0 | 3-Methylcarbazole | 12.72 | 10 | N J |
| 544-76-3 | Hexadecane | 13.01 | 6.0 | N J |
| 132-64-9 | Dibenzofuran | 14.77 | 42 | N J |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8270C Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Prep Method: | 3550C | Prep Batch: | 280-151857 | Lab File ID: | D5792.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.0 g |
| Analysis Date: | 12/17/2012 1428 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 11 | U | 11 | 340 |
| Acenaphthylene | | 18 | U | 18 | 340 |
| Anthracene | | 18 | U | 18 | 340 |
| Benzo[a]anthracene | | 21 | U | 21 | 340 |
| Benzo[a]pyrene | | 21 | U | 21 | 340 |
| Benzo[b]fluoranthene | | 27 | U | 27 | 340 |
| Benzo[ghi]perylene | | 17 | U | 17 | 340 |
| Benzo[k]fluoranthene | | 42 | U | 42 | 340 |
| Bis(2-chloroethoxy)methane | | 24 | U | 24 | 340 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 340 |
| bis (2-chloroisopropyl) ether | | 24 | U | 24 | 340 |
| Bis(2-ethylhexyl) phthalate | | 48 | U | 48 | 340 |
| 4-Bromophenyl phenyl ether | | 20 | U | 20 | 340 |
| Butyl benzyl phthalate | | 45 | U | 45 | 340 |
| Carbazole | | 38 | U | 38 | 340 |
| 4-Chloroaniline | | 85 | U | 85 | 340 |
| 4-Chloro-3-methylphenol | | 69 | U | 69 | 340 |
| 2-Chloronaphthalene | | 10 | U | 10 | 340 |
| 2-Chlorophenol | | 22 | U | 22 | 340 |
| 4-Chlorophenyl phenyl ether | | 22 | U | 22 | 340 |
| Chrysene | | 28 | U | 28 | 340 |
| Dibenz(a,h)anthracene | | 20 | U | 20 | 340 |
| Dibenzofuran | | 21 | U | 21 | 340 |
| 1,2-Dichlorobenzene | | 23 | U | 23 | 340 |
| 1,3-Dichlorobenzene | | 13 | U | 13 | 340 |
| 1,4-Dichlorobenzene | | 14 | U | 14 | 340 |
| 3,3'-Dichlorobenzidine | | 94 | U | 94 | 690 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 340 |
| Diethyl phthalate | | 27 | U | 27 | 340 |
| 2,4-Dimethylphenol | | 69 | U | 69 | 340 |
| Dimethyl phthalate | | 24 | U | 24 | 340 |
| Di-n-butyl phthalate | | 30 | U | 30 | 340 |
| 4,6-Dinitro-2-methylphenol | | 340 | U T | 340 | 690 |
| 2,4-Dinitrophenol | | 350 | U T | 350 | 860 |
| 2,4-Dinitrotoluene | | 69 | U | 69 | 340 |
| 2,6-Dinitrotoluene | | 29 | U | 29 | 340 |
| Di-n-octyl phthalate | | 15 | U | 15 | 340 |
| Fluoranthene | | 38 | U | 38 | 340 |
| Fluorene | | 19 | U | 19 | 340 |
| Hexachlorobenzene | | 30 | U | 30 | 340 |
| Hexachlorobutadiene | | 10 | U | 10 | 340 |
| Hexachlorocyclopentadiene | | 52 | U | 52 | 340 |
| Hexachloroethane | | 22 | U | 22 | 340 |
| Indeno[1,2,3-cd]pyrene | | 23 | U | 23 | 340 |
| Isophorone | | 18 | U | 18 | 340 |
| 2-Methylnaphthalene | | 20 | U | 20 | 340 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8270C Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Prep Method: | 3550C | Prep Batch: | 280-151857 | Lab File ID: | D5792.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.0 g |
| Analysis Date: | 12/17/2012 1428 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |

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

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 78 | | 50 - 120 |
| 2-Fluorophenol | 73 | | 53 - 120 |
| Nitrobenzene-d5 | 79 | | 50 - 120 |
| Phenol-d5 | 82 | | 52 - 120 |
| Terphenyl-d14 | 105 | | 55 - 120 |
| 2,4,6-Tribromophenol | 88 | | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8270C Semivolatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Prep Method: | 3550C | Prep Batch: | 280-151857 | Lab File ID: | D5792.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.0 g |
| Analysis Date: | 12/17/2012 1428 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 1.73 | 180 | N J |
| | Unknown | 1.78 | 170 | N J |
| 763-93-9 | 3-Hexen-2-one | 2.55 | 520 | N J |
| | Unknown | 2.89 | 11000 | N J |
| 107-70-0 | 2-Pentanone, 4-methoxy-4-methyl- | 3.41 | 190 | N J |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8082 | Analysis Batch: | 280-152378 | Instrument ID: | GCS_W |
| Prep Method: | 3550C | Prep Batch: | 280-151861 | Initial Weight/Volume: | 30.7 g |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5000 uL |
| Analysis Date: | 12/14/2012 1958 | | | Injection Volume: | 1 uL |
| Prep Date: | 12/12/2012 1740 | | | Result Type: | PRIMARY |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aroclor 1016 | | 3.0 | U | 3.0 | 11 |
| Aroclor 1221 | | 8.7 | U | 8.7 | 18 |
| Aroclor 1232 | | 2.2 | U | 2.2 | 11 |
| Aroclor 1242 | | 5.1 | U | 5.1 | 11 |
| Aroclor 1248 | | 5.1 | U | 5.1 | 11 |
| Aroclor 1254 | | 2.8 | U | 2.8 | 11 |
| Aroclor 1260 | | 2.8 | U | 2.8 | 11 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 88 | | 59 - 130 |
| Tetrachloro-m-xylene | 87 | | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | NWTPH-Dx | Analysis Batch: | 280-152273 | Instrument ID: | SGC_U |
| Prep Method: | 3550C | Prep Batch: | 280-151882 | Lab File ID: | 12141207.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.1 g |
| Analysis Date: | 12/14/2012 1602 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 2010 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 9900 | B | 1100 | 4400 |
| C10-C28 | | 4600 | B | 750 | 4400 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 105 | | 49 - 115 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-152165 | Instrument ID: | MT_025 |
| Prep Method: | 3050B | Prep Batch: | 280-151903 | Lab File ID: | 25A5121312.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.12 g |
| Analysis Date: | 12/13/2012 2338 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1300 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 7550 | | 1.5 | 5.0 |
| Antimony | | 0.38 | U | 0.38 | 0.60 |
| Arsenic | | 3.0 | | 0.65 | 0.99 |
| Barium | | 86.0 | | 0.075 | 0.50 |
| Beryllium | | 0.43 | | 0.033 | 0.20 |
| Boron | | 1.1 | B | 0.97 | 2.0 |
| Cadmium | | 0.18 | B | 0.041 | 0.20 |
| Calcium | | 3210 | | 14.0 | 49.6 |
| Chromium | | 8.2 | X | 0.058 | 0.20 |
| Cobalt | | 6.4 | X | 0.099 | 0.99 |
| Copper | | 15.1 | | 0.22 | 0.99 |
| Iron | | 20600 | | 3.8 | 5.0 |
| Lead | | 5.2 | | 0.27 | 0.50 |
| Lithium | | 7.2 | | 0.30 | 2.5 |
| Magnesium | | 4100 | X | 3.7 | 19.8 |
| Manganese | | 336 | X | 0.099 | 0.99 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 10.2 | | 0.12 | 4.0 |
| Potassium | | 1540 | | 40.7 | 298 |
| Selenium | | 0.85 | U | 0.85 | 0.99 |
| Silicon | | 316 | X | 5.6 | 9.9 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 189 | | 58.5 | 119 |
| Vanadium | | 51.8 | | 0.093 | 2.0 |
| Zinc | | 42.0 | X | 0.39 | 0.99 |
| Zirconium | | 19.9 | | 0.35 | 2.5 |

**6020 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6020 | Analysis Batch: | 280-152193 | Instrument ID: | MT_077 |
| Prep Method: | 3050B | Prep Batch: | 280-151901 | Lab File ID: | 159SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.07 g |
| Analysis Date: | 12/13/2012 2207 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1200 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Uranium | | 1.5 | M | 0.0016 | 0.10 |

**7471A Mercury (CVAA)**

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0

Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 7471A | Analysis Batch: | 280-152272 | Instrument ID: | MT_034 |
| Prep Method: | 7471A | Prep Batch: | 280-151880 | Lab File ID: | 121213taab.TXT |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.66 g |
| Analysis Date: | 12/13/2012 1540 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1130 | | | | |

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

**General Chemistry**

**Client Sample ID:** **J1R4F8**

Lab Sample ID: 280-36891-1
Client Matrix: Solid
% Moisture: 10.0
Date Sampled: 12/07/2012 0905
Date Received: 12/12/2012 0930

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.47 | B | mg/Kg | 0.34 | 0.86 | 1.0 | 353.2 |
| Analysis Batch: 280-152094 | Analysis Date: 12/13/2012 1306 | | | | | | DryWt Corrected: Y |
| Total Cyanide | 0.11 | U N | mg/Kg | 0.11 | 0.55 | 1.0 | 9012A |
| Analysis Batch: 280-152307 | Analysis Date: 12/14/2012 1156 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-152095 | Prep Date: 12/13/2012 1512 | | | | | | |
| Sulfide | 2.7 | U | mg/Kg | 2.7 | 5.6 | 1.0 | 9034 |
| Analysis Batch: 280-152234 | Analysis Date: 12/13/2012 1500 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-151999 | Prep Date: 12/13/2012 0905 | | | | | | |
| Chloride-Soluble | 5.7 | | mg/Kg | 2.2 | 5.5 | 1.0 | 9056M |
| Analysis Batch: 280-152461 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Nitrate as N-Soluble | 1.2 | B | mg/Kg | 0.35 | 2.8 | 1.0 | 9056M |
| Analysis Batch: 280-152460 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Bromide-Soluble | 0.43 | U | mg/Kg | 0.43 | 2.2 | 1.0 | 9056M |
| Analysis Batch: 280-152461 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Nitrite as N-Soluble | 0.37 | U | mg/Kg | 0.37 | 2.8 | 1.0 | 9056M |
| Analysis Batch: 280-152460 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Orthophosphate as P-Soluble | 1.6 | B N | mg/Kg | 1.4 | 5.5 | 1.0 | 9056M |
| Analysis Batch: 280-152460 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Sulfate-Soluble | 7.1 | | mg/Kg | 1.9 | 5.5 | 1.0 | 9056M |
| Analysis Batch: 280-152461 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |
| Fluoride-Soluble | 0.90 | U | mg/Kg | 0.90 | 5.5 | 1.0 | 9056M |
| Analysis Batch: 280-152461 | Analysis Date: 12/14/2012 0548 | | | | | | DryWt Corrected: Y |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| pH adj. to 25 deg C-Soluble | 8.52 | | SU | 0.100 | 0.100 | 1.0 | 9045C |
| Analysis Batch: 280-151938 | Analysis Date: 12/12/2012 2352 | | | | | | DryWt Corrected: N |
| Percent Moisture | 10.0 | | % | 0.10 | 0.10 | 1.0 | D-2216 |
| Analysis Batch: 280-151846 | Analysis Date: 12/12/2012 1434 | | | | | | DryWt Corrected: N |

# QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151932**

**Method: 8260B**
**Preparation: 5035**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151932/1-A | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3699.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 4.964 g |
| Analysis Date: | 12/14/2012 1833 | Units: | ug/Kg | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acetone | 5.4 | U | 5.4 | 20 |
| Benzene | 0.47 | U | 0.47 | 5.0 |
| Bromodichloromethane | 0.22 | U | 0.22 | 5.0 |
| Bromoform | 0.609 | J | 0.23 | 5.0 |
| Bromomethane | 0.50 | U | 0.50 | 10 |
| 2-Butanone (MEK) | 1.8 | U | 1.8 | 10 |
| Carbon disulfide | 0.709 | J | 0.42 | 5.0 |
| Carbon tetrachloride | 0.63 | U | 0.63 | 5.0 |
| Chlorobenzene | 0.54 | U | 0.54 | 5.0 |
| Dibromochloromethane | 0.57 | U | 0.57 | 5.0 |
| Chloroethane | 0.90 | U | 0.90 | 10 |
| Chloroform | 0.29 | U | 0.29 | 5.0 |
| Chloromethane | 0.78 | U | 0.78 | 10 |
| 1,1-Dichloroethane | 0.21 | U | 0.21 | 5.0 |
| 1,2-Dichloroethane | 0.71 | U | 0.71 | 5.0 |
| 1,1-Dichloroethene | 0.59 | U | 0.59 | 5.0 |
| 1,2-Dichloroethene, Total | 0.39 | U | 0.39 | 5.0 |
| 1,2-Dichloropropane | 0.55 | U | 0.55 | 5.0 |
| cis-1,3-Dichloropropene | 1.3 | U | 1.3 | 5.0 |
| trans-1,3-Dichloropropene | 0.67 | U | 0.67 | 5.0 |
| Ethylbenzene | 0.67 | U | 0.67 | 5.0 |
| 2-Hexanone | 4.9 | U | 4.9 | 20 |
| Methylene Chloride | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 4.4 | U | 4.4 | 10 |
| Styrene | 0.63 | U | 0.63 | 5.0 |
| 1,1,2,2-Tetrachloroethane | 0.61 | U | 0.61 | 5.0 |
| Tetrachloroethene | 0.59 | U | 0.59 | 5.0 |
| Toluene | 0.70 | U | 0.70 | 5.0 |
| 1,1,1-Trichloroethane | 0.52 | U | 0.52 | 5.0 |
| 1,1,2-Trichloroethane | 0.89 | U | 0.89 | 5.0 |
| Trichloroethene | 0.23 | U | 0.23 | 5.0 |
| Vinyl chloride | 1.3 | U | 1.3 | 5.0 |
| Xylenes, Total | 0.61 | U | 0.61 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 90 | 58 - 140 |
| Toluene-d8 (Surr) | 96 | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 98 | 76 - 127 |
| Dibromofluoromethane (Surr) | 97 | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank TICs- Batch: 280-151932**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| 132-64-9 | Dibenzofuran | 14.77 | 65.1 | N J |
| 101-84-8 | Diphenyl ether | 10.22 | 1050 | N J |
| 66324-83-2 | Naphthalene, 1,2,3,4-tetrahydro-1-propyl | 8.31 | 13.1 | N J |
| 124-19-6 | Nonanal | 12.54 | 12.0 | N J |
| | Unknown | 8.07 | 10.4 | N J |
| | Unknown | 12.78 | 10.5 | N J |
| | Unknown | 9.35 | 12.7 | N J |
| | Unknown | 8.58 | 16.5 | N J |
| | Unknown | 12.21 | 22.9 | N J |
| | Unknown | 6.92 | 9.87 | N J |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Lab Control Sample - Batch: 280-151932**

**Method: 8260B**
**Preparation: 5035**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151932/3-A | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3693.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 g |
| Analysis Date: | 12/14/2012 1639 | Units: | ug/Kg | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acetone | 200 | 222 | 111 | 65 - 150 | |
| Benzene | 50.0 | 46.9 | 94 | 75 - 135 | |
| Bromodichloromethane | 50.0 | 50.3 | 101 | 73 - 135 | |
| Bromoform | 50.0 | 50.5 | 101 | 77 - 135 | |
| Bromomethane | 50.0 | 47.3 | 95 | 52 - 135 | |
| 2-Butanone (MEK) | 200 | 268 | 134 | 45 - 177 | |
| Carbon disulfide | 50.0 | 48.6 | 97 | 45 - 150 | |
| Carbon tetrachloride | 50.0 | 51.5 | 103 | 69 - 138 | |
| Chlorobenzene | 50.0 | 48.6 | 97 | 78 - 135 | |
| Dibromochloromethane | 50.0 | 52.5 | 105 | 77 - 135 | |
| Chloroethane | 50.0 | 42.8 | 86 | 51 - 145 | |
| Chloroform | 50.0 | 48.6 | 97 | 73 - 123 | |
| Chloromethane | 50.0 | 45.6 | 91 | 41 - 138 | |
| 1,1-Dichloroethane | 50.0 | 47.9 | 96 | 70 - 135 | |
| 1,2-Dichloroethane | 50.0 | 48.5 | 97 | 69 - 135 | |
| 1,1-Dichloroethene | 50.0 | 54.9 | 110 | 79 - 135 | |
| 1,2-Dichloroethene, Total | 100 | 96.2 | 96 | 78 - 135 | |
| 1,2-Dichloropropane | 50.0 | 47.6 | 95 | 72 - 121 | |
| cis-1,3-Dichloropropene | 50.0 | 51.7 | 103 | 71 - 135 | |
| trans-1,3-Dichloropropene | 50.0 | 49.5 | 99 | 71 - 135 | |
| Ethylbenzene | 50.0 | 48.9 | 98 | 73 - 125 | |
| 2-Hexanone | 200 | 217 | 108 | 67 - 150 | |
| Methylene Chloride | 50.0 | 50.7 | 101 | 76 - 136 | |
| 4-Methyl-2-pentanone (MIBK) | 200 | 218 | 109 | 69 - 150 | |
| Styrene | 50.0 | 49.6 | 99 | 76 - 135 | |
| 1,1,2,2-Tetrachloroethane | 50.0 | 49.6 | 99 | 65 - 135 | |
| Tetrachloroethene | 50.0 | 48.3 | 97 | 76 - 135 | |
| Toluene | 50.0 | 47.0 | 94 | 77 - 122 | |
| 1,1,1-Trichloroethane | 50.0 | 50.1 | 100 | 70 - 135 | |
| 1,1,2-Trichloroethane | 50.0 | 46.8 | 94 | 78 - 135 | |
| Trichloroethene | 50.0 | 46.3 | 93 | 77 - 135 | |
| Vinyl chloride | 50.0 | 44.5 | 89 | 43 - 145 | |
| Xylenes, Total | 150 | 145 | 97 | 76 - 135 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 97 | 58 - 140 |
| Toluene-d8 (Surr) | 100 | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 103 | 76 - 127 |
| Dibromofluoromethane (Surr) | 99 | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151932**

**Method: 8260B**
**Preparation: 5035**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.085 g |
| Analysis Date: | 12/14/2012 1911 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3702.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.082 g |
| Analysis Date: | 12/14/2012 1930 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Acetone | 94 | 101 | 65 - 150 | 7 | 28 | | |
| Benzene | 84 | 87 | 75 - 135 | 4 | 20 | | |
| Bromodichloromethane | 86 | 85 | 73 - 135 | 2 | 20 | | |
| Bromoform | 83 | 76 | 77 - 135 | 8 | 20 | | T |
| Bromomethane | 84 | 99 | 52 - 135 | 17 | 22 | | |
| 2-Butanone (MEK) | 136 | 142 | 45 - 177 | 4 | 32 | | |
| Carbon disulfide | 88 | 97 | 45 - 150 | 10 | 24 | | |
| Carbon tetrachloride | 84 | 95 | 69 - 138 | 12 | 20 | | |
| Chlorobenzene | 85 | 81 | 78 - 135 | 4 | 20 | | |
| Dibromochloromethane | 90 | 84 | 77 - 135 | 7 | 20 | | |
| Chloroethane | 73 | 92 | 51 - 145 | 22 | 22 | | |
| Chloroform | 86 | 85 | 73 - 123 | 1 | 20 | | |
| Chloromethane | 82 | 93 | 41 - 138 | 12 | 25 | | |
| 1,1-Dichloroethane | 84 | 88 | 70 - 135 | 4 | 20 | | |
| 1,2-Dichloroethane | 83 | 80 | 69 - 135 | 3 | 20 | | |
| 1,1-Dichloroethene | 102 | 114 | 79 - 135 | 10 | 20 | | |
| 1,2-Dichloroethene, Total | 89 | 92 | 78 - 135 | 3 | 20 | | |
| 1,2-Dichloropropane | 86 | 87 | 72 - 121 | 1 | 20 | | |
| cis-1,3-Dichloropropene | 89 | 82 | 71 - 135 | 8 | 20 | | |
| trans-1,3-Dichloropropene | 86 | 86 | 71 - 135 | 1 | 20 | | |
| Ethylbenzene | 83 | 80 | 73 - 125 | 3 | 20 | | |
| 2-Hexanone | 90 | 92 | 67 - 150 | 2 | 29 | | |
| Methylene Chloride | 93 | 93 | 76 - 136 | 0 | 21 | | |
| 4-Methyl-2-pentanone (MIBK) | 96 | 105 | 69 - 150 | 9 | 25 | | |
| Styrene | 83 | 76 | 76 - 135 | 9 | 20 | | |
| 1,1,2,2-Tetrachloroethane | 87 | 88 | 65 - 135 | 1 | 21 | | |
| Tetrachloroethene | 84 | 87 | 76 - 135 | 3 | 20 | | |
| Toluene | 85 | 93 | 77 - 122 | 9 | 20 | | |
| 1,1,1-Trichloroethane | 83 | 93 | 70 - 135 | 11 | 20 | | |
| 1,1,2-Trichloroethane | 89 | 91 | 78 - 135 | 2 | 20 | | |
| Trichloroethene | 83 | 87 | 77 - 135 | 6 | 20 | | |
| Vinyl chloride | 78 | 95 | 43 - 145 | 19 | 24 | | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151932**

**Method: 8260B**
**Preparation: 5035**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.085 g |
| Analysis Date: | 12/14/2012 1911 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152348 | Instrument ID: | VMS_G2 |
| Client Matrix: | Solid | Prep Batch: | 280-151932 | Lab File ID: | g2_3702.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.082 g |
| Analysis Date: | 12/14/2012 1930 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/12/2012 2107 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Xylenes, Total | 81 | 78 | 76 - 135 | 4 | 20 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 89 | 89 | 58 - 140 |
| Toluene-d8 (Surr) | 99 | 97 | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 101 | 105 | 76 - 127 |
| Dibromofluoromethane (Surr) | 97 | 95 | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151857/1-A | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5781.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.4 g |
| Analysis Date: | 12/17/2012 1049 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

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

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151857/1-A | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5781.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.4 g |
| Analysis Date: | 12/17/2012 1049 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2-Methylnaphthalene | 19 | U | 19 | 330 |
| 2-Methylphenol | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | 33 | U | 33 | 330 |
| Naphthalene | 31 | U | 31 | 330 |
| 2-Nitroaniline | 49 | U | 49 | 330 |
| 3-Nitroaniline | 72 | U | 72 | 330 |
| 4-Nitroaniline | 72 | U | 72 | 330 |
| Nitrobenzene | 22 | U | 22 | 330 |
| 2-Nitrophenol | 9.9 | U | 9.9 | 330 |
| 4-Nitrophenol | 96 | U | 96 | 650 |
| N-Nitrosodi-n-propylamine | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | 21 | U | 21 | 330 |
| Pentachlorophenol | 330 | U | 330 | 650 |
| Phenanthrene | 17 | U | 17 | 330 |
| Phenol | 18 | U | 18 | 330 |
| Pyrene | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | 9.9 | U | 9.9 | 330 |
| 2,4,6-Trichlorophenol | 9.9 | U | 9.9 | 330 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 50 - 120 |
| 2-Fluorophenol | 80 | 53 - 120 |
| Nitrobenzene-d5 | 88 | 50 - 120 |
| Phenol-d5 | 88 | 52 - 120 |
| Terphenyl-d14 | 102 | 55 - 120 |
| 2,4,6-Tribromophenol | 85 | 51 - 120 |

**Method Blank TICs- Batch: 280-151857**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| 107-70-0 | 2-Pentanone, 4-methoxy-4-methyl- | 3.41 | 166 | N J |
| 763-93-9 | 3-Hexen-2-one | 2.55 | 498 | N J |
| | Unknown | 2.89 | 11400 | N J |
| | Unknown | 1.73 | 168 | N J |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Lab Control Sample - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151857/2-A | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5782.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.3 g |
| Analysis Date: | 12/17/2012 1109 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 2560 | 2140 | 84 | 60 - 120 | |
| Acenaphthylene | 2560 | 2270 | 89 | 64 - 120 | |
| Anthracene | 2560 | 2440 | 95 | 63 - 120 | |
| Benzo[a]anthracene | 2560 | 2400 | 94 | 65 - 120 | |
| Benzo[a]pyrene | 2560 | 2290 | 90 | 59 - 120 | |
| Benzo[b]fluoranthene | 2560 | 2320 | 91 | 47 - 129 | |
| Benzo[ghi]perylene | 2560 | 2460 | 96 | 55 - 126 | |
| Benzo[k]fluoranthene | 2560 | 2750 | 108 | 48 - 130 | |
| Bis(2-chloroethoxy)methane | 2560 | 2100 | 82 | 56 - 120 | |
| Bis(2-chloroethyl)ether | 2560 | 2130 | 83 | 51 - 120 | |
| bis (2-chloroisopropyl) ether | 2560 | 2260 | 88 | 49 - 120 | |
| Bis(2-ethylhexyl) phthalate | 2560 | 2650 | 104 | 65 - 120 | |
| 4-Bromophenyl phenyl ether | 2560 | 2560 | 100 | 64 - 120 | |
| Butyl benzyl phthalate | 2560 | 2540 | 99 | 65 - 120 | |
| Carbazole | 2560 | 2400 | 94 | 64 - 120 | |
| 4-Chloroaniline | 2560 | 1160 | 45 | 28 - 120 | |
| 4-Chloro-3-methylphenol | 2560 | 2470 | 97 | 63 - 120 | |
| 2-Chloronaphthalene | 2560 | 2150 | 84 | 59 - 120 | |
| 2-Chlorophenol | 2560 | 2200 | 86 | 57 - 120 | |
| 4-Chlorophenyl phenyl ether | 2560 | 2380 | 93 | 64 - 120 | |
| Chrysene | 2560 | 2520 | 99 | 64 - 120 | |
| Dibenz(a,h)anthracene | 2560 | 2500 | 98 | 50 - 133 | |
| Dibenzofuran | 2560 | 2250 | 88 | 61 - 120 | |
| 1,2-Dichlorobenzene | 2560 | 2070 | 81 | 53 - 120 | |
| 1,3-Dichlorobenzene | 2560 | 1980 | 77 | 52 - 120 | |
| 1,4-Dichlorobenzene | 2560 | 2050 | 80 | 52 - 120 | |
| 3,3'-Dichlorobenzidine | 2560 | 1350 | 53 | 30 - 120 | |
| 2,4-Dichlorophenol | 2560 | 2250 | 88 | 60 - 120 | |
| Diethyl phthalate | 2560 | 2510 | 98 | 66 - 120 | |
| 2,4-Dimethylphenol | 2560 | 2080 | 81 | 54 - 120 | |
| Dimethyl phthalate | 2560 | 2380 | 93 | 65 - 120 | |
| Di-n-butyl phthalate | 2560 | 2620 | 102 | 67 - 120 | |
| 4,6-Dinitro-2-methylphenol | 2560 | 2160 | 84 | 57 - 120 | |
| 2,4-Dinitrophenol | 2560 | 1930 | 76 | 46 - 120 | |
| 2,4-Dinitrotoluene | 2560 | 2600 | 102 | 68 - 120 | |
| 2,6-Dinitrotoluene | 2560 | 2490 | 98 | 64 - 120 | |
| Di-n-octyl phthalate | 2560 | 2430 | 95 | 66 - 120 | |
| Fluoranthene | 2560 | 2520 | 99 | 66 - 120 | |
| Fluorene | 2560 | 2290 | 90 | 64 - 120 | |
| Hexachlorobenzene | 2560 | 2480 | 97 | 62 - 120 | |
| Hexachlorobutadiene | 2560 | 2070 | 81 | 53 - 120 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Lab Control Sample - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151857/2-A | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5782.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.3 g |
| Analysis Date: | 12/17/2012 1109 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Hexachlorocyclopentadiene | 2560 | 2160 | 85 | 47 - 120 | |
| Hexachloroethane | 2560 | 2170 | 85 | 51 - 120 | |
| Indeno[1,2,3-cd]pyrene | 2560 | 2280 | 89 | 63 - 120 | |
| Isophorone | 2560 | 2320 | 91 | 56 - 120 | |
| 2-Methylnaphthalene | 2560 | 2090 | 82 | 57 - 120 | |
| 2-Methylphenol | 2560 | 2240 | 88 | 56 - 120 | |
| 3 & 4 Methylphenol | 5110 | 4810 | 94 | 53 - 120 | |
| Naphthalene | 2560 | 2090 | 82 | 57 - 120 | |
| 2-Nitroaniline | 2560 | 2780 | 109 | 63 - 120 | |
| 3-Nitroaniline | 2560 | 1830 | 72 | 47 - 120 | |
| 4-Nitroaniline | 2560 | 2230 | 87 | 64 - 120 | |
| Nitrobenzene | 2560 | 2260 | 89 | 54 - 120 | |
| 2-Nitrophenol | 2560 | 2240 | 88 | 56 - 120 | |
| 4-Nitrophenol | 2560 | 2660 | 104 | 63 - 121 | |
| N-Nitrosodi-n-propylamine | 2560 | 2450 | 96 | 51 - 120 | |
| N-Nitrosodiphenylamine | 2180 | 2100 | 96 | 61 - 120 | |
| Pentachlorophenol | 2560 | 1930 | 75 | 56 - 120 | |
| Phenanthrene | 2560 | 2490 | 97 | 64 - 120 | |
| Phenol | 2560 | 2320 | 91 | 56 - 120 | |
| Pyrene | 2560 | 2400 | 94 | 64 - 120 | |
| 1,2,4-Trichlorobenzene | 2560 | 2050 | 80 | 52 - 120 | |
| 2,4,5-Trichlorophenol | 2560 | 2360 | 93 | 64 - 120 | |
| 2,4,6-Trichlorophenol | 2560 | 2290 | 90 | 61 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 85 | 50 - 120 |
| 2-Fluorophenol | 84 | 53 - 120 |
| Nitrobenzene-d5 | 91 | 50 - 120 |
| Phenol-d5 | 92 | 52 - 120 |
| Terphenyl-d14 | 102 | 55 - 120 |
| 2,4,6-Tribromophenol | 98 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5793.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.2 g |
| Analysis Date: | 12/17/2012 1448 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5794.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.8 g |
| Analysis Date: | 12/17/2012 1508 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Acenaphthene | 84 | 78 | 60 - 120 | 8 | 30 | | |
| Acenaphthylene | 89 | 83 | 64 - 120 | 8 | 30 | | |
| Anthracene | 93 | 88 | 63 - 120 | 7 | 30 | | |
| Benzo[a]anthracene | 97 | 90 | 65 - 120 | 9 | 30 | | |
| Benzo[a]pyrene | 87 | 81 | 59 - 120 | 9 | 30 | | |
| Benzo[b]fluoranthene | 90 | 83 | 47 - 129 | 9 | 44 | | |
| Benzo[ghi]perylene | 94 | 88 | 55 - 126 | 9 | 31 | | |
| Benzo[k]fluoranthene | 102 | 92 | 48 - 130 | 12 | 30 | | |
| Bis(2-chloroethoxy)methane | 78 | 74 | 56 - 120 | 6 | 30 | | |
| Bis(2-chloroethyl)ether | 76 | 72 | 51 - 120 | 7 | 30 | | |
| bis (2-chloroisopropyl) ether | 82 | 76 | 49 - 120 | 10 | 30 | | |
| Bis(2-ethylhexyl) phthalate | 108 | 102 | 65 - 120 | 8 | 30 | | |
| 4-Bromophenyl phenyl ether | 99 | 91 | 64 - 120 | 10 | 30 | | |
| Butyl benzyl phthalate | 104 | 98 | 65 - 120 | 8 | 30 | | |
| Carbazole | 92 | 87 | 64 - 120 | 8 | 30 | | |
| 4-Chloroaniline | 56 | 57 | 28 - 120 | 1 | 30 | | |
| 4-Chloro-3-methylphenol | 99 | 92 | 63 - 120 | 10 | 30 | | |
| 2-Chloronaphthalene | 83 | 75 | 59 - 120 | 11 | 30 | | |
| 2-Chlorophenol | 80 | 72 | 57 - 120 | 13 | 30 | | |
| 4-Chlorophenyl phenyl ether | 94 | 85 | 64 - 120 | 13 | 30 | | |
| Chrysene | 95 | 89 | 64 - 120 | 8 | 35 | | |
| Dibenz(a,h)anthracene | 94 | 85 | 50 - 133 | 12 | 30 | | |
| Dibenzofuran | 89 | 83 | 61 - 120 | 9 | 30 | | |
| 1,2-Dichlorobenzene | 76 | 70 | 53 - 120 | 11 | 30 | | |
| 1,3-Dichlorobenzene | 72 | 66 | 52 - 120 | 10 | 32 | | |
| 1,4-Dichlorobenzene | 75 | 66 | 52 - 120 | 14 | 30 | | |
| 3,3'-Dichlorobenzidine | 73 | 76 | 30 - 120 | 2 | 30 | | |
| 2,4-Dichlorophenol | 87 | 80 | 60 - 120 | 10 | 30 | | |
| Diethyl phthalate | 95 | 89 | 66 - 120 | 9 | 30 | | |
| 2,4-Dimethylphenol | 91 | 81 | 54 - 120 | 14 | 30 | | |
| Dimethyl phthalate | 94 | 86 | 65 - 120 | 10 | 30 | | |
| Di-n-butyl phthalate | 99 | 92 | 67 - 120 | 9 | 30 | | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5793.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.2 g |
| Analysis Date: | 12/17/2012 1448 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5794.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.8 g |
| Analysis Date: | 12/17/2012 1508 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 4,6-Dinitro-2-methylphenol | 63 | 54 | 57 - 120 | 18 | 30 | | T |
| 2,4-Dinitrophenol | 53 | 43 | 46 - 120 | 23 | 34 | | T |
| 2,4-Dinitrotoluene | 95 | 92 | 68 - 120 | 5 | 30 | | |
| 2,6-Dinitrotoluene | 94 | 92 | 64 - 120 | 5 | 30 | | |
| Di-n-octyl phthalate | 97 | 94 | 66 - 120 | 5 | 30 | | |
| Fluoranthene | 92 | 87 | 66 - 120 | 8 | 30 | | |
| Fluorene | 90 | 83 | 64 - 120 | 11 | 30 | | |
| Hexachlorobenzene | 91 | 88 | 62 - 120 | 6 | 30 | | |
| Hexachlorobutadiene | 79 | 74 | 53 - 120 | 9 | 30 | | |
| Hexachlorocyclopentadiene | 63 | 54 | 47 - 120 | 17 | 30 | | |
| Hexachloroethane | 74 | 71 | 51 - 120 | 7 | 30 | | |
| Indeno[1,2,3-cd]pyrene | 87 | 82 | 63 - 120 | 8 | 30 | | |
| Isophorone | 88 | 84 | 56 - 120 | 7 | 30 | | |
| 2-Methylnaphthalene | 79 | 74 | 57 - 120 | 9 | 30 | | |
| 2-Methylphenol | 86 | 80 | 56 - 120 | 9 | 30 | | |
| 3 & 4 Methylphenol | 91 | 81 | 53 - 120 | 13 | 30 | | |
| Naphthalene | 79 | 75 | 57 - 120 | 7 | 30 | | |
| 2-Nitroaniline | 108 | 102 | 63 - 120 | 8 | 30 | | |
| 3-Nitroaniline | 78 | 75 | 47 - 120 | 6 | 30 | | |
| 4-Nitroaniline | 93 | 88 | 64 - 120 | 8 | 30 | | |
| Nitrobenzene | 84 | 82 | 54 - 120 | 4 | 30 | | |
| 2-Nitrophenol | 83 | 75 | 56 - 120 | 12 | 30 | | |
| 4-Nitrophenol | 100 | 98 | 63 - 121 | 4 | 30 | | |
| N-Nitrosodi-n-propylamine | 89 | 81 | 51 - 120 | 11 | 30 | | |
| N-Nitrosodiphenylamine | 97 | 90 | 61 - 120 | 9 | 36 | | |
| Pentachlorophenol | 77 | 72 | 56 - 120 | 8 | 30 | | |
| Phenanthrene | 92 | 87 | 64 - 120 | 7 | 30 | | |
| Phenol | 85 | 79 | 56 - 120 | 9 | 30 | | |
| Pyrene | 98 | 91 | 64 - 120 | 9 | 38 | | |
| 1,2,4-Trichlorobenzene | 78 | 73 | 52 - 120 | 8 | 30 | | |
| 2,4,5-Trichlorophenol | 98 | 94 | 64 - 120 | 6 | 30 | | |
| 2,4,6-Trichlorophenol | 92 | 83 | 61 - 120 | 12 | 30 | | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151857**

**Method: 8270C**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5793.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.2 g |
| Analysis Date: | 12/17/2012 1448 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152500 | Instrument ID: | SMS_D |
| Client Matrix: | Solid | Prep Batch: | 280-151857 | Lab File ID: | D5794.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.8 g |
| Analysis Date: | 12/17/2012 1508 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 1630 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 86 | 77 | 50 - 120 |
| 2-Fluorophenol | 76 | 70 | 53 - 120 |
| Nitrobenzene-d5 | 84 | 81 | 50 - 120 |
| Phenol-d5 | 87 | 78 | 52 - 120 |
| Terphenyl-d14 | 103 | 96 | 55 - 120 |
| 2,4,6-Tribromophenol | 97 | 89 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151861**

**Method: 8082**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151861/1-A | Analysis Batch: | 280-152378 | Instrument ID: | GCS_W |
| Client Matrix: | Solid | Prep Batch: | 280-151861 | Lab File ID: | 014F1401.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.0 g |
| Analysis Date: | 12/14/2012 1911 | Units: | ug/Kg | Final Weight/Volume: | 5000 uL |
| Prep Date: | 12/12/2012 1740 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aroclor 1016 | 2.7 | U | 2.7 | 9.7 |
| Aroclor 1221 | 7.8 | U | 7.8 | 16 |
| Aroclor 1232 | 1.9 | U | 1.9 | 9.7 |
| Aroclor 1242 | 4.5 | U | 4.5 | 9.7 |
| Aroclor 1248 | 4.5 | U | 4.5 | 9.7 |
| Aroclor 1254 | 2.5 | U | 2.5 | 9.7 |
| Aroclor 1260 | 2.5 | U | 2.5 | 9.7 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 105 | 59 - 130 |
| Tetrachloro-m-xylene | 80 | 53 - 128 |

**Lab Control Sample - Batch: 280-151861**

**Method: 8082**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151861/2-A | Analysis Batch: | 280-152378 | Instrument ID: | GCS_W |
| Client Matrix: | Solid | Prep Batch: | 280-151861 | Lab File ID: | 015F1501.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.8 g |
| Analysis Date: | 12/14/2012 1935 | Units: | ug/Kg | Final Weight/Volume: | 5000 uL |
| Prep Date: | 12/12/2012 1740 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aroclor 1016 | 32.5 | 30.8 | 95 | 54 - 132 | |
| Aroclor 1260 | 32.5 | 34.5 | 106 | 62 - 129 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 106 | 59 - 130 |
| Tetrachloro-m-xylene | 81 | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151861**

**Method: 8082**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152378 | Instrument ID: | GCS_W |
| Client Matrix: | Solid | Prep Batch: | 280-151861 | Lab File ID: | 017F1701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.5 g |
| Analysis Date: | 12/14/2012 2021 | | | Final Weight/Volume: | 5000 uL |
| Prep Date: | 12/12/2012 1740 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152378 | Instrument ID: | GCS_W |
| Client Matrix: | Solid | Prep Batch: | 280-151861 | Lab File ID: | 018F1801.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.3 g |
| Analysis Date: | 12/14/2012 2044 | | | Final Weight/Volume: | 5000 uL |
| Prep Date: | 12/12/2012 1740 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Aroclor 1016 | 96 | 98 | 54 - 132 | 1 | 26 | | |
| Aroclor 1260 | 100 | 111 | 62 - 129 | 8 | 26 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 86 | 91 | 59 - 130 |
| Tetrachloro-m-xylene | 88 | 85 | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151882**

**Method: NWTPH-Dx**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151882/1-A | Analysis Batch: | 280-152273 | Instrument ID: | SGC_U |
| Client Matrix: | Solid | Prep Batch: | 280-151882 | Lab File ID: | 12141205.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.2 g |
| Analysis Date: | 12/14/2012 1503 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 2010 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| C10-C36 | 1180 | J | 990 | 4000 |
| C10-C28 | 1120 | J | 670 | 4000 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 110 | 49 - 115 |

**Lab Control Sample - Batch: 280-151882**

**Method: NWTPH-Dx**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151882/2-A | Analysis Batch: | 280-152273 | Instrument ID: | SGC_U |
| Client Matrix: | Solid | Prep Batch: | 280-151882 | Lab File ID: | 12141206.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.7 g |
| Analysis Date: | 12/14/2012 1533 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 2010 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| C10-C36 | 65200 | 62200 | 95 | 57 - 115 | |
| C10-C28 | 65200 | 62200 | 95 | 53 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 102 | 49 - 115 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-151882**

**Method: NWTPH-Dx**
**Preparation: 3550C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152273 | Instrument ID: | SGC_U |
| Client Matrix: | Solid | Prep Batch: | 280-151882 | Lab File ID: | 12141208.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.0 g |
| Analysis Date: | 12/14/2012 1631 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 2010 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152505 | Instrument ID: | SGC_U |
| Client Matrix: | Solid | Prep Batch: | 280-151882 | Lab File ID: | 12171204.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.4 g |
| Analysis Date: | 12/17/2012 1127 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 12/12/2012 2010 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| C10-C36 | 91 | 95 | 57 - 115 | 2 | 23 | | |
| C10-C28 | 94 | 93 | 56 - 115 | 3 | 23 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 110 | 98 | 49 - 115 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151903**

**Method: 6010B**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151903/1-A | Analysis Batch: | 280-152165 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-151903 | Lab File ID: | 25A5121312.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 12/13/2012 2334 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1300 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aluminum | 1.6 | U | 1.6 | 5.0 |
| Antimony | 0.38 | U | 0.38 | 0.60 |
| Arsenic | 0.66 | U | 0.66 | 1.0 |
| Barium | 0.111 | B | 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 | 16.16 | B | 14.1 | 50.0 |
| Chromium | 0.058 | U | 0.058 | 0.20 |
| Cobalt | 0.10 | U | 0.10 | 1.0 |
| Copper | 0.22 | U | 0.22 | 1.0 |
| Iron | 3.8 | U | 3.8 | 5.0 |
| Lead | 0.27 | U | 0.27 | 0.50 |
| Lithium | 0.30 | U | 0.30 | 2.5 |
| 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 | 0.497 | B | 0.40 | 1.0 |
| Zirconium | 0.35 | U | 0.35 | 2.5 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Lab Control Sample - Batch: 280-151903**

**Method: 6010B**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151903/2-A | Analysis Batch: | 280-152165 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-151903 | Lab File ID: | 25A5121312.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 12/13/2012 2336 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1300 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aluminum | 200 | 194.6 | 97 | 82 - 116 | |
| Antimony | 50.0 | 48.72 | 97 | 82 - 110 | |
| Arsenic | 100 | 102.7 | 103 | 85 - 110 | |
| Barium | 200 | 197.1 | 99 | 87 - 112 | |
| Beryllium | 5.00 | 4.82 | 96 | 84 - 114 | |
| Boron | 100 | 89.89 | 90 | 81 - 110 | |
| Cadmium | 10.0 | 9.97 | 100 | 87 - 110 | |
| Calcium | 5000 | 4637 | 93 | 82 - 114 | |
| Chromium | 20.0 | 18.94 | 95 | 84 - 114 | |
| Cobalt | 50.0 | 49.02 | 98 | 87 - 110 | |
| Copper | 25.0 | 24.46 | 98 | 88 - 110 | |
| Iron | 100 | 94.72 | 95 | 87 - 120 | |
| Lead | 50.0 | 49.16 | 98 | 86 - 110 | |
| Lithium | 100 | 102.9 | 103 | 90 - 110 | |
| Magnesium | 5000 | 5140 | 103 | 90 - 110 | |
| Manganese | 50.0 | 47.34 | 95 | 88 - 110 | |
| Molybdenum | 100 | 91.84 | 92 | 86 - 110 | |
| Nickel | 50.0 | 50.06 | 100 | 87 - 110 | |
| Potassium | 5000 | 4896 | 98 | 89 - 110 | |
| Selenium | 200 | 176.8 | 88 | 83 - 110 | |
| Silicon | 1000 | 175.2 | 18 | 10 - 70 | |
| Silver | 5.00 | 5.57 | 111 | 87 - 114 | |
| Sodium | 5000 | 4798 | 96 | 90 - 112 | |
| Vanadium | 50.0 | 52.23 | 104 | 88 - 110 | |
| Zinc | 50.0 | 48.12 | 96 | 76 - 114 | |
| Zirconium | 50.0 | 44.95 | 90 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike - Batch: 280-151903**

**Method: 6010B**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152165 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-151903 | Lab File ID: | 25A5121312.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.13 g |
| Analysis Date: | 12/13/2012 2345 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1300 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Aluminum | 7550 | | 197 | 9832 | 1162 | 50 - 200 | 4 |
| Antimony | 0.38 | U | 49.2 | 25.72 | 52 | 20 - 200 | |
| Arsenic | 3.0 | | 98.3 | 93.79 | 92 | 76 - 111 | |
| Barium | 86.0 | | 197 | 266.0 | 91 | 52 - 159 | |
| Beryllium | 0.43 | | 4.92 | 4.75 | 88 | 72 - 105 | |
| Boron | 1.1 | B | 98.3 | 78.26 | 78 | 75 - 107 | |
| Cadmium | 0.18 | B | 9.83 | 9.08 | 91 | 40 - 130 | |
| Calcium | 3210 | | 4920 | 8492 | 108 | 43 - 165 | |
| Chromium | 8.2 | | 19.7 | 26.61 | 94 | 70 - 200 | |
| Cobalt | 6.4 | | 49.2 | 49.40 | 87 | 72 - 106 | |
| Copper | 15.1 | | 24.6 | 34.19 | 78 | 37 - 187 | |
| Iron | 20600 | | 98.3 | 21930 | 1387 | 70 - 200 | 4 |
| Lead | 5.2 | | 49.2 | 47.30 | 86 | 70 - 200 | |
| Lithium | 7.2 | | 98.3 | 101.4 | 96 | 84 - 109 | |
| Magnesium | 4100 | | 4920 | 9179 | 103 | 64 - 145 | |
| Manganese | 336 | | 49.2 | 388.5 | 106 | 40 - 200 | 4 |
| Molybdenum | 0.26 | U | 98.3 | 79.90 | 81 | 75 - 103 | |
| Nickel | 10.2 | | 49.2 | 54.82 | 91 | 61 - 126 | |
| Potassium | 1540 | | 4920 | 6253 | 96 | 56 - 172 | |
| Selenium | 0.85 | U | 197 | 156.1 | 79 | 76 - 104 | |
| Silicon | 316 | | 983 | 551.1 | 24 | 20 - 200 | |
| Silver | 0.16 | U | 4.92 | 5.08 | 103 | 75 - 141 | |
| Sodium | 189 | | 4920 | 4707 | 92 | 78 - 111 | |
| Vanadium | 51.8 | | 49.2 | 105.7 | 110 | 50 - 169 | |
| Zinc | 42.0 | | 49.2 | 83.65 | 85 | 70 - 200 | |
| Zirconium | 19.9 | | 49.2 | 63.55 | 89 | 75 - 125 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Duplicate - Batch: 280-151903**

**Method: 6010B**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152165 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-151903 | Lab File ID: | 25A5121312.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.15 g |
| Analysis Date: | 12/13/2012 2343 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1300 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Aluminum | 7550 | | 7658 | 1 | 40 | |
| Antimony | 0.38 | U | 0.37 | NC | 40 | U |
| Arsenic | 3.0 | | 2.87 | 3 | 30 | |
| Barium | 86.0 | | 92.01 | 7 | 30 | |
| Beryllium | 0.43 | | 0.415 | 4 | 30 | |
| Boron | 1.1 | B | 0.95 | NC | 30 | U |
| Cadmium | 0.18 | B | 0.152 | 16 | 30 | B |
| Calcium | 3210 | | 3272 | 2 | 30 | |
| Chromium | 8.2 | | 8.59 | 5 | 40 | |
| Cobalt | 6.4 | | 6.51 | 1 | 30 | |
| Copper | 15.1 | | 11.73 | 25 | 30 | |
| Iron | 20600 | | 20620 | 0.3 | 40 | |
| Lead | 5.2 | | 5.01 | 3 | 40 | |
| Lithium | 7.2 | | 7.20 | 0.2 | 30 | |
| Magnesium | 4100 | | 4178 | 2 | 30 | |
| Manganese | 336 | | 362.6 | 8 | 40 | |
| Molybdenum | 0.26 | U | 0.25 | NC | 30 | U |
| Nickel | 10.2 | | 11.09 | 8 | 30 | |
| Potassium | 1540 | | 1581 | 2 | 40 | |
| Selenium | 0.85 | U | 0.83 | NC | 30 | U |
| Silicon | 316 | | 255.1 | 21 | 40 | |
| Silver | 0.16 | U | 0.15 | NC | 30 | U |
| Sodium | 189 | | 183.1 | 3 | 30 | |
| Vanadium | 51.8 | | 51.29 | 1 | 30 | |
| Zinc | 42.0 | | 39.76 | 5 | 40 | |
| Zirconium | 19.9 | | 19.46 | 2 | 30 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151901**

**Method: 6020**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151901/1-A | Analysis Batch: | 280-152193 | Instrument ID: | MT_077 |
| Client Matrix: | Solid | Prep Batch: | 280-151901 | Lab File ID: | 157_BLK.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 12/13/2012 2158 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1200 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Uranium | 0.00420 | B | 0.0016 | 0.10 |

**Lab Control Sample - Batch: 280-151901**

**Method: 6020**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151901/2-A | Analysis Batch: | 280-152193 | Instrument ID: | MT_077 |
| Client Matrix: | Solid | Prep Batch: | 280-151901 | Lab File ID: | 158_LCS.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 12/13/2012 2203 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1200 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Uranium | 20.0 | 19.85 | 99 | 85 - 123 | |

**Matrix Spike - Batch: 280-151901**

**Method: 6020**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152193 | Instrument ID: | MT_077 |
| Client Matrix: | Solid | Prep Batch: | 280-151901 | Lab File ID: | 162SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.13 g |
| Analysis Date: | 12/13/2012 2220 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1200 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Uranium | 1.5 | 19.7 | 19.18 | 90 | 85 - 123 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Duplicate - Batch: 280-151901**

**Method: 6020**
**Preparation: 3050B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152193 | Instrument ID: | MT_077 |
| Client Matrix: | Solid | Prep Batch: | 280-151901 | Lab File ID: | 161SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.04 g |
| Analysis Date: | 12/13/2012 2215 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 12/13/2012 1200 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Uranium | 1.5 | 1.06 | 34 | 20 | M |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151880**

**Method: 7471A**
**Preparation: 7471A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151880/1-A | Analysis Batch: | 280-152272 | Instrument ID: | MT_034 |
| Client Matrix: | Solid | Prep Batch: | 280-151880 | Lab File ID: | 121213taab.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | .6 g |
| Analysis Date: | 12/13/2012 1535 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1130 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.0055 | U | 0.0055 | 0.017 |

**Lab Control Sample - Batch: 280-151880**

**Method: 7471A**
**Preparation: 7471A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151880/2-A | Analysis Batch: | 280-152272 | Instrument ID: | MT_034 |
| Client Matrix: | Solid | Prep Batch: | 280-151880 | Lab File ID: | 121213taab.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | .6 g |
| Analysis Date: | 12/13/2012 1537 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1130 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.417 | 0.375 | 90 | 87 - 111 | |

**Matrix Spike - Batch: 280-151880**

**Method: 7471A**
**Preparation: 7471A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152272 | Instrument ID: | MT_034 |
| Client Matrix: | Solid | Prep Batch: | 280-151880 | Lab File ID: | 121213taab.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.61 g |
| Analysis Date: | 12/13/2012 1549 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1130 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Mercury | 0.0056 | U | 0.455 | 0.406 | 89 | 87 - 111 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Duplicate - Batch: 280-151880**

**Method: 7471A**
**Preparation: 7471A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152272 | Instrument ID: | MT_034 |
| Client Matrix: | Solid | Prep Batch: | 280-151880 | Lab File ID: | 121213taab.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.70 g |
| Analysis Date: | 12/13/2012 1542 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1130 | | | | |
| Leach Date: | N/A | | | | |

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

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-152094**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-152032/1-A | Analysis Batch: | 280-152094 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\1213NXN |
| Dilution: | 1.0 | Leach Batch: | 280-152032 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1254 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1015 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.31 | U | 0.31 | 0.78 |

**Method Reporting Limit Check - Batch: 280-152094**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-152094/18 | Analysis Batch: | 280-152094 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\1213NXN |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 12/13/2012 1130 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.100 | 0.0940 | 94 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-152094**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-152032/2-A | Analysis Batch: | 280-152094 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\1213NXN |
| Dilution: | 1.0 | Leach Batch: | 280-152032 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1256 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1015 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 52.1 | 51.48 | 99 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike - Batch: 280-152094**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152094 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\1213NXN |
| Dilution: | 1.0 | Leach Batch: | 280-152032 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1309 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1015 | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.47 | B | 43.2 | 44.54 | 102 | 90 - 110 | |

**Duplicate - Batch: 280-152094**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152094 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\1213NXN |
| Dilution: | 1.0 | Leach Batch: | 280-152032 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1308 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1015 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.47 | B | 0.488 | 5 | 10 | B |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-152095/4-A | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 12/14/2012 1155 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Cyanide | 0.10 | U | 0.10 | 0.50 |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**High Level Control Sample - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | HLCS 280-152095/1-A | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 2.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 12/14/2012 1150 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 20.0 | 20.71 | 104 | 90 - 110 | |

**Low Level Control Sample - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LLCS 280-152095/2-A | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 12/14/2012 1428 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 5.00 | 5.33 | 107 | 90 - 110 | |

**Lab Control Sample - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-152095/3-A | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 12/14/2012 1429 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 5.00 | 5.17 | 103 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.02 g |
| Analysis Date: | 12/14/2012 1158 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Total Cyanide | 0.11 | U | 5.45 | 4.16 | 76 | 90 - 110 | N |

**Duplicate - Batch: 280-152095**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152307 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-152095 | Lab File ID: | C:\FLOW_4\CN121412 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.02 g |
| Analysis Date: | 12/14/2012 1159 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/13/2012 1512 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Total Cyanide | 0.11 | U | 0.11 | NC | 10 | U |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-151999**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-151999/1-A | Analysis Batch: | 280-152234 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-151999 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.00 g |
| Analysis Date: | 12/13/2012 1500 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 12/13/2012 0905 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Sulfide | 2.4 | U | 2.4 | 5.0 |

**Lab Control Sample - Batch: 280-151999**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-151999/2-A | Analysis Batch: | 280-152234 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-151999 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.03 g |
| Analysis Date: | 12/13/2012 1500 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 12/13/2012 0905 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 108 | 83.95 | 78 | 47 - 100 | |

**Matrix Spike - Batch: 280-151999**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152234 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-151999 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.05 g |
| Analysis Date: | 12/13/2012 1500 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 12/13/2012 0905 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Sulfide | 2.7 | U | 120 | 64.83 | 54 | 47 - 100 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Duplicate - Batch: 280-151999**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152234 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-151999 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 49.95 g |
| Analysis Date: | 12/13/2012 1500 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 12/13/2012 0905 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Sulfide | 2.7 | U | 2.7 | NC | 35 | U |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-151938**

**Method: 9045C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-151938/4 | Analysis Batch: | 280-151938 | Instrument ID: | No Equipment |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/12/2012 2352 | Units: | SU | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-151938/5 | Analysis Batch: | 280-151938 | Instrument ID: | No Equipment |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/12/2012 2352 | Units: | SU | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| pH adj. to 25 deg C-Soluble | 100 | 100 | 97 - 103 | 0 | 5 | | |

**Duplicate - Batch: 280-151938**

**Method: 9045C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-151938 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | 280-151922 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/12/2012 2352 | Units: | SU | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/12/2012 1847 | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| pH adj. to 25 deg C-Soluble | 8.52 | 8.550 | 0.4 | 5 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-152460**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-152089/2-A | Analysis Batch: | 280-152460 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 162.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0908 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate as N-Soluble | 0.31 | U | 0.31 | 2.5 |
| Nitrite as N-Soluble | 0.33 | U | 0.33 | 2.5 |
| Orthophosphate as P-Soluble | 1.2 | U | 1.2 | 5.0 |

**Method Reporting Limit Check - Batch: 280-152460**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-152460/3 | Analysis Batch: | 280-152460 | Instrument ID: | WC_IC3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 112.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1825 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N-Soluble | 0.200 | 0.287 | 144 | 50 - 150 | B |
| Nitrite as N-Soluble | 0.200 | 0.244 | 122 | 50 - 150 | B |
| Orthophosphate as P-Soluble | 0.200 | 0.249 | 125 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-152460**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-152089/1-A | Analysis Batch: | 280-152460 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 151.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0515 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N-Soluble | 50.0 | 48.60 | 97 | 90 - 110 | |
| Nitrite as N-Soluble | 50.0 | 48.00 | 96 | 90 - 110 | |
| Orthophosphate as P-Soluble | 50.0 | 52.74 | 105 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike - Batch: 280-152460**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152460 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 154.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0621 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Nitrate as N-Soluble | 1.2 | B | 55.0 | 59.58 | 106 | 80 - 120 | |
| Nitrite as N-Soluble | 0.37 | U | 55.0 | 57.73 | 105 | 80 - 120 | |
| Orthophosphate as P-Soluble | 1.6 | B | 55.0 | 70.88 | 126 | 80 - 120 | N |

**Duplicate - Batch: 280-152460**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152460 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 153.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0605 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate as N-Soluble | 1.2 | B | 1.18 | 4 | 15 | B |
| Nitrite as N-Soluble | 0.37 | U | 0.37 | NC | 15 | U |
| Orthophosphate as P-Soluble | 1.6 | B | 1.4 | NC | 15 | U |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Method Blank - Batch: 280-152461**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-152089/2-A | Analysis Batch: | 280-152461 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 162.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0908 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Chloride-Soluble | 2.0 | U | 2.0 | 5.0 |
| Bromide-Soluble | 0.38 | U | 0.38 | 2.0 |
| Sulfate-Soluble | 1.7 | U | 1.7 | 5.0 |
| Fluoride-Soluble | 0.81 | U | 0.81 | 5.0 |

**Method Reporting Limit Check - Batch: 280-152461**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-152461/3 | Analysis Batch: | 280-152461 | Instrument ID: | WC_IC3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 112.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/13/2012 1825 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Chloride-Soluble | 1.00 | 1.29 | 129 | 50 - 150 | B |
| Bromide-Soluble | 0.200 | 0.276 | 138 | 50 - 150 | B |
| Sulfate-Soluble | 1.00 | 1.11 | 111 | 50 - 150 | B |
| Fluoride-Soluble | 0.200 | 0.232 | 116 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-152461**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-152089/1-A | Analysis Batch: | 280-152461 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 151.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0515 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Chloride-Soluble | 250 | 239.3 | 96 | 90 - 110 | |
| Bromide-Soluble | 50.0 | 49.64 | 99 | 90 - 110 | |
| Sulfate-Soluble | 250 | 238.0 | 95 | 90 - 110 | |
| Fluoride-Soluble | 50.0 | 46.01 | 92 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Matrix Spike - Batch: 280-152461**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152461 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 154.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0621 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Chloride-Soluble | 5.7 | | 275 | 290.3 | 103 | 80 - 120 | |
| Bromide-Soluble | 0.43 | U | 55.0 | 60.09 | 109 | 80 - 120 | |
| Sulfate-Soluble | 7.1 | | 275 | 291.4 | 103 | 80 - 120 | |
| Fluoride-Soluble | 0.90 | U | 55.0 | 52.30 | 95 | 80 - 120 | |

**Duplicate - Batch: 280-152461**

**Method: 9056M**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-152461 | Instrument ID: | WC_IC3 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 153.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-152089 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 12/14/2012 0605 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 12/13/2012 1505 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Chloride-Soluble | 5.7 | | 5.62 | 2 | 15 | |
| Bromide-Soluble | 0.43 | U | 0.43 | NC | 15 | U |
| Sulfate-Soluble | 7.1 | | 7.31 | 2 | 15 | |
| Fluoride-Soluble | 0.90 | U | 0.90 | NC | 15 | U |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

**Duplicate - Batch: 280-151846**

**Method: D-2216**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-36891-1 | Analysis Batch: | 280-151846 | 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: | 12/12/2012 1434 | Units: | % | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Percent Moisture | 10.0 | 10 | 0.4 | 20 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Prep Batch: 280-151932** | | | | | |
| LCS 280-151932/3-A | Lab Control Sample | T | Solid | 5035 | |
| MB 280-151932/1-A | Method Blank | T | Solid | 5035 | |
| 280-36891-1 | J1R4F8 | T | Solid | 5035 | |
| 280-36891-1MS | Matrix Spike | T | Solid | 5035 | |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 5035 | |
| **Analysis Batch:280-152348** | | | | | |
| LCS 280-151932/3-A | Lab Control Sample | T | Solid | 8260B | 280-151932 |
| MB 280-151932/1-A | Method Blank | T | Solid | 8260B | 280-151932 |
| 280-36891-1 | J1R4F8 | T | Solid | 8260B | 280-151932 |
| 280-36891-1MS | Matrix Spike | T | Solid | 8260B | 280-151932 |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 8260B | 280-151932 |

**Report Basis**
T = Total

| | | | | | |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 280-151857** | | | | | |
| LCS 280-151857/2-A | Lab Control Sample | T | Solid | 3550C | |
| MB 280-151857/1-A | Method Blank | T | Solid | 3550C | |
| 280-36891-1 | J1R4F8 | T | Solid | 3550C | |
| 280-36891-1MS | Matrix Spike | T | Solid | 3550C | |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 3550C | |
| **Analysis Batch:280-152500** | | | | | |
| LCS 280-151857/2-A | Lab Control Sample | T | Solid | 8270C | 280-151857 |
| MB 280-151857/1-A | Method Blank | T | Solid | 8270C | 280-151857 |
| 280-36891-1 | J1R4F8 | T | Solid | 8270C | 280-151857 |
| 280-36891-1MS | Matrix Spike | T | Solid | 8270C | 280-151857 |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 8270C | 280-151857 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 280-151861** | | | | | |
| LCS 280-151861/2-A | Lab Control Sample | T | Solid | 3550C | |
| MB 280-151861/1-A | Method Blank | T | Solid | 3550C | |
| 280-36891-1 | J1R4F8 | T | Solid | 3550C | |
| 280-36891-1MS | Matrix Spike | T | Solid | 3550C | |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 3550C | |
| **Prep Batch: 280-151882** | | | | | |
| LCS 280-151882/2-A | Lab Control Sample | T | Solid | 3550C | |
| MB 280-151882/1-A | Method Blank | T | Solid | 3550C | |
| 280-36891-1 | J1R4F8 | T | Solid | 3550C | |
| 280-36891-1MS | Matrix Spike | T | Solid | 3550C | |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 3550C | |
| **Analysis Batch:280-152273** | | | | | |
| LCS 280-151882/2-A | Lab Control Sample | T | Solid | NWTPH-Dx | 280-151882 |
| MB 280-151882/1-A | Method Blank | T | Solid | NWTPH-Dx | 280-151882 |
| 280-36891-1 | J1R4F8 | T | Solid | NWTPH-Dx | 280-151882 |
| 280-36891-1MS | Matrix Spike | T | Solid | NWTPH-Dx | 280-151882 |
| **Analysis Batch:280-152378** | | | | | |
| LCS 280-151861/2-A | Lab Control Sample | T | Solid | 8082 | 280-151861 |
| MB 280-151861/1-A | Method Blank | T | Solid | 8082 | 280-151861 |
| 280-36891-1 | J1R4F8 | T | Solid | 8082 | 280-151861 |
| 280-36891-1MS | Matrix Spike | T | Solid | 8082 | 280-151861 |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | 8082 | 280-151861 |
| **Analysis Batch:280-152505** | | | | | |
| 280-36891-1MSD | Matrix Spike Duplicate | T | Solid | NWTPH-Dx | 280-151882 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 280-151880** | | | | | |
| LCS 280-151880/2-A | Lab Control Sample | T | Solid | 7471A | |
| MB 280-151880/1-A | Method Blank | T | Solid | 7471A | |
| 280-36891-1 | J1R4F8 | T | Solid | 7471A | |
| 280-36891-1DU | Duplicate | T | Solid | 7471A | |
| 280-36891-1MS | Matrix Spike | T | Solid | 7471A | |
| **Prep Batch: 280-151901** | | | | | |
| LCS 280-151901/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-151901/1-A | Method Blank | T | Solid | 3050B | |
| 280-36891-1 | J1R4F8 | T | Solid | 3050B | |
| 280-36891-1DU | Duplicate | T | Solid | 3050B | |
| 280-36891-1MS | Matrix Spike | T | Solid | 3050B | |
| **Prep Batch: 280-151903** | | | | | |
| LCS 280-151903/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-151903/1-A | Method Blank | T | Solid | 3050B | |
| 280-36891-1 | J1R4F8 | T | Solid | 3050B | |
| 280-36891-1DU | Duplicate | T | Solid | 3050B | |
| 280-36891-1MS | Matrix Spike | T | Solid | 3050B | |
| **Analysis Batch:280-152165** | | | | | |
| LCS 280-151903/2-A | Lab Control Sample | T | Solid | 6010B | 280-151903 |
| MB 280-151903/1-A | Method Blank | T | Solid | 6010B | 280-151903 |
| 280-36891-1 | J1R4F8 | T | Solid | 6010B | 280-151903 |
| 280-36891-1DU | Duplicate | T | Solid | 6010B | 280-151903 |
| 280-36891-1MS | Matrix Spike | T | Solid | 6010B | 280-151903 |
| **Analysis Batch:280-152193** | | | | | |
| LCS 280-151901/2-A | Lab Control Sample | T | Solid | 6020 | 280-151901 |
| MB 280-151901/1-A | Method Blank | T | Solid | 6020 | 280-151901 |
| 280-36891-1 | J1R4F8 | T | Solid | 6020 | 280-151901 |
| 280-36891-1DU | Duplicate | T | Solid | 6020 | 280-151901 |
| 280-36891-1MS | Matrix Spike | T | Solid | 6020 | 280-151901 |
| **Analysis Batch:280-152272** | | | | | |
| LCS 280-151880/2-A | Lab Control Sample | T | Solid | 7471A | 280-151880 |
| MB 280-151880/1-A | Method Blank | T | Solid | 7471A | 280-151880 |
| 280-36891-1 | J1R4F8 | T | Solid | 7471A | 280-151880 |
| 280-36891-1DU | Duplicate | T | Solid | 7471A | 280-151880 |
| 280-36891-1MS | Matrix Spike | T | Solid | 7471A | 280-151880 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-151846** | | | | | |
| 280-36891-1 | J1R4F8 | T | Solid | D-2216 | |
| 280-36891-1DU | Duplicate | T | Solid | D-2216 | |
| **Prep Batch: 280-151922** | | | | | |
| 280-36891-1 | J1R4F8 | S | Solid | DI Leach | |
| 280-36891-1DU | Duplicate | S | Solid | DI Leach | |
| **Analysis Batch:280-151938** | | | | | |
| LCS 280-151938/4 | Lab Control Sample | T | Water | 9045C | |
| LCSD 280-151938/5 | Lab Control Sample Duplicate | T | Water | 9045C | |
| 280-36891-1 | J1R4F8 | S | Solid | 9045C | |
| 280-36891-1DU | Duplicate | S | Solid | 9045C | |
| **Prep Batch: 280-151999** | | | | | |
| LCS 280-151999/2-A | Lab Control Sample | T | Solid | 9030B | |
| MB 280-151999/1-A | Method Blank | T | Solid | 9030B | |
| 280-36891-1 | J1R4F8 | T | Solid | 9030B | |
| 280-36891-1DU | Duplicate | T | Solid | 9030B | |
| 280-36891-1MS | Matrix Spike | T | Solid | 9030B | |
| **Prep Batch: 280-152032** | | | | | |
| LCS 280-152032/2-A | Lab Control Sample | S | Solid | DI Leach | |
| MB 280-152032/1-A | Method Blank | S | Solid | DI Leach | |
| 280-36891-1 | J1R4F8 | S | Solid | DI Leach | |
| 280-36891-1DU | Duplicate | S | Solid | DI Leach | |
| 280-36891-1MS | Matrix Spike | S | Solid | DI Leach | |
| **Prep Batch: 280-152089** | | | | | |
| LCS 280-152089/1-A | Lab Control Sample | S | Solid | DI Leach | |
| MB 280-152089/2-A | Method Blank | S | Solid | DI Leach | |
| 280-36891-1 | J1R4F8 | S | Solid | DI Leach | |
| 280-36891-1DU | Duplicate | S | Solid | DI Leach | |
| 280-36891-1MS | Matrix Spike | S | Solid | DI Leach | |
| **Analysis Batch:280-152094** | | | | | |
| LCS 280-152032/2-A | Lab Control Sample | S | Solid | 353.2 | |
| MB 280-152032/1-A | Method Blank | S | Solid | 353.2 | |
| 280-36891-1 | J1R4F8 | S | Solid | 353.2 | |
| 280-36891-1DU | Duplicate | S | Solid | 353.2 | |
| 280-36891-1MS | Matrix Spike | S | Solid | 353.2 | |

Client: Washington Closure Hanford

Job Number: 280-36891-1
Sdg Number: JP0428

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 280-152095** | | | | | |
| HLCS 280-152095/1-A | High Level Control Sample | T | Solid | 9012A | |
| LCS 280-152095/3-A | Lab Control Sample | T | Solid | 9012A | |
| LLCS 280-152095/2-A | Low Level Control Sample | T | Solid | 9012A | |
| MB 280-152095/4-A | Method Blank | T | Solid | 9012A | |
| 280-36891-1 | J1R4F8 | T | Solid | 9012A | |
| 280-36891-1DU | Duplicate | T | Solid | 9012A | |
| 280-36891-1MS | Matrix Spike | T | Solid | 9012A | |
| **Analysis Batch:280-152234** | | | | | |
| LCS 280-151999/2-A | Lab Control Sample | T | Solid | 9034 | 280-151999 |
| MB 280-151999/1-A | Method Blank | T | Solid | 9034 | 280-151999 |
| 280-36891-1 | J1R4F8 | T | Solid | 9034 | 280-151999 |
| 280-36891-1DU | Duplicate | T | Solid | 9034 | 280-151999 |
| 280-36891-1MS | Matrix Spike | T | Solid | 9034 | 280-151999 |
| **Analysis Batch:280-152307** | | | | | |
| HLCS 280-152095/1-A | High Level Control Sample | T | Solid | 9012A | 280-152095 |
| LCS 280-152095/3-A | Lab Control Sample | T | Solid | 9012A | 280-152095 |
| LLCS 280-152095/2-A | Low Level Control Sample | T | Solid | 9012A | 280-152095 |
| MB 280-152095/4-A | Method Blank | T | Solid | 9012A | 280-152095 |
| 280-36891-1 | J1R4F8 | T | Solid | 9012A | 280-152095 |
| 280-36891-1DU | Duplicate | T | Solid | 9012A | 280-152095 |
| 280-36891-1MS | Matrix Spike | T | Solid | 9012A | 280-152095 |
| **Analysis Batch:280-152460** | | | | | |
| LCS 280-152089/1-A | Lab Control Sample | S | Solid | 9056M | |
| MB 280-152089/2-A | Method Blank | S | Solid | 9056M | |
| 280-36891-1 | J1R4F8 | S | Solid | 9056M | |
| 280-36891-1DU | Duplicate | S | Solid | 9056M | |
| 280-36891-1MS | Matrix Spike | S | Solid | 9056M | |
| **Analysis Batch:280-152461** | | | | | |
| LCS 280-152089/1-A | Lab Control Sample | S | Solid | 9056M | |
| MB 280-152089/2-A | Method Blank | S | Solid | 9056M | |
| 280-36891-1 | J1R4F8 | S | Solid | 9056M | |
| 280-36891-1DU | Duplicate | S | Solid | 9056M | |
| 280-36891-1MS | Matrix Spike | S | Solid | 9056M | |

**Report Basis**
S = Soluble
T = Total