0096433

# SAF-RC-149
# 300 Area Field Remediation – Soil In-Process
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt H4-21 KW 5/17/11
INITIAL/DATE

**COMMENTS:**

**SDG J01087 SAF-RC-149**

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

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

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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* 31 *Pages*

**Report No.: 46456**

**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. |
|---|---|---|---|---|---|---|
| J01087 | RC-149 | J1CYF8 | J1D190622-1 | MG8MT1AA | 9MG8MT10 | 1110181 |
| | | J1CYF8 | J1D190622-1 | MG8MT1AC | 9MG8MT10 | 1110184 |
| | | J1CYF9 | J1D190622-2 | MG8M21AA | 9MG8M210 | 1110181 |
| | | J1CYF9 | J1D190622-2 | MG8M21AC | 9MG8M210 | 1110184 |

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

May 4, 2011

Attention: Joan Kessner

| | | |
|---|---|---|
| SAF Number | : | RC-149 |
| Date SDG Closed | : | April 19, 2011 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Soil |
| SDG Number | : | J01087 |
| Data Deliverable | : | 15– Day / Summary |

## CASE NARRATIVE

### I. Introduction

On April 19, 2011 two soil samples were received at TestAmerica for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

| WCH ID# | TARL ID# | MATRIX | DATE OF RECEIPT |
|---|---|---|---|
| J1CYF8 | MG8MT | SOIL | 4/19/11 |
| J1CYF9 | MG8M2 | SOIL | 4/19/11 |

### II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

### III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

**Gas Proportional Counting**
Gross Alpha by method RL-GPC-001
Gross Beta by method RL-GPC-001

### 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 recovery was slightly below the acceptance criteria on the original count; the LCS was re-counted for an acceptable yield. Except as noted, the LCS, batch blank, samples and sample duplicate (J1CYF8) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (J1CYF9) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar
Project Manager

## Drinking Water Method Cross References

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

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

## Uncertainty Estimation

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

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

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

## Report Definitions

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

# Sample Results Summary

Date: 04-May-11

## TestAmerica TARL

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

**Report No. :** 46456

**SDG No:** J01087

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| **1110181** | **9310_ALPHABETA_GPC** | | | | | | | | |
| | **J1CYF8** | | | | | | | | |
| | MG8MT1AA | ALPHA | 4.21E+00 +- 3.0E+00 | | pCi/g | 100% | 3.75E+00 | 1.00E+01 | |
| | **J1CYF8 DUP** | | | | | | | | |
| | MG8MT1AD | ALPHA | 9.73E+00 +- 4.9E+00 | | pCi/g | 100% | 5.47E+00 | 1.00E+01 | 79.2 |
| | **J1CYF9** | | | | | | | | |
| | MG8M21AA | ALPHA | 1.41E+01 +- 5.8E+00 | | pCi/g | 100% | 5.01E+00 | 1.00E+01 | |
| **1110184** | **9310_ALPHABETA_GPC** | | | | | | | | |
| | **J1CYF8** | | | | | | | | |
| | MG8MT1AC | BETA | 3.02E+01 +- 5.7E+00 | | pCi/g | 100% | 4.45E+00 | 1.50E+01 | |
| | **J1CYF9** | | | | | | | | |
| | MG8M21AC | BETA | 2.65E+01 +- 5.3E+00 | | pCi/g | 100% | 4.92E+00 | 1.50E+01 | |
| | **J1CYF9 DUP** | | | | | | | | |
| | MG8M21AD | BETA | 2.50E+01 +- 5.1E+00 | | pCi/g | 100% | 4.95E+00 | 1.50E+01 | 5.6 |

**No. of Results:** 6

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

rptSTLRchSaSum
mary2 V5.2.12
A2002

# QC Results Summary

## TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

**Date:** 04-May-11

**Report No. :** 46456

**SDG No.:** J01087

| Batch Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDC\|MDA |
|---|---|---|---|---|---|---|---|---|
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 1110181 BLANK QC, | | | | | | | | |
| MG87E1AA | ALPHA | 3.58E-02 +- 9.6E-01 | U | pCi/g | 100% | | | 2.49E+00 |
| 1110181 LCS, | | | | | | | | |
| MG87E2AC | ALPHA | 7.85E+01 +- 1.8E+01 | | pCi/g | 100% | 96% | 0.0 | 3.00E+00 |
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 1110184 BLANK QC, | | | | | | | | |
| MG87L1AA | BETA | 4.05E+00 +- 2.1E+00 | | pCi/g | 100% | | | 3.81E+00 |
| 1110184 LCS, | | | | | | | | |
| MG87L1AC | BETA | 6.69E+01 +- 1.0E+01 | | pCi/g | 100% | 99% | 0.0 | 5.22E+00 |

**No. of Results:** 4

**TestAmerica**

**rptSTLRchQcSummary V5.2.12 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: 04-May-11

| | | | | | |
|---|---|---|---|---|---|
| Lab Name: | TestAmerica | SDG: | J01087 | Collection Date: | 4/18/2011 12:50:00 PM |
| Lot-Sample No.: | J1D190622-1 | Report No. : | 46456 | Received Date: | 4/19/2011 4:05:00 PM |
| Client Sample ID: | J1CYF8 | COC No. : | RC-149-072 | Matrix: | SOIL |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Batch: 1110181 | 9310_ALPHABETA_GPC | | | Work Order: | MG8MT1AA | | Report DB ID: | 9MG8MT10 | | | | |
| ALPHA | ***4.21E+00*** | | 2.9E+00 | 3.0E+00 | 3.75E+00 | pCi/g | 100% | *(1.1)* | 5/2/11 05:26 p | | 0.0505 | GPC10A |
| | | | | | | 1.35E+00 | 1.00E+01 | *(2.8)* | | | g | |
| Batch: 1110184 | 9310_ALPHABETA_GPC | | | Work Order: | MG8MT1AC | | Report DB ID: | 9MG8MT10 | | | | |
| BETA | ***3.02E+01*** | | 4.3E+00 | 5.7E+00 | 4.45E+00 | pCi/g | 100% | *(6.8)* | 5/2/11 02:53 p | | 0.2005 | GPC27A |
| | | | | | | 2.06E+00 | 1.50E+01 | *(10.6)* | | | g | |

No. of Results: 2 Comments:

TestAmerica
rptSTLRchSample
V5.2.12 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: 04-May-11

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica | **SDG:** | J01087 | **Collection Date:** | 4/18/2011 2:25:00 PM |
| **Lot-Sample No.:** | J1D190622-2 | **Report No. :** | 46456 | **Received Date:** | 4/19/2011 4:05:00 PM |
| **Client Sample ID:** | J1CYF9 | **COC No. :** | RC-149-072 | **Matrix:** | SOIL |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 1110181 | 9310_ALPHABETA_GPC | | | **Work Order:** MG8M21AA | | | **Report DB ID:** 9MG8M210 | | | | | |
| ALPHA | ***1.41E+01*** | | 5.0E+00 | 5.8E+00 | 5.01E+00 | pCi/g | 100% | *(2.8)* | 5/2/11 05:26 p | | 0.0503 | GPC10C |
| | | | | | | 1.99E+00 | 1.00E+01 | *(4.9)* | | | g | |
| **Batch:** 1110184 | 9310_ALPHABETA_GPC | | | **Work Order:** MG8M21AC | | | **Report DB ID:** 9MG8M210 | | | | | |
| BETA | ***2.65E+01*** | | 4.2E+00 | 5.3E+00 | 4.92E+00 | pCi/g | 100% | *(5.4)* | 5/2/11 02:53 p | | 0.2006 | GPC27B |
| | | | | | | 2.29E+00 | 1.50E+01 | *(10.)* | | | g | |

**No. of Results:** 2 **Comments:**



TestAmerica Laboratories, Inc.

TestAmerica
rptSTLRchSample
V5.2.12 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: 04-May-11

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| Lab Name: | TestAmerica | SDG: | J01087 | Collection Date: | 4/18/2011 12:50:00 PM |
| Lot-Sample No.: | J1D190622-1 | Report No. : | 46456 | Received Date: | 4/19/2011 4:05:00 PM |
| Client Sample ID: | J1CYF8 DUP | COC No. : | RC-149-072 | Matrix: | SOIL |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Batch: 1110181 | 9310_ALPHABETA_GPC | | | Work Order: MG8MT1AD | | Report DB ID: MG8MT1DR | | | Orig Sa DB ID: 9MG8MT10 | | | |
| ALPHA | 9.73E+00 | | 4.4E+00 | 4.9E+00 | 5.47E+00 | pCi/g | 100% | (1.8) | 5/2/11 05:26 p | | 0.0502 | GPC10B |
| | 4.21E+00 | | RPD | 79.2 | | 1.00E+01 | | (4.) | | | g | |

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.

rptSTLRchDupV5.2 .12 A2002 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

# FORM II

Date: 04-May-11

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica** | **SDG:** | J01087 | **Collection Date:** | 4/18/2011 2:25:00 PM |
| **Lot-Sample No.:** | **J1D190622-2** | **Report No. :** | 46456 | **Received Date:** | 4/19/2011 4:05:00 PM |
| **Client Sample ID:** | **J1CYF9 DUP** | **COC No. :** | RC-149-072 | **Matrix:** | SOIL |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Batch: 1110184 | 9310_ALPHABETA_GPC | | | Work Order: MG8M21AD | | Report DB ID: MG8M21DR | | | Orig Sa DB ID: 9MG8M210 | | | |
| BETA | 2.50E+01 | | 4.1E+00 | 5.1E+00 | 4.95E+00 | pCi/g | 100% | (5.1) | 5/2/11 02:53 p | | 0.2006 | GPC27C |
| | 2.65E+01 | | RPD 5.6 | | | 1.50E+01 | | (9.7) | | | g | |

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.

rptSTLRchDupV5.2 .12 A2002 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

# FORM II

## BLANK RESULTS

Date: 04-May-11

Lab Name: TestAmerica

Matrix: SOIL

SDG: J01087

Report No. : 46456

| Parameter | Result | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA , | Rpt Unit, CRDL | Yield | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 1110181 | 9310_ALPHABETA_GPC | | | **Work Order:** MG87E1AA | | | **Report DB ID:** MG87E1AB | | | | | |
| ALPHA | 3.58E-02 | U | 9.6E-01 | 9.6E-01 | 2.49E+00 | pCi/g | 100% | 0.01 | 5/2/11 05:26 p | | 0.0572 | GPC10D |
| | | | | | 1.00E+00 | 1.00E+01 | | 0.07 | | | g | |
| **Batch:** 1110184 | 9310_ALPHABETA_GPC | | | **Work Order:** MG87L1AA | | | **Report DB ID:** MG87L1AB | | | | | |
| BETA | 4.05E+00 | | 2.0E+00 | 2.1E+00 | 3.81E+00 | pCi/g | 100% | (1.1) | 5/2/11 02:53 p | | 0.2 | GPC27D |
| | | | | | 1.77E+00 | 1.50E+01 | | (3.8) | | | g | |

No. of Results: 2 Comments:



TestAmerica
rptSTLRchBlank
V5.2.12 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: 04-May-11

**Lab Name:** TestAmerica

**Matrix:** SOIL

**SDG:** J01087

**Report No. :** 46456

| Parameter | Result | Qual | Count Error ( 2 s) | Total Uncert( 2 s) | MDC\|MDA | Report Unit | Yield | Expected | Expected Uncert | Recovery, Bias | Analysis, Prep Date | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 1110181 | 9310_ALPHABETA_GPC | | | **Work Order:** | MG87E2AC | | **Report DB ID:** | MG87E2CS | | | | | |
| ALPHA | 7.85E+01 | | 7.7E+00 | 1.8E+01 | 3.00E+00 | pCi/g | 100% | 8.20E+01 | 8.3E-01 | 96% | 5/4/11 05:10 a | 0.0551 | GPC10C |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.0 | | g | |
| **Batch:** 1110184 | 9310_ALPHABETA_GPC | | | **Work Order:** | MG87L1AC | | **Report DB ID:** | MG87L1CS | | | | | |
| BETA | 6.69E+01 | | 5.6E+00 | 1.0E+01 | 5.22E+00 | pCi/g | 100% | 6.72E+01 | 2.6E+00 | 99% | 5/2/11 02:53 p | 0.2028 | GPC28A |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.0 | | g | |

**No. of Results:** 2 **Comments:**



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

rptSTLRchLcs
V5.2.12 A2002

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# Data Review/Verification Checklist
RADIOCHEMISTRY, First Level Review

5/4/2011 11:22:24 AM

**Lot No., Due Date:** J1D190622; 05/04/2011
**Client, Site:** 127642; S00N063A00 HANFORD
**QC Batch No., Method Test:** 1110181; RALPHA-A Alpha by GPC-Am
**SDG, Matrix:** J01087; 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:
Please see NCM # 10-18291

First Level [signature] Date 5-4-11

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist
## RADIOCHEMISTRY
### Second Level Review

**Batch Number:** 1110181

| 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 = 10.0pCi/g
Se NCM #-10-18591

Second Level Review: [signature] Date: 5/4/11

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

# Clouseau
# Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-18291**
NCM Initiated By: John Norton
Date Opened: 05/04/2011
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Counting
Tests: Alpha by GPC-Am
Lot #'s (Sample #'s): J1D190622 (1,2), J1D200000 (181),
QC Batches: 1110181,

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

## Problem Description / Root Cause

| Name | Date | Description |
|---|---|---|
| John Norton | 05/04/2011 | The LCS yield was low at 69%. |

## Corrective Action

| Name | Date | Corrective Action |
|---|---|---|
| John Norton | 05/04/2011 | The LCS was re-counted for an acceptable yield of 96%. |

## 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: 5/4/2011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

5/3/2011 1:52:50 PM

**Lot No., Due Date:** J1D190622; 05/04/2011
**Client, Site:** 127642; S00N063A00 HANFORD
**QC Batch No., Method Test:** 1110184; RBETA-SR Beta by GPC-Sr/Y
**SDG, Matrix:** J01087; 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: | |

Thomas D Mc[illegible]

**First Level** _____ **Date** 5/3/11

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist
## RADIOCHEMISTRY
### Second Level Review

**Batch Number:** 1110184

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | X RW 5/4/11 | | ✓ |
| 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: [signature] Date: 5/4/11

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

1 of 1

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-149-072 | Page ~~5 of 8~~ DH 4-18/11 |
|---|---|---|---|
| **Collector** Q. Stowe | **Company Contact** Joan Kessner; **Telephone No.** 509-375-4688 | **Project Coordinator** KESSNER, JH | **Price Code** 8L; **Data Turnaround** ~~21 Days~~ 15 |
| **Project Designation** 300 Area Field Remediation - Soil In-Process | **Sampling Location** 300-15 | **SAF No.** RC-149 | |
| **Ice Chest No.** N/A | **Field Logbook No.** EL-1395-17; **COA** R300152600 | **Method of Shipment** Hand Deliever | |
| **Shipped To** TestAmerica Incorporated, Richland | **Offsite Property No.** N/A | **Bill of Lading/Air Bill No.** N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potential Radioactive* L DOT Limit AJ 4-19-11

**Special Handling and/or Storage**
*Cool 4C*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Preservation** | None | None | | | | | | | | | | |
| **Type of Container** | G/P | G/P | | | | | | | | | | |
| **No. of Container(s)** | 1 | 1 | | | | | | | | | | |
| **Volume** | 60mL | 60g | | | | | | | | | | |
| **SAMPLE ANALYSIS** | Gross Alpha & Gross Beta | RCF GEA Shipping Screen | | | | | | | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1CYF8 | SOIL | 4.18.11 | 1250 | X | | MG&M | | | | | | | RCF |
| J1CYF9 | SOIL | 4.18.11 | 1425 | X | | MG&M | | | | | | | 27852 |
| J1CYH0 | SOIL | | | | | | | | | | | | 27853 |
| J1CYH1 | SOIL | | | | | | | | | | | | |
| J1CYH2 | SOIL | | | | | | | | | | | | |

DH 4/18/11

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| Quincy Stowe | 4/18/11 1520 | D. Dutteidelberg | 1520 4-18-11 |
| D. Dutteidelberg | 1600 4-18-11 | A. Freier | 1600 4-18-11 |
| A. Freier | WCH 1605 4-19-11 | TALL Angel Garcia | 1605 4-19-11 |
| | | | |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**
(*)Extract and hold TCLP Metals. TCLP SVOA. TCLP VOA. Contact Joan Kessner before analyzing.

Q27038 4/25/11
~~SDG 50104~~
Due: ~~5-09-11~~ 5/20/11
5/04/11
SDG: J01087

J1D190622

REVIEWED BY JEB
DATE 4-19-11

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 |

WCH-EE-011

Apex™

Analysis Report for RCF27852

J1CYF8 SAF:RC-149 FF2/300-15 SOIL SAMPLE

Non-Reg

# GAMMA SPECTRUM ANALYSIS

| | |
|---|---|
| Sample Identification | : RCF27852 |
| Sample Description | : J1CYF8 SAF:RC-149 FF2/300-15 SOIL SAMPLE |
| Sample Type | : 80g pillbox |
| Sample Size | : 7.200E+01 grams |
| Facility | : Default |
| Sample Taken On | : 4/18/2011 12:50:00PM |
| Acquisition Started | : 4/19/2011 10:16:28AM |
| Procedure | : 80 Gram Pill Box |
| Operator | : RCT |
| Detector Name | : GEA2703 |
| Geometry | : 80 Gram Pill Box |
| Live Time | : 3600.0 seconds |
| Real Time | : 3601.1 seconds |
| Dead Time | : 0.03 % |
| 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 | : 2/2/2011 |
| Efficiency Calibration Used Done On | : 2/23/2011 |
| Efficiency Calibration Description | : GEA2703 80gPB 020311EC SN82752-238 |
| Sample Number | : 13758 |

# INTERFERENCE CORRECTED REPORT

| Nuclide Name | Nuclide Id Confidence | Wt mean Activity (pCi/grams) | Wt mean Activity Uncertainty | Comments |
|---|---|---|---|---|
| K-40 | 0.989 | 1.07E+01 | 2.41E+00 | |
| U-235 | 0.546 | 9.19E-02 | 8.88E-02 | MDA <1.43E-01 |
| U-238d | 0.333 | 1.68E+00 | 1.07E+00 | MDA <1.69E+00 |

Apex™

Analysis Report for RCF27853

J1CYF9 SAF:RC-149 FF2/300-15 SOIL SAMPLE

Non-Reg

# GAMMA SPECTRUM ANALYSIS

| | |
|---|---|
| Sample Identification | : RCF27853 |
| Sample Description | : J1CYF9 SAF:RC-149 FF2/300-15 SOIL SAMPLE |
| Sample Type | : 80g pillbox |
| Sample Size | : 7.700E+01 grams |
| Facility | : Default |
| Sample Taken On | : 4/18/2011 2:25:00PM |
| Acquisition Started | : 4/19/2011 10:16:35AM |
| Procedure | : 80 Gram Pill Box |
| Operator | : RCT |
| Detector Name | : PGTLYNX |
| Geometry | : 80 Gram Pill Box |
| Live Time | : 3600.0 seconds |
| Real Time | : 3601.8 seconds |
| Dead Time | : 0.05 % |
| 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 | : 3/3/2011 |
| Efficiency Calibration Used Done On | : 3/11/2011 |
| Efficiency Calibration Description | : PGTL 80gPB 030811EC SN82752-238 |
| Sample Number | : 13759 |

# INTERFERENCE CORRECTED REPORT

| Nuclide Name | | Nuclide Id Confidence | Wt mean Activity (pCi/grams) | Wt mean Activity Uncertainty | Comments |
|---|---|---|---|---|---|
| K-40 | | 1.000 | 1.55E+01 | 2.55E+00 | |
| PB-212 | | 0.709 | 7.14E-01 | 1.32E-01 | |
| RA-226d | @ | 0.675 | 3.48E-01 | 1.05E-01 | |
| TH-232d | | 0.821 | 5.46E-01 | 1.04E-01 | |
| U-235 | | 0.544 | 7.58E-02 | 8.61E-02 | |

< MDA 1.38E-01

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Sample Check-in List

Date/Time Received: 4.19.11 1605 GM Screen Result (out) .3 (in) .4 Initials RR

Client: WCH SDG #: ~~381087~~ NA [ ] SAF #: RC-149 NA [ ]

Work Order Number: J1D190622 Chain of Custody # RC-149-072

Shipping Container ID: HAND Delivered NA [ ] Air Bill # _____ NA [✓]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals on shipping container intact? Yes [RR] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [RR] No [ ] No Custody Seal [ ]
3. Chain of Custody record present? Yes [RR] No [ ]
4. Cooler temperature: Amb NA [ ] 5.Vermiculite/packing materials is NA [ ] Wet [ ] Dry [RR]

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 2 Samples @ 1 per Container
7. Sample holding times exceeded? NA [ ] Yes [ ] No [RR]
8. Samples have:
   - RR tape
   - RR custody seals
   - ____ hazard labels
   - RR appropriate sample lab

   J1D190622
9. Samples:
   - RR are in good condition Soil
   - ____ are broken
   - ____ are leaking
   - ____ have air bubbles (Only for samples requiring no head space)
10. Sample pH appropriate for analysis requested Yes [ ] No [ ] N/A [RR] (Note discrepancies in #13)
    (If acidification necessary, then document sample ID, initial pH, amount of $HNO_3$ added and pH after addition)

    RPL ID # of preservative used : N/A
11. Sample Location, Sample Collector Listed? * Yes [RR] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [RR]
13. Description of anomalies (include sample numbers): NA [✓]

See other side for additional comments

Sample Custodian: Ryn Rodgers Date: 4.19.11 1605

Client Informed on _____ by _____ Person contacted _____

[✓] No action necessary; process as is

Project Manager [signature] Date 4/20/11

LS-023, Rev. 12, 10/10

5/2/2011 2:03:37 PM

# Sample Preparation/Analysis

Balance Id:1117411003

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

Pipet #:

AnalyDueDate: 05/04/2011 87 J01094 2W 5/4/11

Sep1 DT/Tm Tech:

Batch: 1110181 SOIL pCi/g PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 1110181 AYS7, 1110184 BBS8,

Prep Tech: BockJ

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 MG8MT-1-AA<br>J1D190622-1-SAMP<br>04/18/2011 12:50 | | 0.0505g,in<br>AmtRec: 1XJAR60MLG #Containers: 1 | | | 50.5 | 100 | 10A | 1816 | 5/2/11 | |
| 2 MG8MT-1-AD-X<br>J1D190622-1-DUP<br>04/18/2011 12:50 | | 0.0502g,in<br>AmtRec: 1XJAR60MLG #Containers: 1 | | | 50.2 | | 10B | | | |
| 3 MG8M2-1-AA<br>J1D190622-2-SAMP<br>04/18/2011 14:25 | | 0.0503g,in<br>AmtRec: 1XJAR60MLG #Containers: 1 | | | 50.3 | | 10C | | | |
| 4 MG87E-1-AA-B<br>J1D200000-181-BLK<br>04/20/2011 10:05 pd | | 0.0572g,in<br>AmtRec: #Containers: 1 | | | 1.3950g<br>1.3950g<br>0mg | | 10A | | | |
| 5 MG87E-1-AC-C<br>J1D200000-181-LCS<br>04/20/2011 10:05 pd | | 0.0551g,in<br>AmtRec: #Containers: 1 | ASD5110<br>04/06/11,pd<br>04/04/05 | | 1.3854g<br>1.3849g<br>0.5mg | | 10A | 0452 | 5/3/11 | |

Comments:

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

MG8MT1AA-SAMP Constituent List:
ALPHA RDL:1.00E+01 pCi/g LCL: UCL: RPD:



TestAmerica Laboratories, Inc.

# Sample Preparation/Analysis

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

Balance Id:1117411003
Pipet #: _____

AnalyDueDate: 05/04/2011

Sep1 DT/Tm Tech:

Batch: 1110181 pCi/g
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,BockJ

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

```
MG87E1AA-BLK:
  ALPHA        RDL:1.00E+01    pCi/g    LCL:        UCL:        RPD:
MG87E1AC-LCS:
  Am-241       RDL:            pCi/g    LCL:70      UCL:130     RPD:35
MG8MT1AA-SAMP Calc Info:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MG87E1AA-BLK:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MG87E1AC-LCS:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
```



TestAmerica Laboratories, Inc.

5/4/2011 11:20:36 AM

# ICOC Fraction Transfer/Status Report

ByDate: 5/4/2010, 5/9/2011, Batch: '1110181', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 1110181 | | | | | | |
| AC | | Rev1C | BouslaughP | 4/20/2011 11:24:36 | | |
| SC | | | Maucieris | IsBatched | 4/20/2011 10:17:06 AM | ICOC_RADCALC v4.8.49 |
| SC | | | BouslaughP | Prep1C | 4/20/2011 11:24:36 AM | RL-PRP-003 REVISION 1 |
| SC | | | WoodT | InPrep | 4/21/2011 12:17:31 AM | RL-PRP-003 REVISION 1 |
| SC | | | WoodT | Prep1C | 4/21/2011 12:18:09 AM | RL-PRP-003 REVISION 1 |
| SC | | | BockJ | InPrep | 5/2/2011 2:02:01 PM | RL-GPC-007 REVISION 1 |
| SC | | | BockJ | Prep2C | 5/2/2011 2:05:12 PM | RL-GPC-007 REVISION 1 |
| SC | | | ClarkR | InCnt1 | 5/2/2011 2:24:32 PM | RL-CI-006 REVISION 1 |
| SC | | | BlackCL | CalcC | 5/3/2011 9:27:25 AM | RL-CI-006 REVISION 1 |
| SC | | | ClarkR | InCnt1 | 5/3/2011 1:58:17 PM | RL-CI-006 REVISION 1 |
| SC | | | ClarkR | CalcC | 5/4/2011 8:24:22 AM | RL-CI-006 REVISION 1 |
| SC | | | nortonj | Rev1C | 5/4/2011 11:20:31 AM | RL-DR-001 Rev 2 |
| AC | | | WoodT | 4/21/2011 12:17:31 | | |
| AC | | | WoodT | 4/21/2011 12:18:09 | | |
| AC | | | BockJ | 5/2/2011 2:02:01 PM | | |
| AC | | | BockJ | 5/2/2011 2:05:12 PM | | |
| AC | | | ClarkR | 5/2/2011 2:24:32 PM | | |
| AC | | | BlackCL | 5/3/2011 9:27:25 AM | | |
| AC | | | ClarkR | 5/3/2011 1:58:17 PM | | |
| AC | | | ClarkR | 5/4/2011 8:24:22 AM | | |
| AC | | | nortonj | 5/4/2011 11:20:31 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 10

ICOCFractions v4.8.44

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

***RE-COUNT REQUEST***

DUE DATE 5-4-11

CUSTOMER WCH

ANALAYSIS Gross Alpha

MATRIX

LOT NUMBER

SAMPLE DELIVERY GROUP

OLD BATCH NUMBER 1110181

NEW BATCH NUMBER SAME

| LAB SAMPLE ID | CLIENT ID | REASON FOR REQUEST & ANALYSIS COMMENTS |
|---|---|---|
| 1) | | |
| 2) | | |
| 3) | | |
| 4) | | |
| 5) MG87E | IAC | Low (69%) LCS |
| 6) | | |
| 7) | | |
| 8) | | |
| 9) | | |
| 10) | | |
| 11) | | |
| 12) | | |
| 13) | | |
| 14) | | |
| 15) | | |
| 16) | | |
| 17) | | |
| 18) | | |
| 19) | | |
| 20) | | |

RC-126, 12/07, Rev 5

5/3/2011 1:03:14 PM

# Sample Preparation/Analysis

Balance Id:1117411003

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: 05/04/2011

Sep1 DT/Tm Tech:

Batch: 1110181 SOIL pCi/g PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 1110181 AYS7, 1110184 BBS8,

Prep Tech: BockJ

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 MG8MT-1-AA<br>J1D190622-1-SAMP<br>04/18/2011 12:50 | | 0.0505g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | | | | Scr: | Alpha: | Beta: |
| 2 MG8MT-1-AD-X<br>J1D190622-1-DUP<br>04/18/2011 12:50 | | 0.0502g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | | | | Scr: | Alpha: | Beta: |
| 3 MG8M2-1-AA<br>J1D190622-2-SAMP<br>04/18/2011 14:25 | | 0.0503g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | | | | Scr: | Alpha: | Beta: |
| 4 MG87E-1-AA-B<br>J1D200000-181-BLK<br>04/20/2011 10:05 pd | | 0.0572g,in<br>AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | Beta: |
| 5 MG87E-1-AC-C<br>J1D200000-181-LCS<br>04/20/2011 10:05 pd | | 0.0551g,in<br>AmtRec: | ASD5110<br>04/06/11,pd<br>#Containers: 1 | | | | | Scr: | Alpha: | Beta: |
| 6 MG87E-2-AC-C<br>J1D200000-181-LCS<br>05/03/2011 13:01 pd | | 0.0551<br>AmtRec: | ASD5110<br>4/6/11<br>#Containers: 1 | | 1.38749 100<br>1.38499<br>2.5 mg | | ICC | Ucl | 5/4/11<br>Scr: | Alpha: | Beta: |



Test America Laboratories, Inc.

# Sample Preparation/Analysis

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

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

AnalyDueDate: 05/04/2011

Batch: 1110181 pCi/g
SEQ Batch, Test: None

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

Comments:

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

MG8MT1AA-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| ALPHA | RDL:1.00E+01 | pCi/g | LCL: | UCL: | RPD: |
| MG87E1AA-BLK: | | | | | |
| ALPHA | RDL:1.00E+01 | pCi/g | LCL: | UCL: | RPD: |
| MG87E1AC-LCS: | | | | | |
| Am-241 | RDL: | pCi/g | LCL:70 | UCL:130 | RPD:35 |
| MG87E2AC-LCS: | | | | | |

MG8MT1AA-SAMP Calc Info:

| | | | | |
|---|---|---|---|---|
| Uncert Level (#s).: 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |
| MG87E1AA-BLK: | | | | |
| Uncert Level (#s).: 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |
| MG87E1AC-LCS: | | | | |
| Uncert Level (#s).: 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |
| MG87E2AC-LCS: | | | | |
| Uncert Level (#s).: 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |



TestAmerica Laboratories, Inc.

5/2/2011 2:06:23 PM

# Sample Preparation/Analysis

Balance Id:1117411003

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

Pipet #: _____

AnalyDueDate: 05/04/2011 J01 087

Sep1 DT/Tm Tech:

Batch: 1110184 SOIL pCi/g PM, Quote: RW2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

RW 5/4/11

Prep Tech: BockJ

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 MG8MT-1-AC<br>J1D190622-1-SAMP<br>04/18/2011 12:50 | | 0.2005g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | 200.5 | 50 | 27A<br>Scr: | 1517<br>Alpha: | 5/2/11 m<br>Beta: | |
| 2 MG8M2-1-AC<br>J1D190622-2-SAMP<br>04/18/2011 14:25 | | 0.2006g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | 200.4 | | 27B<br>Scr: | Alpha: | Beta: | |
| 3 MG8M2-1-AD-X<br>J1D190622-2-DUP<br>04/18/2011 14:25 | | 0.2006g,in<br>AmtRec: 1XJAR60MLG | #Containers: 1 | | 200.6 | | 27C<br>Scr: | Alpha: | Beta: | |
| 4 MG87L-1-AA-B<br>J1D200000-184-BLK<br>04/20/2011 10:05 pd | | 0.20g,in<br>AmtRec: | #Containers: 1 | | 1.3762 g<br>1.3764 g<br>0 mg | | 28B<br>Scr: | Alpha: | Beta: | |
| 5 MG87L-1-AC-C<br>J1D200000-184-LCS<br>04/20/2011 10:05 pd | | 0.2028g,in<br>AmtRec: | BESD1735<br>03/31/11,pd<br>10/01/01 r<br>#Containers: 1 | | 1.3744 g<br>1.3741 g<br>0.3 mg | | 28A<br>Scr: | Alpha: | Beta: | |

**Comments:**

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

MG8MT1AC-SAMP Constituent List:
BETA RDL:1.50E+01 pCi/g LCL: UCL: RPD:



TestAmerica Laboratories, Inc.

29

5/2/2011 2:06:24 PM

# Sample Preparation/Analysis

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

Balance Id:1117411003

Pipet #: _____

AnalyDueDate: 05/04/2011

Sep1 DT/Tm Tech:

**Batch: 1110184** pCi/g

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,BockJ

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

```
MG87L1AA-BLK:
  BETA        RDL:1.50E+01    pCi/g    LCL:        UCL:        RPD:
MG87L1AC-LCS:
  Sr-90       RDL:            pCi/g    LCL:70      UCL:130     RPD:35
MG8MT1AC-SAMP Calc Info:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MG87L1AA-BLK:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
MG87L1AC-LCS:
     Uncert Level (#s).: 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B
```



TestAmerica Laboratories, Inc.

5/3/2011 1:40:28 PM

# ICOC Fraction Transfer/Status Report

ByDate: 5/3/2010, 5/8/2011, Batch: '1110184', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 1110184 | | | | | | |
| AC | | Rev1C | WoodT | 4/21/2011 12:17:38 | | |
| SC | | | Maucieris | IsBatched | 4/20/2011 10:17:21 AM | ICOC_RADCALC v4.8.49 |
| SC | | | WoodT | InPrep | 4/21/2011 12:17:38 AM | RL-PRP-003 REVISION 1 |
| SC | | | WoodT | Prep1C | 4/21/2011 12:17:48 AM | RL-PRP-003 REVISION 1 |
| SC | | | BockJ | InPrep | 5/2/2011 2:05:29 PM | RL-PRP-004 REVISION 1 |
| SC | | | BockJ | Prep2C | 5/2/2011 2:06:25 PM | RL-GPC-007 REVISION 1 |
| SC | | | ClarkR | InCnt1 | 5/2/2011 2:24:38 PM | RL-CI-006 REVISION 1 |
| SC | | | DawkinsO | CalcC | 5/2/2011 11:48:34 PM | RL-CI-006 REVISION 1 |
| SC | | | mcginnist | Rev1C | 5/3/2011 1:40:20 PM | RL-DR-001 Rev 2 |
| AC | | | WoodT | 4/21/2011 12:17:48 | | |
| AC | | | BockJ | 5/2/2011 2:05:29 PM | | |
| AC | | | BockJ | 5/2/2011 2:06:25 PM | | |
| AC | | | ClarkR | 5/2/2011 2:24:38 PM | | |
| AC | | | DawkinsO | 5/2/2011 11:48:34 PM | | |
| AC | | | mcginnist | 5/3/2011 1:40:20 PM | | |

*AC: Accepting Entry; SC: Status Change*

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 280-14844-1

SDG Number: J01087

Job Description: SAF# RC-149

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

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Project Manager II
5/12/2011 1:29 PM

Kae E Yoder
Project Manager II
kae.yoder@testamericainc.com
05/12/2011

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.

**TestAmerica Laboratories, Inc.**
TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

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# CASE NARRATIVE

## Client: Washington Closure Hanford

## Project: WASHINGTON CLOSURE HANFORD

## Report Number: 280-14844-1

**SDG #: J01087**
**SAF#: RC-149**

**Date SDG Closed: April 20, 2011**
**Data Deliverable: 15 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J1CYF8 | 280-14844-1 | 6010/7471/1311-6010-7470/300.0/353.2/ 9010/9045/9030/8260A/8270A/8082/ 1311-8260A/1311-8270A | 6010B/7471A/9056M/353.2/ 9012A/9045C/9034/8260B/8270C/8082 |
| J1CYF9 | 280-14844-2 | 6010/7471/1311-6010-7470/300.0/353.2/ 9010/9045/9030/8260A/8270A/8082/ 1311-8260A/1311-8270A | 6010B/7471A/9056M/353.2/ 9012A/9045C/9034/8260B/8270C/8082 |

*The Anions method substitution noted above, as agreed to by all parties, has 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 samples were received on 4/20/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 3.4 C.

Samples J1CYF8 and J1CYF9, requesting TCLP Metals 1311/6010B/7470A, TCLP VOA 1311/8260B and TCLP Semi-VOA 1311/8270C analyses, were leached/extracted and placed on hold, as instructed on the chain-of-custody. On 5/12/2011, the client instructed the laboratory to cancel all requested TCLP analyses.

**GC/MS VOLATILES - SW846 8260B**
The MSD aliquot of the MS/MSD performed on sample J1CYF8 exhibited percent recoveries outside the control limits for Tetrachloroethene and Trichloroethene, and the associated sample results have been flagged "T". In addition, surrogates were recovered outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**GC/MS SEMIVOLATILES - SW846 8270C**
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1CYF8 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

No other anomalies were encountered.

**GC SEMIVOLATILES - SW846 8082 - PCBs**
The laboratory noted that a Sulfuric Acid clean-up and a Mercury clean-up were performed on sample J1CYF8 to reduce matrix interferences.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1CYF8 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

The laboratory noted that samples J1CYF8 and J1CYF9 contained more than one Aroclor component. Results should be considered estimated due to shared peaks.

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1CYF9. The result has been flagged with a "P".

No other anomalies were encountered.

**TOTAL METALS - SW846 6010B/7471A**
Serial dilution of a digestate in batch 280-63486 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Potassium and Manganese are present in the method blank associated with batch 280-63486. Because the concentrations in the method blank are not present at levels greater than the reporting limits, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron, Manganese and Zinc in the Matrix Spike performed on sample J1CYF8; therefore, control limits are not applicable.

The SW846 6010B Matrix Spike performed on sample J1CYF8 exhibited percent recoveries outside the control limits for Calcium and Silicon, and the associated sample results have 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.

The SW846 6010B duplicate analysis of sample J1CYF8 exhibited RPD data outside the control limits for Molybdenum, 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.

The Mercury duplicate analysis of sample J1CYF9 exhibited RPD data outside the control limits, 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 as N**
The duplicate analysis of sample J1CYF8 exhibited RPD data outside the control limits, 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 - SW846 9012A - TOTAL CYANIDE**
No anomalies were encountered.

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

**GENERAL CHEMISTRY - SW846 9056M - ANIONS**
Low levels of Nitrate as N are present in the method blank associated with batch 280-63808. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

No other anomalies were encountered.

**GENERAL CHEMISTRY - SW846 9045C - PH**
No anomalies were encountered.

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | B | Analyte was found in the associated method blank as well as in the sample. |
| | 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. |
| | * | Surrogate exceeds the control limit |
| GC/MS Semi VOA | | |
| | U | Analyzed for but not detected. |
| | K | Benzo (b&k) fluoranthene are unresolved due to matrix, result is reported as Benzo(b)fluoranthene. |
| | J | Indicates an Estimated Value for TICs |
| | 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 Semi VOA | | |
| | U | Analyzed for but not detected. |
| | D | The reported value is from a dilution. |
| | P | This flag is used for an aroclor target analyte where there is greater than 25% difference for detected concentrations between the two GC columns |

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

| Lab Section | Qualifier | Description |
|---|---|---|
| Metals | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |
| | N | Recovery exceeds upper or lower control limits |
| | M | Sample duplicate precision not met. |
| | X | Serial dilution in the analytical batch indicates that physical and chemical interferences are present. |
| General Chemistry | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | M | Sample duplicate precision not met. |

# METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Solid** | | | |
| Volatile Organic Compounds (GC/MS) | TAL DEN | SW846 8260B | |
| Purge and Trap | TAL DEN | | SW846 5030B |
| 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 |
| Metals (ICP) | TAL DEN | SW846 6010B | |
| 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.

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: 280-14844-1
Sdg Number: J01087

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Reinhardt, Jason | JR |
| SW846 8270C | Hoffman, Michael G | MGH |
| SW846 8082 | Pavlakovich, Adam M | AMP |
| SW846 6010B | Bowen, Heidi E | HEB |
| SW846 6010B | Harre, John K | JKH |
| SW846 7471A | Niman, Katie M | KMN |
| MCAWW 353.2 | Stosak, Lara E | LES |
| SW846 9012A | Kilker, Lorelei M | LMK |
| SW846 9034 | Plumb, Paul M | PMP |
| SW846 9045C | Ayala, Delaina | DA |
| SW846 9056M | Phan, Thu L | TLP |
| ASTM D-2216 | Berry III, Paul B | PBB |

## SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-14844-1 | J1CYF8 | Solid | 04/18/2011 1250 | 04/20/2011 1200 |
| 280-14844-2 | J1CYF9 | Solid | 04/18/2011 1425 | 04/20/2011 1200 |

# SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Prep Method: | 5030B | Prep Batch: | 280-63667 | Lab File ID: | J6137.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.106 g |
| Analysis Date: | 04/22/2011 1229 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acetone | | 5.7 | U | 5.7 | 21 |
| Benzene | | 0.50 | U | 0.50 | 5.3 |
| Bromodichloromethane | | 0.23 | U | 0.23 | 5.3 |
| Bromoform | | 0.24 | U | 0.24 | 5.3 |
| Bromomethane | | 0.53 | U | 0.53 | 11 |
| 2-Butanone (MEK) | | 1.9 | U | 1.9 | 11 |
| Carbon disulfide | | 0.44 | U | 0.44 | 5.3 |
| Carbon tetrachloride | | 0.66 | U | 0.66 | 5.3 |
| Chlorobenzene | | 0.57 | U | 0.57 | 5.3 |
| Dibromochloromethane | | 0.60 | U | 0.60 | 5.3 |
| Chloroethane | | 0.94 | U | 0.94 | 11 |
| Chloroform | | 0.31 | U | 0.31 | 5.3 |
| Chloromethane | | 0.81 | U | 0.81 | 11 |
| 1,1-Dichloroethane | | 0.22 | U | 0.22 | 5.3 |
| 1,2-Dichloroethane | | 0.74 | U | 0.74 | 5.3 |
| 1,1-Dichloroethene | | 0.62 | U | 0.62 | 5.3 |
| 1,2-Dichloroethene, Total | | 0.41 | U | 0.41 | 5.3 |
| 1,2-Dichloropropane | | 0.58 | U | 0.58 | 5.3 |
| cis-1,3-Dichloropropene | | 1.4 | U | 1.4 | 5.3 |
| trans-1,3-Dichloropropene | | 0.71 | U | 0.71 | 5.3 |
| Ethylbenzene | | 0.71 | U | 0.71 | 5.3 |
| 2-Hexanone | | 5.2 | U | 5.2 | 21 |
| Methylene Chloride | | 0.79 | U | 0.79 | 5.3 |
| 4-Methyl-2-pentanone (MIBK) | | 4.6 | U | 4.6 | 11 |
| Styrene | | 0.66 | U | 0.66 | 5.3 |
| 1,1,2,2-Tetrachloroethane | | 0.64 | U | 0.64 | 5.3 |
| Tetrachloroethene | | 0.62 | U T | 0.62 | 5.3 |
| Toluene | | 1.2 | J | 0.73 | 5.3 |
| 1,1,1-Trichloroethane | | 0.55 | U | 0.55 | 5.3 |
| 1,1,2-Trichloroethane | | 0.93 | U | 0.93 | 5.3 |
| Trichloroethene | | 0.24 | U T | 0.24 | 5.3 |
| Vinyl chloride | | 1.4 | U | 1.4 | 5.3 |
| Xylenes, Total | | 0.64 | U | 0.64 | 5.3 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 107 | | 58 - 140 |
| Toluene-d8 (Surr) | 110 | | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 115 | | 76 - 127 |
| Dibromofluoromethane (Surr) | 106 | | 75 - 121 |

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Prep Method: | 5030B | Prep Batch: | 280-63667 | Lab File ID: | J6137.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.106 g |
| Analysis Date: | 04/22/2011 1229 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 14.01 | 6.9 | N J |
| 91-20-3 | Naphthalene | 15.61 | 0.78 | J N J B T |
| | Unknown | 16.06 | 14 | N J |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid

% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Prep Method: | 5030B | Prep Batch: | 280-63667 | Lab File ID: | J6140.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.681 g |
| Analysis Date: | 04/22/2011 1338 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acetone | | 8.7 | J | 5.1 | 19 |
| Benzene | | 0.44 | U | 0.44 | 4.7 |
| Bromodichloromethane | | 0.21 | U | 0.21 | 4.7 |
| Bromoform | | 0.22 | U | 0.22 | 4.7 |
| Bromomethane | | 0.47 | U | 0.47 | 9.4 |
| 2-Butanone (MEK) | | 1.7 | U | 1.7 | 9.4 |
| Carbon disulfide | | 0.40 | U | 0.40 | 4.7 |
| Carbon tetrachloride | | 0.60 | U | 0.60 | 4.7 |
| Chlorobenzene | | 0.51 | U | 0.51 | 4.7 |
| Dibromochloromethane | | 0.54 | U | 0.54 | 4.7 |
| Chloroethane | | 0.84 | U | 0.84 | 9.4 |
| Chloroform | | 0.45 | J | 0.27 | 4.7 |
| Chloromethane | | 0.73 | U | 0.73 | 9.4 |
| 1,1-Dichloroethane | | 0.20 | U | 0.20 | 4.7 |
| 1,2-Dichloroethane | | 0.66 | U | 0.66 | 4.7 |
| 1,1-Dichloroethene | | 0.56 | U | 0.56 | 4.7 |
| 1,2-Dichloroethene, Total | | 0.37 | U | 0.37 | 4.7 |
| 1,2-Dichloropropane | | 0.52 | U | 0.52 | 4.7 |
| cis-1,3-Dichloropropene | | 1.2 | U | 1.2 | 4.7 |
| trans-1,3-Dichloropropene | | 0.63 | U | 0.63 | 4.7 |
| Ethylbenzene | | 0.63 | U | 0.63 | 4.7 |
| 2-Hexanone | | 4.6 | U | 4.6 | 19 |
| Methylene Chloride | | 0.71 | U | 0.71 | 4.7 |
| 4-Methyl-2-pentanone (MIBK) | | 4.1 | U | 4.1 | 9.4 |
| Styrene | | 0.60 | U | 0.60 | 4.7 |
| 1,1,2,2-Tetrachloroethane | | 0.58 | U | 0.58 | 4.7 |
| Tetrachloroethene | | 0.56 | U | 0.56 | 4.7 |
| Toluene | | 0.65 | U | 0.65 | 4.7 |
| 1,1,1-Trichloroethane | | 0.49 | U | 0.49 | 4.7 |
| 1,1,2-Trichloroethane | | 0.83 | U | 0.83 | 4.7 |
| Trichloroethene | | 0.22 | U | 0.22 | 4.7 |
| Vinyl chloride | | 1.3 | U | 1.3 | 4.7 |
| Xylenes, Total | | 0.58 | U | 0.58 | 4.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 111 | | 58 - 140 |
| Toluene-d8 (Surr) | 105 | | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 100 | | 76 - 127 |
| Dibromofluoromethane (Surr) | 108 | | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Prep Method: | 5030B | Prep Batch: | 280-63667 | Lab File ID: | J6140.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.681 g |
| Analysis Date: | 04/22/2011 1338 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |
| 71-36-3 | n-Butanol | 7.00 | 48 | J N J |
| 120-82-1 | 1,2,4-Trichlorobenzene | 15.32 | 0.78 | J N J B |
| 87-68-3 | Hexachlorobutadiene | 15.51 | 0.53 | J |
| 91-20-3 | Naphthalene | 15.60 | 1.1 | J N J B |
| 87-61-6 | 1,2,3-Trichlorobenzene | 15.89 | 0.90 | J N J B |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3430.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Analysis Date: | 04/25/2011 1752 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 71 | J | 11 | 340 |
| Acenaphthylene | | 17 | U | 17 | 340 |
| Anthracene | | 140 | J | 17 | 340 |
| Benzo[a]anthracene | | 220 | J | 20 | 340 |
| Benzo[a]pyrene | | 320 | J | 20 | 340 |
| Benzo[b]fluoranthene | | 440 | K | 27 | 340 |
| Benzo[ghi]perylene | | 220 | J | 16 | 340 |
| Benzo[k]fluoranthene | | 41 | U K | 41 | 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 | | 730 | | 47 | 340 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 340 |
| Butyl benzyl phthalate | | 220 | J | 44 | 340 |
| Carbazole | | 43 | J | 37 | 340 |
| 4-Chloroaniline | | 84 | U | 84 | 340 |
| 4-Chloro-3-methylphenol | | 68 | U | 68 | 340 |
| 2-Chloronaphthalene | | 10 | U | 10 | 340 |
| 2-Chlorophenol | | 21 | U | 21 | 340 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 340 |
| Chrysene | | 320 | J | 28 | 340 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 340 |
| Dibenzofuran | | 96 | J | 20 | 340 |
| 1,2-Dichlorobenzene | | 23 | U | 23 | 340 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 340 |
| 1,4-Dichlorobenzene | | 14 | U | 14 | 340 |
| 3,3'-Dichlorobenzidine | | 92 | U | 92 | 680 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 340 |
| Diethyl phthalate | | 27 | U | 27 | 340 |
| 2,4-Dimethylphenol | | 68 | U | 68 | 340 |
| Dimethyl phthalate | | 24 | U | 24 | 340 |
| Di-n-butyl phthalate | | 74 | J | 30 | 340 |
| 4,6-Dinitro-2-methylphenol | | 340 | U | 340 | 680 |
| 2,4-Dinitrophenol | | 340 | U | 340 | 840 |
| 2,4-Dinitrotoluene | | 68 | U | 68 | 340 |
| 2,6-Dinitrotoluene | | 29 | U | 29 | 340 |
| Di-n-octyl phthalate | | 150 | J | 15 | 340 |
| Fluoranthene | | 510 | | 37 | 340 |
| Fluorene | | 90 | J | 18 | 340 |
| Hexachlorobenzene | | 30 | U | 30 | 340 |
| Hexachlorobutadiene | | 10 | U | 10 | 340 |
| Hexachlorocyclopentadiene | | 51 | U | 51 | 340 |
| Hexachloroethane | | 22 | U | 22 | 340 |
| Indeno[1,2,3-cd]pyrene | | 140 | J | 23 | 340 |
| Isophorone | | 17 | U | 17 | 340 |
| 2-Methylnaphthalene | | 19 | U | 19 | 340 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3430.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Analysis Date: | 04/25/2011 1752 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 340 |
| 3 & 4 Methylphenol | | 34 | U | 34 | 340 |
| Naphthalene | | 32 | U | 32 | 340 |
| 2-Nitroaniline | | 51 | U | 51 | 340 |
| 3-Nitroaniline | | 75 | U | 75 | 340 |
| 4-Nitroaniline | | 74 | U | 74 | 340 |
| Nitrobenzene | | 23 | U | 23 | 340 |
| 2-Nitrophenol | | 10 | U | 10 | 340 |
| 4-Nitrophenol | | 99 | U | 99 | 680 |
| N-Nitrosodi-n-propylamine | | 32 | U | 32 | 340 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 340 |
| Pentachlorophenol | | 340 | U | 340 | 680 |
| Phenanthrene | | 330 | J | 17 | 340 |
| Phenol | | 18 | U | 18 | 340 |
| Pyrene | | 540 | | 12 | 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 | 77 | | 50 - 120 |
| 2-Fluorophenol | 76 | | 53 - 120 |
| Nitrobenzene-d5 | 68 | | 50 - 120 |
| Phenol-d5 | 80 | | 52 - 120 |
| Terphenyl-d14 | 94 | | 55 - 120 |
| 2,4,6-Tribromophenol | 81 | | 51 - 120 |

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3430.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Analysis Date: | 04/25/2011 1752 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 2.55 | 820 | N J |
| | Unknown | 2.60 | 150 | N J |
| | Unknown | 2.93 | 2400 | N J |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3431.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.1 g |
| Analysis Date: | 04/25/2011 1811 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | 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 | | 41 | U | 41 | 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 | | 37 | U | 37 | 340 |
| 4-Chloroaniline | | 85 | U | 85 | 340 |
| 4-Chloro-3-methylphenol | | 68 | U | 68 | 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 | | 12 | U | 12 | 340 |
| 1,4-Dichlorobenzene | | 14 | U | 14 | 340 |
| 3,3'-Dichlorobenzidine | | 93 | U | 93 | 680 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 340 |
| Diethyl phthalate | | 27 | U | 27 | 340 |
| 2,4-Dimethylphenol | | 68 | U | 68 | 340 |
| Dimethyl phthalate | | 24 | U | 24 | 340 |
| Di-n-butyl phthalate | | 30 | U | 30 | 340 |
| 4,6-Dinitro-2-methylphenol | | 340 | U | 340 | 680 |
| 2,4-Dinitrophenol | | 340 | U | 340 | 850 |
| 2,4-Dinitrotoluene | | 68 | U | 68 | 340 |
| 2,6-Dinitrotoluene | | 29 | U | 29 | 340 |
| Di-n-octyl phthalate | | 15 | U | 15 | 340 |
| Fluoranthene | | 37 | U | 37 | 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: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3431.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.1 g |
| Analysis Date: | 04/25/2011 1811 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 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 | | 75 | U | 75 | 340 |
| Nitrobenzene | | 23 | U | 23 | 340 |
| 2-Nitrophenol | | 10 | U | 10 | 340 |
| 4-Nitrophenol | | 100 | U | 100 | 680 |
| N-Nitrosodi-n-propylamine | | 32 | U | 32 | 340 |
| N-Nitrosodiphenylamine | | 22 | U | 22 | 340 |
| Pentachlorophenol | | 340 | U | 340 | 680 |
| 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 | 77 | | 50 - 120 |
| 2-Fluorophenol | 76 | | 53 - 120 |
| Nitrobenzene-d5 | 72 | | 50 - 120 |
| Phenol-d5 | 76 | | 52 - 120 |
| Terphenyl-d14 | 88 | | 55 - 120 |
| 2,4,6-Tribromophenol | 83 | | 51 - 120 |

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Prep Method: | 3550C | Prep Batch: | 280-63275 | Lab File ID: | D3431.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.1 g |
| Analysis Date: | 04/25/2011 1811 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 2.92 | 2100 | N J |
| | Unknown | 7.88 | 150 | N J |
| | Unknown | 8.42 | 160 | N J |
| | Unknown | 9.70 | 650 | N J |
| | Unknown | 9.85 | 760 | N J |
| 1740-19-8 | 1-Phenanthrenecarboxylic acid, 1,2,3,4,4 | 10.22 | 2100 | N J |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8082 | Analysis Batch: | 280-64127 | Instrument ID: | GCS_P3 |
| Prep Method: | 3550C | Prep Batch: | 280-63276 | Initial Weight/Volume: | 32.1 g |
| Dilution: | 2.0 | | | Final Weight/Volume: | 5000 uL |
| Analysis Date: | 04/25/2011 1358 | | | Injection Volume: | 1 uL |
| Prep Date: | 04/20/2011 2349 | | | Result Type: | PRIMARY |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aroclor 1016 | | 5.6 | U D | 5.6 | 20 |
| Aroclor 1221 | | 16 | U D | 16 | 33 |
| Aroclor 1232 | | 4.0 | U D | 4.0 | 20 |
| Aroclor 1242 | | 9.4 | U D | 9.4 | 20 |
| Aroclor 1248 | | 9.4 | U D | 9.4 | 20 |
| Aroclor 1254 | | 170 | D | 5.2 | 20 |
| Aroclor 1260 | | 120 | D | 5.2 | 20 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 73 | | 59 - 130 |
| Tetrachloro-m-xylene | 104 | | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8082 | Analysis Batch: | 280-64126 | Instrument ID: | GCS_P3 |
| Prep Method: | 3550C | Prep Batch: | 280-63276 | Initial Weight/Volume: | 31.8 g |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5000 uL |
| Analysis Date: | 04/22/2011 2127 | | | Injection Volume: | 1 uL |
| Prep Date: | 04/20/2011 2349 | | | Result Type: | PRIMARY |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aroclor 1016 | | 2.8 | U | 2.8 | 10 |
| Aroclor 1221 | | 8.1 | U | 8.1 | 17 |
| Aroclor 1232 | | 2.0 | U | 2.0 | 10 |
| Aroclor 1242 | | 4.7 | U | 4.7 | 10 |
| Aroclor 1248 | | 4.7 | U | 4.7 | 10 |
| Aroclor 1254 | | 67 | P | 2.6 | 10 |
| Aroclor 1260 | | 48 | | 2.6 | 10 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 65 | | 59 - 130 |
| Tetrachloro-m-xylene | 85 | | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Prep Method: | 3050B | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.03 g |
| Analysis Date: | 04/25/2011 1704 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Arsenic | | 2.4 | | 0.69 | 1.0 |
| Barium | | 77.7 | X | 0.080 | 0.52 |
| Beryllium | | 0.035 | U | 0.035 | 0.21 |
| Boron | | 2.7 | | 1.0 | 2.1 |
| Cadmium | | 0.30 | | 0.043 | 0.21 |
| Calcium | | 11300 | X N | 14.8 | 52.3 |
| Chromium | | 10.9 | X | 0.061 | 0.21 |
| Cobalt | | 8.2 | X | 0.10 | 1.0 |
| Copper | | 20.9 | | 0.23 | 1.0 |
| Molybdenum | | 0.66 | B M | 0.27 | 2.1 |
| Nickel | | 12.4 | X | 0.13 | 4.2 |
| Potassium | | 1140 | | 42.9 | 314 |
| Silicon | | 258 | N | 5.9 | 10.5 |
| Silver | | 0.17 | U | 0.17 | 0.21 |
| Zinc | | 229 | X | 0.42 | 1.0 |
| Zirconium | | 21.7 | X | 0.37 | 2.6 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Prep Method: | 3050B | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.03 g |
| Analysis Date: | 04/26/2011 1339 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 6660 | | 1.6 | 5.2 |
| Antimony | | 0.40 | U | 0.40 | 0.63 |
| Iron | | 21300 | X | 4.0 | 5.2 |
| Lead | | 12.0 | | 0.28 | 0.52 |
| Manganese | | 324 | | 0.10 | 1.0 |
| Selenium | | 0.90 | U | 0.90 | 1.0 |
| Sodium | | 308 | | 61.7 | 126 |
| Vanadium | | 53.8 | X | 0.098 | 2.1 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Prep Method: | 3050B | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.09 g |
| Analysis Date: | 04/28/2011 1129 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Magnesium | | 3760 | | 3.7 | 19.8 |

**7471A Mercury (CVAA)**

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 7471A | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Prep Method: | 7471A | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.67 g |
| Analysis Date: | 04/28/2011 1434 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.21 | | 0.0053 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid

% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Prep Method: | 3050B | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.06 g |
| Analysis Date: | 04/25/2011 1713 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Arsenic | | 2.6 | | 0.67 | 1.0 |
| Barium | | 73.1 | X | 0.077 | 0.51 |
| Beryllium | | 0.033 | U | 0.033 | 0.20 |
| Boron | | 1.8 | B | 0.99 | 2.0 |
| Cadmium | | 0.13 | B | 0.042 | 0.20 |
| Calcium | | 4550 | X | 14.3 | 50.6 |
| Chromium | | 9.9 | X | 0.059 | 0.20 |
| Cobalt | | 6.1 | X | 0.10 | 1.0 |
| Copper | | 15.8 | | 0.22 | 1.0 |
| Molybdenum | | 0.44 | B | 0.26 | 2.0 |
| Nickel | | 10.1 | X | 0.12 | 4.1 |
| Potassium | | 1140 | | 41.5 | 304 |
| Silicon | | 225 | | 5.7 | 10.1 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Zinc | | 118 | X | 0.40 | 1.0 |
| Zirconium | | 18.3 | X | 0.36 | 2.5 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Prep Method: | 3050B | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.06 g |
| Analysis Date: | 04/26/2011 1348 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 6430 | | 1.6 | 5.1 |
| Antimony | | 0.38 | U | 0.38 | 0.61 |
| Iron | | 18300 | X | 3.8 | 5.1 |
| Lead | | 5.8 | | 0.27 | 0.51 |
| Manganese | | 277 | | 0.10 | 1.0 |
| Selenium | | 0.87 | U | 0.87 | 1.0 |
| Sodium | | 171 | | 59.7 | 122 |
| Vanadium | | 44.3 | X | 0.095 | 2.0 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Prep Method: | 3050B | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.06 g |
| Analysis Date: | 04/28/2011 1131 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Magnesium | | 4290 | | 3.7 | 20.3 |

**7471A Mercury (CVAA)**

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8

Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 7471A | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Prep Method: | 7471A | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.6 g |
| Analysis Date: | 04/28/2011 1436 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.029 | M | 0.0059 | 0.018 |

**General Chemistry**

**Client Sample ID:** **J1CYF8**

Lab Sample ID: 280-14844-1
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 04/18/2011 1250
Date Received: 04/20/2011 1200

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 2.7 | M | mg/Kg | 0.37 | 0.78 | 1.0 | 353.2 |
| Analysis Batch: 280-64536 | Analysis Date: 04/27/2011 1159 | | | | | | DryWt Corrected: Y |
| Total Cyanide | 0.11 | U | mg/Kg | 0.11 | 0.53 | 1.0 | 9012A |
| Analysis Batch: 280-63740 | Analysis Date: 04/22/2011 1347 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-63362 | Prep Date: 04/21/2011 1021 | | | | | | |
| Sulfide | 2.5 | U | mg/Kg | 2.5 | 5.3 | 1.0 | 9034 |
| Analysis Batch: 280-63998 | Analysis Date: 04/25/2011 1627 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-63966 | Prep Date: 04/25/2011 1409 | | | | | | |
| Chloride-Soluble | 3.2 | B | mg/Kg | 2.0 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Nitrate as N-Soluble | 2.1 | B | mg/Kg | 0.33 | 2.6 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Bromide-Soluble | 0.40 | U | mg/Kg | 0.40 | 2.1 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Nitrite as N-Soluble | 0.35 | U | mg/Kg | 0.35 | 2.6 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Orthophosphate as P-Soluble | 1.3 | U | mg/Kg | 1.3 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Sulfate-Soluble | 15.0 | | mg/Kg | 1.8 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |
| Fluoride-Soluble | 0.85 | U | mg/Kg | 0.85 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2207 | | | | | | DryWt Corrected: Y |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| pH adj. to 25 deg C-Soluble | 9.24 | | SU | 0.0100 | 0.0100 | 1.0 | 9045C |
| Analysis Batch: 280-63515 | Analysis Date: 04/21/2011 1447 | | | | | | DryWt Corrected: N |
| Percent Moisture | 7.2 | | % | 0.10 | 0.10 | 1.0 | D-2216 |
| Analysis Batch: 280-63363 | Analysis Date: 04/21/2011 1025 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **J1CYF9**

Lab Sample ID: 280-14844-2
Client Matrix: Solid
% Moisture: 6.8
Date Sampled: 04/18/2011 1425
Date Received: 04/20/2011 1200

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 12.6 | | mg/Kg | 0.37 | 0.78 | 1.0 | 353.2 |
| Analysis Batch: 280-64536 | Analysis Date: 04/27/2011 1212 | | | | | | DryWt Corrected: Y |
| Total Cyanide | 0.11 | U | mg/Kg | 0.11 | 0.53 | 1.0 | 9012A |
| Analysis Batch: 280-63740 | Analysis Date: 04/22/2011 1359 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-63362 | Prep Date: 04/21/2011 1021 | | | | | | |
| Sulfide | 2.6 | U | mg/Kg | 2.6 | 5.3 | 1.0 | 9034 |
| Analysis Batch: 280-63998 | Analysis Date: 04/25/2011 1627 | | | | | | DryWt Corrected: Y |
| Prep Batch: 280-63966 | Prep Date: 04/25/2011 1409 | | | | | | |
| Chloride-Soluble | 2.8 | B | mg/Kg | 2.1 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Nitrate as N-Soluble | 10.6 | | mg/Kg | 0.33 | 2.6 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Bromide-Soluble | 0.40 | U | mg/Kg | 0.40 | 2.1 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Nitrite as N-Soluble | 0.35 | U | mg/Kg | 0.35 | 2.6 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Orthophosphate as P-Soluble | 1.3 | U | mg/Kg | 1.3 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63808 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Sulfate-Soluble | 37.5 | | mg/Kg | 1.8 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |
| Fluoride-Soluble | 0.94 | B | mg/Kg | 0.86 | 5.2 | 1.0 | 9056M |
| Analysis Batch: 280-63809 | Analysis Date: 04/22/2011 2331 | | | | | | DryWt Corrected: Y |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| pH adj. to 25 deg C-Soluble | 8.78 | | SU | 0.0100 | 0.0100 | 1.0 | 9045C |
| Analysis Batch: 280-63515 | Analysis Date: 04/21/2011 1458 | | | | | | DryWt Corrected: N |
| Percent Moisture | 6.8 | | % | 0.10 | 0.10 | 1.0 | D-2216 |
| Analysis Batch: 280-63363 | Analysis Date: 04/21/2011 1025 | | | | | | DryWt Corrected: N |

# QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Prep Batch: 280-63667** | | | | | |
| LCS 280-63667/2-A | Lab Control Sample | T | Solid | 5030B | |
| MB 280-63667/1-A | Method Blank | T | Solid | 5030B | |
| 280-14844-1 | J1CYF8 | T | Solid | 5030B | |
| 280-14844-1MS | Matrix Spike | T | Solid | 5030B | |
| 280-14844-1MSD | Matrix Spike Duplicate | T | Solid | 5030B | |
| 280-14844-2 | J1CYF9 | T | Solid | 5030B | |
| **Analysis Batch:280-64074** | | | | | |
| LCS 280-63667/2-A | Lab Control Sample | T | Solid | 8260B | 280-63667 |
| MB 280-63667/1-A | Method Blank | T | Solid | 8260B | 280-63667 |
| 280-14844-1 | J1CYF8 | T | Solid | 8260B | 280-63667 |
| 280-14844-1MS | Matrix Spike | T | Solid | 8260B | 280-63667 |
| 280-14844-1MSD | Matrix Spike Duplicate | T | Solid | 8260B | 280-63667 |
| 280-14844-2 | J1CYF9 | T | Solid | 8260B | 280-63667 |

**Report Basis**
T = Total

| | | | | | |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 280-63275** | | | | | |
| LCS 280-63275/2-A | Lab Control Sample | T | Solid | 3550C | |
| MB 280-63275/1-A | Method Blank | T | Solid | 3550C | |
| 280-14844-1 | J1CYF8 | T | Solid | 3550C | |
| 280-14844-1MS | Matrix Spike | T | Solid | 3550C | |
| 280-14844-1MSD | Matrix Spike Duplicate | T | Solid | 3550C | |
| 280-14844-2 | J1CYF9 | T | Solid | 3550C | |
| **Analysis Batch:280-64085** | | | | | |
| LCS 280-63275/2-A | Lab Control Sample | T | Solid | 8270C | 280-63275 |
| MB 280-63275/1-A | Method Blank | T | Solid | 8270C | 280-63275 |
| 280-14844-1 | J1CYF8 | T | Solid | 8270C | 280-63275 |
| 280-14844-1MS | Matrix Spike | T | Solid | 8270C | 280-63275 |
| 280-14844-1MSD | Matrix Spike Duplicate | T | Solid | 8270C | 280-63275 |
| 280-14844-2 | J1CYF9 | T | Solid | 8270C | 280-63275 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 280-63276** | | | | | |
| LCS 280-63276/2-A | Lab Control Sample | T | Solid | 3550C | |
| MB 280-63276/1-A | Method Blank | T | Solid | 3550C | |
| 280-14844-1 | J1CYF8 | T | Solid | 3550C | |
| 280-14844-2 | J1CYF9 | T | Solid | 3550C | |
| 280-14844-2MS | Matrix Spike | T | Solid | 3550C | |
| 280-14844-2MSD | Matrix Spike Duplicate | T | Solid | 3550C | |
| **Analysis Batch:280-64124** | | | | | |
| LCS 280-63276/2-A | Lab Control Sample | T | Solid | 8082 | 280-63276 |
| MB 280-63276/1-A | Method Blank | T | Solid | 8082 | 280-63276 |
| 280-14844-2 | J1CYF9 | T | Solid | 8082 | 280-63276 |
| 280-14844-2MS | Matrix Spike | T | Solid | 8082 | 280-63276 |
| 280-14844-2MSD | Matrix Spike Duplicate | T | Solid | 8082 | 280-63276 |
| **Analysis Batch:280-64126** | | | | | |
| LCS 280-63276/2-A | Lab Control Sample | T | Solid | 8082 | 280-63276 |
| MB 280-63276/1-A | Method Blank | T | Solid | 8082 | 280-63276 |
| 280-14844-2 | J1CYF9 | T | Solid | 8082 | 280-63276 |
| 280-14844-2MS | Matrix Spike | T | Solid | 8082 | 280-63276 |
| 280-14844-2MSD | Matrix Spike Duplicate | T | Solid | 8082 | 280-63276 |
| **Analysis Batch:280-64127** | | | | | |
| 280-14844-1 | J1CYF8 | T | Solid | 8082 | 280-63276 |
| **Analysis Batch:280-64128** | | | | | |
| 280-14844-1 | J1CYF8 | T | Solid | 8082 | 280-63276 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 280-63406** | | | | | |
| LCS 280-63406/2-A | Lab Control Sample | T | Solid | 7471A | |
| MB 280-63406/1-A | Method Blank | T | Solid | 7471A | |
| 280-14844-1 | J1CYF8 | T | Solid | 7471A | |
| 280-14844-2 | J1CYF9 | T | Solid | 7471A | |
| 280-14844-2DU | Duplicate | T | Solid | 7471A | |
| 280-14844-2MS | Matrix Spike | T | Solid | 7471A | |
| **Prep Batch: 280-63486** | | | | | |
| LCS 280-63486/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-63486/1-A | Method Blank | T | Solid | 3050B | |
| 280-14844-1 | J1CYF8 | T | Solid | 3050B | |
| 280-14844-1DU | Duplicate | T | Solid | 3050B | |
| 280-14844-1MS | Matrix Spike | T | Solid | 3050B | |
| 280-14844-2 | J1CYF9 | T | Solid | 3050B | |
| **Analysis Batch:280-64063** | | | | | |
| LCS 280-63486/2-A | Lab Control Sample | T | Solid | 6010B | 280-63486 |
| MB 280-63486/1-A | Method Blank | T | Solid | 6010B | 280-63486 |
| 280-14844-1 | J1CYF8 | T | Solid | 6010B | 280-63486 |
| 280-14844-1DU | Duplicate | T | Solid | 6010B | 280-63486 |
| 280-14844-1MS | Matrix Spike | T | Solid | 6010B | 280-63486 |
| 280-14844-2 | J1CYF9 | T | Solid | 6010B | 280-63486 |
| **Analysis Batch:280-64267** | | | | | |
| LCS 280-63486/2-A | Lab Control Sample | T | Solid | 6010B | 280-63486 |
| MB 280-63486/1-A | Method Blank | T | Solid | 6010B | 280-63486 |
| 280-14844-1 | J1CYF8 | T | Solid | 6010B | 280-63486 |
| 280-14844-1DU | Duplicate | T | Solid | 6010B | 280-63486 |
| 280-14844-1MS | Matrix Spike | T | Solid | 6010B | 280-63486 |
| 280-14844-2 | J1CYF9 | T | Solid | 6010B | 280-63486 |
| **Prep Batch: 280-64318** | | | | | |
| LCS 280-64318/2-A | Lab Control Sample | T | Solid | 3050B | |
| MB 280-64318/1-A | Method Blank | T | Solid | 3050B | |
| 280-14844-1 | J1CYF8 | T | Solid | 3050B | |
| 280-14844-2 | J1CYF9 | T | Solid | 3050B | |
| 280-14844-2DU | Duplicate | T | Solid | 3050B | |
| 280-14844-2MS | Matrix Spike | T | Solid | 3050B | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Analysis Batch:280-64725** | | | | | |
| LCS 280-64318/2-A | Lab Control Sample | T | Solid | 6010B | 280-64318 |
| MB 280-64318/1-A | Method Blank | T | Solid | 6010B | 280-64318 |
| 280-14844-1 | J1CYF8 | T | Solid | 6010B | 280-64318 |
| 280-14844-2 | J1CYF9 | T | Solid | 6010B | 280-64318 |
| 280-14844-2DU | Duplicate | T | Solid | 6010B | 280-64318 |
| 280-14844-2MS | Matrix Spike | T | Solid | 6010B | 280-64318 |
| **Analysis Batch:280-64749** | | | | | |
| LCS 280-63406/2-A | Lab Control Sample | T | Solid | 7471A | 280-63406 |
| MB 280-63406/1-A | Method Blank | T | Solid | 7471A | 280-63406 |
| 280-14844-1 | J1CYF8 | T | Solid | 7471A | 280-63406 |
| 280-14844-2 | J1CYF9 | T | Solid | 7471A | 280-63406 |
| 280-14844-2DU | Duplicate | T | Solid | 7471A | 280-63406 |
| 280-14844-2MS | Matrix Spike | T | Solid | 7471A | 280-63406 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 280-63343** | | | | | |
| 280-14844-1 | J1CYF8 | S | Solid | DI Leach | |
| 280-14844-1DU | Duplicate | S | Solid | DI Leach | |
| 280-14844-2 | J1CYF9 | S | Solid | DI Leach | |
| **Prep Batch: 280-63362** | | | | | |
| HLCS 280-63362/1-A | High Level Control Sample | T | Solid | 9012A | |
| LCS 280-63362/3-A | Lab Control Sample | T | Solid | 9012A | |
| LLCS 280-63362/2-A | Low Level Control Sample | T | Solid | 9012A | |
| MB 280-63362/4-A | Method Blank | T | Solid | 9012A | |
| 280-14844-1 | J1CYF8 | T | Solid | 9012A | |
| 280-14844-1DU | Duplicate | T | Solid | 9012A | |
| 280-14844-1MS | Matrix Spike | T | Solid | 9012A | |
| 280-14844-2 | J1CYF9 | T | Solid | 9012A | |
| **Analysis Batch:280-63363** | | | | | |
| 280-14844-1 | J1CYF8 | T | Solid | D-2216 | |
| 280-14844-1DU | Duplicate | T | Solid | D-2216 | |
| 280-14844-2 | J1CYF9 | T | Solid | D-2216 | |
| **Analysis Batch:280-63515** | | | | | |
| LCS 280-63515/4 | Lab Control Sample | T | Water | 9045C | |
| LCSD 280-63515/5 | Lab Control Sample Duplicate | T | Water | 9045C | |
| 280-14844-1 | J1CYF8 | S | Solid | 9045C | |
| 280-14844-1DU | Duplicate | S | Solid | 9045C | |
| 280-14844-2 | J1CYF9 | S | Solid | 9045C | |
| **Prep Batch: 280-63717** | | | | | |
| LCS 280-63717/1-A | Lab Control Sample | S | Solid | DI Leach | |
| MB 280-63717/2-A | Method Blank | S | Solid | DI Leach | |
| 280-14844-1 | J1CYF8 | S | Solid | DI Leach | |
| 280-14844-1DU | Duplicate | S | Solid | DI Leach | |
| 280-14844-1MS | Matrix Spike | S | Solid | DI Leach | |
| 280-14844-2 | J1CYF9 | S | Solid | DI Leach | |
| **Prep Batch: 280-63719** | | | | | |
| LCS 280-63719/2-A | Lab Control Sample | S | Solid | DI Leach | |
| MB 280-63719/1-A | Method Blank | S | Solid | DI Leach | |
| 280-14844-1 | J1CYF8 | S | Solid | DI Leach | |
| 280-14844-1DU | Duplicate | S | Solid | DI Leach | |
| 280-14844-1MS | Matrix Spike | S | Solid | DI Leach | |
| 280-14844-2 | J1CYF9 | S | Solid | DI Leach | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-63740** | | | | | |
| HLCS 280-63362/1-A | High Level Control Sample | T | Solid | 9012A | 280-63362 |
| LCS 280-63362/3-A | Lab Control Sample | T | Solid | 9012A | 280-63362 |
| LLCS 280-63362/2-A | Low Level Control Sample | T | Solid | 9012A | 280-63362 |
| MB 280-63362/4-A | Method Blank | T | Solid | 9012A | 280-63362 |
| 280-14844-1 | J1CYF8 | T | Solid | 9012A | 280-63362 |
| 280-14844-1DU | Duplicate | T | Solid | 9012A | 280-63362 |
| 280-14844-1MS | Matrix Spike | T | Solid | 9012A | 280-63362 |
| 280-14844-2 | J1CYF9 | T | Solid | 9012A | 280-63362 |
| **Analysis Batch:280-63808** | | | | | |
| LCS 280-63717/1-A | Lab Control Sample | S | Solid | 9056M | |
| MB 280-63717/2-A | Method Blank | S | Solid | 9056M | |
| 280-14844-1 | J1CYF8 | S | Solid | 9056M | |
| 280-14844-1DU | Duplicate | S | Solid | 9056M | |
| 280-14844-1MS | Matrix Spike | S | Solid | 9056M | |
| 280-14844-2 | J1CYF9 | S | Solid | 9056M | |
| **Analysis Batch:280-63809** | | | | | |
| LCS 280-63717/1-A | Lab Control Sample | S | Solid | 9056M | |
| MB 280-63717/2-A | Method Blank | S | Solid | 9056M | |
| 280-14844-1 | J1CYF8 | S | Solid | 9056M | |
| 280-14844-1DU | Duplicate | S | Solid | 9056M | |
| 280-14844-1MS | Matrix Spike | S | Solid | 9056M | |
| 280-14844-2 | J1CYF9 | S | Solid | 9056M | |
| **Prep Batch: 280-63966** | | | | | |
| LCS 280-63966/4-A | Lab Control Sample | T | Solid | 9030B | |
| MB 280-63966/6-A | Method Blank | T | Solid | 9030B | |
| 280-14844-1 | J1CYF8 | T | Solid | 9030B | |
| 280-14844-1DU | Duplicate | T | Solid | 9030B | |
| 280-14844-1MS | Matrix Spike | T | Solid | 9030B | |
| 280-14844-2 | J1CYF9 | T | Solid | 9030B | |
| **Analysis Batch:280-63998** | | | | | |
| LCS 280-63966/4-A | Lab Control Sample | T | Solid | 9034 | 280-63966 |
| MB 280-63966/6-A | Method Blank | T | Solid | 9034 | 280-63966 |
| 280-14844-1 | J1CYF8 | T | Solid | 9034 | 280-63966 |
| 280-14844-1DU | Duplicate | T | Solid | 9034 | 280-63966 |
| 280-14844-1MS | Matrix Spike | T | Solid | 9034 | 280-63966 |
| 280-14844-2 | J1CYF9 | T | Solid | 9034 | 280-63966 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-64536** | | | | | |
| LCS 280-63719/2-A | Lab Control Sample | S | Solid | 353.2 | |
| MB 280-63719/1-A | Method Blank | S | Solid | 353.2 | |
| 280-14844-1 | J1CYF8 | S | Solid | 353.2 | |
| 280-14844-1DU | Duplicate | S | Solid | 353.2 | |
| 280-14844-1MS | Matrix Spike | S | Solid | 353.2 | |
| 280-14844-2 | J1CYF9 | S | Solid | 353.2 | |

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

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63667**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63667/1-A | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Client Matrix: | Solid | Prep Batch: | 280-63667 | Lab File ID: | J6136.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.06 g |
| Analysis Date: | 04/22/2011 1159 | Units: | ug/Kg | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 0600 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acetone | 5.3 | U | 5.3 | 20 |
| Benzene | 0.46 | U | 0.46 | 4.9 |
| Bromodichloromethane | 0.22 | U | 0.22 | 4.9 |
| Bromoform | 0.23 | U | 0.23 | 4.9 |
| Bromomethane | 0.49 | U | 0.49 | 9.9 |
| 2-Butanone (MEK) | 1.8 | U | 1.8 | 9.9 |
| Carbon disulfide | 0.42 | U | 0.42 | 4.9 |
| Carbon tetrachloride | 0.62 | U | 0.62 | 4.9 |
| Chlorobenzene | 0.53 | U | 0.53 | 4.9 |
| Dibromochloromethane | 0.56 | U | 0.56 | 4.9 |
| Chloroethane | 0.88 | U | 0.88 | 9.9 |
| Chloroform | 0.29 | U | 0.29 | 4.9 |
| Chloromethane | 0.76 | U | 0.76 | 9.9 |
| 1,3-Dichlorobenzene | 0.47 | U | 0.47 | 4.9 |
| 1,1-Dichloroethane | 0.21 | U | 0.21 | 4.9 |
| 1,2-Dichloroethane | 0.69 | U | 0.69 | 4.9 |
| trans-1,2-Dichloroethene | 0.39 | U | 0.39 | 2.5 |
| 1,1-Dichloroethene | 0.58 | U | 0.58 | 4.9 |
| 1,2-Dichloroethene, Total | 0.39 | U | 0.39 | 4.9 |
| 1,2-Dichloropropane | 0.54 | U | 0.54 | 4.9 |
| cis-1,3-Dichloropropene | 1.3 | U | 1.3 | 4.9 |
| trans-1,3-Dichloropropene | 0.66 | U | 0.66 | 4.9 |
| Ethylbenzene | 0.66 | U | 0.66 | 4.9 |
| 2-Hexanone | 4.8 | U | 4.8 | 20 |
| Methylene Chloride | 0.74 | U | 0.74 | 4.9 |
| 4-Methyl-2-pentanone (MIBK) | 4.3 | U | 4.3 | 9.9 |
| Styrene | 0.62 | U | 0.62 | 4.9 |
| 1,1,2,2-Tetrachloroethane | 0.60 | U | 0.60 | 4.9 |
| Tetrachloroethene | 0.58 | U | 0.58 | 4.9 |
| Toluene | 0.68 | U | 0.68 | 4.9 |
| 1,1,1-Trichloroethane | 0.51 | U | 0.51 | 4.9 |
| 1,1,2-Trichloroethane | 0.87 | U | 0.87 | 4.9 |
| Trichloroethene | 0.23 | U | 0.23 | 4.9 |
| Vinyl chloride | 1.3 | U | 1.3 | 4.9 |
| Xylenes, Total | 0.60 | U | 0.60 | 4.9 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 110 | 58 - 140 |
| Toluene-d8 (Surr) | 105 | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 99 | 76 - 127 |
| Dibromofluoromethane (Surr) | 109 | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank TICs- Batch: 280-63667**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| 87-61-6 | 1,2,3-Trichlorobenzene | 15.91 | 0.947 | J N J |
| 120-82-1 | 1,2,4-Trichlorobenzene | 15.32 | 0.763 | J N J |
| 91-20-3 | Naphthalene | 15.59 | 0.742 | J N J |
| | Unknown | 16.05 | 13.4 | N J |

**Lab Control Sample - Batch: 280-63667**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63667/2-A | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Client Matrix: | Solid | Prep Batch: | 280-63667 | Lab File ID: | J6131.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 g |
| Analysis Date: | 04/22/2011 0925 | Units: | ug/Kg | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 0600 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Benzene | 50.0 | 52.9 | 106 | 76 - 120 | |
| Bromodichloromethane | 50.0 | 53.5 | 107 | 74 - 125 | |
| Carbon tetrachloride | 50.0 | 54.7 | 109 | 69 - 147 | |
| Chlorobenzene | 50.0 | 51.5 | 103 | 74 - 120 | |
| Chloroform | 50.0 | 51.8 | 104 | 77 - 125 | |
| 1,3-Dichlorobenzene | 50.0 | 54.8 | 110 | 74 - 120 | |
| 1,1-Dichloroethane | 50.0 | 49.1 | 98 | 74 - 120 | |
| trans-1,2-Dichloroethene | 50.0 | 49.0 | 98 | 80 - 127 | |
| 1,1-Dichloroethene | 50.0 | 52.9 | 106 | 77 - 143 | |
| 1,2-Dichloropropane | 50.0 | 51.4 | 103 | 74 - 120 | |
| Ethylbenzene | 50.0 | 51.9 | 104 | 78 - 120 | |
| Methylene Chloride | 50.0 | 51.4 | 103 | 76 - 137 | |
| Tetrachloroethene | 50.0 | 53.1 | 106 | 71 - 120 | |
| Toluene | 50.0 | 52.0 | 104 | 72 - 120 | |
| 1,1,1-Trichloroethane | 50.0 | 53.4 | 107 | 67 - 143 | |
| Trichloroethene | 50.0 | 53.7 | 107 | 78 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 107 | 58 - 140 |
| Toluene-d8 (Surr) | 108 | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 97 | 76 - 127 |
| Dibromofluoromethane (Surr) | 103 | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-63667**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Client Matrix: | Solid | Prep Batch: | 280-63667 | Lab File ID: | J6138.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.080 g |
| Analysis Date: | 04/22/2011 1252 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64074 | Instrument ID: | MSV_J |
| Client Matrix: | Solid | Prep Batch: | 280-63667 | Lab File ID: | J6139.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5.503 g |
| Analysis Date: | 04/22/2011 1315 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/22/2011 1210 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Benzene | 98 | 113 | 76 - 120 | 6 | 20 | | |
| Bromodichloromethane | 101 | 116 | 74 - 125 | 5 | 20 | | |
| Carbon tetrachloride | 111 | 126 | 69 - 147 | 4 | 20 | | |
| Chlorobenzene | 103 | 113 | 74 - 120 | 1 | 20 | | |
| Chloroform | 99 | 113 | 77 - 125 | 5 | 20 | | |
| 1,3-Dichlorobenzene | 102 | 117 | 74 - 120 | 6 | 20 | | |
| 1,1-Dichloroethane | 92 | 106 | 74 - 120 | 6 | 20 | | |
| trans-1,2-Dichloroethene | 93 | 105 | 80 - 127 | 5 | 20 | | |
| 1,1-Dichloroethene | 100 | 114 | 77 - 143 | 5 | 20 | | |
| 1,2-Dichloropropane | 94 | 109 | 74 - 120 | 7 | 20 | | |
| Ethylbenzene | 105 | 115 | 78 - 120 | 1 | 20 | | |
| Methylene Chloride | 95 | 111 | 76 - 137 | 8 | 21 | | |
| Tetrachloroethene | 113 | 123 | 71 - 120 | 0 | 20 | | T |
| Toluene | 99 | 111 | 72 - 120 | 4 | 20 | | |
| 1,1,1-Trichloroethane | 108 | 122 | 67 - 143 | 4 | 20 | | |
| Trichloroethene | 106 | 123 | 78 - 120 | 7 | 20 | | T |

| Surrogate | MS % Rec | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 109 | 127 | | 58 - 140 |
| Toluene-d8 (Surr) | 112 | 133 | * | 80 - 126 |
| 4-Bromofluorobenzene (Surr) | 100 | 128 | * | 76 - 127 |
| Dibromofluoromethane (Surr) | 98 | 117 | | 75 - 121 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63275**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63275/1-A | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-63275 | Lab File ID: | D3429.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.9 g |
| Analysis Date: | 04/25/2011 1733 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 9.7 | U | 9.7 | 310 |
| Acenaphthylene | 16 | U | 16 | 310 |
| Anthracene | 16 | U | 16 | 310 |
| Benzo[a]anthracene | 19 | U | 19 | 310 |
| Benzo[a]pyrene | 19 | U | 19 | 310 |
| Benzo[b]fluoranthene | 25 | U | 25 | 310 |
| Benzo[ghi]perylene | 15 | U | 15 | 310 |
| Benzo[k]fluoranthene | 38 | U | 38 | 310 |
| Bis(2-chloroethoxy)methane | 22 | U | 22 | 310 |
| Bis(2-chloroethyl)ether | 16 | U | 16 | 310 |
| bis (2-chloroisopropyl) ether | 22 | U | 22 | 310 |
| Bis(2-ethylhexyl) phthalate | 43 | U | 43 | 310 |
| 4-Bromophenyl phenyl ether | 18 | U | 18 | 310 |
| Butyl benzyl phthalate | 40 | U | 40 | 310 |
| Carbazole | 34 | U | 34 | 310 |
| 4-Chloroaniline | 77 | U | 77 | 310 |
| 4-Chloro-3-methylphenol | 62 | U | 62 | 310 |
| 2-Chloronaphthalene | 9.4 | U | 9.4 | 310 |
| 2-Chlorophenol | 20 | U | 20 | 310 |
| 4-Chlorophenyl phenyl ether | 20 | U | 20 | 310 |
| Chrysene | 25 | U | 25 | 310 |
| Dibenz(a,h)anthracene | 18 | U | 18 | 310 |
| Dibenzofuran | 19 | U | 19 | 310 |
| 1,2-Dichlorobenzene | 21 | U | 21 | 310 |
| 1,3-Dichlorobenzene | 11 | U | 11 | 310 |
| 1,4-Dichlorobenzene | 13 | U | 13 | 310 |
| 3,3'-Dichlorobenzidine | 85 | U | 85 | 620 |
| 2,4-Dichlorophenol | 9.4 | U | 9.4 | 310 |
| Diethyl phthalate | 24 | U | 24 | 310 |
| 2,4-Dimethylphenol | 62 | U | 62 | 310 |
| Dimethyl phthalate | 22 | U | 22 | 310 |
| Di-n-butyl phthalate | 27 | U | 27 | 310 |
| 4,6-Dinitro-2-methylphenol | 310 | U | 310 | 620 |
| 2,4-Dinitrophenol | 310 | U | 310 | 780 |
| 2,4-Dinitrotoluene | 62 | U | 62 | 310 |
| 2,6-Dinitrotoluene | 26 | U | 26 | 310 |
| Di-n-octyl phthalate | 14 | U | 14 | 310 |
| Fluoranthene | 34 | U | 34 | 310 |
| Fluorene | 17 | U | 17 | 310 |
| Hexachlorobenzene | 27 | U | 27 | 310 |
| Hexachlorobutadiene | 9.4 | U | 9.4 | 310 |
| Hexachlorocyclopentadiene | 47 | U | 47 | 310 |
| Hexachloroethane | 20 | U | 20 | 310 |
| Indeno[1,2,3-cd]pyrene | 21 | U | 21 | 310 |
| Isophorone | 16 | U | 16 | 310 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63275**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63275/1-A | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-63275 | Lab File ID: | D3429.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.9 g |
| Analysis Date: | 04/25/2011 1733 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2-Methylnaphthalene | 18 | U | 18 | 310 |
| 2-Methylphenol | 12 | U | 12 | 310 |
| 3 & 4 Methylphenol | 31 | U | 31 | 310 |
| Naphthalene | 29 | U | 29 | 310 |
| 2-Nitroaniline | 47 | U | 47 | 310 |
| 3-Nitroaniline | 69 | U | 69 | 310 |
| 4-Nitroaniline | 68 | U | 68 | 310 |
| Nitrobenzene | 21 | U | 21 | 310 |
| 2-Nitrophenol | 9.4 | U | 9.4 | 310 |
| 4-Nitrophenol | 91 | U | 91 | 620 |
| N-Nitrosodi-n-propylamine | 29 | U | 29 | 310 |
| N-Nitrosodiphenylamine | 20 | U | 20 | 310 |
| Pentachlorophenol | 310 | U | 310 | 620 |
| Phenanthrene | 16 | U | 16 | 310 |
| Phenol | 17 | U | 17 | 310 |
| Pyrene | 11 | U | 11 | 310 |
| 1,2,4-Trichlorobenzene | 26 | U | 26 | 310 |
| 2,4,5-Trichlorophenol | 9.4 | U | 9.4 | 310 |
| 2,4,6-Trichlorophenol | 9.4 | U | 9.4 | 310 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 74 | 50 - 120 |
| 2-Fluorophenol | 85 | 53 - 120 |
| Nitrobenzene-d5 | 73 | 50 - 120 |
| Phenol-d5 | 80 | 52 - 120 |
| Terphenyl-d14 | 101 | 55 - 120 |
| 2,4,6-Tribromophenol | 82 | 51 - 120 |

**Method Blank TICs- Batch: 280-63275**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| | Unknown | 2.75 | 126 | N J |
| | Unknown | 2.93 | 2220 | N J |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Lab Control Sample - Batch: 280-63275**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63275/2-A | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-63275 | Lab File ID: | D3409.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.9 g |
| Analysis Date: | 04/25/2011 1118 | Units: | ug/Kg | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 2510 | 2010 | 80 | 52 - 120 | |
| Anthracene | 2510 | 1780 | 71 | 57 - 120 | |
| Carbazole | 2510 | 1970 | 79 | 54 - 120 | |
| 4-Chloro-3-methylphenol | 2510 | 2050 | 82 | 57 - 120 | |
| 2-Chlorophenol | 2510 | 1750 | 70 | 53 - 120 | |
| 1,4-Dichlorobenzene | 2510 | 1720 | 68 | 46 - 120 | |
| 2,4-Dinitrotoluene | 2510 | 2160 | 86 | 53 - 120 | |
| 2-Methylnaphthalene | 2510 | 1790 | 71 | 55 - 120 | |
| 2-Methylphenol | 2510 | 1790 | 72 | 51 - 120 | |
| 4-Nitrophenol | 2510 | 2120 | 84 | 41 - 120 | |
| N-Nitrosodi-n-propylamine | 2510 | 1950 | 78 | 51 - 120 | |
| Pentachlorophenol | 2510 | 2010 | 80 | 30 - 120 | |
| Phenol | 2510 | 1800 | 72 | 54 - 120 | |
| Pyrene | 2510 | 2120 | 85 | 50 - 120 | |
| 1,2,4-Trichlorobenzene | 2510 | 1760 | 70 | 50 - 120 | |
| 2,4,6-Trichlorophenol | 2510 | 1810 | 72 | 50 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 76 | 50 - 120 |
| 2-Fluorophenol | 76 | 53 - 120 |
| Nitrobenzene-d5 | 77 | 50 - 120 |
| Phenol-d5 | 76 | 52 - 120 |
| Terphenyl-d14 | 89 | 55 - 120 |
| 2,4,6-Tribromophenol | 90 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-63275**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-63275 | Lab File ID: | D3410.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.9 g |
| Analysis Date: | 04/25/2011 1137 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64085 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-63275 | Lab File ID: | D3411.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.0 g |
| Analysis Date: | 04/25/2011 1156 | | | Final Weight/Volume: | 1000 uL |
| Prep Date: | 04/21/2011 0030 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 74 | 85 | 52 - 120 | 19 | 30 | | |
| Anthracene | 65 | 76 | 57 - 120 | 20 | 30 | | |
| Carbazole | 75 | 84 | 54 - 120 | 16 | 30 | | |
| 4-Chloro-3-methylphenol | 81 | 88 | 57 - 120 | 15 | 30 | | |
| 2-Chlorophenol | 74 | 77 | 53 - 120 | 10 | 30 | | |
| 1,4-Dichlorobenzene | 69 | 59 | 46 - 120 | 10 | 30 | | |
| 2,4-Dinitrotoluene | 80 | 89 | 53 - 120 | 16 | 30 | | |
| 2-Methylnaphthalene | 73 | 77 | 55 - 120 | 12 | 30 | | |
| 2-Methylphenol | 78 | 84 | 51 - 120 | 14 | 30 | | |
| 4-Nitrophenol | 81 | 91 | 41 - 120 | 17 | 30 | | |
| N-Nitrosodi-n-propylamine | 79 | 81 | 51 - 120 | 9 | 30 | | |
| Pentachlorophenol | 66 | 73 | 30 - 120 | 15 | 30 | | |
| Phenol | 78 | 77 | 54 - 120 | 4 | 30 | | |
| Pyrene | 87 | 104 | 50 - 120 | 20 | 38 | | |
| 1,2,4-Trichlorobenzene | 70 | 68 | 50 - 120 | 3 | 30 | | |
| 2,4,6-Trichlorophenol | 69 | 78 | 50 - 120 | 18 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 79 | 84 | 50 - 120 |
| 2-Fluorophenol | 78 | 76 | 53 - 120 |
| Nitrobenzene-d5 | 77 | 76 | 50 - 120 |
| Phenol-d5 | 82 | 79 | 52 - 120 |
| Terphenyl-d14 | 81 | 88 | 55 - 120 |
| 2,4,6-Tribromophenol | 80 | 88 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63276**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63276/1-A | Analysis Batch: | 280-64126 | Instrument ID: | GCS_P3 |
| Client Matrix: | Solid | Prep Batch: | 280-63276 | Lab File ID: | 023B2301.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 32.2 g |
| Analysis Date: | 04/22/2011 2002 | Units: | ug/Kg | Final Weight/Volume: | 5000 uL |
| Prep Date: | 04/20/2011 2349 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aroclor 1016 | 2.6 | U | 2.6 | 9.3 |
| Aroclor 1221 | 7.5 | U | 7.5 | 15 |
| Aroclor 1232 | 1.9 | U | 1.9 | 9.3 |
| Aroclor 1242 | 4.3 | U | 4.3 | 9.3 |
| Aroclor 1248 | 4.3 | U | 4.3 | 9.3 |
| Aroclor 1254 | 2.4 | U | 2.4 | 9.3 |
| Aroclor 1260 | 2.4 | U | 2.4 | 9.3 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 81 | 59 - 130 |
| Tetrachloro-m-xylene | 95 | 53 - 128 |

**Lab Control Sample - Batch: 280-63276**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63276/2-A | Analysis Batch: | 280-64126 | Instrument ID: | GCS_P3 |
| Client Matrix: | Solid | Prep Batch: | 280-63276 | Lab File ID: | 024B2401.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 31.1 g |
| Analysis Date: | 04/22/2011 2023 | Units: | ug/Kg | Final Weight/Volume: | 5000 uL |
| Prep Date: | 04/20/2011 2349 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aroclor 1016 | 32.2 | 22.4 | 70 | 54 - 132 | |
| Aroclor 1260 | 32.2 | 27.7 | 86 | 62 - 129 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 80 | 59 - 130 |
| Tetrachloro-m-xylene | 97 | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-63276**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64126 | Instrument ID: | GCS_P3 |
| Client Matrix: | Solid | Prep Batch: | 280-63276 | Lab File ID: | 028B2801.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.6 g |
| Analysis Date: | 04/22/2011 2149 | | | Final Weight/Volume: | 5000 uL |
| Prep Date: | 04/20/2011 2349 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64126 | Instrument ID: | GCS_P3 |
| Client Matrix: | Solid | Prep Batch: | 280-63276 | Lab File ID: | 029B2901.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.0 g |
| Analysis Date: | 04/22/2011 2210 | | | Final Weight/Volume: | 5000 uL |
| Prep Date: | 04/20/2011 2349 | | | 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 | 92 | 86 | 54 - 132 | 5 | 26 | | |
| Aroclor 1260 | 102 | 88 | 62 - 129 | 6 | 26 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 72 | 71 | 59 - 130 |
| Tetrachloro-m-xylene | 93 | 94 | 53 - 128 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63486/1-A | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 g |
| Analysis Date: | 04/25/2011 1700 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Arsenic | 0.66 | U | 0.66 | 1.0 |
| Barium | 0.429 | 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 | 14.1 | U | 14.1 | 50.0 |
| Chromium | 0.058 | U | 0.058 | 0.20 |
| Cobalt | 0.10 | U | 0.10 | 1.0 |
| Copper | 0.22 | U | 0.22 | 1.0 |
| Molybdenum | 0.26 | U | 0.26 | 2.0 |
| Nickel | 0.12 | U | 0.12 | 4.0 |
| Potassium | 41.66 | B | 41.0 | 300 |
| Silicon | 5.7 | U | 5.7 | 10.0 |
| Silver | 0.16 | U | 0.16 | 0.20 |
| Zinc | 0.40 | U | 0.40 | 1.0 |
| Zirconium | 0.35 | U | 0.35 | 2.5 |

**Method Blank - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63486/1-A | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 g |
| Analysis Date: | 04/26/2011 1334 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aluminum | 1.6 | U | 1.6 | 5.0 |
| Antimony | 0.38 | U | 0.38 | 0.60 |
| Iron | 3.8 | U | 3.8 | 5.0 |
| Lead | 0.27 | U | 0.27 | 0.50 |
| Manganese | 0.182 | B | 0.10 | 1.0 |
| Selenium | 0.86 | U | 0.86 | 1.0 |
| Sodium | 59.0 | U | 59.0 | 120 |
| Vanadium | 0.094 | U | 0.094 | 2.0 |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Lab Control Sample - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63486/2-A | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 g |
| Analysis Date: | 04/25/2011 1702 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Arsenic | 100 | 99.16 | 99 | 85 - 110 | |
| Barium | 200 | 185.9 | 93 | 87 - 112 | |
| Beryllium | 5.00 | 4.73 | 95 | 84 - 114 | |
| Boron | 100 | 90.45 | 90 | 81 - 110 | |
| Cadmium | 10.0 | 9.20 | 92 | 87 - 110 | |
| Calcium | 5000 | 4445 | 89 | 82 - 114 | |
| Chromium | 20.0 | 20.69 | 103 | 84 - 114 | |
| Cobalt | 50.0 | 46.05 | 92 | 87 - 110 | |
| Copper | 25.0 | 23.68 | 95 | 88 - 110 | |
| Molybdenum | 100 | 101.7 | 102 | 86 - 110 | |
| Nickel | 50.0 | 47.30 | 95 | 87 - 110 | |
| Potassium | 5000 | 4806 | 96 | 89 - 110 | |
| Silicon | 1000 | 165.2 | 17 | 10 - 70 | |
| Silver | 5.00 | 4.41 | 88 | 87 - 114 | |
| Zinc | 50.0 | 43.73 | 87 | 76 - 114 | |
| Zirconium | 50.0 | 48.03 | 96 | 90 - 110 | |

**Lab Control Sample - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63486/2-A | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 g |
| Analysis Date: | 04/26/2011 1337 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aluminum | 200 | 174.9 | 87 | 82 - 116 | |
| Antimony | 50.0 | 45.26 | 91 | 82 - 110 | |
| Iron | 100 | 94.93 | 95 | 87 - 120 | |
| Lead | 50.0 | 45.38 | 91 | 86 - 110 | |
| Manganese | 50.0 | 44.35 | 89 | 88 - 110 | |
| Selenium | 200 | 173.2 | 87 | 83 - 110 | |
| Sodium | 5000 | 4584 | 92 | 90 - 112 | |
| Vanadium | 50.0 | 44.95 | 90 | 88 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 04/25/2011 1711 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Arsenic | 2.4 | | 108 | 101.2 | 92 | 76 - 111 | |
| Barium | 77.7 | | 216 | 253.9 | 82 | 52 - 159 | |
| Beryllium | 0.035 | U | 5.39 | 4.75 | 88 | 72 - 105 | |
| Boron | 2.7 | | 108 | 88.31 | 79 | 75 - 107 | |
| Cadmium | 0.30 | | 10.8 | 9.31 | 84 | 40 - 130 | |
| Calcium | 11300 | | 5390 | 11790 | 10 | 43 - 165 | N |
| Chromium | 10.9 | | 21.6 | 34.61 | 110 | 70 - 200 | |
| Cobalt | 8.2 | | 53.9 | 53.10 | 83 | 72 - 106 | |
| Copper | 20.9 | | 26.9 | 43.40 | 84 | 37 - 187 | |
| Molybdenum | 0.66 | B | 108 | 100.9 | 93 | 75 - 103 | |
| Nickel | 12.4 | | 53.9 | 60.11 | 89 | 61 - 126 | |
| Potassium | 1140 | | 5390 | 6064 | 91 | 56 - 172 | |
| Silicon | 258 | | 1080 | 454.6 | 18 | 20 - 200 | N |
| Silver | 0.17 | U | 5.39 | 4.26 | 79 | 75 - 141 | |
| Zinc | 229 | | 53.9 | 238.2 | 17 | 70 - 200 | 4 |
| Zirconium | 21.7 | | 53.9 | 73.18 | 96 | 75 - 125 | |

**Matrix Spike - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.00 g |
| Analysis Date: | 04/26/2011 1346 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Aluminum | 6660 | | 216 | 8381 | 798 | 50 - 200 | 4 |
| Antimony | 0.40 | U | 53.9 | 28.52 | 53 | 20 - 200 | |
| Iron | 21300 | | 108 | 20800 | -421 | 70 - 200 | 4 |
| Lead | 12.0 | | 53.9 | 56.77 | 83 | 70 - 200 | |
| Manganese | 324 | | 53.9 | 373.2 | 91 | 40 - 200 | 4 |
| Selenium | 0.90 | U | 216 | 174.5 | 81 | 76 - 104 | |
| Sodium | 308 | | 5390 | 5371 | 94 | 78 - 111 | |
| Vanadium | 53.8 | | 53.9 | 100.1 | 86 | 50 - 169 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Duplicate - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64063 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26b042511.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.05 g |
| Analysis Date: | 04/25/2011 1709 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Arsenic | 2.4 | | 2.40 | 1 | 30 | |
| Barium | 77.7 | | 77.50 | 0.3 | 30 | |
| Beryllium | 0.035 | U | 0.034 | NC | 30 | U |
| Boron | 2.7 | | 2.12 | 24 | 30 | |
| Cadmium | 0.30 | | 0.272 | 10 | 30 | |
| Calcium | 11300 | | 9082 | 22 | 30 | |
| Chromium | 10.9 | | 12.00 | 9 | 40 | |
| Cobalt | 8.2 | | 7.34 | 11 | 30 | |
| Copper | 20.9 | | 19.67 | 6 | 30 | |
| Molybdenum | 0.66 | B | 0.279 | 81 | 30 | B M |
| Nickel | 12.4 | | 13.12 | 6 | 30 | |
| Potassium | 1140 | | 1195 | 5 | 40 | |
| Silicon | 258 | | 369.9 | 36 | 40 | |
| Silver | 0.17 | U | 0.16 | NC | 30 | U |
| Zinc | 229 | | 234.7 | 2 | 40 | |
| Zirconium | 21.7 | | 21.10 | 3 | 30 | |

**Duplicate - Batch: 280-63486**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64267 | Instrument ID: | MT_026 |
| Client Matrix: | Solid | Prep Batch: | 280-63486 | Lab File ID: | 26a042611.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.05 g |
| Analysis Date: | 04/26/2011 1344 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/25/2011 0830 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Aluminum | 6660 | | 6816 | 2 | 40 | |
| Antimony | 0.40 | U | 0.39 | NC | 40 | U |
| Iron | 21300 | | 20170 | 5 | 40 | |
| Lead | 12.0 | | 13.30 | 10 | 40 | |
| Manganese | 324 | | 297.8 | 9 | 40 | |
| Selenium | 0.90 | U | 0.88 | NC | 30 | U |
| Sodium | 308 | | 299.1 | 3 | 30 | |
| Vanadium | 53.8 | | 51.75 | 4 | 30 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-64318**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-64318/1-A | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/28/2011 1124 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Magnesium | 0.037 | U | 0.037 | 0.20 |

**Lab Control Sample - Batch: 280-64318**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-64318/2-A | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/28/2011 1127 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Magnesium | 50.0 | 51.49 | 103 | 90 - 110 | |

**Matrix Spike - Batch: 280-64318**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.05 g |
| Analysis Date: | 04/28/2011 1139 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Magnesium | 4290 | 5110 | 9640 | 105 | 64 - 145 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Duplicate - Batch: 280-64318**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64725 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-64318 | Lab File ID: | 25A1042811.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.08 g |
| Analysis Date: | 04/28/2011 1136 | Units: | mg/Kg | Final Weight/Volume: | 100 mL |
| Prep Date: | 04/27/2011 1500 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Magnesium | 4290 | 4108 | 4 | 30 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63406**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63406/1-A | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Client Matrix: | Solid | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.60 g |
| Analysis Date: | 04/28/2011 1429 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |
| Leach Date: | N/A | | | | |

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

**Lab Control Sample - Batch: 280-63406**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63406/2-A | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Client Matrix: | Solid | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.60 g |
| Analysis Date: | 04/28/2011 1432 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.417 | 0.387 | 93 | 87 - 111 | |

**Matrix Spike - Batch: 280-63406**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Client Matrix: | Solid | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.65 g |
| Analysis Date: | 04/28/2011 1441 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Mercury | 0.029 | 0.413 | 0.437 | 99 | 87 - 111 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Duplicate - Batch: 280-63406**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-2 | Analysis Batch: | 280-64749 | Instrument ID: | MT_033 |
| Client Matrix: | Solid | Prep Batch: | 280-63406 | Lab File ID: | 110428AA.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 0.64 g |
| Analysis Date: | 04/28/2011 1438 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/28/2011 1100 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.029 | 0.0174 | 50 | 20 | M |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-64536**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63719/1-A | Analysis Batch: | 280-64536 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0427ANXN |
| Dilution: | 1.0 | Leach Batch: | 280-63719 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/27/2011 1156 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1135 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 0.35 | U | 0.35 | 0.73 |

**Method Reporting Limit Check - Batch: 280-64536**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-64536/17 | Analysis Batch: | 280-64536 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0427ANXN |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 04/27/2011 1054 | 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 | 0.0909 | 91 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-64536**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63719/2-A | Analysis Batch: | 280-64536 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0427ANXN |
| Dilution: | 1.0 | Leach Batch: | 280-63719 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/27/2011 1157 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1135 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 48.1 | 47.60 | 99 | 90 - 110 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike - Batch: 280-64536**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64536 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0427ANXN |
| Dilution: | 1.0 | Leach Batch: | 280-63719 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/27/2011 1211 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1135 | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 2.7 | 41.4 | 46.30 | 105 | 90 - 110 | |

**Duplicate - Batch: 280-64536**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-64536 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0427ANXN |
| Dilution: | 1.0 | Leach Batch: | 280-63719 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/27/2011 1209 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1135 | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N-Soluble | 2.7 | 2.34 | 13 | 10 | M |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63362/4-A | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/22/2011 1346 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| Leach Date: | N/A | | | | |

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

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**High Level Control Sample - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | HLCS 280-63362/1-A | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 2.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/22/2011 1341 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 20.0 | 19.10 | 95 | 90 - 110 | |

**Low Level Control Sample - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LLCS 280-63362/2-A | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/22/2011 1343 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 5.00 | 5.01 | 100 | 90 - 110 | |

**Lab Control Sample - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63362/3-A | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 g |
| Analysis Date: | 04/22/2011 1344 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 5.00 | 4.97 | 99 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.01 g |
| Analysis Date: | 04/22/2011 1356 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Total Cyanide | 0.11 | U | 5.33 | 4.81 | 90 | 90 - 110 | |

**Duplicate - Batch: 280-63362**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63740 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Solid | Prep Batch: | 280-63362 | Lab File ID: | C:\FLOW_4\CN042211 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.02 g |
| Analysis Date: | 04/22/2011 1358 | Units: | mg/Kg | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/21/2011 1021 | | | | |
| 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: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63966**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63966/6-A | Analysis Batch: | 280-63998 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-63966 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 51.65 g |
| Analysis Date: | 04/25/2011 1627 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 04/25/2011 1409 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Sulfide | 2.3 | U | 2.3 | 4.8 |

**Lab Control Sample - Batch: 280-63966**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63966/4-A | Analysis Batch: | 280-63998 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-63966 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.38 g |
| Analysis Date: | 04/25/2011 1627 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 04/25/2011 1409 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 96.9 | 63.52 | 66 | 47 - 100 | |

**Matrix Spike - Batch: 280-63966**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63998 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-63966 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 49.98 g |
| Analysis Date: | 04/25/2011 1627 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 04/25/2011 1409 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Sulfide | 2.5 | U | 105 | 63.82 | 61 | 57 - 136 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Duplicate - Batch: 280-63966**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63998 | Instrument ID: | No Equipment |
| Client Matrix: | Solid | Prep Batch: | 280-63966 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 51.68 g |
| Analysis Date: | 04/25/2011 1627 | Units: | mg/Kg | Final Weight/Volume: | 250 mL |
| Prep Date: | 04/25/2011 1409 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Sulfide | 2.5 | U | 2.5 | NC | 35 | U |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-63515**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-63515/4 | Analysis Batch: | 280-63515 | Instrument ID: | WC_pH Probe |
| 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: | 04/21/2011 0738 | Units: | SU | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-63515/5 | Analysis Batch: | 280-63515 | Instrument ID: | WC_pH Probe |
| 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: | 04/21/2011 0739 | 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 | 101 | 101 | 97 - 103 | 0 | 5 | | |

**Duplicate - Batch: 280-63515**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63515 | Instrument ID: | WC_pH Probe |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | 280-63343 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/21/2011 1448 | Units: | SU | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/21/2011 0943 | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| pH adj. to 25 deg C-Soluble | 9.24 | 9.220 | 0.2 | 5 | |

Job Number: 280-14844-1
Sdg Number: J01087

Client: Washington Closure Hanford

## Method Blank - Batch: 280-63808

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63717/2-A | Analysis Batch: | 280-63808 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 146.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2150 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate as N-Soluble | 0.394 | B | 0.30 | 2.4 |
| Nitrite as N-Soluble | 0.32 | U | 0.32 | 2.4 |
| Orthophosphate as P-Soluble | 1.2 | U | 1.2 | 4.8 |

## Method Reporting Limit Check - Batch: 280-63808

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-63808/11 | Analysis Batch: | 280-63808 | Instrument ID: | WC_IC8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 110.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 1036 | 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 | 0.191 | 96 | 50 - 150 | B |
| Nitrite as N-Soluble | 0.200 | 0.197 | 98 | 50 - 150 | B |
| Orthophosphate as P-Soluble | 0.200 | 0.203 | 102 | 50 - 150 | B |

## Lab Control Sample - Batch: 280-63808

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63717/1-A | Analysis Batch: | 280-63808 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 145.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2134 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N-Soluble | 49.0 | 49.61 | 101 | 90 - 110 | |
| Nitrite as N-Soluble | 49.0 | 49.77 | 102 | 90 - 110 | |
| Orthophosphate as P-Soluble | 49.0 | 47.34 | 97 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike - Batch: 280-63808**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63808 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 151.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2314 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Nitrate as N-Soluble | 2.1 | B | 51.8 | 54.89 | 102 | 80 - 120 | |
| Nitrite as N-Soluble | 0.35 | U | 51.8 | 53.39 | 103 | 80 - 120 | |
| Orthophosphate as P-Soluble | 1.3 | U | 51.8 | 42.54 | 82 | 80 - 120 | |

**Duplicate - Batch: 280-63808**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63808 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 150.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2258 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate as N-Soluble | 2.1 | B | 2.08 | 0.5 | 15 | B |
| Nitrite as N-Soluble | 0.35 | U | 0.35 | NC | 15 | U |
| Orthophosphate as P-Soluble | 1.3 | U | 1.3 | NC | 15 | U |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Method Blank - Batch: 280-63809**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-63717/2-A | Analysis Batch: | 280-63809 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 146.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2150 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Chloride-Soluble | 1.9 | U | 1.9 | 4.8 |
| Bromide-Soluble | 0.37 | U | 0.37 | 1.9 |
| Sulfate-Soluble | 1.7 | U | 1.7 | 4.8 |
| Fluoride-Soluble | 0.79 | U | 0.79 | 4.8 |

**Method Reporting Limit Check - Batch: 280-63809**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-63809/11 | Analysis Batch: | 280-63809 | Instrument ID: | WC_IC8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 110.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 1036 | 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 | 0.916 | 92 | 50 - 150 | B |
| Bromide-Soluble | 0.200 | 0.200 | 100 | 50 - 150 | B |
| Sulfate-Soluble | 1.00 | 0.954 | 95 | 50 - 150 | B |
| Fluoride-Soluble | 0.200 | 0.198 | 99 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-63809**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-63717/1-A | Analysis Batch: | 280-63809 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 145.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2134 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Chloride-Soluble | 245 | 248.9 | 102 | 90 - 110 | |
| Bromide-Soluble | 49.0 | 49.33 | 101 | 90 - 110 | |
| Sulfate-Soluble | 245 | 250.4 | 102 | 90 - 110 | |
| Fluoride-Soluble | 49.0 | 50.34 | 103 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Matrix Spike - Batch: 280-63809**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63809 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 151.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2314 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Chloride-Soluble | 3.2 | B | 259 | 280.6 | 107 | 80 - 120 | |
| Bromide-Soluble | 0.40 | U | 51.8 | 52.73 | 102 | 80 - 120 | |
| Sulfate-Soluble | 15.0 | | 259 | 285.6 | 104 | 80 - 120 | |
| Fluoride-Soluble | 0.85 | U | 51.8 | 44.87 | 87 | 80 - 120 | |

**Duplicate - Batch: 280-63809**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63809 | Instrument ID: | WC_IC8 |
| Client Matrix: | Solid | Prep Batch: | N/A | Lab File ID: | 150.TXT |
| Dilution: | 1.0 | Leach Batch: | 280-63717 | Initial Weight/Volume: | 1.0 mL |
| Analysis Date: | 04/22/2011 2258 | Units: | mg/Kg | Final Weight/Volume: | 1.0 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | 04/22/2011 1426 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Chloride-Soluble | 3.2 | B | 3.15 | 2 | 15 | B |
| Bromide-Soluble | 0.40 | U | 0.40 | NC | 15 | U |
| Sulfate-Soluble | 15.0 | | 14.60 | 3 | 15 | |
| Fluoride-Soluble | 0.85 | U | 0.85 | NC | 15 | U |

Client: Washington Closure Hanford

Job Number: 280-14844-1
Sdg Number: J01087

**Duplicate - Batch: 280-63363**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-14844-1 | Analysis Batch: | 280-63363 | 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: | 04/21/2011 1025 | Units: | % | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Percent Moisture | 7.2 | 6.2 | 15 | 20 | |

3.4

1 of 1

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-149-072 | Page ~~1 of 5~~ DH 4/18/11 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Collector** Q. Stowe | **Company Contact** Joan Kessner | **Telephone No.** 509-375-4688 | **Project Coordinator** KESSNER, JH |
| **Price Code** 8L | **Data Turnaround** ~~21~~ 15 Days DH 4.18.11 | | |
| **Project Designation** 300 Area Field Remediation - Soil In-Process | **Sampling Location** 300-15 | | **SAF No.** RC-149 |
| **Ice Chest No.** ~~N/A~~ AJ 4-18-11 AFS-04-121 | **Field Logbook No.** EL-1395-17 | **COA** R300152600 | **Method of Shipment** Hand Deliever/Fedex |
| **Shipped To** TestAmerica Incorporated, ~~Richland~~ Denver DH 4/18/11 | **Offsite Property No.** N/A | | **Bill of Lading/Air Bill No.** ~~N/A~~ AJ 4-18-11 7970 0854 3823 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potential Radioactive* <DOT Limits JEB 4-19-11

**Special Handling and/or Storage**
*Cool 4C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Preservation** | Cool 4C | None | Cool 4C | Cool 4C | None | Cool 4C | Cool 4C | Cool 4C | Cool 4C | None |
| **Type of Container** | G/P | aG | G/P | aG | G/P | G | aG | aG | aG | aG |
| **No. of Container(s)** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Volume** | 60mL | 120mL | 60mL | 120mL | 60mL | 60mL | 60mL | 60mL | 120mL | 120mL |
| **SAMPLE ANALYSIS** | See item (1) in Special Instructions. | See item (2) in Special Instructions. * | IC Anions - 300.0; NO2/NO3 - 353.2 | Total Cyanide - 9010 | pH (Soil) - 9045; Sulfides - 9030 | VOA - 8260A (TCL) | Semi-VOA - 8270A (TCL) | PCBs - 8082 | TCLP VOA -- 1311/8260A * | TCLP Semi-VOA - 1311/8270A * |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1CYF8 | SOIL | 04/18/11 | 1250 | X | X | X | X | X | X | X | X | X | X |
| J1CYF9 | SOIL | 4/18/11 | 1425 | X | X | X | X | X | X | X | X | X | X |
| ~~J1CYH0~~ | SOIL | | | | | | | | | | | | |
| J1CYH1 | SOIL | | | | | | | | | | | | |
| J1CYH2 | SOIL | | | | | | | | | | | | |

DH 4/18/11

| CHAIN OF POSSESSION | Date/Time | Sign/Print Names: Received By/Stored In | Date/Time |
|---|---|---|---|
| Relinquished By/Removed From: Quincy Stowe | 4/18/11 1520 | Received By/Stored In: Don Heidelberg | 1520 4/18/11 |
| Relinquished By/Removed From: Don Heidelberg | 1600 4/18/11 | Received By/Stored In: A. Freier A. Freier | 1600 4-18-11 |
| Relinquished By/Removed From: WCH A. Freier A. Freier | 1510 4-19-11 | Received By/Stored In: Fed Ex | |
| Relinquished By/Removed From | | ~~Received By/Stored In~~ | 4-20-11 1000 |
| Relinquished By/Removed From | | ~~Received By/Stored In~~ | |
| Relinquished By/Removed From | | Received By/Stored In | |

**SPECIAL INSTRUCTIONS**
(*)Extract and hold TCLP Metals, TCLP SVOA, TCLP VOA. Contact Joan Kessner before analyzing.

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

*Extract and hold TCLP Metals, TCLP VOA and TCLP SVOA. Contact Joan Kessner before analyzing.
J01087 DH 4.18.11

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

REVIEWED BY JEB Date/Time
DATE 4-19-11 Date/Time

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

WCH-EE-011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

(1-2)/4R, 6J

Project 28002142 - 6010TR Solid

Analytical Due:

Report Due: 5/5/11 (Rush 11d TAT)

# Sample Check-in List

Date/Time Received: 4/20/11 1200 GM Screen Result 13 microR/hr

Client: Washington Closure Hanford SDG #: J01087 NA[ ] SAF #: RC-149 NA [ ]

Job Number: 14844 Chain of Custody # RC-149-072

Shipping Container ID: AFS-04-121 Air Bill # 797008547823

1. Custody Seals on shipping container intact? NA [ ] Yes [✓] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [✓] No [ ]
3. Chain of Custody record present? NA [ ] Yes [✓] No [ ]
4. Cooler Temperature °C: 3.4 NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? NA [ ] Yes [ ] No [✓]
8. Samples have:
   - ✓ Tape
   - ✓ Custody Seals
   - ✓ Hazard Lables
   - ✓ Appropriate Sample Lables
9. Samples are:
   - ✓ In Good Condition
   - ___ Broken
   - ___ Leaking
   - ___ Have Air Bubbles (Only for samples requiring no head space.)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ] pH>9 [ ] **Amount $HNO_3$ Added** ___
11. Sample Location, Sample Collector Listed? *
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): ___

**Sample Custodian:** [signature] **Date:** 4/20/11

| Client Sample ID | Analysis Requested | Condition | Comments/Action |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Client Informed on ___ by ___ Person Contacted ___

[ ] No action necessary; process as is.

Project Manager [signature] Date 04/20/11

From: (509) 375-4640 Origin ID: PSCA
WCH MAILROOM
WASHINGTON CLOSURE HANFORD
2620 FERMI AVE

RICHLAND, WA 99354

FedEx. Express

J11151102250225

Ship Date: 19APR11
ActWgt: 70.0 LB
CAD: 8897843/INET3130

Delivery Address Bar Code

Ref #
Invoice #
PO #
Dept #

SHIP TO: (303) 736-0100 BILL SENDER

**Sample Recieving**
**Test America Denver**
**4955 YARROW ST**

**ARVADA, CO 80002**

WED - 20 APR A1
PRIORITY OVERNIGHT

TRK# 0201 7970 0854 3823

**XH WHHA**

80002
CO-US
DEN

50DG3/26A8/7EFB

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