0089701

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

**COMPLETE COPY OF VALIDATION PACKAGE TO:**

Kathy Wendt H4-21 (2 copies)

**COMMENTS:**

**SDG J00791 SAF-RC-075**

**Waste Site: 118-D-1**

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Date: 12 July 2010
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Site – Soil Full Protocol - Waste Site 118-D-1
Subject: Radiochemistry - Data Package No. J00791-TAL

## INTRODUCTION

This memo presents the results of data validation on Data Package No. J00791 prepared by TestAmerica Laboratory Inc. (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|---|---|---|---|---|
| J19XP8 | 5/13/10 | Soil | C | See note 1 |
| J19XP9 | 5/13/10 | Soil | C | See note 1 |
| J19XR0 | 5/13/10 | Soil | C | See note 1 |
| J19XR1 | 5/13/10 | Soil | C | See note 1 |
| J19XR2 | 5/13/10 | Soil | C | See note 1 |
| J19XR3 | 5/13/10 | Soil | C | See note 1 |
| J19XR4 | 5/13/10 | Soil | C | See note 1 |
| J19XR5 | 5/13/10 | Soil | C | See note 1 |
| J19XR6 | 5/13/10 | Soil | C | See note 1 |
| J19XR7 | 5/13/10 | Soil | C | See note 1 |
| J19XR8 | 5/13/10 | Soil | C | See note 1 |
| J19XR9 | 5/13/10 | Soil | C | See note 1 |
| J19XT0 | 5/13/10 | Soil | C | See note 1 |
| J19XW8 | 5/13/10 | Soil | C | See note 1 |
| J19XW9 | 5/13/10 | Soil | C | See note 1 |
| J19XX0 | 5/13/10 | Soil | C | See note 1 |

1 – Gamma spectroscopy, alpha spectroscopy, strontium-90, nickel-63, technetium-99, carbon-14, tritium.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

## DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

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

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

All other laboratory blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 65-135%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

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

Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 35%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J19XR4/J19XT0) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. J00791 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

## MAJOR DEFICIENCIES

None found.

## MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to method blank contamination, all tritium results were qualified and undetected and flagged "U".
- Due to the lack of an LCS analysis, all plutonium-238 and uranium-235 results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

## REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

## Appendix 1

## Glossary of Data Reporting Qualifiers

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

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

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

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

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

## Appendix 2

## Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

| SDG: J00783 | REVIEWER: ELR | Project: 118-D-1 | PAGE 1 OF 1 |
|---|---|---|---|
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Tritium | U | All | Method blank contamination |
| Plutonium-238<br>Uranium-235 | J | All | No LCS analysis |
| Tritium<br>Carbon-14 | J | All | No MS analysis |

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

**Appendix 3**

**Annotated Laboratory Reports**

7/6/10

Date: 23-Jun-10

# Sample Results Summary

## TestAmerica TARL

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

**Report No. : 44110** **SDG No: J00791**

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140122 PUISO_PLATE_AEA | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AF | PU-238 | 0.00E+00 +- 7.0E-02 | U J | pCi/g | 72% | 1.30E-01 | 1.00E+00 | |
| | | PU239/40 | -1.69E-03 +- 7.0E-02 | U | pCi/g | 72% | 1.30E-01 | 1.00E+00 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AF | PU-238 | -4.59E-03 +- 6.1E-02 | U J | pCi/g | 86% | 1.38E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 6.1E-02 | U | pCi/g | 86% | 1.14E-01 | 1.00E+00 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AF | PU-238 | -1.65E-03 +- 6.6E-02 | U J | pCi/g | 79% | 1.24E-01 | 1.00E+00 | |
| | | PU239/40 | -1.65E-03 +- 6.6E-02 | U | pCi/g | 79% | 1.24E-01 | 1.00E+00 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AF | PU-238 | -2.90E-03 +- 5.8E-02 | U J | pCi/g | 83% | 1.21E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 5.8E-02 | U | pCi/g | 83% | 1.08E-01 | 1.00E+00 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AF | PU-238 | -1.51E-03 +- 6.1E-02 | U J | pCi/g | 83% | 1.13E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 6.0E-02 | U | pCi/g | 83% | 1.13E-01 | 1.00E+00 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AF | PU-238 | -2.97E-03 +- 5.9E-02 | U J | pCi/g | 83% | 1.23E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 5.9E-02 | U | pCi/g | 83% | 1.10E-01 | 1.00E+00 | |
| J19XR3 DUP | | | | | | | | | |
| | L1Q521AL | PU-238 | -1.32E-03 +- 5.3E-02 | U | pCi/g | 99% | 9.92E-02 | 1.00E+00 | -76.7 |
| | | PU239/40 | 2.64E-02 +- 5.3E-02 | U | pCi/g | 99% | 9.91E-02 | 1.00E+00 | 200.0 |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AF | PU-238 | 0.00E+00 +- 8.3E-02 | U J | pCi/g | 63% | 1.55E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 8.3E-02 | U | pCi/g | 63% | 1.55E-01 | 1.00E+00 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AF | PU-238 | -1.60E-03 +- 6.4E-02 | U J | pCi/g | 78% | 1.20E-01 | 1.00E+00 | |
| | | PU239/40 | 5.58E-02 +- 9.1E-02 | U | pCi/g | 78% | 1.61E-01 | 1.00E+00 | |
| J19XR6 | | | | | | | | | |
| | L1Q851AF | PU-238 | -1.71E-03 +- 7.0E-02 | U J | pCi/g | 75% | 1.31E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 7.0E-02 | U | pCi/g | 75% | 1.31E-01 | 1.00E+00 | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AF | PU-238 | 0.00E+00 +- 7.3E-02 | U J | pCi/g | 80% | 1.36E-01 | 1.00E+00 | |
| | | PU239/40 | -3.55E-03 +- 7.3E-02 | U | pCi/g | 80% | 1.51E-01 | 1.00E+00 | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AF | PU-238 | 0.00E+00 +- 5.9E-02 | U J | pCi/g | 85% | 1.11E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 5.9E-02 | U | pCi/g | 85% | 1.11E-01 | 1.00E+00 | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AF | PU-238 | -2.72E-03 +- 1.1E-01 | U J | pCi/g | 49% | 2.03E-01 | 1.00E+00 | |

TestAmerica

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RPD - Relative Percent Difference.

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

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7/6/10

# Sample Results Summary

## TestAmerica TARL

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

Date: 23-Jun-10

Report No. : 44110

SDG No: J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140122 PUISO_PLATE_AEA | | | | | | | | | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AF | PU239/40 | -1.36E-02 +- 1.1E-01 | U | pCi/g | 49% | 2.72E-01 | 1.00E+00 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AF | PU-238 | -2.81E-03 +- 5.6E-02 | U J | pCi/g | 88% | 1.17E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 5.6E-02 | U | pCi/g | 88% | 1.05E-01 | 1.00E+00 | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AF | PU-238 | 0.00E+00 +- 5.5E-02 | U J | pCi/g | 96% | 1.04E-01 | 1.00E+00 | |
| | | PU239/40 | -2.78E-03 +- 5.5E-02 | U | pCi/g | 96% | 1.15E-01 | 1.00E+00 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AF | PU-238 | 0.00E+00 +- 6.6E-02 | U J | pCi/g | 75% | 1.23E-01 | 1.00E+00 | |
| | | PU239/40 | -1.65E-03 +- 6.6E-02 | U | pCi/g | 75% | 1.23E-01 | 1.00E+00 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AF | PU-238 | 0.00E+00 +- 6.3E-02 | U J | pCi/g | 83% | 1.18E-01 | 1.00E+00 | |
| | | PU239/40 | 0.00E+00 +- 6.3E-02 | U | pCi/g | 83% | 1.17E-01 | 1.00E+00 | |
| 0140124 UISO_IE_PLATE_AEA | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AC | U-234 | 6.83E-01 +- 3.2E-01 | | pCi/g | 71% | 1.12E-01 | 1.00E+00 | |
| | | U-235 | 0.00E+00 +- 6.0E-02 | U J | pCi/g | 71% | 1.12E-01 | 1.00E+00 | |
| | | U-238 | 8.31E-01 +- 3.7E-01 | | pCi/g | 71% | 1.25E-01 | 1.00E+00 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AC | U-234 | 4.31E-01 +- 2.3E-01 | | pCi/g | 91% | 9.55E-02 | 1.00E+00 | |
| | | U-235 | 2.29E-02 +- 5.1E-02 | U J | pCi/g | 91% | 1.06E-01 | 1.00E+00 | |
| | | U-238 | 7.33E-01 +- 3.2E-01 | | pCi/g | 91% | 1.22E-01 | 1.00E+00 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AC | U-234 | 7.41E-01 +- 3.4E-01 | | pCi/g | 80% | 1.52E-01 | 1.00E+00 | |
| | | U-235 | -1.80E-03 +- 6.0E-02 | U J | pCi/g | 80% | 1.15E-01 | 1.00E+00 | |
| | | U-238 | 7.47E-01 +- 3.4E-01 | | pCi/g | 80% | 1.09E-01 | 1.00E+00 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AC | U-234 | 7.19E-01 +- 3.4E-01 | | pCi/g | 85% | 1.44E-01 | 1.00E+00 | |
| | | U-235 | 2.96E-02 +- 6.3E-02 | U J | pCi/g | 85% | 1.21E-01 | 1.00E+00 | |
| | | U-238 | 9.73E-01 +- 4.1E-01 | | pCi/g | 85% | 1.36E-01 | 1.00E+00 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AC | U-234 | 7.34E-01 +- 3.3E-01 | | pCi/g | 91% | 1.06E-01 | 1.00E+00 | |
| | | U-235 | 0.00E+00 +- 5.7E-02 | U J | pCi/g | 91% | 1.06E-01 | 1.00E+00 | |
| | | U-238 | 6.48E-01 +- 3.1E-01 | | pCi/g | 91% | 1.06E-01 | 1.00E+00 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AC | U-234 | 8.54E-01 +- 3.6E-01 | | pCi/g | 84% | 1.36E-01 | 1.00E+00 | |
| | | U-235 | -1.35E-03 +- 5.4E-02 | U J | pCi/g | 84% | 1.01E-01 | 1.00E+00 | |

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RPD - Relative Percent Difference.

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

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7/6/10

# Sample Results Summary

## TestAmerica TARL

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

Date: 23-Jun-10

**Report No. :** 44110

**SDG No:** J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140124 | UISO_IE_PLATE_AEA | | | | | | | | |
| | J19XR3 | | | | | | | | |
| | L1Q521AC | U-238 | 6.65E-01 +- 3.1E-01 | | pCi/g | 84% | 1.41E-01 | 1.00E+00 | |
| | J19XR4 | | | | | | | | |
| | L1Q7N1AC | U-234 | 3.50E-01 +- 2.1E-01 | | pCi/g | 85% | 1.51E-01 | 1.00E+00 | |
| | | U-235 | 2.49E-02 +- 5.6E-02 | U J | pCi/g | 85% | 1.16E-01 | 1.00E+00 | |
| | | U-238 | 3.25E-01 +- 2.0E-01 | | pCi/g | 85% | 1.39E-01 | 1.00E+00 | |
| | J19XR4 DUP | | | | | | | | |
| | L1Q7N1AL | U-234 | 4.50E-01 +- 2.6E-01 | | pCi/g | 79% | 1.74E-01 | 1.00E+00 | 25.2 |
| | | U-235 | -1.54E-03 +- 6.2E-02 | U | pCi/g | 79% | 1.16E-01 | 1.00E+00 | 226.5 |
| | | U-238 | 5.51E-01 +- 2.9E-01 | | pCi/g | 79% | 1.39E-01 | 1.00E+00 | 51.6 |
| | J19XR5 | | | | | | | | |
| | L1Q771AC | U-234 | 4.14E-01 +- 2.6E-01 | | pCi/g | 67% | 1.45E-01 | 1.00E+00 | |
| | | U-235 | 0.00E+00 +- 7.0E-02 | U J | pCi/g | 67% | 1.30E-01 | 1.00E+00 | |
| | | U-238 | 3.48E-01 +- 2.3E-01 | | pCi/g | 67% | 1.30E-01 | 1.00E+00 | |
| | J19XR6 | | | | | | | | |
| | L1Q851AC | U-234 | 1.14E+00 +- 4.4E-01 | | pCi/g | 78% | 1.29E-01 | 1.00E+00 | |
| | | U-235 | 5.59E-02 +- 8.2E-02 | U J | pCi/g | 78% | 1.08E-01 | 1.00E+00 | |
| | | U-238 | 5.99E-01 +- 2.9E-01 | | pCi/g | 78% | 1.20E-01 | 1.00E+00 | |
| | J19XR7 | | | | | | | | |
| | L1Q9A1AC | U-234 | 2.46E-01 +- 1.7E-01 | | pCi/g | 86% | 1.03E-01 | 1.00E+00 | |
| | | U-235 | -1.38E-03 +- 5.5E-02 | U J | pCi/g | 86% | 1.03E-01 | 1.00E+00 | |
| | | U-238 | 4.94E-01 +- 2.6E-01 | | pCi/g | 86% | 1.03E-01 | 1.00E+00 | |
| | J19XR8 | | | | | | | | |
| | L1Q9X1AC | U-234 | 4.08E-01 +- 2.2E-01 | | pCi/g | 89% | 1.27E-01 | 1.00E+00 | |
| | | U-235 | -5.20E-04 +- 5.2E-02 | U J | pCi/g | 89% | 8.71E-02 | 1.00E+00 | |
| | | U-238 | 4.12E-01 +- 2.2E-01 | | pCi/g | 89% | 1.04E-01 | 1.00E+00 | |
| | J19XR9 | | | | | | | | |
| | L1RAE1AC | U-234 | 5.07E-01 +- 2.6E-01 | | pCi/g | 85% | 1.54E-01 | 1.00E+00 | |
| | | U-235 | 2.45E-02 +- 5.5E-02 | U J | pCi/g | 85% | 1.14E-01 | 1.00E+00 | |
| | | U-238 | 7.02E-01 +- 3.2E-01 | | pCi/g | 85% | 1.37E-01 | 1.00E+00 | |
| | J19XT0 | | | | | | | | |
| | L1RAG1AC | U-234 | 3.80E-01 +- 2.2E-01 | | pCi/g | 88% | 1.88E-01 | 1.00E+00 | |
| | | U-235 | -4.04E-03 +- 5.4E-02 | U J | pCi/g | 88% | 1.21E-01 | 1.00E+00 | |
| | | U-238 | 4.16E-01 +- 2.3E-01 | | pCi/g | 88% | 1.61E-01 | 1.00E+00 | |
| | J19XW8 | | | | | | | | |
| | L1RAK1AC | U-234 | 9.08E-01 +- 4.3E-01 | | pCi/g | 62% | 1.59E-01 | 1.00E+00 | |
| | | U-235 | 3.80E-02 +- 7.7E-02 | U J | pCi/g | 62% | 1.43E-01 | 1.00E+00 | |
| | | U-238 | 7.60E-01 +- 3.8E-01 | | pCi/g | 62% | 1.43E-01 | 1.00E+00 | |

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RPD - Relative Percent Difference.

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

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## Sample Results Summary

## TestAmerica TARL

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

7/6/10 Date: 23-Jun-10

**Report No. :** 44110 **SDG No:** J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140124 UISO_IE_PLATE_AEA | | | | | | | | | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AC | U-234 | 1.54E+00 +- 5.3E-01 | | pCi/g | 80% | 1.26E-01 | 1.00E+00 | |
| | | U-235 | 2.62E-02 +- 5.6E-02 | U J | pCi/g | 80% | 1.03E-01 | 1.00E+00 | |
| | | U-238 | 1.71E+00 +- 5.7E-01 | | pCi/g | 80% | 1.15E-01 | 1.00E+00 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AC | U-234 | 8.17E-01 +- 3.6E-01 | | pCi/g | 77% | 1.13E-01 | 1.00E+00 | |
| | | U-235 | 5.90E-02 +- 8.7E-02 | U J | pCi/g | 77% | 1.13E-01 | 1.00E+00 | |
| | | U-238 | 6.96E-01 +- 3.3E-01 | | pCi/g | 77% | 1.13E-01 | 1.00E+00 | |
| 0140144 GAMMA_GS | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AJ | AMERICIUM 241 | 4.41E-02 +- 1.6E-01 | U | pCi/g | | 2.68E-01 | | |
| | | CO-60 | 2.64E-03 +- 1.7E-02 | U | pCi/g | | 3.06E-02 | 5.00E-02 | |
| | | CS-137 | 1.04E-01 +- 3.4E-02 | | pCi/g | | 2.82E-02 | 1.00E-01 | |
| | | EU-152 | 1.86E-03 +- 4.5E-02 | U | pCi/g | | 7.52E-02 | 1.00E-01 | |
| | | EU-154 | -3.62E-02 +- 5.4E-02 | U | pCi/g | | 8.88E-02 | 1.00E-01 | |
| | | EU-155 | 2.30E-02 +- 5.2E-02 | U | pCi/g | | 8.99E-02 | 1.00E-01 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AJ | AMERICIUM 241 | -2.34E-02 +- 2.8E-02 | U | pCi/g | | 4.59E-02 | | |
| | | CO-60 | -1.30E-02 +- 1.8E-02 | U | pCi/g | | 2.89E-02 | 5.00E-02 | |
| | | CS-137 | -2.49E-04 +- 1.7E-02 | U | pCi/g | | 2.96E-02 | 1.00E-01 | |
| | | EU-152 | 1.51E-02 +- 4.7E-02 | U | pCi/g | | 7.81E-02 | 1.00E-01 | |
| | | EU-154 | -1.73E-02 +- 5.1E-02 | U | pCi/g | | 8.76E-02 | 1.00E-01 | |
| | | EU-155 | -1.73E-02 +- 3.9E-02 | U | pCi/g | | 6.58E-02 | 1.00E-01 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AJ | AMERICIUM 241 | -3.68E-02 +- 8.2E-02 | U | pCi/g | | 1.41E-01 | | |
| | | CO-60 | -7.41E-03 +- 1.4E-02 | U | pCi/g | | 2.37E-02 | 5.00E-02 | |
| | | CS-137 | 1.12E-02 +- 1.3E-02 | U | pCi/g | | 2.43E-02 | 1.00E-01 | |
| | | EU-152 | -4.99E-03 +- 3.2E-02 | U | pCi/g | | 5.43E-02 | 1.00E-01 | |
| | | EU-154 | -2.84E-02 +- 4.0E-02 | U | pCi/g | | 6.66E-02 | 1.00E-01 | |
| | | EU-155 | 3.93E-02 +- 3.7E-02 | U | pCi/g | | 6.46E-02 | 1.00E-01 | |
| J19XR0 DUP | | | | | | | | | |
| | L1Q9H1AL | AMERICIUM 241 | 2.34E-03 +- 1.6E-01 | U | pCi/g | | 2.80E-01 | | -227.1 |
| | | CO-60 | -1.24E-02 +- 1.7E-02 | U | pCi/g | | 2.85E-02 | 5.00E-02 | -50.1 |
| | | CS-137 | 2.52E-03 +- 1.6E-02 | U | pCi/g | | 2.84E-02 | 1.00E-01 | 126.3 |
| | | EU-152 | -9.35E-03 +- 4.4E-02 | U | pCi/g | | 7.38E-02 | 1.00E-01 | -60.7 |
| | | EU-154 | 3.29E-02 +- 5.8E-02 | U | pCi/g | | 1.04E-01 | 1.00E-01 | 2703.2 |
| | | EU-155 | 2.35E-02 +- 5.1E-02 | U | pCi/g | | 9.00E-02 | 1.00E-01 | 50.3 |
| J19XR1 | | | | | | | | | |

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RPD - Relative Percent Difference.

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

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## Sample Results Summary

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Date: 23-Jun-10

## TestAmerica TARL

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

**Report No. :** 44110

**SDG No:** J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2σ) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140144 | GAMMA_GS | | | | | | | | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AJ | AMERICIUM 241 | 1.17E-02 +- 3.7E-02 | U | pCi/g | | 6.39E-02 | | |
| | | CO-60 | -3.36E-03 +- 2.2E-02 | U | pCi/g | | 3.75E-02 | 5.00E-02 | |
| | | CS-137 | -4.94E-03 +- 2.2E-02 | U | pCi/g | | 3.84E-02 | 1.00E-01 | |
| | | EU-152 | 1.37E-02 +- 6.0E-02 | U | pCi/g | | 1.02E-01 | 1.00E-01 | |
| | | EU-154 | -7.49E-02 +- 7.1E-02 | U | pCi/g | | 1.12E-01 | 1.00E-01 | |
| | | EU-155 | 1.44E-02 +- 5.2E-02 | U | pCi/g | | 8.91E-02 | 1.00E-01 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AJ | AMERICIUM 241 | -4.88E-02 +- 6.9E-02 | U | pCi/g | | 1.14E-01 | | |
| | | CO-60 | -7.07E-03 +- 2.3E-02 | U | pCi/g | | 3.98E-02 | 5.00E-02 | |
| | | CS-137 | -3.72E-03 +- 2.1E-02 | U | pCi/g | | 3.58E-02 | 1.00E-01 | |
| | | EU-152 | 8.55E-04 +- 5.6E-02 | U | pCi/g | | 9.25E-02 | 1.00E-01 | |
| | | EU-154 | 5.83E-02 +- 7.0E-02 | U | pCi/g | | 1.30E-01 | 1.00E-01 | |
| | | EU-155 | 5.18E-02 +- 5.2E-02 | U | pCi/g | | 9.22E-02 | 1.00E-01 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AJ | AMERICIUM 241 | 1.10E-02 +- 3.3E-02 | U | pCi/g | | 5.64E-02 | | |
| | | CO-60 | 4.09E-02 +- 2.4E-02 | U | pCi/g | | 4.53E-02 | 5.00E-02 | |
| | | CS-137 | 1.92E-02 +- 2.1E-02 | U | pCi/g | | 3.78E-02 | 1.00E-01 | |
| | | EU-152 | 1.20E-02 +- 5.0E-02 | U | pCi/g | | 8.54E-02 | 1.00E-01 | |
| | | EU-154 | 2.37E-02 +- 6.4E-02 | U | pCi/g | | 1.16E-01 | 1.00E-01 | |
| | | EU-155 | 4.02E-02 +- 4.4E-02 | U | pCi/g | | 7.74E-02 | 1.00E-01 | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AJ | AMERICIUM 241 | 5.73E-02 +- 7.7E-02 | U | pCi/g | | 1.40E-01 | | |
| | | CO-60 | 3.61E-04 +- 1.3E-02 | U | pCi/g | | 2.40E-02 | 5.00E-02 | |
| | | CS-137 | 4.22E-03 +- 1.2E-02 | U | pCi/g | | 2.07E-02 | 1.00E-01 | |
| | | EU-152 | -9.30E-03 +- 3.2E-02 | U | pCi/g | | 5.29E-02 | 1.00E-01 | |
| | | EU-154 | 1.59E-02 +- 4.2E-02 | U | pCi/g | | 7.65E-02 | 1.00E-01 | |
| | | EU-155 | 1.38E-02 +- 3.4E-02 | U | pCi/g | | 5.89E-02 | 1.00E-01 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AJ | AMERICIUM 241 | -2.92E-03 +- 3.6E-02 | U | pCi/g | | 6.20E-02 | | |
| | | CO-60 | -4.43E-03 +- 2.1E-02 | U | pCi/g | | 3.68E-02 | 5.00E-02 | |
| | | CS-137 | -1.57E-03 +- 2.2E-02 | U | pCi/g | | 3.81E-02 | 1.00E-01 | |
| | | EU-152 | 3.59E-02 +- 6.5E-02 | U | pCi/g | | 9.90E-02 | 1.00E-01 | |
| | | EU-154 | -4.95E-02 +- 7.1E-02 | U | pCi/g | | 1.17E-01 | 1.00E-01 | |
| | | EU-155 | 2.48E-02 +- 5.1E-02 | U | pCi/g | | 8.81E-02 | 1.00E-01 | |
| J19XR6 | | | | | | | | | |
| | L1Q851AJ | AMERICIUM 241 | 4.67E-03 +- 6.3E-02 | U | pCi/g | | 1.07E-01 | | |
| | | CO-60 | 7.62E-03 +- 2.0E-02 | U | pCi/g | | 3.83E-02 | 5.00E-02 | |

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RPD - Relative Percent Difference.

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

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# Sample Results Summary

## TestAmerica TARL

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

Date: 23-Jun-10

Report No. : 44110

SDG No: J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140144 GAMMA_GS | | | | | | | | | |
| J19XR6 | | | | | | | | | |
| | L1Q851AJ | CS-137 | 2.58E-02 +- 2.2E-02 | U | pCi/g | | 4.01E-02 | 1.00E-01 | |
| | | EU-152 | -7.47E-03 +- 5.6E-02 | U | pCi/g | | 8.80E-02 | 1.00E-01 | |
| | | EU-154 | 9.01E-03 +- 7.1E-02 | U | pCi/g | | 1.25E-01 | 1.00E-01 | |
| | | EU-155 | -1.36E-02 +- 5.1E-02 | U | pCi/g | | 8.66E-02 | 1.00E-01 | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AJ | AMERICIUM 241 | -2.47E-02 +- 6.4E-02 | U | pCi/g | | 1.06E-01 | | |
| | | CO-60 | -8.77E-03 +- 1.4E-02 | U | pCi/g | | 2.25E-02 | 5.00E-02 | |
| | | CS-137 | 7.52E-03 +- 1.3E-02 | U | pCi/g | | 2.41E-02 | 1.00E-01 | |
| | | EU-152 | -2.13E-02 +- 5.4E-02 | U | pCi/g | | 6.67E-02 | 1.00E-01 | |
| | | EU-154 | -1.06E-02 +- 4.7E-02 | U | pCi/g | | 8.03E-02 | 1.00E-01 | |
| | | EU-155 | -3.52E-02 +- 5.0E-02 | U | pCi/g | | 8.09E-02 | 1.00E-01 | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AJ | AMERICIUM 241 | 2.30E-02 +- 7.5E-02 | U | pCi/g | | 1.27E-01 | | |
| | | CO-60 | 1.01E-02 +- 1.6E-02 | U | pCi/g | | 2.95E-02 | 5.00E-02 | |
| | | CS-137 | -6.33E-03 +- 1.7E-02 | U | pCi/g | | 2.90E-02 | 1.00E-01 | |
| | | EU-152 | -3.93E-02 +- 7.2E-02 | U | pCi/g | | 7.95E-02 | 1.00E-01 | |
| | | EU-154 | -4.11E-02 +- 5.5E-02 | U | pCi/g | | 9.10E-02 | 1.00E-01 | |
| | | EU-155 | -3.82E-02 +- 5.8E-02 | U | pCi/g | | 9.48E-02 | 1.00E-01 | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AJ | AMERICIUM 241 | -2.49E-02 +- 1.5E-01 | U | pCi/g | | 2.52E-01 | | |
| | | CO-60 | 4.83E-03 +- 1.6E-02 | U | pCi/g | | 2.92E-02 | 5.00E-02 | |
| | | CS-137 | -3.90E-03 +- 1.5E-02 | U | pCi/g | | 2.59E-02 | 1.00E-01 | |
| | | EU-152 | 1.06E-02 +- 4.0E-02 | U | pCi/g | | 6.83E-02 | 1.00E-01 | |
| | | EU-154 | 7.71E-03 +- 4.8E-02 | U | pCi/g | | 8.50E-02 | 1.00E-01 | |
| | | EU-155 | 5.23E-02 +- 4.9E-02 | U | pCi/g | | 8.64E-02 | 1.00E-01 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AJ | AMERICIUM 241 | 4.96E-03 +- 2.7E-02 | U | pCi/g | | 4.52E-02 | | |
| | | CO-60 | -2.51E-03 +- 1.9E-02 | U | pCi/g | | 3.35E-02 | 5.00E-02 | |
| | | CS-137 | -7.07E-03 +- 1.5E-02 | U | pCi/g | | 2.56E-02 | 1.00E-01 | |
| | | EU-152 | 6.85E-02 +- 4.3E-02 | U | pCi/g | | 7.86E-02 | 1.00E-01 | |
| | | EU-154 | 1.60E-02 +- 5.2E-02 | U | pCi/g | | 9.46E-02 | 1.00E-01 | |
| | | EU-155 | 1.15E-02 +- 3.9E-02 | U | pCi/g | | 6.73E-02 | 1.00E-01 | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AJ | AMERICIUM 241 | -1.28E-02 +- 9.0E-02 | U | pCi/g | | 1.57E-01 | | |
| | | CO-60 | -4.18E-03 +- 1.5E-02 | U | pCi/g | | 2.59E-02 | 5.00E-02 | |
| | | CS-137 | 1.86E-02 +- 1.5E-02 | U | pCi/g | | 2.76E-02 | 1.00E-01 | |
| | | EU-152 | -2.25E-03 +- 3.6E-02 | U | pCi/g | | 6.12E-02 | 1.00E-01 | |

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RPD - Relative Percent Difference.

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

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# Sample Results Summary

Date: 23-Jun-10

## TestAmerica TARL

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

**Report No. :** 44110 **SDG No:** J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140144 GAMMA_GS | | | | | | | | | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AJ | EU-154 | 1.58E-02 +- 4.8E-02 | U | pCi/g | | 8.57E-02 | 1.00E-01 | |
| | | EU-155 | -6.64E-03 +- 4.1E-02 | U | pCi/g | | 6.84E-02 | 1.00E-01 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AJ | AMERICIUM 241 | 8.03E-03 +- 4.0E-02 | U | pCi/g | | 6.84E-02 | | |
| | | CO-60 | 8.55E-02 +- 2.9E-02 | U | pCi/g | | 5.74E-02 | 5.00E-02 | |
| | | CS-137 | 2.58E-01 +- 5.8E-02 | | pCi/g | | 4.31E-02 | 1.00E-01 | |
| | | EU-152 | -3.15E-02 +- 6.6E-02 | U | pCi/g | | 9.68E-02 | 1.00E-01 | |
| | | EU-154 | -2.26E-02 +- 6.9E-02 | U | pCi/g | | 1.17E-01 | 1.00E-01 | |
| | | EU-155 | -2.74E-02 +- 5.6E-02 | U | pCi/g | | 9.22E-02 | 1.00E-01 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AJ | AMERICIUM 241 | -2.73E-02 +- 6.3E-02 | U | pCi/g | | 1.05E-01 | | |
| | | CO-60 | -2.34E-03 +- 2.0E-02 | U | pCi/g | | 3.54E-02 | 5.00E-02 | |
| | | CS-137 | 2.96E-02 +- 2.2E-02 | U | pCi/g | | 4.09E-02 | 1.00E-01 | |
| | | EU-152 | -4.78E-02 +- 5.3E-02 | U | pCi/g | | 8.49E-02 | 1.00E-01 | |
| | | EU-154 | 1.27E-02 +- 6.8E-02 | U | pCi/g | | 1.20E-01 | 1.00E-01 | |
| | | EU-155 | 3.40E-02 +- 5.0E-02 | U | pCi/g | | 8.74E-02 | 1.00E-01 | |
| 0140150 SRTOT_SEP_PRECIP_GPC | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AD | STRONTIUM | 1.02E-01 +- 7.3E-02 | U | pCi/g | 85% | 1.35E-01 | | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AD | STRONTIUM | 3.14E-02 +- 7.6E-02 | U | pCi/g | 70% | 1.71E-01 | | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AD | STRONTIUM | -2.92E-02 +- 5.6E-02 | U | pCi/g | 81% | 1.41E-01 | | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AD | STRONTIUM | 6.68E-02 +- 8.0E-02 | U | pCi/g | 75% | 1.68E-01 | | |
| J19XR1 DUP | | | | | | | | | |
| | L1Q9J1AL | STRONTIUM | 1.20E-02 +- 6.1E-02 | U | pCi/g | 78% | 1.41E-01 | | 139.1 |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AD | STRONTIUM | -2.49E-02 +- 6.1E-02 | U | pCi/g | 77% | 1.51E-01 | | |
| J19XR3 | | | | | | | | | |
| | L1Q521AD | STRONTIUM | 5.98E-02 +- 7.2E-02 | U | pCi/g | 80% | 1.50E-01 | | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AD | STRONTIUM | -3.11E-03 +- 6.4E-02 | U | pCi/g | 74% | 1.54E-01 | | |
| J19XR5 | | | | | | | | | |
| | L1Q771AD | STRONTIUM | 5.12E-02 +- 6.8E-02 | U | pCi/g | 72% | 1.44E-01 | | |
| J19XR6 | | | | | | | | | |
| | L1Q851AD | STRONTIUM | -2.98E-03 +- 5.6E-02 | U | pCi/g | 81% | 1.36E-01 | | |

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RPD - Relative Percent Difference.

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

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# Sample Results Summary

## TestAmerica TARL

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

Date: 23-Jun-10

**Report No. : 44110** **SDG No: J00791**

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140150 SRTOT_SEP_PRECIP_GPC | | | | | | | | | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AD | STRONTIUM | -4.88E-02 +- 6.1E-02 | U | pCi/g | 66% | 1.58E-01 | | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AD | STRONTIUM | -3.21E-02 +- 6.3E-02 | U | pCi/g | 73% | 1.58E-01 | | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AD | STRONTIUM | 8.53E-03 +- 6.2E-02 | U | pCi/g | 76% | 1.46E-01 | | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AD | STRONTIUM | -1.88E-02 +- 5.3E-02 | U | pCi/g | 83% | 1.32E-01 | | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AD | STRONTIUM | 3.87E-03 +- 5.2E-02 | U | pCi/g | 88% | 1.24E-01 | | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AD | STRONTIUM | 1.44E-01 +- 8.3E-02 | | pCi/g | 88% | 1.40E-01 | | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AD | STRONTIUM | 2.44E-02 +- 5.6E-02 | U | pCi/g | 91% | 1.26E-01 | | |
| 0140125 C14_CHEM_LSC | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AK | C-14 | 1.95E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AK | C-14 | 8.13E-02 +- 2.0E-01 | U J | pCi/g | 100% | 4.47E-01 | 5.00E+01 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AK | C-14 | 1.24E-01 +- 2.0E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AK | C-14 | 8.48E-02 +- 2.0E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AK | C-14 | 1.39E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.47E-01 | 5.00E+01 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AK | C-14 | 1.49E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.47E-01 | 5.00E+01 | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AK | C-14 | 2.07E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AK | C-14 | 2.60E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR5 DUP | | | | | | | | | |
| | L1Q771AL | C-14 | 3.56E-02 +- 2.0E-01 | U | pCi/g | 100% | 4.46E-01 | 5.00E+01 | 151.9 |
| J19XR6 | | | | | | | | | |
| | L1Q851AK | C-14 | 1.97E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AK | C-14 | 2.67E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AK | C-14 | 1.23E-01 +- 2.0E-01 | U J | pCi/g | 100% | 4.48E-01 | 5.00E+01 | |

TestAmerica

rptSTLRch3aSummary2 V5.2.5
A2002

RPD - Relative Percent Difference.

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

000017

7/6/10

# Sample Results Summary

## TestAmerica TARL

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

Date: 23-Jun-10

Report No. : 44110

SDG No: J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140125 C14_CHEM_LSC | | | | | | | | | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AK | C-14 | 7.40E-02 +- 2.0E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AK | C-14 | 2.29E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AK | C-14 | 2.61E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.46E-01 | 5.00E+01 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AK | C-14 | 2.89E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.45E-01 | 5.00E+01 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AK | C-14 | 2.21E-01 +- 2.1E-01 | U J | pCi/g | 100% | 4.45E-01 | 5.00E+01 | |
| 0140127 NI63_LSC | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AE | NI-63 | -2.89E+00 +- 6.7E+00 | U | pCi/g | 100% | 1.58E+01 | 3.00E+01 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AE | NI-63 | 4.05E+00 +- 6.0E+00 | U | pCi/g | 99% | 1.21E+01 | 3.00E+01 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AE | NI-63 | -2.03E+00 +- 6.4E+00 | U | pCi/g | 100% | 1.37E+01 | 3.00E+01 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AE | NI-63 | 1.58E+00 +- 6.4E+00 | U | pCi/g | 100% | 1.33E+01 | 3.00E+01 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AE | NI-63 | -4.19E+00 +- 6.3E+00 | U | pCi/g | 100% | 1.38E+01 | 3.00E+01 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AE | NI-63 | -8.75E+00 +- 8.7E+00 | U | pCi/g | 69% | 2.08E+01 | 3.00E+01 | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AE | NI-63 | -3.65E+00 +- 6.2E+00 | U | pCi/g | 93% | 1.36E+01 | 3.00E+01 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AE | NI-63 | -5.34E+00 +- 6.4E+00 | U | pCi/g | 93% | 1.47E+01 | 3.00E+01 | |
| J19XR6 | | | | | | | | | |
| | L1Q851AE | NI-63 | -1.87E+00 +- 5.8E+00 | U | pCi/g | 100% | 1.27E+01 | 3.00E+01 | |
| J19XR6 DUP | | | | | | | | | |
| | L1Q851AL | NI-63 | -2.87E+00 +- 6.5E+00 | U | pCi/g | 98% | 1.43E+01 | 3.00E+01 | -42.4 |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AE | NI-63 | -2.84E+00 +- 6.2E+00 | U | pCi/g | 100% | 1.48E+01 | 3.00E+01 | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AE | NI-63 | -7.04E-01 +- 6.9E+00 | U | pCi/g | 94% | 1.49E+01 | 3.00E+01 | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AE | NI-63 | -2.42E+00 +- 5.6E+00 | U | pCi/g | 100% | 1.22E+01 | 3.00E+01 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AE | NI-63 | -5.66E+00 +- 6.2E+00 | U | pCi/g | 100% | 1.41E+01 | 3.00E+01 | |

TestAmerica

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RPD - Relative Percent Difference.

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

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# Sample Results Summary

## TestAmerica TARL

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

7/6/10

Date: 23-Jun-10

Report No. : 44110

SDG No: J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140127 NI63_LSC | | | | | | | | | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AE | NI-63 | -2.83E+00 +- 6.3E+00 | U | pCi/g | 100% | 1.38E+01 | 3.00E+01 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AE | NI-63 | 1.76E+00 +- 5.9E+00 | U | pCi/g | 100% | 1.24E+01 | 3.00E+01 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AE | NI-63 | 4.35E-01 +- 5.8E+00 | U | pCi/g | 100% | 1.23E+01 | 3.00E+01 | |
| 0140132 TC99_ETVDSK_LSC | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AG | TC-99 | 2.40E-01 +- 3.4E-01 | U | pCi/g | 100% | 6.14E-01 | 1.50E+01 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AG | TC-99 | 1.26E-01 +- 3.3E-01 | U | pCi/g | 100% | 6.01E-01 | 1.50E+01 | |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AG | TC-99 | 1.10E-01 +- 3.3E-01 | U | pCi/g | 100% | 5.90E-01 | 1.50E+01 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AG | TC-99 | 8.22E-02 +- 3.3E-01 | U | pCi/g | 100% | 6.03E-01 | 1.50E+01 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AG | TC-99 | 2.31E-02 +- 3.3E-01 | U | pCi/g | 100% | 6.11E-01 | 1.50E+01 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AG | TC-99 | -3.61E-02 +- 3.2E-01 | U | pCi/g | 100% | 5.79E-01 | 1.50E+01 | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AG | TC-99 | 2.43E-02 +- 3.3E-01 | U | pCi/g | 100% | 6.04E-01 | 1.50E+01 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AG | TC-99 | -3.48E-02 +- 3.2E-01 | U | pCi/g | 100% | 6.06E-01 | 1.50E+01 | |
| J19XR6 | | | | | | | | | |
| | L1Q851AG | TC-99 | 1.49E-01 +- 3.4E-01 | U | pCi/g | 100% | 6.09E-01 | 1.50E+01 | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AG | TC-99 | 8.19E-02 +- 3.3E-01 | U | pCi/g | 100% | 6.02E-01 | 1.50E+01 | |
| J19XR7 DUP | | | | | | | | | |
| | L1Q9A1AL | TC-99 | -1.70E-01 +- 3.1E-01 | U | pCi/g | 100% | 5.94E-01 | 1.50E+01 | -571.3 |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AG | TC-99 | 1.49E-01 +- 3.3E-01 | U | pCi/g | 100% | 6.02E-01 | 1.50E+01 | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AG | TC-99 | -7.37E-02 +- 3.2E-01 | U | pCi/g | 100% | 6.10E-01 | 1.50E+01 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AG | TC-99 | 5.97E-03 +- 3.2E-01 | U | pCi/g | 100% | 6.07E-01 | 1.50E+01 | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AG | TC-99 | -8.27E-02 +- 3.2E-01 | U | pCi/g | 100% | 6.00E-01 | 1.50E+01 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AG | TC-99 | -1.12E-01 +- 3.2E-01 | U | pCi/g | 100% | 6.08E-01 | 1.50E+01 | |

TestAmerica

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A2002

RPD - Relative Percent Difference.

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

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7/6/10

Date: 23-Jun-10

# Sample Results Summary

## TestAmerica TARL

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

**Report No. : 44110** **SDG No: J00791**

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140132 TC99_ETVDSK_LSC | | | | | | | | | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AG | TC-99 | 2.70E-02 +- 3.2E-01 | U | pCi/g | 100% | 6.06E-01 | 1.50E+01 | |
| 0140134 906.0_H3_LSC | | | | | | | | | |
| J19XP8 | | | | | | | | | |
| | L1Q9C1AH | H-3 | 3.47E-02 +- 4.8E-03 | J | pCi/g | 100% | 8.07E-03 | 4.00E+02 | |
| J19XP9 | | | | | | | | | |
| | L1Q9F1AH | H-3 | 2.19E-02 +- 5.7E-03 | J | pCi/g | 100% | 1.10E-02 | 4.00E+02 | |
| J19XP9 DUP | | | | | | | | | |
| | L1Q9F1AL | H-3 | 3.38E-02 +- 7.8E-03 | | pCi/g | 100% | 1.49E-02 | 4.00E+02 | 42.5 |
| J19XR0 | | | | | | | | | |
| | L1Q9H1AH | H-3 | 6.60E-02 +- 6.1E-03 | J | pCi/g | 100% | 8.34E-03 | 4.00E+02 | |
| J19XR1 | | | | | | | | | |
| | L1Q9J1AH | H-3 | 1.85E-01 +- 9.2E-03 | J | pCi/g | 100% | 7.02E-03 | 4.00E+02 | |
| J19XR2 | | | | | | | | | |
| | L1Q9P1AH | H-3 | 6.49E-02 +- 6.1E-03 | J | pCi/g | 100% | 8.43E-03 | 4.00E+02 | |
| J19XR3 | | | | | | | | | |
| | L1Q521AH | H-3 | 5.50E-02 +- 6.2E-03 | J | pCi/g | 100% | 9.53E-03 | 4.00E+02 | |
| J19XR4 | | | | | | | | | |
| | L1Q7N1AH | H-3 | 3.22E-02 +- 4.9E-03 | J | pCi/g | 100% | 8.38E-03 | 4.00E+02 | |
| J19XR5 | | | | | | | | | |
| | L1Q771AH | H-3 | 8.48E-02 +- 6.6E-03 | J | pCi/g | 100% | 8.17E-03 | 4.00E+02 | |
| J19XR6 | | | | | | | | | |
| | L1Q851AH | H-3 | 2.29E-02 +- 4.3E-03 | J | pCi/g | 100% | 7.73E-03 | 4.00E+02 | |
| J19XR7 | | | | | | | | | |
| | L1Q9A1AH | H-3 | 2.79E-02 +- 4.5E-03 | J | pCi/g | 100% | 7.82E-03 | 4.00E+02 | |
| J19XR8 | | | | | | | | | |
| | L1Q9X1AH | H-3 | 2.25E-02 +- 4.0E-03 | J | pCi/g | 100% | 7.06E-03 | 4.00E+02 | |
| J19XR9 | | | | | | | | | |
| | L1RAE1AH | H-3 | 1.31E-02 +- 4.0E-03 | J | pCi/g | 100% | 8.07E-03 | 4.00E+02 | |
| J19XT0 | | | | | | | | | |
| | L1RAG1AH | H-3 | 2.86E-02 +- 4.6E-03 | J | pCi/g | 100% | 8.43E-03 | 4.00E+02 | |
| J19XW8 | | | | | | | | | |
| | L1RAK1AH | H-3 | 2.01E-02 +- 4.9E-03 | J | pCi/g | 100% | 9.39E-03 | 4.00E+02 | |
| J19XW9 | | | | | | | | | |
| | L1RAL1AH | H-3 | 5.04E-02 +- 6.1E-03 | J | pCi/g | 100% | 9.52E-03 | 4.00E+02 | |
| J19XX0 | | | | | | | | | |
| | L1RAM1AH | H-3 | 3.73E-02 +- 5.1E-03 | J | pCi/g | 100% | 8.52E-03 | 4.00E+02 | |
| 0140415 7196_CR6 | | | | | | | | | |
| J19XP8 | | | | | | | | | |

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RPD - Relative Percent Difference.

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

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## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

June 23, 2010

Attention: Joan Kessner

| | | |
|---|---|---|
| SAF Number | : | RC-075 |
| Date SDG Closed | : | May 18, 2010 |
| Number of Samples | : | Sixteen (16) |
| Sample Type | : | Soil |
| SDG Number | : | J00791 |
| Data Deliverable | : | 21 – Day / Summary |

## CASE NARRATIVE

### I. Introduction

On May 18, 2010 sixteen 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 |
|---|---|---|---|
| J19XP8 | L1Q9C | SOIL | 5/18/10 |
| J19XP9 | L1Q9F | SOIL | 5/18/10 |
| J19XR0 | L1Q9H | SOIL | 5/18/10 |
| J19XR1 | L1Q9J | SOIL | 5/18/10 |
| J19XR2 | L1Q9P | SOIL | 5/18/10 |
| J19XR3 | L1Q52 | SOIL | 5/18/10 |
| J19XR4 | L1Q7N | SOIL | 5/18/10 |
| J19XR5 | L1Q77 | SOIL | 5/18/10 |
| J19XR6 | L1Q85 | SOIL | 5/18/10 |
| J19XR7 | L1Q9A | SOIL | 5/18/10 |
| J19XR8 | L1Q9X | SOIL | 5/18/10 |
| J19XR9 | L1RAE | SOIL | 5/18/10 |
| J19XT0 | L1RAG | SOIL | 5/18/10 |
| J19XW8 | L1RAK | SOIL | 5/18/10 |
| J19XW9 | L1RAL | SOIL | 5/18/10 |
| J19XX0 | L1RAM | SOIL | 5/18/10 |

## II. Sample Receipt

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

## III. Analytical Results/Methodology

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

The requested analyses were:

**Alpha Spectroscopy**
Plutonium-238, -239/240 by method RL-ALP-002 (RICH-RC-5010)*
Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039)*
**Gas Proportional Counting**
Strontium-90 by method RL-GPC-003 (RICH-RC-5006)*
**Gamma Spectroscopy**
Gamma Spec by method RL-GAM-001 (RICH-RC-5017)*
**Liquid Scintillation Counting**
Technetium-99 by method RL-LSC-013 (RICH-RC-5078)*
Tritium by method RL-LSC-005 (RICH-RC-5007)*
Carbon-14 by method RL-LSC-008 (RICH-RC-5022)*
Nickel-63 by method RL-LCS-017 (RICH-RC-5069)*
**Chemical Analysis**
Hexavalent Chromium by EPA method 7196A

*SOP ID's changed effective 7-01-2008. Attached is a cross reference until SOP ID's are changed in all systems.

## IV. Quality Control

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

QC and sample results are reported in the same units.

## V. Comments

**Alpha Spectroscopy**
Plutonium-238, -239/240 by method RL-ALP-002 (RICH-RC-5010):
The LCS, batch blank, samples and sample duplicate (J19XR3) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039):
The LCS, batch blank, samples and sample duplicate (J19XR4) results are within contractual requirements.

**Gas Proportional Counting**

Strontium-90 by method RL-GPC-003 (RICH-RC-5006):
The LCS, batch blank, samples and sample duplicate (J19XR1) results are within contractual requirements.

**Gamma Spectroscopy**

Gamma Spec by method RL-GAM-001 (RICH-RC-5017):
There was insufficient volume for a duplicate. Sample J19XR0 was recounted on a different detector for the duplicate (J19XR0 DUP). The MDAs for the Europium isotopes for several samples were not met due to the reduced count time. Except as noted, the LCS, batch blank, samples and sample duplicate (J19XR0) results are within contractual requirements.

**Liquid Scintillation Counting**

Technetium-99 by method RL-LSC-013 (RICH-RC-5078):
The LCS, batch blank, samples, sample duplicate (J19XR7), and sample matrix spike (J19XP8) results are within contractual requirements.

Tritium by method RL-LSC-005 (RICH-RC-5007):
The LCS, batch blank, samples and sample duplicate (J19XP9) results are within contractual requirements.

Carbon-14 by method RL-LSC-008 (RICH-RC-5022):
The LCS, batch blank, samples and sample duplicate (J19XR5) results are within contractual requirements.

Nickel-63 by method RL-LCS-017 (RICH-RC-5069):
The LCS, batch blank, samples and sample duplicate (J19XR6) results are within contractual requirements.

**Chemical Analysis**

Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J19XR3), sample matrix spike (J19XR3), and matrix spike duplicate (J19XR3) 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:

Sandra Seger
Project Manager

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-161 | Page 1 of 1 |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Focus | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions | Carbon-14; Tritium - HG | Nickel-63; Strontium-89,90 – Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~J19XW7~~ 05/12/10 | SOIL | | | | | | | | | | | |
| J19XW8 / L1RAK | SOIL | 5/13/10 | 0925 | X | X | X | X | X | X | X | X | X |
| J19XW9 L1RAL | SOIL | 5/13/10 | 0930 | X | X | X | X | X | X | X | X | X |
| J19XX0 L1RAM | SOIL | 5/13/10 | 0935 | X | X | X | X | X | X | X | X | X |

| CHAIN OF POSSESSION | Date/Time | Sign/Print Names | Date/Time |
|---|---|---|---|
| Relinquished By/Removed From: J Sellers | 5-13-10 1430 | Received By/Stored In: Doodlebug | 5/13/10 1430 |
| Relinquished By/Removed From: Doodlebug | 5/13/10 1645 | Received By/Stored In: J-E Beal | 5-13-10 1645 |
| Relinquished By/Removed From: J-E Beal | 5-18-10 1430 | Received By/Stored In: TRL / Angela Ortiz | 5/18/10 1430 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis. 051910

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

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

JE-190567
SDG J00791
DUE-6/8/10
CW 5/19/10

REVIEWED BY JRC DATE 5-19-10

Matrix *
S=Soil
SS=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

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 1 |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J19XP8 L109K | SOIL | 5/13/10 | 0950 | X | X | X | X | X | X | X | X | X | |
| J19XP9 L109F | SOIL | 5/13/10 | 0955 | X | X | X | X | X | X | X | X | X | |
| J19XR0 L109H | SOIL | 5/13/10 | 1025 | X | X | X | X | X | X | X | X | X | |
| J19XR1 L109J | SOIL | 5/13/10 | 1030 | X | X | X | X | X | X | X | X | X | |
| J19XR2 L109P | SOIL | 5/13/10 | ~~1055~~ 1050 | X | X | X | X | X | X | X | X | X | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers | 5-13-10 1430 | | 5/13/10 1430 |
| | 5/13/10 1645 | J. E. Baul | 5-13-10 1645 |
| J. E. Baul | 5-18-10 1430 | | 5-18-10 1430 |
| | | | |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JOE190567
SDG000771
DUE 6/08/10
09
RWS 5/19/10

REVIEWED BY JRE DATE 5-18-10

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

TestAmerica

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| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 2 of 3 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH | Price Code 8L | Data Turnaround<br>21 Days |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Deep Zone | | SAF No.<br>RC-075 | | |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver | | |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A | | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D + | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J19XR3 L1Q52 | SOIL | 5/13/10 | 1055 | X | X | X | X | X | X | X | X | X |
| J19XR4 L1Q7N | SOIL | 5/13/10 | 1235 | X | X | X | X | X | X | X | X | X |
| J19XR5 L1Q77 | SOIL | 5/13/10 | 1245 | X | X | X | X | X | X | X | X | X |
| J19XR6 L1Q85 | SOIL | 5/13/10 | 1305 | X | X | X | X | X | X | X | X | X |
| J19XR7 L1Q9A | SOIL | 5/13/10 | 1310 | X | X | X | X | X | X | X | X | X |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Rabbella | 5-13-10 1430 | Dwoolett | 5/13/10 1430 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Dwoolett | 5/13/10 1645 | J. E. Beal | 5-13-10 1645 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| J. E. Beal WCH | 5-18-10 1430 | THCR / Angel Garcia | 5-18-10 1430 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JCE190567
JDB100791
DLL 5-18-10
1091

REVIEWED BY LRE DATE 5-19-10

RW 5/19/10

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 |

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TestAmerica

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| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 3 |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

POSSIBLE SAMPLE HAZARDS/REMARKS

*Potential Rad (<DOT limits)*

Special Handling and/or Storage

*Cool 4 Deg C*

J0E190567

MPLE ANALYSIS

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium. | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J19XR8 L1Q9X | SOIL | 5/13/10 | 1330 | X | X | X | X | X | X | X | X | X | |
| J19XR9 L1RAE | SOIL | 5/13/10 | 1335 | X | X | X | X | X | X | X | X | X | |
| J19XT0 L1RAG | SOIL | 5/13/10 | ~~1245~~ 1235 | X | X | X | X | X | X | X | X | X | |

| CHAIN OF POSSESSION | Sign/Print Names | |
|---|---|---|
| Relinquished By/Removed From: J. Sellers / Josh Sellers — Date/Time: 5-13-10 1430 | Received By/Stored In: [illegible] — Date/Time: 5/13/10 1430 | |
| Relinquished By/Removed From: [illegible] — Date/Time: 5/13/10 1645 | Received By/Stored In: J-E. Beal — Date/Time: 5-13-10 1645 | |
| Relinquished By/Removed From: J-E. Beal WCH — Date/Time: 5-18-10 1430 | Received By/Stored In: TALR [illegible] AMCEE — Date/Time: 5-18-10 1430 | |
| Relinquished By/Removed From: — Date/Time: | Received By/Stored In: — Date/Time: | |
| Relinquished By/Removed From: — Date/Time: | Received By/Stored In: — Date/Time: | |
| Relinquished By/Removed From: — Date/Time: | Received By/Stored In: — Date/Time: | |

SPECIAL INSTRUCTIONS

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JOE190567
DUE 6-8-10
SDG TJ00791

REVIEWED BY [illegible]
DATE 5-18-10

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

RW 5/19/10

WCH-EE-011

TestAmerica

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## Appendix 5

## Data Validation Supporting Documentation

## APPENDIX A

## RADIOCHEMICAL DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: | 119-D-1 | | DATA PACKAGE: | J00791 | |
| VALIDATOR: | ELR | LAB: TAL | | DATE: 7/2/10 | |
| | | | SDG: | J00791 | |

| ANALYSES PERFORMED | | | | | |
|---|---|---|---|---|---|
| ☐ Gross Alpha/Beta | ☒ Strontium-90 | ☒ Technetium-99 | ☒ Alpha Spectroscopy | ☒ Gamma Spectroscopy | |
| ☐ Total Uranium | ☐ Radium-22 | ☒ Tritium | Ni-63 | C-14 | |

| SAMPLES/MATRIX | | | | | |
|---|---|---|---|---|---|
| J19XP8 | J19XP9 | J19XR0 | J19XR1 | J19XR2 | J19XR3 |
| J19XR4 | J19XR5 | J19XR6 | J19XR7 | J19XR8 | J19XR9 |
| J19XT0 | J19XW8 | J19XW9 | J19XX0 | | |
| | | | | | |
| | | | | | Soil |

1. Completeness ..... ☐ N/A

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

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

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

Comments: 3H - U all - MB

no FB

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

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

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

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

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

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

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

Comments: no PU-238 or U-235 LCS - J all

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: 3H + C-14 - NO µg - J all

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

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

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

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

Comments:

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

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

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

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

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

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

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

Comments: no FS or PAS

R4/TO

12. Holding Times (All levels)

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

Comments:

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

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

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

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

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

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

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

Comments: ~~IIII~~ IIII – aut

**Appendix 6**

**Additional Documentation Requested by Client**

# QC Results Summary

Date: 23-Jun-10

## TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

**Report No. :** 44110 **SDG No.:** J00791

| Batch Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDC\|MDA |
|---|---|---|---|---|---|---|---|---|
| **PUISO_PLATE_AEA** | | | | | | | | |
| 0140122 BLANK QC, | | | | | | | | |
| L1RWN1AA | PU-238 | -1.49E-03 +- 6.0E-02 | U | pCi/g | 90% | | | 1.12E-01 |
| | PU239/40 | -1.49E-03 +- 6.0E-02 | U | pCi/g | 90% | | | 1.12E-01 |
| 0140122 LCS, | | | | | | | | |
| L1RWN1AC | PU239/40 | 5.98E+00 +- 1.7E+00 | | pCi/g | 65% | 85% | -0.2 | 1.49E-01 |
| **UISO_IE_PLATE_AEA** | | | | | | | | |
| 0140124 BLANK QC, | | | | | | | | |
| L1RWV1AA | U-234 | -2.37E-03 +- 4.7E-02 | U | pCi/g | 89% | | | 9.89E-02 |
| | U-235 | 0.00E+00 +- 4.7E-02 | U | pCi/g | 89% | | | 8.87E-02 |
| | U-238 | -2.37E-03 +- 4.7E-02 | U | pCi/g | 89% | | | 9.89E-02 |
| 0140124 LCS, | | | | | | | | |
| L1RWV1AC | U-234 | 2.68E+00 +- 9.6E-01 | | pCi/g | 55% | 81% | -0.2 | 1.67E-01 |
| | U-238 | 2.53E+00 +- 9.2E-01 | | pCi/g | 55% | 73% | -0.3 | 2.14E-01 |
| **GAMMA_GS** | | | | | | | | |
| 0140144 BLANK QC, | | | | | | | | |
| L1R1Q1AA | AMERICIUM 241 | -5.29E-02 +- 4.3E-02 | U | pCi/g | | | | 6.86E-02 |
| | CO-60 | -1.04E-02 +- 1.0E-02 | U | pCi/g | | | | 1.65E-02 |
| | CS-137 | 6.52E-04 +- 1.2E-02 | U | pCi/g | | | | 2.10E-02 |
| | EU-152 | -1.40E-02 +- 3.4E-02 | U | pCi/g | | | | 5.41E-02 |
| | EU-154 | 2.03E-02 +- 3.0E-02 | U | pCi/g | | | | 5.88E-02 |
| | EU-155 | -1.06E-02 +- 3.2E-02 | U | pCi/g | | | | 5.37E-02 |
| 0140144 LCS, | | | | | | | | |
| L1R1Q1AC | CS-137 | 1.24E+00 +- 1.7E-01 | | pCi/g | | 112% | 0.1 | 3.49E-02 |
| **SRTOT_SEP_PRECIP_GPC** | | | | | | | | |
| 0140150 BLANK QC, | | | | | | | | |
| L1R1V1AA | STRONTIUM | 5.07E-02 +- 6.1E-02 | U | pCi/g | 89% | | | 1.27E-01 |
| 0140150 LCS, | | | | | | | | |
| L1R1V1AC | STRONTIUM | 9.59E-01 +- 2.8E-01 | | pCi/g | 87% | 85% | -0.2 | 1.28E-01 |
| **C14_CHEM_LSC** | | | | | | | | |
| 0140125 BLANK QC, | | | | | | | | |
| L1RW61AA | C-14 | -1.40E-03 +- 4.9E-03 | U | pCi/g | 100% | | | 1.12E-02 |
| 0140125 LCS, | | | | | | | | |
| L1RW61AC | C-14 | 1.88E-01 +- 1.3E-02 | | pCi/g | 100% | 103% | 0.0 | 1.12E-02 |
| **NI63_LSC** | | | | | | | | |
| 0140127 BLANK QC, | | | | | | | | |
| L1RXG1AA | NI-63 | -1.85E+00 +- 6.1E+00 | U | pCi/g | 96% | | | 1.32E+01 |
| 0140127 LCS, | | | | | | | | |
| L1RXG1AC | NI-63 | 4.49E+02 +- 4.3E+01 | | pCi/g | 100% | 79% | -0.2 | 1.27E+01 |
| **TC99_ETVDSK_LSC** | | | | | | | | |
| 0140132 BLANK QC, | | | | | | | | |
| L1R1A1AA | TC-99 | -6.64E-02 +- 3.2E-01 | U | pCi/g | 100% | | | 6.06E-01 |
| 0140132 LCS, | | | | | | | | |

TestAmerica rptSTLRchQcSummary V5.2.5 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 or Total Uncert or not identified by gamma scan software.

000037

# QC Results Summary

Date: 23-Jun-10

## TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 44110

SDG No.: J00791

| Batch Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDC\|MDA |
|---|---|---|---|---|---|---|---|---|
| L1R1A1AC | TC-99 | 6.12E+01 +- 4.0E+00 | | pCi/g | 100% | 90% | -0.1 | 6.08E-01 |
| 0140132 MATRIX SPIKE, J19XP8 | | | | | | | | |
| L1Q9C1AL | TC-99 | 2.02E+02 +- 1.2E+01 | | pCi/g | 100% | 89% | -0.1 | 6.12E-01 |
| **906.0_H3_LSC** | | | | | | | | |
| 0140134 BLANK QC, | | | | | | | | |
| L1R1L1AA | H-3 | 4.37E-01 +- 1.5E-01 | | pCi/g | 100% | | | 3.08E-01 |
| 0140134 LCS, | | | | | | | | |
| L1R1L1AC | H-3 | 2.90E+00 +- 2.4E-01 | | pCi/g | 100% | 107% | 0.1 | 3.08E-01 |
| **7196_CR6** | | | | | | | | |
| 0140415 BLANK QC, | | | | | | | | |
| L1VK51AA | HEXCHROME | 1.55E-01 +- 0.0E+00 | U | mg/kg | N/A | | | 1.55E-01 |
| 0140415 LCS, | | | | | | | | |
| L1VK61AC | HEXCHROME | 1.82E+01 +- 0.0E+00 | | mg/kg | N/A | 91% | -0.1 | 1.55E-01 |
| 0140415 MATRIX SPIKE, J19XR3 | | | | | | | | |
| L1Q521AC | HEXCHROME | 8.32E+00 +- 0.0E+00 | | mg/kg | N/A | 83% | -0.2 | 1.54E-01 |

No. of Results: 29

TestAmerica

rptSTLRchQcSummary V5.2.5 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 or Total Uncert or not identified by gamma scan software.

000038

Date: 12 July 2010
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 118-D-1
Subject: Metals - Data Package No. J00791-TAL

## INTRODUCTION

This memo presents the results of data validation on Data Package No. J00791 prepared by TestAmerica Laboratory Inc. (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|---|---|---|---|---|
| J19XP8 | 5/13/10 | Soil | C | See note 1 |
| J19XP9 | 5/13/10 | Soil | C | See note 1 |
| J19XR0 | 5/13/10 | Soil | C | See note 1 |
| J19XR1 | 5/13/10 | Soil | C | See note 1 |
| J19XR2 | 5/13/10 | Soil | C | See note 1 |
| J19XR3 | 5/13/10 | Soil | C | See note 1 |
| J19XR4 | 5/13/10 | Soil | C | See note 1 |
| J19XR5 | 5/13/10 | Soil | C | See note 1 |
| J19XR6 | 5/13/10 | Soil | C | See note 1 |
| J19XR7 | 5/13/10 | Soil | C | See note 1 |
| J19XR8 | 5/13/10 | Soil | C | See note 1 |
| J19XR9 | 5/13/10 | Soil | C | See note 1 |
| J19XT0 | 5/13/10 | Soil | C | See note 1 |
| J19XW8 | 5/13/10 | Soil | C | See note 1 |
| J19XW9 | 5/13/10 | Soil | C | See note 1 |
| J19XX0 | 5/13/10 | Soil | C | See note 1 |

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

## DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the mercury result in samples J19XR4, J19XR6, J19XP8, J19XR0, J19XR1, J19XR2, J19XW8, J19XW9, J19XX0, J19XR8, J19XR9 and J19XT0 were qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (58%) and silicon (14%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (27%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J19XR4/J19XT0) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. J00791 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

## MAJOR DEFICIENCIES

None found.

## MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the mercury result in samples J19XR4, J19XR6, J19XP8, J19XR0, J19XR1, J19XR2, J19XW8, J19XW9, J19XX0, J19XR8, J19XR9 and J19XT0 were qualified as undetected and flagged "UJ".

- Due to matrix spike recoveries outside QC limits, all antimony (58%) and silicon (14%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (27%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

## REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

## Appendix 1

## Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

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

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

## Appendix 2

## Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

| SDG: J00791 | REVIEWER: ELR | Project: 118-D-1 | PAGE 1 OF 1 |
|---|---|---|---|
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Mercury | UJ | J19XR4, J19XR6<br>J19XP8, J19XR0<br>J19XR1, J19XR2<br>J19XW8, J19XW9<br>J19XX0, J19XR8<br>J19XR9, J19XT0 | Method blank contamination |
| Antimony<br>Silicon | J | All | MS recovery |
| Silicon | J | All | LCS recovery |

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

## Appendix 3

## Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR3

Lab Sample ID: 280-3716-1
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1055
Date Received: 05/20/2010 0930

## 6010B Metals (ICP)

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.00 g |
| Date Analyzed: | 06/02/2010 1449 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 7220 | | 1.6 | 5.0 |
| Antimony | | 0.38 | U J | 0.38 | 0.60 |
| Arsenic | | 3.3 | | 0.66 | 1.0 |
| Barium | | 52.6 | | 0.077 | 0.50 |
| Beryllium | | 0.25 | | 0.033 | 0.20 |
| Boron | | 0.99 | U | 0.99 | 2.0 |
| Cadmium | | 0.055 | B | 0.041 | 0.20 |
| Calcium | | 6590 | L | 14.2 | 50.4 |
| Chromium | | 10.0 | L | 0.058 | 0.20 |
| Cobalt | | 8.8 | L | 0.10 | 1.0 |
| Copper | | 15.7 | | 0.22 | 1.0 |
| Iron | | 22500 | L | 3.8 | 5.0 |
| Lead | | 5.4 | | 0.27 | 0.50 |
| Magnesium | | 5160 | | 3.7 | 20.1 |
| Manganese | | 329 | L | 0.10 | 1.0 |
| Molybdenum | | 0.38 | B | 0.26 | 2.0 |
| Nickel | | 11.3 | L | 0.12 | 4.0 |
| Potassium | | 1140 | | 41.3 | 302 |
| Selenium | | 0.87 | U | 0.87 | 1.0 |
| Silicon | | 195 | L N J | 2.1 | 10.1 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 328 | | 59.4 | 121 |
| Vanadium | | 56.6 | | 0.095 | 2.0 |
| Zinc | | 44.5 | L | 0.40 | 1.0 |

## 7471A Mercury (CVAA)

7/6/10

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.61 g |
| Date Analyzed: | 06/09/2010 1457 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.050 | J | 0.0055 | 0.017 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR4

Lab Sample ID: 280-3716-2
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

## 6010B Metals (ICP)

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.06 g |
| Date Analyzed: | 06/02/2010 1458 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

K 7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 4500 | | 1.5 | 4.8 |
| Antimony | | 0.36 | U J | 0.36 | 0.57 |
| Arsenic | | 1.5 | | 0.63 | 0.95 |
| Barium | | 48.0 | | 0.072 | 0.48 |
| Boron | | 0.93 | U | 0.93 | 1.9 |
| Cadmium | | 0.039 | U | 0.039 | 0.19 |
| Calcium | | 5380 | L | 13.5 | 47.7 |
| Chromium | | 5.7 | L | 0.055 | 0.19 |
| Iron | | 25100 | L | 3.6 | 4.8 |
| Magnesium | | 4670 | | 3.5 | 19.1 |
| Manganese | | 306 | L | 0.095 | 0.95 |
| Molybdenum | | 0.25 | U | 0.25 | 1.9 |
| Nickel | | 11.5 | L | 0.12 | 3.8 |
| Potassium | | 564 | | 39.1 | 286 |
| Selenium | | 0.82 | U | 0.82 | 0.95 |
| Silicon | | 295 | L J | 2.0 | 9.5 |
| Silver | | 0.15 | U | 0.15 | 0.19 |
| Sodium | | 344 | | 56.3 | 114 |
| Zinc | | 54.7 | L | 0.38 | 0.95 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-18032 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060310.txt |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 1.06 g |
| Date Analyzed: | 06/03/2010 1606 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.18 | B | 0.063 | 0.38 |
| Cobalt | | 11.0 | L | 0.19 | 1.9 |
| Copper | | 15.2 | | 0.41 | 1.9 |
| Lead | | 4.5 | | 0.52 | 0.95 |
| Vanadium | | 77.6 | | 0.18 | 3.8 |

## 7471A Mercury (CVAA)

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.65 g |
| Date Analyzed: | 06/09/2010 1246 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.012 | B J C UJ | 0.0052 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR5**

Lab Sample ID: 280-3716-3
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1245
Date Received: 05/20/2010 0930

## 6010B Metals (ICP)

Method: 6010B
Preparation: 3050B
Dilution: 1.0
Date Analyzed: 06/02/2010 1510
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 4330 | | 1.4 | 4.4 |
| Antimony | | 0.34 | U J | 0.34 | 0.53 |
| Arsenic | | 1.2 | | 0.59 | 0.89 |
| Barium | | 46.5 | | 0.067 | 0.44 |
| Boron | | 0.87 | U | 0.87 | 1.8 |
| Cadmium | | 0.036 | U | 0.036 | 0.18 |
| Calcium | | 5130 | L | 12.5 | 44.4 |
| Chromium | | 5.3 | L | 0.051 | 0.18 |
| Iron | | 24500 | L | 3.4 | 4.4 |
| Magnesium | | 4280 | | 3.3 | 17.7 |
| Manganese | | 296 | L | 0.089 | 0.89 |
| Molybdenum | | 0.24 | B | 0.23 | 1.8 |
| Nickel | | 8.9 | L | 0.11 | 3.5 |
| Potassium | | 556 | | 36.4 | 266 |
| Selenium | | 0.76 | U | 0.76 | 0.89 |
| Silicon | | 185 | L J | 1.9 | 8.9 |
| Silver | | 0.14 | U | 0.14 | 0.18 |
| Sodium | | 341 | | 52.3 | 106 |
| Zinc | | 43.1 | L | 0.35 | 0.89 |

Method: 6010B
Preparation: 3050B
Dilution: 2.0
Date Analyzed: 06/03/2010 1609
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-18032
Prep Batch: 280-16904

Instrument ID: MT_025
Lab File ID: 25A1060310.txt
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.20 | B | 0.059 | 0.35 |
| Cobalt | | 10.2 | L | 0.18 | 1.8 |
| Copper | | 14.4 | | 0.39 | 1.8 |
| Lead | | 2.4 | | 0.48 | 0.89 |
| Vanadium | | 81.7 | | 0.17 | 3.5 |

## 7471A Mercury (CVAA)

Method: 7471A
Preparation: 7471A
Dilution: 1.0
Date Analyzed: 06/09/2010 1248
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.62 g
Final Weight/Volume: 50 mL

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

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR6**

Lab Sample ID: 280-3716-4
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1305
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.02 g |
| Date Analyzed: | 06/02/2010 1513 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5510 | | 1.5 | 5.0 |
| Antimony | | 0.38 | U J | 0.38 | 0.59 |
| Arsenic | | 2.5 | | 0.65 | 0.99 |
| Barium | | 57.3 | | 0.075 | 0.50 |
| Beryllium | | 0.23 | | 0.033 | 0.20 |
| Boron | | 0.97 | U | 0.97 | 2.0 |
| Cadmium | | 0.050 | B | 0.041 | 0.20 |
| Calcium | | 6690 | L | 14.0 | 49.6 |
| Chromium | | 7.1 | L | 0.057 | 0.20 |
| Cobalt | | 8.7 | L | 0.099 | 0.99 |
| Copper | | 16.1 | | 0.22 | 0.99 |
| Iron | | 23300 | L | 3.8 | 5.0 |
| Lead | | 6.6 | | 0.27 | 0.50 |
| Magnesium | | 4300 | | 3.7 | 19.8 |
| Manganese | | 304 | L | 0.099 | 0.99 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 8.9 | L | 0.12 | 4.0 |
| Potassium | | 915 | | 40.6 | 297 |
| Selenium | | 0.85 | U | 0.85 | 0.99 |
| Silicon | | 260 | L J | 2.1 | 9.9 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 237 | | 58.5 | 119 |
| Vanadium | | 66.3 | | 0.093 | 2.0 |
| Zinc | | 59.2 | L | 0.39 | 0.99 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.60 g |
| Date Analyzed: | 06/09/2010 1251 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0083 | B J C UJ | 0.0056 | 0.017 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR7**

Lab Sample ID: 280-3716-5
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 1310
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.16 g |
| Date Analyzed: | 06/02/2010 1515 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 3840 | | 1.4 | 4.4 |
| Antimony | | 0.33 | U J | 0.33 | 0.52 |
| Arsenic | | 1.2 | | 0.58 | 0.87 |
| Barium | | 44.9 | | 0.066 | 0.44 |
| Boron | | 0.86 | U | 0.86 | 1.7 |
| Cadmium | | 0.036 | U | 0.036 | 0.17 |
| Calcium | | 4610 | L | 12.3 | 43.6 |
| Chromium | | 4.5 | L | 0.051 | 0.17 |
| Iron | | 23300 | L | 3.3 | 4.4 |
| Magnesium | | 3640 | | 3.2 | 17.5 |
| Manganese | | 276 | L | 0.087 | 0.87 |
| Molybdenum | | 0.23 | U | 0.23 | 1.7 |
| Nickel | | 6.4 | L | 0.11 | 3.5 |
| Potassium | | 493 | | 35.8 | 262 |
| Selenium | | 0.75 | U | 0.75 | 0.87 |
| Silicon | | 141 | L J | 1.8 | 8.7 |
| Silver | | 0.14 | U | 0.14 | 0.17 |
| Sodium | | 295 | | 51.5 | 105 |
| Zinc | | 41.6 | L | 0.35 | 0.87 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-18032 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060310.txt |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 1.16 g |
| Date Analyzed: | 06/03/2010 1611 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.18 | B | 0.058 | 0.35 |
| Cobalt | | 11.0 | L | 0.17 | 1.7 |
| Copper | | 15.8 | | 0.38 | 1.7 |
| Lead | | 2.6 | | 0.47 | 0.87 |
| Vanadium | | 72.1 | | 0.16 | 3.5 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.62 g |
| Date Analyzed: | 06/09/2010 1253 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

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

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XP8**

Lab Sample ID: 280-3716-6
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 0950
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.03 g |
| Date Analyzed: | 06/02/2010 1518 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 4710 | | 1.5 | 4.9 |
| Antimony | | 0.37 | U J | 0.37 | 0.59 |
| Arsenic | | 2.2 | | 0.65 | 0.98 |
| Barium | | 60.4 | | 0.075 | 0.49 |
| Beryllium | | 0.20 | | 0.032 | 0.20 |
| Boron | | 0.96 | U | 0.96 | 2.0 |
| Cadmium | | 0.043 | B | 0.040 | 0.20 |
| Calcium | | 5270 | L | 13.9 | 49.2 |
| Chromium | | 6.4 | L | 0.057 | 0.20 |
| Cobalt | | 7.9 | L | 0.098 | 0.98 |
| Copper | | 16.9 | | 0.21 | 0.98 |
| Iron | | 20500 | L | 3.7 | 4.9 |
| Lead | | 3.8 | | 0.27 | 0.49 |
| Magnesium | | 3900 | | 3.6 | 19.7 |
| Manganese | | 285 | L | 0.098 | 0.98 |
| Molybdenum | | 0.26 | B | 0.26 | 2.0 |
| Nickel | | 9.8 | L | 0.12 | 3.9 |
| Potassium | | 746 | | 40.3 | 295 |
| Selenium | | 0.85 | U | 0.85 | 0.98 |
| Silicon | | 201 | L J | 2.1 | 9.8 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 243 | | 58.0 | 118 |
| Vanadium | | 53.2 | | 0.092 | 2.0 |
| Zinc | | 37.0 | L | 0.39 | 0.98 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.66 g |
| Date Analyzed: | 06/09/2010 1255 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0070 | B J C UJ | 0.0051 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XP9**

Lab Sample ID: 280-3716-7
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 0955
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.04 g |
| Date Analyzed: | 06/02/2010 1520 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 4340 | | 1.5 | 4.9 |
| Antimony | | 0.37 | U J | 0.37 | 0.58 |
| Arsenic | | 1.3 | | 0.64 | 0.97 |
| Barium | | 46.2 | | 0.074 | 0.49 |
| Boron | | 0.95 | U | 0.95 | 1.9 |
| Cadmium | | 0.040 | U | 0.040 | 0.19 |
| Calcium | | 4900 | L | 13.7 | 48.7 |
| Chromium | | 5.0 | L | 0.056 | 0.19 |
| Iron | | 24200 | L | 3.7 | 4.9 |
| Magnesium | | 4050 | | 3.6 | 19.5 |
| Manganese | | 303 | L | 0.097 | 0.97 |
| Molybdenum | | 0.25 | U | 0.25 | 1.9 |
| Nickel | | 8.4 | L | 0.12 | 3.9 |
| Potassium | | 537 | | 39.9 | 292 |
| Selenium | | 0.84 | U | 0.84 | 0.97 |
| Silicon | | 172 | L J | 2.0 | 9.7 |
| Silver | | 0.16 | U | 0.16 | 0.19 |
| Sodium | | 257 | | 57.4 | 117 |
| Vanadium | | 73.5 | | 0.091 | 1.9 |
| Zinc | | 43.0 | L | 0.39 | 0.97 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-18032 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060310.txt |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 1.04 g |
| Date Analyzed: | 06/03/2010 1614 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.19 | B | 0.064 | 0.39 |
| Cobalt | | 9.9 | L | 0.19 | 1.9 |
| Copper | | 17.1 | | 0.42 | 1.9 |
| Lead | | 2.8 | | 0.53 | 0.97 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.65 g |
| Date Analyzed: | 06/09/2010 1307 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0052 | U | 0.0052 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR0**

Lab Sample ID: 280-3716-8
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 1025
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.01 g |
| Date Analyzed: | 06/02/2010 1523 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5100 | | 1.6 | 5.0 |
| Antimony | | 0.38 | U J | 0.38 | 0.60 |
| Arsenic | | 1.7 | | 0.66 | 1.0 |
| Barium | | 52.3 | | 0.076 | 0.50 |
| Boron | | 0.98 | U | 0.98 | 2.0 |
| Cadmium | | 0.041 | U | 0.041 | 0.20 |
| Calcium | | 5370 | L | 14.1 | 50.2 |
| Chromium | | 6.4 | L | 0.058 | 0.20 |
| Iron | | 24600 | L | 3.8 | 5.0 |
| Magnesium | | 4580 | | 3.7 | 20.1 |
| Manganese | | 317 | L | 0.10 | 1.0 |
| Molybdenum | | 0.26 | B | 0.26 | 2.0 |
| Nickel | | 10.7 | L | 0.12 | 4.0 |
| Potassium | | 741 | | 41.1 | 301 |
| Selenium | | 0.86 | U | 0.86 | 1.0 |
| Silicon | | 475 | L J | 2.1 | 10.0 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 297 | | 59.2 | 120 |
| Zinc | | 43.7 | L | 0.40 | 1.0 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-18032 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060310.txt |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 1.01 g |
| Date Analyzed: | 06/03/2010 1616 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.22 | B | 0.066 | 0.40 |
| Cobalt | | 10.1 | L | 0.20 | 2.0 |
| Copper | | 15.3 | | 0.44 | 2.0 |
| Lead | | 3.2 | | 0.54 | 1.0 |
| Vanadium | | 79.9 | | 0.19 | 4.0 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.65 g |
| Date Analyzed: | 06/09/2010 1309 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0063 | B J C UJ | 0.0052 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR1**

Lab Sample ID: 280-3716-9
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.02 g |
| Date Analyzed: | 06/02/2010 1525 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5830 | | 1.5 | 4.9 |
| Antimony | | 0.38 | U J | 0.38 | 0.59 |
| Arsenic | | 2.8 | | 0.65 | 0.99 |
| Barium | | 58.5 | | 0.075 | 0.49 |
| Beryllium | | 0.23 | | 0.033 | 0.20 |
| Boron | | 0.97 | U | 0.97 | 2.0 |
| Cadmium | | 0.040 | U | 0.040 | 0.20 |
| Calcium | | 6040 | L | 13.9 | 49.4 |
| Chromium | | 7.9 | L | 0.057 | 0.20 |
| Cobalt | | 8.2 | L | 0.099 | 0.99 |
| Copper | | 15.2 | | 0.21 | 0.99 |
| Iron | | 21900 | L | 3.8 | 4.9 |
| Lead | | 4.1 | | 0.27 | 0.49 |
| Magnesium | | 4420 | | 3.7 | 19.7 |
| Manganese | | 309 | L | 0.099 | 0.99 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 10.7 | L | 0.12 | 3.9 |
| Potassium | | 903 | | 40.5 | 296 |
| Selenium | | 0.85 | U | 0.85 | 0.99 |
| Silicon | | 194 | L J | 2.1 | 9.9 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 269 | | 58.3 | 118 |
| Vanadium | | 61.1 | | 0.093 | 2.0 |
| Zinc | | 42.3 | L | 0.39 | 0.99 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.61 g |
| Date Analyzed: | 06/09/2010 1312 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0067 | B J C UJ | 0.0055 | 0.017 |

000018

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.03 g |
| Date Analyzed: | 06/02/2010 1538 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 6400 | | 1.5 | 4.9 |
| Antimony | | 0.37 | U J | 0.37 | 0.59 |
| Arsenic | | 2.6 | | 0.65 | 0.98 |
| Barium | | 68.0 | | 0.075 | 0.49 |
| Beryllium | | 0.23 | | 0.032 | 0.20 |
| Boron | | 2.1 | | 0.96 | 2.0 |
| Cadmium | | 0.059 | B | 0.040 | 0.20 |
| Calcium | | 6530 | L | 13.8 | 49.1 |
| Chromium | | 9.8 | L | 0.057 | 0.20 |
| Cobalt | | 7.7 | L | 0.098 | 0.98 |
| Copper | | 14.3 | | 0.21 | 0.98 |
| Iron | | 20100 | L | 3.7 | 4.9 |
| Lead | | 3.7 | | 0.27 | 0.49 |
| Magnesium | | 4340 | | 3.6 | 19.6 |
| Manganese | | 298 | L | 0.098 | 0.98 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 11.0 | L | 0.12 | 3.9 |
| Potassium | | 1000 | | 40.3 | 295 |
| Selenium | | 0.84 | U | 0.84 | 0.98 |
| Silicon | | 201 | L J | 2.1 | 9.8 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 233 | | 57.9 | 118 |
| Vanadium | | 53.7 | | 0.092 | 2.0 |
| Zinc | | 38.2 | L | 0.39 | 0.98 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.63 g |
| Date Analyzed: | 06/09/2010 1314 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0072 | B J C UJ | 0.0053 | 0.016 |

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW8**

Lab Sample ID: 280-3716-11
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0925
Date Received: 05/20/2010 0930

### 6010B Metals (ICP)

Method: 6010B
Preparation: 3050B
Dilution: 1.0
Date Analyzed: 06/02/2010 1540
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5740 | | 1.4 | 4.6 |
| Antimony | | 0.35 | U J | 0.35 | 0.56 |
| Arsenic | | 2.5 | | 0.61 | 0.93 |
| Barium | | 64.1 | | 0.070 | 0.46 |
| Beryllium | | 0.22 | | 0.031 | 0.19 |
| Boron | | 0.91 | U | 0.91 | 1.9 |
| Cadmium | | 0.043 | B | 0.038 | 0.19 |
| Calcium | | 6270 | L | 13.1 | 46.4 |
| Chromium | | 7.9 | L | 0.054 | 0.19 |
| Cobalt | | 8.3 | L | 0.093 | 0.93 |
| Copper | | 14.0 | | 0.20 | 0.93 |
| Iron | | 21100 | L | 3.5 | 4.6 |
| Lead | | 3.6 | | 0.25 | 0.46 |
| Magnesium | | 4180 | | 3.4 | 18.5 |
| Manganese | | 282 | L | 0.093 | 0.93 |
| Molybdenum | | 0.24 | U | 0.24 | 1.9 |
| Nickel | | 10.5 | L | 0.11 | 3.7 |
| Potassium | | 958 | | 38.0 | 278 |
| Selenium | | 0.80 | U | 0.80 | 0.93 |
| Silicon | | 212 | L J | 1.9 | 9.3 |
| Silver | | 0.15 | U | 0.15 | 0.19 |
| Sodium | | 273 | | 54.7 | 111 |
| Vanadium | | 57.6 | | 0.087 | 1.9 |
| Zinc | | 39.3 | L | 0.37 | 0.93 |

### 7471A Mercury (CVAA)

Method: 7471A
Preparation: 7471A
Dilution: 1.0
Date Analyzed: 06/09/2010 1316
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.65 g
Final Weight/Volume: 50 mL

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0054 | B J C U J | 0.0052 | 0.016 |

000020

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW9**

Lab Sample ID: 280-3716-12
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0930
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.05 g |
| Date Analyzed: | 06/02/2010 1543 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

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| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 4790 | | 1.5 | 4.8 |
| Antimony | | 0.37 | U J | 0.37 | 0.58 |
| Arsenic | | 2.3 | | 0.64 | 0.96 |
| Barium | | 50.6 | | 0.073 | 0.48 |
| Beryllium | | 0.19 | | 0.032 | 0.19 |
| Boron | | 0.94 | U | 0.94 | 1.9 |
| Cadmium | | 0.039 | U | 0.039 | 0.19 |
| Calcium | | 6030 | L | 13.6 | 48.1 |
| Chromium | | 7.6 | L | 0.056 | 0.19 |
| Cobalt | | 7.9 | L | 0.096 | 0.96 |
| Copper | | 13.8 | | 0.21 | 0.96 |
| Iron | | 21800 | L | 3.7 | 4.8 |
| Lead | | 4.4 | | 0.26 | 0.48 |
| Magnesium | | 4130 | | 3.6 | 19.3 |
| Manganese | | 279 | L | 0.096 | 0.96 |
| Molybdenum | | 0.25 | U | 0.25 | 1.9 |
| Nickel | | 9.8 | L | 0.12 | 3.9 |
| Potassium | | 680 | | 39.5 | 289 |
| Selenium | | 0.83 | U | 0.83 | 0.96 |
| Silicon | | 188 | L J | 2.0 | 9.6 |
| Silver | | 0.15 | U | 0.15 | 0.19 |
| Sodium | | 235 | | 56.8 | 116 |
| Vanadium | | 62.5 | | 0.090 | 1.9 |
| Zinc | | 39.7 | L | 0.38 | 0.96 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.63 g |
| Date Analyzed: | 06/09/2010 1318 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0063 | B J C UJ | 0.0053 | 0.016 |

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Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XX0**

Lab Sample ID: 280-3716-13
Client Matrix: Solid
% Moisture: 2.3

Date Sampled: 05/13/2010 0935
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.01 g |
| Date Analyzed: | 06/02/2010 1546 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 6350 | | 1.6 | 5.1 |
| Antimony | | 0.39 | U J | 0.39 | 0.61 |
| Arsenic | | 2.7 | | 0.67 | 1.0 |
| Barium | | 60.0 | | 0.077 | 0.51 |
| Beryllium | | 0.24 | | 0.033 | 0.20 |
| Boron | | 0.99 | U | 0.99 | 2.0 |
| Cadmium | | 0.060 | B | 0.042 | 0.20 |
| Calcium | | 7610 | L | 14.3 | 50.7 |
| Chromium | | 10.6 | L | 0.059 | 0.20 |
| Cobalt | | 7.6 | L | 0.10 | 1.0 |
| Copper | | 14.2 | | 0.22 | 1.0 |
| Iron | | 20000 | L | 3.9 | 5.1 |
| Lead | | 4.0 | | 0.27 | 0.51 |
| Magnesium | | 4270 | | 3.8 | 20.3 |
| Manganese | | 293 | L | 0.10 | 1.0 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 10.5 | L | 0.12 | 4.1 |
| Potassium | | 981 | | 41.6 | 304 |
| Selenium | | 0.87 | U | 0.87 | 1.0 |
| Silicon | | 235 | L J | 2.1 | 10.1 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 213 | | 59.8 | 122 |
| Vanadium | | 53.3 | | 0.095 | 2.0 |
| Zinc | | 37.7 | L | 0.40 | 1.0 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.62 g |
| Date Analyzed: | 06/09/2010 1321 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0080 | B J C UJ | 0.0055 | 0.017 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR8**

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.04 g |
| Date Analyzed: | 06/02/2010 1548 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

K 7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5090 | | 1.5 | 4.9 |
| Antimony | | 0.37 | U J | 0.37 | 0.59 |
| Arsenic | | 1.7 | | 0.65 | 0.98 |
| Barium | | 64.1 | | 0.074 | 0.49 |
| Boron | | 0.96 | U | 0.96 | 2.0 |
| Cadmium | | 0.040 | U | 0.040 | 0.20 |
| Calcium | | 6670 | L | 13.8 | 48.9 |
| Chromium | | 5.6 | L | 0.057 | 0.20 |
| Iron | | 25200 | L | 3.7 | 4.9 |
| Magnesium | | 4470 | | 3.6 | 19.6 |
| Manganese | | 317 | L | 0.098 | 0.98 |
| Molybdenum | | 0.26 | B | 0.25 | 2.0 |
| Nickel | | 9.4 | L | 0.12 | 3.9 |
| Potassium | | 778 | | 40.1 | 293 |
| Selenium | | 0.84 | U | 0.84 | 0.98 |
| Silicon | | 313 | L J | 2.1 | 9.8 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 307 | | 57.7 | 117 |
| Zinc | | 45.9 | L | 0.39 | 0.98 |

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-18032 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060310.txt |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 1.04 g |
| Date Analyzed: | 06/03/2010 1619 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.24 | B | 0.065 | 0.39 |
| Cobalt | | 11.4 | L | 0.20 | 2.0 |
| Copper | | 17.4 | | 0.42 | 2.0 |
| Lead | | 3.4 | | 0.53 | 0.98 |
| Vanadium | | 81.7 | | 0.18 | 3.9 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.63 g |
| Date Analyzed: | 06/09/2010 1323 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0057 | B J C UJ | 0.0054 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR9**

Lab Sample ID: 280-3716-15
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/13/2010 1335
Date Received: 05/20/2010 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 280-17882 | | Instrument ID: | MT_025 |
| Preparation: | 3050B | Prep Batch: 280-16904 | | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1.03 g |
| Date Analyzed: | 06/02/2010 1551 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 5360 | | 1.5 | 5.0 |
| Antimony | | 0.38 | U J | 0.38 | 0.60 |
| Arsenic | | 2.0 | | 0.66 | 0.99 |
| Barium | | 62.1 | | 0.076 | 0.50 |
| Beryllium | | 0.23 | | 0.033 | 0.20 |
| Boron | | 0.98 | U | 0.98 | 2.0 |
| Cadmium | | 0.041 | U | 0.041 | 0.20 |
| Calcium | | 5540 | L | 14.0 | 49.7 |
| Chromium | | 5.3 | L | 0.058 | 0.20 |
| Cobalt | | 10.1 | L | 0.099 | 0.99 |
| Copper | | 17.0 | | 0.22 | 0.99 |
| Iron | | 25800 | L | 3.8 | 5.0 |
| Lead | | 3.3 | | 0.27 | 0.50 |
| Magnesium | | 4660 | | 3.7 | 19.9 |
| Manganese | | 318 | L | 0.099 | 0.99 |
| Molybdenum | | 0.26 | U | 0.26 | 2.0 |
| Nickel | | 10.0 | L | 0.12 | 4.0 |
| Potassium | | 823 | | 40.8 | 298 |
| Selenium | | 0.86 | U | 0.86 | 0.99 |
| Silicon | | 257 | L J | 2.1 | 9.9 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 353 | | 58.7 | 119 |
| Vanadium | | 68.8 | | 0.094 | 2.0 |
| Zinc | | 47.3 | L | 0.40 | 0.99 |

**7471A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7471A | Analysis Batch: 280-18792 | | Instrument ID: | MT_033 |
| Preparation: | 7471A | Prep Batch: 280-18461 | | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 0.66 g |
| Date Analyzed: | 06/09/2010 1325 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0062 | B J C UJ | 0.0052 | 0.016 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XT0

Lab Sample ID: 280-3716-16
Client Matrix: Solid
% Moisture: 1.0

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

## 6010B Metals (ICP)

Method: 6010B
Preparation: 3050B
Dilution: 1.0
Date Analyzed: 06/02/2010 1553
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

7/6/10

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Aluminum | | 3930 | | 1.6 | 5.1 |
| Antimony | | 0.38 | U J | 0.38 | 0.61 |
| Arsenic | | 1.5 | | 0.67 | 1.0 |
| Barium | | 49.8 | | 0.077 | 0.51 |
| Boron | | 0.99 | U | 0.99 | 2.0 |
| Cadmium | | 0.041 | U | 0.041 | 0.20 |
| Calcium | | 5040 | L | 14.2 | 50.5 |
| Chromium | | 4.4 | L | 0.059 | 0.20 |
| Iron | | 24700 | L | 3.8 | 5.1 |
| Magnesium | | 4220 | | 3.7 | 20.2 |
| Manganese | | 305 | L | 0.10 | 1.0 |
| Molybdenum | | 0.29 | B | 0.26 | 2.0 |
| Nickel | | 11.1 | L | 0.12 | 4.0 |
| Potassium | | 471 | | 41.4 | 303 |
| Selenium | | 0.87 | U | 0.87 | 1.0 |
| Silicon | | 168 | L J | 2.1 | 10.1 |
| Silver | | 0.16 | U | 0.16 | 0.20 |
| Sodium | | 295 | | 59.6 | 121 |
| Zinc | | 47.2 | L | 0.40 | 1.0 |

Method: 6010B
Preparation: 3050B
Dilution: 2.0
Date Analyzed: 06/03/2010 1621
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-18032
Prep Batch: 280-16904

Instrument ID: MT_025
Lab File ID: 25A1060310.txt
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Beryllium | | 0.18 | B | 0.067 | 0.40 |
| Cobalt | | 10.7 | L | 0.20 | 2.0 |
| Copper | | 15.7 | | 0.44 | 2.0 |
| Lead | | 2.6 | | 0.55 | 1.0 |
| Vanadium | | 78.0 | | 0.19 | 4.0 |

## 7471A Mercury (CVAA)

Method: 7471A
Preparation: 7471A
Dilution: 1.0
Date Analyzed: 06/09/2010 1328
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.68 g
Final Weight/Volume: 50 mL

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Mercury | | 0.0056 | B J C UJ | 0.0049 | 0.015 |

000025

## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

## CASE NARRATIVE

### Client: Washington Closure Hanford

### Project: WASHINGTON CLOSURE HANFORD

### Report Number: 280-3716-1

**SDG #: J00791**
**SAF#: RC-075**

**Date SDG Closed: May 20, 2010**
**Data Deliverable: 21 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J19XR3 | 280-3716-1 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR4 | 280-3716-2 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR5 | 280-3716-3 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR6 | 280-3716-4 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR7 | 280-3716-5 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XP8 | 280-3716-6 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XP9 | 280-3716-7 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR0 | 280-3716-8 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR1 | 280-3716-9 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR2 | 280-3716-10 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XW8 | 280-3716-11 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XW9 | 280-3716-12 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XX0 | 280-3716-13 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR8 | 280-3716-14 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR9 | 280-3716-15 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XT0 | 280-3716-16 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |

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.

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 5/20/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.6 C.

**GC/MS SEMIVOLATILES - SW846 8270C**
Samples J19XR1, J19XR2 and J19XR8 exhibited surrogate recoveries outside the control limits. No matrix effects were obvious that would explain the failures. Upon re-extraction and reanalysis, surrogate recoveries were 100% in control. Both the original and reanalysis data have been provided, as re-extraction was unavoidably performed outside the recommended sample holding times.

Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J19XR8 analyzed in batch 280-18249 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".

Acenaphthene was recovered outside the control limits in the MS aliquot of the MS/MSD performed on sample J19XW9 in batch 280-16642, and the associated sample result has been flagged "T". In addition, the MS exhibited the percent recovery outside the control limits biased low for surrogate 2-Fluorophenol. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Surrogate 2,4,6-Tribromophenol was recovered outside the control limits biased low in the method blank associated with re-extract batch 280-18249. Further corrective action outside the recommended sample holding time was not initiated, and data are reported as is.

No other anomalies were encountered.

**GC SEMIVOLATILES - NWTPH-Dx - DRO**
No anomalies were encountered.

**Total Metals - SW846 6010B/7471A**
Serial dilution of a digestate in batch 280-16904 indicates that physical and chemical interferences are present for Calcium, Chromium, Cobalt, Iron, Manganese, Nickel, Silicon and Zinc. Results have been flagged with an "L".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J19XR4, J19XR5, J19XR7, J19XP9, J19XR0, J19XR8 and J19XT0 required a 2x dilution prior to the analysis of Beryllium, Cobalt, Copper, Lead and/or Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been elevated accordingly.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J19XR3, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron, and Manganese in the Matrix Spike performed on sample J19XR3; therefore, control limits are not applicable.

Low levels of Mercury are present in the method blank associated with batch 280-18461. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "J".

No other anomalies were encountered.

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner | Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 8L | Data Turnaround: 21 Days | | |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | | SAF No.: RC-075 |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 | COA: R118D12000 | Method of Shipment: Hand Deliver |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

620029

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. / Matrix * / Sample Date / Sample Time | | | | | | | | | | | |
| J19XP8 / SOIL / 5/13/10 / 0950 | X | X | X | X | X | X | X | X | X | | |
| J19XP9 / SOIL / 5/13/10 / 0955 | X | X | X | X | X | X | X | X | X | | |
| J19XR0 / SOIL / 5/13/10 / 1025 | X | X | X | X | X | X | X | X | X | | |
| J19XR1 / SOIL / 5/13/10 / 1030 | X | X | X | X | X | X | X | X | X | | |
| J19XR2 / SOIL / 5/13/10 / ~~1055~~ 1050 | X | X | X | X | X | X | X | X | X | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Josh Sellers | 5-13-10 1430 | DWoolsey | 5/13/10 1430 |
| DWoolsey | 5/13/10 1645 | J. E. Baur | 5-13-10 1645 |
| J. E. Baur | 5-18-10 1430 | TAIR / Angel | 5-18-10 1430 |
| TAIR / Angel | 5-18-10 1400 | Lina Miller | 5/20/10 0430 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

REVIEWED BY JRE DATE 5-18-10

J00791

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



06/15/2010

AloJRI 5/20/10 2.6

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 2 of 3 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner | Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 8L | Data Turnaround: 21 Days | | |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | | SAF No.: RC-075 |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 | COA: R118D12000 | Method of Shipment: Hand Deliver |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potential Rad (<DOT limits)*

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

000030

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D + | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J19XR3 | SOIL | 5/13/10 | 1055 | X | X | X | X | X | X | X | X | X | |
| J19XR4 | SOIL | 5/13/10 | 1235 | X | X | X | X | X | X | X | X | X | |
| J19XR5 | SOIL | 5/13/10 | 1245 | X | X | X | X | X | X | X | X | X | |
| J19XR6 | SOIL | 5/13/10 | 1305 | X | X | X | X | X | X | X | X | X | |
| J19XF7 | SOIL | 5/13/10 | 1310 | X | X | X | X | X | X | X | X | X | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J Sellers / Jon Sellers | 5-13-10 1430 | Dwoodard | 5/13/10 1430 |
| Dwoodard | 5/13/10 1645 | J. E. Beal | 5-13-10 1645 |
| J. E. Beal / WCH | 5-18-10 1430 | TACR / Angel Garcia | 5-18-10 1400 |
| TACR / Angel Garcia | 5/19/10 1400 | Lin Miller | 5/20/10 0930 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**
Add Technetium-99 - liquid scintillation to radiological analysis.

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) (Mercury)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Ship to Dorsey. J00791

REVIEWED BY JRE DATE 5-18-10

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

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH |
| Price Code 8L | Data Turnaround<br>21 Days | | |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Deep Zone | | SAF No.<br>RC-075 |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

000031

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J19XR8 | SOIL | 5/13/10 | 1330 | X | X | X | X | X | X | X | X | X | |
| J19XR9 | SOIL | 5/13/10 | 1335 | X | X | X | X | X | X | X | X | X | |
| J19XT0 | SOIL | 5/13/10 | ~~1245~~ 1235 | X | X | X | X | X | X | X | X | X | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Josh Sellers | 5-13-10 1430 | Dwoolery | 5/13/10 1430 |
| Dwoolery | 5/13/10 1645 | J. E. Beal | 5-13-10 1645 |
| J. E. Beal WCH | 5-18-10 1430 | TAIR / Angel Angel | 5-18-10 1430 |
| TAIR / Angel Angel | 5-19-10 1400 | Lindy Miller | 5/20/10 0930 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

000791

REVIEWED BY TAE DATE 5-18-10

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

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-161 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH |
| Price Code 8L | Data Turnaround<br>21 Days | | |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Focus | | SAF No.<br>RC-075 |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A |

POSSIBLE SAMPLE HAZARDS/REMARKS

*Potential Rad (<DOT limits)*

Special Handling and/or Storage

*Cool 4 Deg C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| ~~J19XW7~~ 05/12/10 | SOIL | | | | | | | | | | |
| J19XW8 | SOIL | 5/13/10 | 0925 | X | X | X | X | X | X | X | X | X |
| J19XW9 | SOIL | 5/13/10 | 0930 | X | X | X | X | X | X | X | X | X |
| J19XX0 | SOIL | 5/13/10 | 0935 | X | X | X | X | X | X | X | X | X |

CHAIN OF POSSESSION — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers | 5-13-10 1430 | Dwoodfield | 5/13/10 1430 |
| Dwoodfield | 5/13/10 1645 | J. E. Beal | 5-13-10 1645 |
| J. E. Beal | 5-18-10 1430 | Angela Mitchell | 5-18-10 1430 |
| Angela Mitchell | 5-18-10 1400 | Lisa Miller | 5-20-10 0938 |
| | | | |
| | | | |

SPECIAL INSTRUCTIONS

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

REVIEWED BY JRC DATE 5-18-10

JC0791

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

## Appendix 5

## Data Validation Supporting Documentation

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: 118-D-1 | | | DATA PACKAGE: J00791 | | |
| VALIDATOR: ELR | | LAB: TAL | | DATE: 7/2/10 | |
| | | | SDG: J00791 | | |
| ANALYSES PERFORMED | | | | | |
| SW-846/ICP | SW-846/GFAA | SW-846/Hg | SW-846 Cyanide | | |
| | | | | | |

| SAMPLES/MATRIX | | | | |
|---|---|---|---|---|
| J19XP8 | J19XP9 | J19XR0 | J19XR1 | J19XR2 |
| J19XR3 | J19XR4 | J19XR5 | J19XR6 | J19XR7 |
| J19XR8 | J19XR9 | J19XT0 | J19XW8 | J19XW9 |
| J19XX0 | | | | |
| | | | | soil |

## 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

## 2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

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

Comments:

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

## 3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

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

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

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

Comments: no PAS

HG – all detects (except RJ) – UJ

## 4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

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

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

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

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

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

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

Comments:

MS – antimony (58%) silica (14%) – J all

LCS – silica 27% – J all

no PAS

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

## 5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

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

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

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

Comments: _____

## 6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

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

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

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

## 7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

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

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

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

## 8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

## 9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

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

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

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

Comments:

## Appendix 6

## Additional Documentation Requested by Client

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-16904**

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

Lab Sample ID: MB 280-16904/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/02/2010 1444
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aluminum | 1.6 | U | 1.6 | 5.0 |
| Antimony | 0.38 | U | 0.38 | 0.60 |
| Arsenic | 0.66 | U | 0.66 | 1.0 |
| Barium | 0.076 | U | 0.076 | 0.50 |
| Beryllium | 0.033 | U | 0.033 | 0.20 |
| Boron | 0.98 | U | 0.98 | 2.0 |
| Cadmium | 0.041 | U | 0.041 | 0.20 |
| Calcium | 14.1 | U | 14.1 | 50.0 |
| Chromium | 0.058 | U | 0.058 | 0.20 |
| Cobalt | 0.10 | U | 0.10 | 1.0 |
| Copper | 0.22 | U | 0.22 | 1.0 |
| Iron | 3.8 | U | 3.8 | 5.0 |
| Lead | 0.27 | U | 0.27 | 0.50 |
| Magnesium | 3.7 | U | 3.7 | 20.0 |
| Manganese | 0.10 | U | 0.10 | 1.0 |
| Molybdenum | 0.26 | U | 0.26 | 2.0 |
| Nickel | 0.12 | U | 0.12 | 4.0 |
| Potassium | 41.0 | U | 41.0 | 300 |
| Selenium | 0.86 | U | 0.86 | 1.0 |
| Silicon | 2.1 | U | 2.1 | 10.0 |
| Silver | 0.16 | U | 0.16 | 0.20 |
| Sodium | 59.0 | U | 59.0 | 120 |
| Vanadium | 0.094 | U | 0.094 | 2.0 |
| Zinc | 0.40 | U | 0.40 | 1.0 |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Lab Control Sample - Batch: 280-16904**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-16904/2-A | Analysis Batch: | 280-17882 | Instrument ID: | MT_025 |
| Client Matrix: | Solid | Prep Batch: | 280-16904 | Lab File ID: | 25A1060210.txt |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 1.00 g |
| Date Analyzed: | 06/02/2010 1447 | | | Final Weight/Volume: | 100 mL |
| Date Prepared: | 05/27/2010 1600 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aluminum | 200 | 174.7 | 87 | 82 - 116 | |
| Antimony | 50.0 | 47.51 | 95 | 82 - 110 | |
| Arsenic | 100 | 98.84 | 99 | 85 - 110 | |
| Barium | 200 | 196.9 | 98 | 87 - 112 | |
| Beryllium | 5.00 | 4.67 | 93 | 84 - 114 | |
| Boron | 100 | 91.18 | 91 | 81 - 110 | |
| Cadmium | 10.0 | 9.75 | 98 | 87 - 110 | |
| Calcium | 5000 | 4700 | 94 | 82 - 114 | |
| Chromium | 20.0 | 19.56 | 98 | 84 - 114 | |
| Cobalt | 50.0 | 47.11 | 94 | 87 - 110 | |
| Copper | 25.0 | 24.97 | 100 | 88 - 110 | |
| Iron | 100 | 101.9 | 102 | 87 - 120 | |
| Lead | 50.0 | 48.99 | 98 | 86 - 110 | |
| Magnesium | 5000 | 4683 | 94 | 90 - 110 | |
| Manganese | 50.0 | 47.70 | 95 | 88 - 110 | |
| Molybdenum | 100 | 96.96 | 97 | 86 - 110 | |
| Nickel | 50.0 | 47.50 | 95 | 87 - 110 | |
| Potassium | 5000 | 4844 | 97 | 89 - 110 | |
| Selenium | 200 | 192.7 | 96 | 83 - 110 | |
| Silicon | 1000 | 265.4 | 27 | 10 - 70 | |
| Silver | 5.00 | 4.96 | 99 | 87 - 114 | |
| Sodium | 5000 | 5090 | 102 | 90 - 112 | |
| Vanadium | 50.0 | 48.97 | 98 | 88 - 110 | |
| Zinc | 50.0 | 46.49 | 93 | 76 - 114 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Matrix Spike - Batch: 280-16904**

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

Lab Sample ID: 280-3716-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/02/2010 1453
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Aluminum | 7220 | | 187 | 8775 | 835 | 50 - 200 | 4 |
| Antimony | 0.38 | U | 46.6 | 27.04 | 58 | 20 - 200 | |
| Arsenic | 3.3 | | 93.3 | 85.01 | 88 | 76 - 111 | |
| Barium | 52.6 | | 187 | 222.5 | 91 | 52 - 159 | |
| Beryllium | 0.25 | | 4.66 | 4.01 | 81 | 72 - 105 | |
| Boron | 0.99 | U | 93.3 | 73.93 | 79 | 75 - 107 | |
| Cadmium | 0.055 | B | 9.33 | 8.17 | 87 | 40 - 130 | |
| Calcium | 6590 | | 4660 | 10960 | 94 | 43 - 165 | |
| Chromium | 10.0 | | 18.7 | 25.09 | 81 | 70 - 200 | |
| Cobalt | 8.8 | | 46.6 | 47.07 | 82 | 72 - 106 | |
| Copper | 15.7 | | 23.3 | 36.12 | 87 | 37 - 187 | |
| Iron | 22500 | | 93.3 | 23390 | 902 | 70 - 200 | 4 |
| Lead | 5.4 | | 46.6 | 44.83 | 85 | 70 - 200 | |
| Magnesium | 5160 | | 4660 | 9006 | 83 | 64 - 145 | |
| Manganese | 329 | | 46.6 | 373.9 | 97 | 40 - 200 | 4 |
| Molybdenum | 0.38 | B | 93.3 | 77.90 | 83 | 75 - 103 | |
| Nickel | 11.3 | | 46.6 | 48.89 | 81 | 61 - 126 | |
| Potassium | 1140 | | 4660 | 5384 | 91 | 56 - 172 | |
| Selenium | 0.87 | U | 187 | 157.4 | 84 | 76 - 104 | |
| Silicon | 195 | | 933 | 324.6 | 14 | 20 - 200 | N |
| Silver | 0.16 | U | 4.66 | 4.02 | 86 | 75 - 141 | |
| Sodium | 328 | | 4660 | 4684 | 93 | 78 - 111 | |
| Vanadium | 56.6 | | 46.6 | 102.0 | 97 | 50 - 169 | |
| Zinc | 44.5 | | 46.6 | 83.90 | 85 | 70 - 200 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Duplicate - Batch: 280-16904**

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

Lab Sample ID: 280-3716-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/02/2010 1456
Date Prepared: 05/27/2010 1600

Analysis Batch: 280-17882
Prep Batch: 280-16904
Units: mg/Kg

Instrument ID: MT_025
Lab File ID: 25A1060210.txt
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Aluminum | 7220 | | 6672 | 8 | 40 | |
| Antimony | 0.38 | U | 0.35 | NC | 40 | U |
| Arsenic | 3.3 | | 3.30 | 1 | 30 | |
| Barium | 52.6 | | 54.58 | 4 | 30 | |
| Beryllium | 0.25 | | 0.271 | 8 | 30 | |
| Boron | 0.99 | U | 0.91 | NC | 30 | U |
| Cadmium | 0.055 | B | 0.0448 | 21 | 30 | B |
| Calcium | 6590 | | 6670 | 1 | 30 | |
| Chromium | 10.0 | | 8.41 | 18 | 40 | |
| Cobalt | 8.8 | | 9.13 | 4 | 30 | |
| Copper | 15.7 | | 16.88 | 7 | 30 | |
| Iron | 22500 | | 23000 | 2 | 40 | |
| Lead | 5.4 | | 6.85 | 24 | 40 | |
| Magnesium | 5160 | | 5003 | 3 | 30 | |
| Manganese | 329 | | 329.5 | 0 | 40 | |
| Molybdenum | 0.38 | B | 0.406 | 6 | 30 | B |
| Nickel | 11.3 | | 10.28 | 9 | 30 | |
| Potassium | 1140 | | 1136 | 1 | 40 | |
| Selenium | 0.87 | U | 0.80 | NC | 30 | U |
| Silicon | 195 | | 186.2 | 5 | 40 | |
| Silver | 0.16 | U | 0.15 | NC | 30 | U |
| Sodium | 328 | | 285.2 | 14 | 30 | |
| Vanadium | 56.6 | | 59.68 | 5 | 30 | |
| Zinc | 44.5 | | 46.14 | 4 | 40 | |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-18461**

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

Lab Sample ID: MB 280-18461/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/09/2010 1239
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.60 g
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.00633 | B | 0.0055 | 0.017 |

**Lab Control Sample - Batch: 280-18461**

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

Lab Sample ID: LCS 280-18461/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/09/2010 1242
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.60 g
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.417 | 0.379 | 91 | 87 - 111 | |

**Matrix Spike - Batch: 280-18461**

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

Lab Sample ID: 280-3716-6
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/09/2010 1258
Date Prepared: 06/09/2010 0955

Analysis Batch: 280-18792
Prep Batch: 280-18461
Units: mg/Kg

Instrument ID: MT_033
Lab File ID: 100609AA.txt
Initial Weight/Volume: 0.66 g
Final Weight/Volume: 50 mL

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Mercury | 0.0070 | B | 0.384 | 0.377 | 96 | 87 - 111 | |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Duplicate - Batch: 280-18461**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-3716-6 | Analysis Batch: | 280-18792 | Instrument ID: | MT_033 |
| Client Matrix: | Solid | Prep Batch: | 280-18461 | Lab File ID: | 100609AA.txt |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 0.60 g |
| Date Analyzed: | 06/09/2010 1300 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 06/09/2010 0955 | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Mercury | 0.0070 | B | 0.0056 | NC | 20 | U |

000045

Date: 12 July 2010
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 118-D-1
Subject: Semivolatile/DRO - Data Package No. J00791-TAL

## INTRODUCTION

This memo presents the results of data validation on Data Package No. J00791 prepared by TestAmerica Laboratory Inc. (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|---|---|---|---|---|
| J19XP8 | 5/13/10 | Soil | C | See note 1 |
| J19XP9 | 5/13/10 | Soil | C | See note 1 |
| J19XR0 | 5/13/10 | Soil | C | See note 1 |
| J19XR1 | 5/13/10 | Soil | C | See note 1 |
| J19XR1-R | 5/13/10 | Soil | C | See note 2 |
| J19XR2 | 5/13/10 | Soil | C | See note 1 |
| J19XR2-R | 5/13/10 | Soil | C | See note 2 |
| J19XR3 | 5/13/10 | Soil | C | See note 1 |
| J19XR4 | 5/13/10 | Soil | C | See note 1 |
| J19XR5 | 5/13/10 | Soil | C | See note 1 |
| J19XR6 | 5/13/10 | Soil | C | See note 1 |
| J19XR7 | 5/13/10 | Soil | C | See note 1 |
| J19XR8 | 5/13/10 | Soil | C | See note 1 |
| J19XR8-R | 5/13/10 | Soil | C | See note 2 |
| J19XR9 | 5/13/10 | Soil | C | See note 1 |
| J19XT0 | 5/13/10 | Soil | C | See note 1 |
| J19XW8 | 5/13/10 | Soil | C | See note 1 |
| J19XW9 | 5/13/10 | Soil | C | See note 1 |
| J19XX0 | 5/13/10 | Soil | C | See note 1 |

1 – Semivolatiles by 8270C & diesel range organics by NWTPD-Dx.
2 – Semivolatlies by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

## DATA QUALITY OBJECTIVES

### Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Analytes must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

### Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

### Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike recovery outside QC limits (49%), all 1,4-dichlorobenzene results in samples J19XT0, J19XR9, J19XR8, J19XX0, J19XW9, J19XW8, J19XR2, J19XR1, J19XR0, J19XP9, J19XP8, J19XR7, J19XR6, J19XR5, J19XR4 and J19XR3 were qualified as estimates and flagged "J".

Due to matrix spike and matrix spike duplicate recoveries outside QC limits (46% & 48%), all pentachlorophenol results in samples J19XT0, J19XR9, J19XR8, J19XX0, J19XW9, J19XW8, J19XR2, J19XR1, J19XR0, J19XP9, J19XP8, J19XR7, J19XR6, J19XR5, J19XR4 and J19XR3 were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to surrogate recoveries outside QC limits, all 2-chlorophenol, 2,4-dichlorophenol and 4-chloro-3-methylphenol results in samples J19XR1, J19XR2 and J19XR8 were qualified as estimates and flagged "J".

Due to a surrogate recovery outside QC limits, the 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether and 4-bromophenyl phenyl ether results in sample J19XR8 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

## Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J19XR4/J19XT0) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

## Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

## Completeness

Data package No. J00791 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

## MAJOR DEFICIENCIES

None found.

## MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to a matrix spike recovery outside QC limits (49%), all 1,4-dichlorobenzene results in samples J19XT0, J19XR9, J19XR8, J19XX0, J19XW9, J19XW8, J19XR2, J19XR1, J19XR0, J19XP9, J19XP8, J19XR7, J19XR6, J19XR5, J19XR4 and J19XR3 were qualified as estimates and flagged "J".

- Due to matrix spike and matrix spike duplicate recoveries outside QC limits (46% & 48%), all pentachlorophenol results in samples J19XT0, J19XR9, J19XR8, J19XX0, J19XW9, J19XW8, J19XR2, J19XR1, J19XR0, J19XP9, J19XP8, J19XR7, J19XR6, J19XR5, J19XR4 and J19XR3 were qualified as estimates and flagged "J".

- Due to surrogate recoveries outside QC limits, all 2-chlorophenol, 2,4-dichlorophenol and 4-chloro-3-methylphenol results in samples J19XR1, J19XR2 and J19XR8 were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits, the 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether and 4-bromophenyl phenyl ether results in sample J19XR8 were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

## REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

## Appendix 1

## Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

## Appendix 2

## Summary of Data Qualification

SEMIVOLATILE/DRO DATA QUALIFICATION SUMMARY*

| SDG: J00791 | REVIEWER: ELR | Project: 118-D-1 | PAGE_1_OF_1 |
|---|---|---|---|
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| 1,4-dichlorobenzene | J | J19XT0, J19XR9<br>J19XR8, J19XX0<br>J19XW9, J19XW8<br>J19XR2, J19XR1<br>J19XR0, J19XP9<br>J19XP8, J19XR7<br>J19XR6, J19XR5<br>J19XR4, J19XR3 | MS recovery |
| Pentachlorophenol | J | J19XT0, J19XR9<br>J19XR8, J19XX0<br>J19XW9, J19XW8<br>J19XR2, J19XR1<br>J19XR0, J19XP9<br>J19XP8, J19XR7<br>J19XR6, J19XR5<br>J19XR4, J19XR3 | MS & MSD recovery |
| 2-chlorophenol<br>2,4-dichlorophenol<br>4-chloro-3methylphenol | J | J19XR1, J19XR2<br>J19XR8 | Surrogate recovery |
| 2,4-dichlorophenol<br>2,4,6-trichlorophenol<br>2,4,5-trichlorophenol,<br>pentachlorophenol<br>bis(2-chloroethyl)ether<br>bis(2-chloroisopropyl)ether<br>bis(2-chloroethoxy)methane<br>4-chlorophenyl phenyl ether<br>4-bromophenyl phenyl ether | J | J18RX8 | Surrogate recovery |

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

## Appendix 3

## Annotated Laboratory Reports

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR3

Lab Sample ID: 280-3716-1
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1055
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2750.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.0 g |
| Date Analyzed: | 06/02/2010 1938 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 320 |
| Acenaphthylene | | 17 | U | 17 | 320 |
| Anthracene | | 17 | U | 17 | 320 |
| Benzo[a]anthracene | | 19 | U | 19 | 320 |
| Benzo[a]pyrene | | 19 | U | 19 | 320 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 320 |
| Benzo[ghi]perylene | | 16 | U | 16 | 320 |
| Benzo[k]fluoranthene | | 39 | U | 39 | 320 |
| Bis(2-chloroethoxy)methane | | 22 | U | 22 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 22 | U | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | | 45 | U | 45 | 320 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 320 |
| Butyl benzyl phthalate | | 42 | U | 42 | 320 |
| Carbazole | | 35 | U | 35 | 320 |
| 4-Chloroaniline | | 80 | U | 80 | 320 |
| 4-Chloro-3-methylphenol | | 64 | U | 64 | 320 |
| 2-Chloronaphthalene | | 9.7 | U | 9.7 | 320 |
| 2-Chlorophenol | | 20 | U | 20 | 320 |
| 4-Chlorophenyl phenyl ether | | 20 | U | 20 | 320 |
| Chrysene | | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 320 |
| Dibenzofuran | | 19 | U | 19 | 320 |
| 1,2-Dichlorobenzene | | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 88 | U | 88 | 640 |
| 2,4-Dichlorophenol | | 9.7 | U | 9.7 | 320 |
| Diethyl phthalate | | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | | 64 | U | 64 | 320 |
| Dimethyl phthalate | | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 640 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 800 |
| 2,4-Dinitrotoluene | | 64 | U | 64 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 35 | U | 35 | 320 |
| Fluorene | | 18 | U | 18 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.7 | U | 9.7 | 320 |
| Hexachlorocyclopentadiene | | 49 | U | 49 | 320 |
| Hexachloroethane | | 21 | U | 21 | 320 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 320 |
| Isophorone | | 17 | U | 17 | 320 |
| 2-Methylnaphthalene | | 19 | U | 19 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR3

Lab Sample ID: 280-3716-1
Client Matrix: Solid % Moisture: 0.7

Date Sampled: 05/13/2010 1055
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2750.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.0 g |
| Date Analyzed: | 06/02/2010 1938 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 49 | U | 49 | 320 |
| 3-Nitroaniline | | 71 | U | 71 | 320 |
| 4-Nitroaniline | | 71 | U | 71 | 320 |
| Nitrobenzene | | 21 | U | 21 | 320 |
| 2-Nitrophenol | | 9.7 | U | 9.7 | 320 |
| 4-Nitrophenol | | 95 | U | 95 | 640 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 640 |
| Phenanthrene | | 17 | U | 17 | 320 |
| Phenol | | 18 | U | 18 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.7 | U | 9.7 | 320 |
| 2,4,6-Trichlorophenol | | 9.7 | U | 9.7 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 61 | | 50 - 120 |
| 2-Fluorophenol | 57 | | 53 - 120 |
| Nitrobenzene-d5 | 66 | | 50 - 120 |
| Phenol-d5 | 71 | | 52 - 120 |
| Terphenyl-d14 | 71 | | 55 - 120 |
| 2,4,6-Tribromophenol | 59 | | 51 - 120 |

000012

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR3**

Lab Sample ID: 280-3716-1
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 05/13/2010 1055
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2750.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.0 g |
| Date Analyzed: | 06/02/2010 1938 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** **0**

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000013

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** **J19XR4**

Lab Sample ID: 280-3716-2
Client Matrix: Solid

% Moisture: 1:1

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2751.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 1958 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 320 |
| Acenaphthylene | | 17 | U | 17 | 320 |
| Anthracene | | 17 | U | 17 | 320 |
| Benzo[a]anthracene | | 20 | U | 20 | 320 |
| Benzo[a]pyrene | | 20 | U | 20 | 320 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 320 |
| Benzo[ghi]perylene | | 16 | U | 16 | 320 |
| Benzo[k]fluoranthene | | 39 | U | 39 | 320 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 320 |
| Bis(2-ethylhexyl) phthalate | | 45 | U | 45 | 320 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 320 |
| Butyl benzyl phthalate | | 42 | U | 42 | 320 |
| Carbazole | | 35 | U | 35 | 320 |
| 4-Chloroaniline | | 80 | U | 80 | 320 |
| 4-Chloro-3-methylphenol | | 65 | U | 65 | 320 |
| 2-Chloronaphthalene | | 9.8 | U | 9.8 | 320 |
| 2-Chlorophenol | | 21 | U | 21 | 320 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 320 |
| Chrysene | | 27 | U | 27 | 320 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 320 |
| Dibenzofuran | | 20 | U | 20 | 320 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 320 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 88 | U | 88 | 650 |
| 2,4-Dichlorophenol | | 9.8 | U | 9.8 | 320 |
| Diethyl phthalate | | 26 | U | 26 | 320 |
| 2,4-Dimethylphenol | | 65 | U | 65 | 320 |
| Dimethyl phthalate | | 23 | U | 23 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 650 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 810 |
| 2,4-Dinitrotoluene | | 65 | U | 65 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 35 | U | 35 | 320 |
| Fluorene | | 18 | U | 18 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.8 | U | 9.8 | 320 |
| Hexachlorocyclopentadiene | | 49 | U | 49 | 320 |
| Hexachloroethane | | 21 | U | 21 | 320 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 320 |
| Isophorone | | 17 | U | 17 | 320 |
| 2-Methylnaphthalene | | 19 | U | 19 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** **J19XR4**

Lab Sample ID: 280-3716-2
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2751.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 1958 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 49 | U | 49 | 320 |
| 3-Nitroaniline | | 72 | U | 72 | 320 |
| 4-Nitroaniline | | 71 | U | 71 | 320 |
| Nitrobenzene | | 22 | U | 22 | 320 |
| 2-Nitrophenol | | 9.8 | U | 9.8 | 320 |
| 4-Nitrophenol | | 95 | U | 95 | 650 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 650 |
| Phenanthrene | | 17 | U | 17 | 320 |
| Phenol | | 18 | U | 18 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.8 | U | 9.8 | 320 |
| 2,4,6-Trichlorophenol | | 9.8 | U | 9.8 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 59 | | 50 - 120 |
| 2-Fluorophenol | 56 | | 53 - 120 |
| Nitrobenzene-d5 | 63 | | 50 - 120 |
| Phenol-d5 | 68 | | 52 - 120 |
| Terphenyl-d14 | 72 | | 55 - 120 |
| 2,4,6-Tribromophenol | 60 | | 51 - 120 |

000015

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR4

Lab Sample ID: 280-3716-2
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2751.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 1958 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/21/10

**Client Sample ID:** J19XR5

Lab Sample ID: 280-3716-3
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1245
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2752.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.1 g |
| Date Analyzed: | 06/02/2010 2017 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 330 |
| Acenaphthylene | | 17 | U | 17 | 330 |
| Anthracene | | 17 | U | 17 | 330 |
| Benzo[a]anthracene | | 20 | U | 20 | 330 |
| Benzo[a]pyrene | | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 330 |
| Benzo[ghi]perylene | | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | | 40 | U | 40 | 330 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | | 46 | U | 46 | 330 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | | 43 | U | 43 | 330 |
| Carbazole | | 36 | U | 36 | 330 |
| 4-Chloroaniline | | 83 | U | 83 | 330 |
| 4-Chloro-3-methylphenol | | 67 | U | 67 | 330 |
| 2-Chloronaphthalene | | 10 | U | 10 | 330 |
| 2-Chlorophenol | | 21 | U | 21 | 330 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 330 |
| Chrysene | | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 330 |
| Dibenzofuran | | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | | 14 | U J | 14 | 330 |
| 3,3'-Dichlorobenzidine | | 91 | U | 91 | 670 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 330 |
| Diethyl phthalate | | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | | 67 | U | 67 | 330 |
| Dimethyl phthalate | | 23 | U | 23 | 330 |
| Di-n-butyl phthalate | | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | | 330 | U | 330 | 670 |
| 2,4-Dinitrophenol | | 340 | U | 340 | 830 |
| 2,4-Dinitrotoluene | | 67 | U | 67 | 330 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | | 15 | U | 15 | 330 |
| Fluoranthene | | 36 | U | 36 | 330 |
| Fluorene | | 18 | U | 18 | 330 |
| Hexachlorobenzene | | 29 | U | 29 | 330 |
| Hexachlorobutadiene | | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | | 50 | U | 50 | 330 |
| Hexachloroethane | | 21 | U | 21 | 330 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 330 |
| Isophorone | | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | | 19 | U | 19 | 330 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR5**

Lab Sample ID: 280-3716-3
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1245
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2752.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.1 g |
| Date Analyzed: | 06/02/2010 2017 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | | 33 | U | 33 | 330 |
| Naphthalene | | 31 | U | 31 | 330 |
| 2-Nitroaniline | | 50 | U | 50 | 330 |
| 3-Nitroaniline | | 74 | U | 74 | 330 |
| 4-Nitroaniline | | 73 | U | 73 | 330 |
| Nitrobenzene | | 22 | U | 22 | 330 |
| 2-Nitrophenol | | 10 | U | 10 | 330 |
| 4-Nitrophenol | | 98 | U | 98 | 670 |
| N-Nitrosodi-n-propylamine | | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 330 |
| Pentachlorophenol | | 330 | U J | 330 | 670 |
| Phenanthrene | | 17 | U | 17 | 330 |
| Phenol | | 18 | U | 18 | 330 |
| Pyrene | | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | | 10 | U | 10 | 330 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 61 | | 50 - 120 |
| 2-Fluorophenol | 58 | | 53 - 120 |
| Nitrobenzene-d5 | 65 | | 50 - 120 |
| Phenol-d5 | 72 | | 52 - 120 |
| Terphenyl-d14 | 76 | | 55 - 120 |
| 2,4,6-Tribromophenol | 63 | | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

V 7/11/10

**Client Sample ID:** **J19XR5**

Lab Sample ID: 280-3716-3
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1245
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2752.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.1 g |
| Date Analyzed: | 06/02/2010 2017 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** **0**

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000019

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR6**

Lab Sample ID: 280-3716-4
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1305
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2753.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2036 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 330 |
| Acenaphthylene | | 17 | U | 17 | 330 |
| Anthracene | | 17 | U | 17 | 330 |
| Benzo[a]anthracene | | 20 | U | 20 | 330 |
| Benzo[a]pyrene | | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 330 |
| Benzo[ghi]perylene | | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | | 40 | U | 40 | 330 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | | 46 | U | 46 | 330 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | | 43 | U | 43 | 330 |
| Carbazole | | 36 | U | 36 | 330 |
| 4-Chloroaniline | | 82 | U | 82 | 330 |
| 4-Chloro-3-methylphenol | | 66 | U | 66 | 330 |
| 2-Chloronaphthalene | | 10 | U | 10 | 330 |
| 2-Chlorophenol | | 21 | U | 21 | 330 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 330 |
| Chrysene | | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 330 |
| Dibenzofuran | | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | | 14 | U J | 14 | 330 |
| 3,3'-Dichlorobenzidine | | 90 | U | 90 | 660 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 330 |
| Diethyl phthalate | | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | | 66 | U | 66 | 330 |
| Dimethyl phthalate | | 23 | U | 23 | 330 |
| Di-n-butyl phthalate | | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | | 330 | U | 330 | 660 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 830 |
| 2,4-Dinitrotoluene | | 66 | U | 66 | 330 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | | 14 | U | 14 | 330 |
| Fluoranthene | | 36 | U | 36 | 330 |
| Fluorene | | 18 | U | 18 | 330 |
| Hexachlorobenzene | | 29 | U | 29 | 330 |
| Hexachlorobutadiene | | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | | 50 | U | 50 | 330 |
| Hexachloroethane | | 21 | U | 21 | 330 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 330 |
| Isophorone | | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | | 19 | U | 19 | 330 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** **J19XR6**

Lab Sample ID: 280-3716-4
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1305
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2753.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2036 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | | 33 | U | 33 | 330 |
| Naphthalene | | 31 | U | 31 | 330 |
| 2-Nitroaniline | | 50 | U | 50 | 330 |
| 3-Nitroaniline | | 73 | U | 73 | 330 |
| 4-Nitroaniline | | 73 | U | 73 | 330 |
| Nitrobenzene | | 22 | U | 22 | 330 |
| 2-Nitrophenol | | 10 | U | 10 | 330 |
| 4-Nitrophenol | | 97 | U | 97 | 660 |
| N-Nitrosodi-n-propylamine | | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 330 |
| Pentachlorophenol | | 330 | U J | 330 | 660 |
| Phenanthrene | | 17 | U | 17 | 330 |
| Phenol | | 18 | U | 18 | 330 |
| Pyrene | | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | | 10 | U | 10 | 330 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 60 | | 50 - 120 |
| 2-Fluorophenol | 58 | | 53 - 120 |
| Nitrobenzene-d5 | 65 | | 50 - 120 |
| Phenol-d5 | 71 | | 52 - 120 |
| Terphenyl-d14 | 71 | | 55 - 120 |
| 2,4,6-Tribromophenol | 60 | | 51 - 120 |

000021

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

K 7/16/10

**Client Sample ID:** **J19XR6**

Lab Sample ID: 280-3716-4
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1305
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2753.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2036 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000022

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR7**

Lab Sample ID: 280-3716-5
Client Matrix: Solid % Moisture: 1.2

Date Sampled: 05/13/2010 1310
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2754.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2056 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 330 |
| Acenaphthylene | | 17 | U | 17 | 330 |
| Anthracene | | 17 | U | 17 | 330 |
| Benzo[a]anthracene | | 20 | U | 20 | 330 |
| Benzo[a]pyrene | | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 330 |
| Benzo[ghi]perylene | | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | | 40 | U | 40 | 330 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | | 46 | U | 46 | 330 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | | 43 | U | 43 | 330 |
| Carbazole | | 36 | U | 36 | 330 |
| 4-Chloroaniline | | 82 | U | 82 | 330 |
| 4-Chloro-3-methylphenol | | 66 | U | 66 | 330 |
| 2-Chloronaphthalene | | 10 | U | 10 | 330 |
| 2-Chlorophenol | | 21 | U | 21 | 330 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 330 |
| Chrysene | | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 330 |
| Dibenzofuran | | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | | 14 | U J | 14 | 330 |
| 3,3'-Dichlorobenzidine | | 90 | U | 90 | 660 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 330 |
| Diethyl phthalate | | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | | 66 | U | 66 | 330 |
| Dimethyl phthalate | | 23 | U | 23 | 330 |
| Di-n-butyl phthalate | | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | | 330 | U | 330 | 660 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 830 |
| 2,4-Dinitrotoluene | | 66 | U | 66 | 330 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | | 14 | U | 14 | 330 |
| Fluoranthene | | 36 | U | 36 | 330 |
| Fluorene | | 18 | U | 18 | 330 |
| Hexachlorobenzene | | 29 | U | 29 | 330 |
| Hexachlorobutadiene | | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | | 50 | U | 50 | 330 |
| Hexachloroethane | | 21 | U | 21 | 330 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 330 |
| Isophorone | | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | | 19 | U | 19 | 330 |

Client: Washington Closure Hanford

7/16/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR7**

Lab Sample ID: 280-3716-5
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 1310
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2754.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2056 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | | 33 | U | 33 | 330 |
| Naphthalene | | 31 | U | 31 | 330 |
| 2-Nitroaniline | | 50 | U | 50 | 330 |
| 3-Nitroaniline | | 73 | U | 73 | 330 |
| 4-Nitroaniline | | 73 | U | 73 | 330 |
| Nitrobenzene | | 22 | U | 22 | 330 |
| 2-Nitrophenol | | 10 | U | 10 | 330 |
| 4-Nitrophenol | | 97 | U | 97 | 660 |
| N-Nitrosodi-n-propylamine | | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 330 |
| Pentachlorophenol | | 330 | U J | 330 | 660 |
| Phenanthrene | | 17 | U | 17 | 330 |
| Phenol | | 18 | U | 18 | 330 |
| Pyrene | | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | | 10 | U | 10 | 330 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 58 | | 50 - 120 |
| 2-Fluorophenol | 54 | | 53 - 120 |
| Nitrobenzene-d5 | 63 | | 50 - 120 |
| Phenol-d5 | 66 | | 52 - 120 |
| Terphenyl-d14 | 71 | | 55 - 120 |
| 2,4,6-Tribromophenol | 54 | | 51 - 120 |

000024

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR7**

Lab Sample ID: 280-3716-5
Client Matrix: Solid

% Moisture: 1.2

Date Sampled: 05/13/2010 1310
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2754.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/02/2010 2056 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000025

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XP8**

Lab Sample ID: 280-3716-6
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/13/2010 0950
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2755.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 2115 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 320 |
| Acenaphthylene | | 17 | U | 17 | 320 |
| Anthracene | | 17 | U | 17 | 320 |
| Benzo[a]anthracene | | 20 | U | 20 | 320 |
| Benzo[a]pyrene | | 20 | U | 20 | 320 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 320 |
| Benzo[ghi]perylene | | 16 | U | 16 | 320 |
| Benzo[k]fluoranthene | | 39 | U | 39 | 320 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 320 |
| Bis(2-ethylhexyl) phthalate | | 45 | U | 45 | 320 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 320 |
| Butyl benzyl phthalate | | 42 | U | 42 | 320 |
| Carbazole | | 35 | U | 35 | 320 |
| 4-Chloroaniline | | 81 | U | 81 | 320 |
| 4-Chloro-3-methylphenol | | 65 | U | 65 | 320 |
| 2-Chloronaphthalene | | 9.8 | U | 9.8 | 320 |
| 2-Chlorophenol | | 21 | U | 21 | 320 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 320 |
| Chrysene | | 27 | U | 27 | 320 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 320 |
| Dibenzofuran | | 20 | U | 20 | 320 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 320 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 89 | U | 89 | 650 |
| 2,4-Dichlorophenol | | 9.8 | U | 9.8 | 320 |
| Diethyl phthalate | | 26 | U | 26 | 320 |
| 2,4-Dimethylphenol | | 65 | U | 65 | 320 |
| Dimethyl phthalate | | 23 | U | 23 | 320 |
| Di-n-butyl phthalate | | 29 | U | 29 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 650 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 810 |
| 2,4-Dinitrotoluene | | 65 | U | 65 | 320 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 35 | U | 35 | 320 |
| Fluorene | | 18 | U | 18 | 320 |
| Hexachlorobenzene | | 29 | U | 29 | 320 |
| Hexachlorobutadiene | | 9.8 | U | 9.8 | 320 |
| Hexachlorocyclopentadiene | | 49 | U | 49 | 320 |
| Hexachloroethane | | 21 | U | 21 | 320 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 320 |
| Isophorone | | 17 | U | 17 | 320 |
| 2-Methylnaphthalene | | 19 | U | 19 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** **J19XP8**

Lab Sample ID: 280-3716-6
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 0950
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2755.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 2115 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 49 | U | 49 | 320 |
| 3-Nitroaniline | | 72 | U | 72 | 320 |
| 4-Nitroaniline | | 71 | U | 71 | 320 |
| Nitrobenzene | | 22 | U | 22 | 320 |
| 2-Nitrophenol | | 9.8 | U | 9.8 | 320 |
| 4-Nitrophenol | | 95 | U | 95 | 650 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 650 |
| Phenanthrene | | 17 | U | 17 | 320 |
| Phenol | | 18 | U | 18 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 320 |
| 2,4,5-Trichlorophenol | | 9.8 | U | 9.8 | 320 |
| 2,4,6-Trichlorophenol | | 9.8 | U | 9.8 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 60 | | 50 - 120 |
| 2-Fluorophenol | 57 | | 53 - 120 |
| Nitrobenzene-d5 | 66 | | 50 - 120 |
| Phenol-d5 | 70 | | 52 - 120 |
| Terphenyl-d14 | 71 | | 55 - 120 |
| 2,4,6-Tribromophenol | 58 | | 51 - 120 |

000027

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XP8**

Lab Sample ID: 280-3716-6
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/13/2010 0950
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2755.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/02/2010 2115 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** **0**

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** J19XP9

Lab Sample ID: 280-3716-7
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 0955
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2756.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/02/2010 2134 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.6 | U | 9.6 | 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 | | 24 | U | 24 | 310 |
| Benzo[ghi]perylene | | 15 | U | 15 | 310 |
| Benzo[k]fluoranthene | | 37 | U | 37 | 310 |
| Bis(2-chloroethoxy)methane | | 21 | U | 21 | 310 |
| Bis(2-chloroethyl)ether | | 15 | U | 15 | 310 |
| bis (2-chloroisopropyl) ether | | 21 | U | 21 | 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 | | 76 | U | 76 | 310 |
| 4-Chloro-3-methylphenol | | 61 | U | 61 | 310 |
| 2-Chloronaphthalene | | 9.3 | U | 9.3 | 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 | | 20 | U | 20 | 310 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 310 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 310 |
| 3,3'-Dichlorobenzidine | | 84 | U | 84 | 610 |
| 2,4-Dichlorophenol | | 9.3 | U | 9.3 | 310 |
| Diethyl phthalate | | 24 | U | 24 | 310 |
| 2,4-Dimethylphenol | | 61 | U | 61 | 310 |
| Dimethyl phthalate | | 21 | U | 21 | 310 |
| Di-n-butyl phthalate | | 27 | U | 27 | 310 |
| 4,6-Dinitro-2-methylphenol | | 310 | U | 310 | 610 |
| 2,4-Dinitrophenol | | 310 | U | 310 | 770 |
| 2,4-Dinitrotoluene | | 61 | U | 61 | 310 |
| 2,6-Dinitrotoluene | | 26 | U | 26 | 310 |
| Di-n-octyl phthalate | | 13 | U | 13 | 310 |
| Fluoranthene | | 34 | U | 34 | 310 |
| Fluorene | | 17 | U | 17 | 310 |
| Hexachlorobenzene | | 27 | U | 27 | 310 |
| Hexachlorobutadiene | | 9.3 | U | 9.3 | 310 |
| Hexachlorocyclopentadiene | | 47 | U | 47 | 310 |
| Hexachloroethane | | 20 | U | 20 | 310 |
| Indeno[1,2,3-cd]pyrene | | 20 | U | 20 | 310 |
| Isophorone | | 16 | U | 16 | 310 |
| 2-Methylnaphthalene | | 18 | U | 16 | 310 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** J19XP9

Lab Sample ID: 280-3716-7
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 0955
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2756.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/02/2010 2134 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 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 | | 68 | U | 68 | 310 |
| 4-Nitroaniline | | 68 | U | 68 | 310 |
| Nitrobenzene | | 20 | U | 20 | 310 |
| 2-Nitrophenol | | 9.3 | U | 9.3 | 310 |
| 4-Nitrophenol | | 90 | U | 90 | 610 |
| N-Nitrosodi-n-propylamine | | 29 | U | 29 | 310 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 310 |
| Pentachlorophenol | | 310 | U J | 310 | 610 |
| 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 | | 9.3 | U | 9.3 | 310 |
| 2,4,6-Trichlorophenol | | 9.3 | U | 9.3 | 310 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 65 | | 50 - 120 |
| 2-Fluorophenol | 62 | | 53 - 120 |
| Nitrobenzene-d5 | 70 | | 50 - 120 |
| Phenol-d5 | 75 | | 52 - 120 |
| Terphenyl-d14 | 81 | | 55 - 120 |
| 2,4,6-Tribromophenol | 64 | | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/6/10

**Client Sample ID:** **J19XP9**

Lab Sample ID: 280-3716-7
Client Matrix: Solid

% Moisture: 1.2

Date Sampled: 05/13/2010 0955
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2756.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/02/2010 2134 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/14/10

**Client Sample ID:** J19XR0

Lab Sample ID: 280-3716-8
Client Matrix: Solid % Moisture: 1.3

Date Sampled: 05/13/2010 1025
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2757.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Date Analyzed: | 06/02/2010 2154 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.9 | U | 9.9 | 320 |
| Acenaphthylene | | 16 | U | 16 | 320 |
| Anthracene | | 16 | U | 16 | 320 |
| Benzo[a]anthracene | | 19 | U | 19 | 320 |
| Benzo[a]pyrene | | 19 | U | 19 | 320 |
| Benzo[b]fluoranthene | | 25 | U | 25 | 320 |
| Benzo[ghi]perylene | | 15 | U | 15 | 320 |
| Benzo[k]fluoranthene | | 38 | U | 38 | 320 |
| Bis(2-chloroethoxy)methane | | 22 | U | 22 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 22 | U | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | | 44 | U | 44 | 320 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 320 |
| Butyl benzyl phthalate | | 41 | U | 41 | 320 |
| Carbazole | | 35 | U | 35 | 320 |
| 4-Chloroaniline | | 79 | U | 79 | 320 |
| 4-Chloro-3-methylphenol | | 63 | U | 63 | 320 |
| 2-Chloronaphthalene | | 9.6 | U | 9.6 | 320 |
| 2-Chlorophenol | | 20 | U | 20 | 320 |
| 4-Chlorophenyl phenyl ether | | 20 | U | 20 | 320 |
| Chrysene | | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 320 |
| Dibenzofuran | | 19 | U | 19 | 320 |
| 1,2-Dichlorobenzene | | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 87 | U | 87 | 630 |
| 2,4-Dichlorophenol | | 9.6 | U | 9.6 | 320 |
| Diethyl phthalate | | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | | 63 | U | 63 | 320 |
| Dimethyl phthalate | | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 630 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 790 |
| 2,4-Dinitrotoluene | | 63 | U | 63 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 35 | U | 35 | 320 |
| Fluorene | | 17 | U | 17 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.6 | U | 9.6 | 320 |
| Hexachlorocyclopentadiene | | 48 | U | 48 | 320 |
| Hexachloroethane | | 20 | U | 20 | 320 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 320 |
| Isophorone | | 16 | U | 16 | 320 |
| 2-Methylnaphthalene | | 18 | U | 18 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/16/10

**Client Sample ID:** **J19XR0**

Lab Sample ID: 280-3716-8
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 1025
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16842 | | Lab File ID: | Y2757.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Date Analyzed: | 06/02/2010 2154 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 48 | U | 48 | 320 |
| 3-Nitroaniline | | 70 | U | 70 | 320 |
| 4-Nitroaniline | | 70 | U | 70 | 320 |
| Nitrobenzene | | 21 | U | 21 | 320 |
| 2-Nitrophenol | | 9.6 | U | 9.6 | 320 |
| 4-Nitrophenol | | 93 | U | 93 | 630 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 630 |
| Phenanthrene | | 16 | U | 16 | 320 |
| Phenol | | 17 | U | 17 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.6 | U | 9.6 | 320 |
| 2,4,6-Trichlorophenol | | 9.6 | U | 9.6 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 62 | | 50 - 120 |
| 2-Fluorophenol | 59 | | 53 - 120 |
| Nitrobenzene-d5 | 65 | | 50 - 120 |
| Phenol-d5 | 71 | | 52 - 120 |
| Terphenyl-d14 | 72 | | 55 - 120 |
| 2,4,6-Tribromophenol | 59 | | 51 - 120 |

000033

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR0

Lab Sample ID: 280-3716-8
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/13/2010 1025
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2757.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.6 g |
| Date Analyzed: | 06/02/2010 2154 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000034

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR1

Lab Sample ID: 280-3716-9
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2758.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/02/2010 2213 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.5 | U | 9.5 | 300 |
| Acenaphthylene | | 16 | U | 16 | 300 |
| Anthracene | | 16 | U | 16 | 300 |
| Benzo[a]anthracene | | 18 | U | 18 | 300 |
| Benzo[a]pyrene | | 18 | U | 18 | 300 |
| Benzo[b]fluoranthene | | 24 | U | 24 | 300 |
| Benzo[ghi]perylene | | 15 | U | 15 | 300 |
| Benzo[k]fluoranthene | | 37 | U | 37 | 300 |
| Bis(2-chloroethoxy)methane | | 21 | U | 21 | 300 |
| Bis(2-chloroethyl)ether | | 15 | U | 15 | 300 |
| bis (2-chloroisopropyl) ether | | 21 | U | 21 | 300 |
| Bis(2-ethylhexyl) phthalate | | 42 | U | 42 | 300 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 300 |
| Butyl benzyl phthalate | | 40 | U | 40 | 300 |
| Carbazole | | 33 | U | 33 | 300 |
| 4-Chloroaniline | | 76 | U | 76 | 300 |
| 4-Chloro-3-methylphenol | | 61 | U J | 61 | 300 |
| 2-Chloronaphthalene | | 9.2 | U | 9.2 | 300 |
| 2-Chlorophenol | | 19 | U J | 19 | 300 |
| 4-Chlorophenyl phenyl ether | | 19 | U | 19 | 300 |
| Chrysene | | 25 | U | 25 | 300 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 300 |
| Dibenzofuran | | 18 | U | 18 | 300 |
| 1,2-Dichlorobenzene | | 20 | U | 20 | 300 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 300 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 300 |
| 3,3'-Dichlorobenzidine | | 83 | U | 83 | 610 |
| 2,4-Dichlorophenol | | 9.2 | U J | 9.2 | 300 |
| Diethyl phthalate | | 24 | U | 24 | 300 |
| 2,4-Dimethylphenol | | 61 | U | 61 | 300 |
| Dimethyl phthalate | | 21 | U | 21 | 300 |
| Di-n-butyl phthalate | | 27 | U | 27 | 300 |
| 4,6-Dinitro-2-methylphenol | | 300 | U | 300 | 610 |
| 2,4-Dinitrophenol | | 310 | U | 310 | 760 |
| 2,4-Dinitrotoluene | | 61 | U | 61 | 300 |
| 2,6-Dinitrotoluene | | 26 | U | 26 | 300 |
| Di-n-octyl phthalate | | 13 | U | 13 | 300 |
| Fluoranthene | | 33 | U | 33 | 300 |
| Fluorene | | 17 | U | 17 | 300 |
| Hexachlorobenzene | | 27 | U | 27 | 300 |
| Hexachlorobutadiene | | 9.2 | U | 9.2 | 300 |
| Hexachlorocyclopentadiene | | 46 | U | 46 | 300 |
| Hexachloroethane | | 20 | U | 20 | 300 |
| Indeno[1,2,3-cd]pyrene | | 20 | U | 20 | 300 |
| Isophorone | | 16 | U | 16 | 300 |
| 2-Methylnaphthalene | | 18 | U | 18 | 300 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR1**

Lab Sample ID: 280-3716-9
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2758.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/02/2010 2213 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 300 |
| 3 & 4 Methylphenol | | 30 | U | 30 | 300 |
| Naphthalene | | 29 | U | 29 | 300 |
| 2-Nitroaniline | | 46 | U | 46 | 300 |
| 3-Nitroaniline | | 67 | U | 67 | 300 |
| 4-Nitroaniline | | 67 | U | 67 | 300 |
| Nitrobenzene | | 20 | U | 20 | 300 |
| 2-Nitrophenol | | 9.2 | U | 9.2 | 300 |
| 4-Nitrophenol | | 90 | U | 90 | 610 |
| N-Nitrosodi-n-propylamine | | 29 | U | 29 | 300 |
| N-Nitrosodiphenylamine | | 19 | U | 19 | 300 |
| Pentachlorophenol | | 300 | U J | 300 | 610 |
| Phenanthrene | | 16 | U | 16 | 300 |
| Phenol | | 17 | U | 17 | 300 |
| Pyrene | | 11 | U | 11 | 300 |
| 1,2,4-Trichlorobenzene | | 26 | U | 26 | 300 |
| 2,4,5-Trichlorophenol | | 9.2 | U | 9.2 | 300 |
| 2,4,6-Trichlorophenol | | 9.2 | U | 9.2 | 300 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 55 | | 50 - 120 |
| 2-Fluorophenol | 50 | | 53 - 120 |
| Nitrobenzene-d5 | 58 | | 50 - 120 |
| Phenol-d5 | 62 | | 52 - 120 |
| Terphenyl-d14 | 66 | | 55 - 120 |
| 2,4,6-Tribromophenol | 52 | | 51 - 120 |

000036

Client: Washington Closure Hanford

7/16/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR1

Lab Sample ID: 280-3716-9
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2758.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/02/2010 2213 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000037

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR1**

Lab Sample ID: 280-3716-9
Client Matrix: Solid % Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5595.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/10/2010 1442 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.5 | U | 9.5 | 300 |
| Acenaphthylene | | 16 | U | 16 | 300 |
| Anthracene | | 16 | U | 16 | 300 |
| Benzo[a]anthracene | | 18 | U | 18 | 300 |
| Benzo[a]pyrene | | 18 | U | 18 | 300 |
| Benzo[b]fluoranthene | | 24 | U | 24 | 300 |
| Benzo[ghi]perylene | | 15 | U | 15 | 300 |
| Benzo[k]fluoranthene | | 37 | U | 37 | 300 |
| Bis(2-chloroethoxy)methane | | 21 | U | 21 | 300 |
| Bis(2-chloroethyl)ether | | 15 | U | 15 | 300 |
| bis (2-chloroisopropyl) ether | | 21 | U | 21 | 300 |
| Bis(2-ethylhexyl) phthalate | | 42 | U | 42 | 300 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 300 |
| Butyl benzyl phthalate | | 40 | U | 40 | 300 |
| Carbazole | | 33 | U | 33 | 300 |
| 4-Chloroaniline | | 76 | U | 76 | 300 |
| 4-Chloro-3-methylphenol | | 61 | U | 61 | 300 |
| 2-Chloronaphthalene | | 9.2 | U | 9.2 | 300 |
| 2-Chlorophenol | | 19 | U | 19 | 300 |
| 4-Chlorophenyl phenyl ether | | 19 | U | 19 | 300 |
| Chrysene | | 25 | U | 25 | 300 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 300 |
| Dibenzofuran | | 18 | U | 18 | 300 |
| 1,2-Dichlorobenzene | | 20 | U | 20 | 300 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 300 |
| 1,4-Dichlorobenzene | | 13 | U | 13 | 300 |
| 3,3'-Dichlorobenzidine | | 83 | U | 83 | 610 |
| 2,4-Dichlorophenol | | 9.2 | U | 9.2 | 300 |
| Diethyl phthalate | | 24 | U | 24 | 300 |
| 2,4-Dimethylphenol | | 61 | U | 61 | 300 |
| Dimethyl phthalate | | 110 | J | 21 | 300 |
| Di-n-butyl phthalate | | 27 | U | 27 | 300 |
| 4,6-Dinitro-2-methylphenol | | 300 | U | 300 | 610 |
| 2,4-Dinitrophenol | | 310 | U | 310 | 760 |
| 2,4-Dinitrotoluene | | 61 | U | 61 | 300 |
| 2,6-Dinitrotoluene | | 26 | U | 26 | 300 |
| Di-n-octyl phthalate | | 13 | U | 13 | 300 |
| Fluoranthene | | 33 | U | 33 | 300 |
| Fluorene | | 17 | U | 17 | 300 |
| Hexachlorobenzene | | 27 | U | 27 | 300 |
| Hexachlorobutadiene | | 9.2 | U | 9.2 | 300 |
| Hexachlorocyclopentadiene | | 46 | U | 46 | 300 |
| Hexachloroethane | | 20 | U | 20 | 300 |
| Indeno[1,2,3-cd]pyrene | | 20 | U | 20 | 300 |
| Isophorone | | 16 | U | 16 | 300 |
| 2-Methylnaphthalene | | 18 | U | 18 | 300 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR1**

Lab Sample ID: 280-3716-9
Client Matrix: Solid % Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5595.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/10/2010 1442 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 300 |
| 3 & 4 Methylphenol | | 30 | U | 30 | 300 |
| Naphthalene | | 29 | U | 29 | 300 |
| 2-Nitroaniline | | 46 | U | 46 | 300 |
| 3-Nitroaniline | | 67 | U | 67 | 300 |
| 4-Nitroaniline | | 67 | U | 67 | 300 |
| Nitrobenzene | | 20 | U | 20 | 300 |
| 2-Nitrophenol | | 9.2 | U | 9.2 | 300 |
| 4-Nitrophenol | | 90 | U | 90 | 610 |
| N-Nitrosodi-n-propylamine | | 29 | U | 29 | 300 |
| N-Nitrosodiphenylamine | | 19 | U | 19 | 300 |
| Pentachlorophenol | | 300 | U | 300 | 610 |
| Phenanthrene | | 16 | U | 16 | 300 |
| Phenol | | 17 | U | 17 | 300 |
| Pyrene | | 11 | U | 11 | 300 |
| 1,2,4-Trichlorobenzene | | 26 | U | 26 | 300 |
| 2,4,5-Trichlorophenol | | 9.2 | U | 9.2 | 300 |
| 2,4,6-Trichlorophenol | | 9.2 | U | 9.2 | 300 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 93 | | 50 - 120 |
| 2-Fluorophenol | 89 | | 53 - 120 |
| Nitrobenzene-d5 | 91 | | 50 - 120 |
| Phenol-d5 | 88 | | 52 - 120 |
| Terphenyl-d14 | 101 | | 55 - 120 |
| 2,4,6-Tribromophenol | 81 | | 51 - 120 |

000039

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR1

Lab Sample ID: 280-3716-9
Client Matrix: Solid

% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5595.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/10/2010 1442 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 1

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 9.82 | 320 | N J |

Client: Washington Closure Hanford

7/4/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR2

Lab Sample ID: 280-3716-10
Client Matrix: Solid % Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2759.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.4 g |
| Date Analyzed: | 06/02/2010 2232 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 330 |
| Acenaphthylene | | 17 | U | 17 | 330 |
| Anthracene | | 17 | U | 17 | 330 |
| Benzo[a]anthracene | | 20 | U | 20 | 330 |
| Benzo[a]pyrene | | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | | 26 | U | 26 | 330 |
| Benzo[ghi]perylene | | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | | 40 | U | 40 | 330 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | | 46 | U | 46 | 330 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | | 43 | U | 43 | 330 |
| Carbazole | | 36 | U | 36 | 330 |
| 4-Chloroaniline | | 82 | U | 82 | 330 |
| 4-Chloro-3-methylphenol | | 66 | U J | 66 | 330 |
| 2-Chloronaphthalene | | 10 | U | 10 | 330 |
| 2-Chlorophenol | | 21 | U J | 21 | 330 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 330 |
| Chrysene | | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 330 |
| Dibenzofuran | | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | | 14 | U J | 14 | 330 |
| 3,3'-Dichlorobenzidine | | 90 | U | 90 | 660 |
| 2,4-Dichlorophenol | | 10 | U J | 10 | 330 |
| Diethyl phthalate | | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | | 66 | U | 66 | 330 |
| Dimethyl phthalate | | 23 | U | 23 | 330 |
| Di-n-butyl phthalate | | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | | 330 | U | 330 | 660 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 820 |
| 2,4-Dinitrotoluene | | 66 | U | 66 | 330 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | | 14 | U | 14 | 330 |
| Fluoranthene | | 36 | U | 36 | 330 |
| Fluorene | | 18 | U | 18 | 330 |
| Hexachlorobenzene | | 29 | U | 29 | 330 |
| Hexachlorobutadiene | | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | | 50 | U | 50 | 330 |
| Hexachloroethane | | 21 | U | 21 | 330 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 330 |
| Isophorone | | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | | 19 | U | 19 | 330 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR2

Lab Sample ID: 280-3716-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2759.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.4 g |
| Date Analyzed: | 06/02/2010 2232 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | | 33 | U | 33 | 330 |
| Naphthalene | | 31 | U | 31 | 330 |
| 2-Nitroaniline | | 50 | U | 50 | 330 |
| 3-Nitroaniline | | 73 | U | 73 | 330 |
| 4-Nitroaniline | | 72 | U | 72 | 330 |
| Nitrobenzene | | 22 | U | 22 | 330 |
| 2-Nitrophenol | | 10 | U | 10 | 330 |
| 4-Nitrophenol | | 97 | U | 97 | 660 |
| N-Nitrosodi-n-propylamine | | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 330 |
| Pentachlorophenol | | 330 | U J | 330 | 660 |
| Phenanthrene | | 17 | U | 17 | 330 |
| Phenol | | 18 | U | 18 | 330 |
| Pyrene | | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | | 10 | U | 10 | 330 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 55 | | 50 - 120 |
| 2-Fluorophenol | 52 | | 53 - 120 |
| Nitrobenzene-d5 | 59 | | 50 - 120 |
| Phenol-d5 | 63 | | 52 - 120 |
| Terphenyl-d14 | 68 | | 55 - 120 |
| 2,4,6-Tribromophenol | 54 | | 51 - 120 |

000042

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2759.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.4 g |
| Date Analyzed: | 06/02/2010 2232 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000043

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid % Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5596.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.8 g |
| Date Analyzed: | 06/10/2010 1501 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.8 | U | 9.8 | 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 | | 44 | U | 44 | 310 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 310 |
| Butyl benzyl phthalate | | 41 | U | 41 | 310 |
| Carbazole | | 34 | U | 34 | 310 |
| 4-Chloroaniline | | 78 | U | 78 | 310 |
| 4-Chloro-3-methylphenol | | 63 | U | 63 | 310 |
| 2-Chloronaphthalene | | 9.5 | U | 9.5 | 310 |
| 2-Chlorophenol | | 20 | U | 20 | 310 |
| 4-Chlorophenyl phenyl ether | | 20 | U | 20 | 310 |
| Chrysene | | 26 | U | 26 | 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 | | 86 | U | 86 | 630 |
| 2,4-Dichlorophenol | | 9.5 | U | 9.5 | 310 |
| Diethyl phthalate | | 25 | U | 25 | 310 |
| 2,4-Dimethylphenol | | 63 | U | 63 | 310 |
| Dimethyl phthalate | | 43 | J | 22 | 310 |
| Di-n-butyl phthalate | | 28 | U | 28 | 310 |
| 4,6-Dinitro-2-methylphenol | | 310 | U | 310 | 630 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 790 |
| 2,4-Dinitrotoluene | | 63 | U | 63 | 310 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 310 |
| Di-n-octyl phthalate | | 14 | U | 14 | 310 |
| Fluoranthene | | 34 | U | 34 | 310 |
| Fluorene | | 17 | U | 17 | 310 |
| Hexachlorobenzene | | 28 | U | 28 | 310 |
| Hexachlorobutadiene | | 9.5 | U | 9.5 | 310 |
| Hexachlorocyclopentadiene | | 48 | U | 48 | 310 |
| Hexachloroethane | | 20 | U | 20 | 310 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 310 |
| Isophorone | | 16 | U | 16 | 310 |
| 2-Methylnaphthalene | | 18 | U | 18 | 310 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5596.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.8 g |
| Date Analyzed: | 06/10/2010 1501 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 310 |
| 3 & 4 Methylphenol | | 31 | U | 31 | 310 |
| Naphthalene | | 30 | U | 30 | 310 |
| 2-Nitroaniline | | 48 | U | 48 | 310 |
| 3-Nitroaniline | | 70 | U | 70 | 310 |
| 4-Nitroaniline | | 69 | U | 69 | 310 |
| Nitrobenzene | | 21 | U | 21 | 310 |
| 2-Nitrophenol | | 9.5 | U | 9.5 | 310 |
| 4-Nitrophenol | | 93 | U | 93 | 630 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 310 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 310 |
| Pentachlorophenol | | 310 | U | 310 | 630 |
| Phenanthrene | | 16 | U | 16 | 310 |
| Phenol | | 17 | U | 17 | 310 |
| Pyrene | | 12 | U | 12 | 310 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 310 |
| 2,4,5-Trichlorophenol | | 9.5 | U | 9.5 | 310 |
| 2,4,6-Trichlorophenol | | 9.5 | U | 9.5 | 310 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 77 | | 50 - 120 |
| 2-Fluorophenol | 88 | | 53 - 120 |
| Nitrobenzene-d5 | 83 | | 50 - 120 |
| Phenol-d5 | 83 | | 52 - 120 |
| Terphenyl-d14 | 94 | | 55 - 120 |
| 2,4,6-Tribromophenol | 64 | | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-19069 | | Instrument ID: | MSS_D |
| Preparation: | 3550C | Prep Batch: 280-18612 | | Lab File ID: | D5596.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.8 g |
| Date Analyzed: | 06/10/2010 1501 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 1

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 9.82 | 280 | N J |

000046

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XW8

Lab Sample ID: 280-3716-11
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0925
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2760.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.2 g |
| Date Analyzed: | 06/02/2010 2251 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | 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 J | 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 |
| 2-Methylnaphthalene | | 18 | U | 18 | 310 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/4/10

**Client Sample ID:** J19XW8

Lab Sample ID: 280-3716-11
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0925
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2760.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.2 g |
| Date Analyzed: | 06/02/2010 2251 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 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 J | 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 | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 66 | | 50 - 120 |
| 2-Fluorophenol | 62 | | 53 - 120 |
| Nitrobenzene-d5 | 72 | | 50 - 120 |
| Phenol-d5 | 76 | | 52 - 120 |
| Terphenyl-d14 | 79 | | 55 - 120 |
| 2,4,6-Tribromophenol | 62 | | 51 - 120 |

000048

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW8**

Lab Sample ID: 280-3716-11
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 0925
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2760.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.2 g |
| Date Analyzed: | 06/02/2010 2251 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000049

Client: Washington Closure Hanford

7/16/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XW9

Lab Sample ID: 280-3716-12
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0930
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16842 | | Lab File ID: | Y2761.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.4 g |
| Date Analyzed: | 06/02/2010 2311 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.9 | U T | 9.9 | 320 |
| Acenaphthylene | | 16 | U | 16 | 320 |
| Anthracene | | 16 | U | 16 | 320 |
| Benzo[a]anthracene | | 19 | U | 19 | 320 |
| Benzo[a]pyrene | | 19 | U | 19 | 320 |
| Benzo[b]fluoranthene | | 25 | U | 25 | 320 |
| Benzo[ghi]perylene | | 15 | U | 15 | 320 |
| Benzo[k]fluoranthene | | 39 | U | 39 | 320 |
| Bis(2-chloroethoxy)methane | | 22 | U | 22 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 22 | U | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | | 44 | U | 44 | 320 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 320 |
| Butyl benzyl phthalate | | 42 | U | 42 | 320 |
| Carbazole | | 35 | U | 35 | 320 |
| 4-Chloroaniline | | 79 | U | 79 | 320 |
| 4-Chloro-3-methylphenol | | 64 | U | 64 | 320 |
| 2-Chloronaphthalene | | 9.7 | U | 9.7 | 320 |
| 2-Chlorophenol | | 20 | U | 20 | 320 |
| 4-Chlorophenyl phenyl ether | | 20 | U | 20 | 320 |
| Chrysene | | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 320 |
| Dibenzofuran | | 19 | U | 19 | 320 |
| 1,2-Dichlorobenzene | | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 87 | U | 87 | 640 |
| 2,4-Dichlorophenol | | 9.7 | U | 9.7 | 320 |
| Diethyl phthalate | | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | | 64 | U | 64 | 320 |
| Dimethyl phthalate | | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 640 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 800 |
| 2,4-Dinitrotoluene | | 64 | U | 64 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 35 | U | 35 | 320 |
| Fluorene | | 17 | U | 17 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.7 | U | 9.7 | 320 |
| Hexachlorocyclopentadiene | | 48 | U | 48 | 320 |
| Hexachloroethane | | 21 | U | 21 | 320 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 320 |
| Isophorone | | 16 | U | 16 | 320 |
| 2-Methylnaphthalene | | 18 | U | 18 | 320 |

000050

Client: Washington Closure Hanford

W 7/16/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW9**

Lab Sample ID: 280-3716-12
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 0930
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2761.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.4 g |
| Date Analyzed: | 06/02/2010 2311 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 48 | U | 48 | 320 |
| 3-Nitroaniline | | 71 | U | 71 | 320 |
| 4-Nitroaniline | | 70 | U | 70 | 320 |
| Nitrobenzene | | 21 | U | 21 | 320 |
| 2-Nitrophenol | | 9.7 | U | 9.7 | 320 |
| 4-Nitrophenol | | 94 | U | 94 | 640 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 640 |
| Phenanthrene | | 16 | U | 16 | 320 |
| Phenol | | 17 | U | 17 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.7 | U | 9.7 | 320 |
| 2,4,6-Trichlorophenol | | 9.7 | U | 9.7 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 57 | | 50 - 120 |
| 2-Fluorophenol | 54 | | 53 - 120 |
| Nitrobenzene-d5 | 62 | | 50 - 120 |
| Phenol-d5 | 66 | | 52 - 120 |
| Terphenyl-d14 | 70 | | 55 - 120 |
| 2,4,6-Tribromophenol | 56 | | 51 - 120 |

000051

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW9**

Lab Sample ID: 280-3716-12
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0930
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-17984 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2761.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.4 g |
| Date Analyzed: | 06/02/2010 2311 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** **0**

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000052

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XX0**

Lab Sample ID: 280-3716-13
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/13/2010 0935
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2777.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.1 g |
| Date Analyzed: | 06/03/2010 1430 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.9 | U | 9.9 | 320 |
| Acenaphthylene | | 16 | U | 16 | 320 |
| Anthracene | | 16 | U | 16 | 320 |
| Benzo[a]anthracene | | 19 | U | 19 | 320 |
| Benzo[a]pyrene | | 19 | U | 19 | 320 |
| Benzo[b]fluoranthene | | 25 | U | 25 | 320 |
| Benzo[ghi]perylene | | 15 | U | 15 | 320 |
| Benzo[k]fluoranthene | | 38 | U | 38 | 320 |
| Bis(2-chloroethoxy)methane | | 22 | U | 22 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 22 | U | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | | 44 | U | 44 | 320 |
| 4-Bromophenyl phenyl ether | | 18 | U | 18 | 320 |
| Butyl benzyl phthalate | | 41 | U | 41 | 320 |
| Carbazole | | 34 | U | 34 | 320 |
| 4-Chloroaniline | | 78 | U | 78 | 320 |
| 4-Chloro-3-methylphenol | | 63 | U | 63 | 320 |
| 2-Chloronaphthalene | | 9.6 | U | 9.6 | 320 |
| 2-Chlorophenol | | 20 | U | 20 | 320 |
| 4-Chlorophenyl phenyl ether | | 20 | U | 20 | 320 |
| Chrysene | | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 320 |
| Dibenzofuran | | 19 | U | 19 | 320 |
| 1,2-Dichlorobenzene | | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 86 | U | 86 | 630 |
| 2,4-Dichlorophenol | | 9.6 | U | 9.6 | 320 |
| Diethyl phthalate | | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | | 63 | U | 63 | 320 |
| Dimethyl phthalate | | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 630 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 790 |
| 2,4-Dinitrotoluene | | 63 | U | 63 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 34 | U | 34 | 320 |
| Fluorene | | 17 | U | 17 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.6 | U | 9.6 | 320 |
| Hexachlorocyclopentadiene | | 48 | U | 48 | 320 |
| Hexachloroethane | | 20 | U | 20 | 320 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 320 |
| Isophorone | | 16 | U | 16 | 320 |
| 2-Methylnaphthalene | | 18 | U | 18 | 320 |

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XX0**

Lab Sample ID: 280-3716-13
Client Matrix: Solid % Moisture: 2.3

Date Sampled: 05/13/2010 0935
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2777.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.1 g |
| Date Analyzed: | 06/03/2010 1430 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 48 | U | 48 | 320 |
| 3-Nitroaniline | | 70 | U | 70 | 320 |
| 4-Nitroaniline | | 69 | U | 69 | 320 |
| Nitrobenzene | | 21 | U | 21 | 320 |
| 2-Nitrophenol | | 9.6 | U | 9.6 | 320 |
| 4-Nitrophenol | | 93 | U | 93 | 630 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 630 |
| Phenanthrene | | 16 | U | 16 | 320 |
| Phenol | | 17 | U | 17 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.6 | U | 9.6 | 320 |
| 2,4,6-Trichlorophenol | | 9.6 | U | 9.6 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 66 | | 50 - 120 |
| 2-Fluorophenol | 62 | | 53 - 120 |
| Nitrobenzene-d5 | 70 | | 50 - 120 |
| Phenol-d5 | 75 | | 52 - 120 |
| Terphenyl-d14 | 77 | | 55 - 120 |
| 2,4,6-Tribromophenol | 63 | | 51 - 120 |

000054

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XX0**

Lab Sample ID: 280-3716-13
Client Matrix: Solid

% Moisture: 2.3

Date Sampled: 05/13/2010 0935
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2777.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.1 g |
| Date Analyzed: | 06/03/2010 1430 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000055

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR8

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2778.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.9 g |
| Date Analyzed: | 06/03/2010 1449 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.8 | U | 9.8 | 320 |
| Acenaphthylene | | 16 | U | 16 | 320 |
| Anthracene | | 16 | U | 16 | 320 |
| Benzo[a]anthracene | | 19 | U | 19 | 320 |
| Benzo[a]pyrene | | 19 | U | 19 | 320 |
| Benzo[b]fluoranthene | | 25 | U | 25 | 320 |
| Benzo[ghi]perylene | | 15 | U | 15 | 320 |
| Benzo[k]fluoranthene | | 38 | U | 38 | 320 |
| Bis(2-chloroethoxy)methane | | 22 | U J | 22 | 320 |
| Bis(2-chloroethyl)ether | | 16 | U J | 16 | 320 |
| bis (2-chloroisopropyl) ether | | 22 | U J | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | | 44 | U | 44 | 320 |
| 4-Bromophenyl phenyl ether | | 18 | U J | 18 | 320 |
| Butyl benzyl phthalate | | 41 | U | 41 | 320 |
| Carbazole | | 34 | U | 34 | 320 |
| 4-Chloroaniline | | 78 | U | 78 | 320 |
| 4-Chloro-3-methylphenol | | 63 | U J | 63 | 320 |
| 2-Chloronaphthalene | | 9.6 | U | 9.6 | 320 |
| 2-Chlorophenol | | 20 | U J | 20 | 320 |
| 4-Chlorophenyl phenyl ether | | 20 | U J | 20 | 320 |
| Chrysene | | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 320 |
| Dibenzofuran | | 19 | U | 19 | 320 |
| 1,2-Dichlorobenzene | | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 320 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 320 |
| 3,3'-Dichlorobenzidine | | 86 | U | 86 | 630 |
| 2,4-Dichlorophenol | | 9.6 | U J | 9.6 | 320 |
| Diethyl phthalate | | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | | 63 | U | 63 | 320 |
| Dimethyl phthalate | | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | | 320 | U | 320 | 630 |
| 2,4-Dinitrophenol | | 320 | U | 320 | 790 |
| 2,4-Dinitrotoluene | | 63 | U | 63 | 320 |
| 2,6-Dinitrotoluene | | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | | 14 | U | 14 | 320 |
| Fluoranthene | | 34 | U | 34 | 320 |
| Fluorene | | 17 | U | 17 | 320 |
| Hexachlorobenzene | | 28 | U | 28 | 320 |
| Hexachlorobutadiene | | 9.6 | U | 9.6 | 320 |
| Hexachlorocyclopentadiene | | 48 | U | 48 | 320 |
| Hexachloroethane | | 20 | U | 20 | 320 |
| Indeno[1,2,3-cd]pyrene | | 21 | U | 21 | 320 |
| Isophorone | | 16 | U | 16 | 320 |
| 2-Methylnaphthalene | | 18 | U | 18 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR8**

Lab Sample ID: 280-3716-14
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2778.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.9 g |
| Date Analyzed: | 06/03/2010 1449 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 320 |
| 3 & 4 Methylphenol | | 32 | U | 32 | 320 |
| Naphthalene | | 30 | U | 30 | 320 |
| 2-Nitroaniline | | 48 | U | 48 | 320 |
| 3-Nitroaniline | | 70 | U | 70 | 320 |
| 4-Nitroaniline | | 69 | U | 69 | 320 |
| Nitrobenzene | | 21 | U | 21 | 320 |
| 2-Nitrophenol | | 9.6 | U | 9.6 | 320 |
| 4-Nitrophenol | | 93 | U | 93 | 630 |
| N-Nitrosodi-n-propylamine | | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | | 20 | U | 20 | 320 |
| Pentachlorophenol | | 320 | U J | 320 | 630 |
| Phenanthrene | | 16 | U | 16 | 320 |
| Phenol | | 17 | U | 17 | 320 |
| Pyrene | | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | | 9.6 | U J | 9.6 | 320 |
| 2,4,6-Trichlorophenol | | 9.6 | U J | 9.6 | 320 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 55 | | 50 - 120 |
| 2-Fluorophenol | 52 | * | 53 - 120 |
| Nitrobenzene-d5 | 58 | | 50 - 120 |
| Phenol-d5 | 62 | | 52 - 120 |
| Terphenyl-d14 | 67 | | 55 - 120 |
| 2,4,6-Tribromophenol | 50 | * | 51 - 120 |

000057

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR8

Lab Sample ID: 280-3716-14
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2778.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.9 g |
| Date Analyzed: | 06/03/2010 1449 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000058

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR8

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18950 | | Instrument ID: | MSS_K |
| Preparation: | 3550C | Prep Batch: 280-18249 | | Lab File ID: | K4464.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.5 g |
| Date Analyzed: | 06/10/2010 1132 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 10 | U | 10 | 330 |
| Acenaphthylene | | 17 | U | 17 | 330 |
| Anthracene | | 17 | U | 17 | 330 |
| Benzo[a]anthracene | | 20 | U | 20 | 330 |
| Benzo[a]pyrene | | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | | 87 | J K | 26 | 330 |
| Benzo[ghi]perylene | | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | | 40 | U K | 40 | 330 |
| Bis(2-chloroethoxy)methane | | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | | 1000 | | 46 | 330 |
| 4-Bromophenyl phenyl ether | | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | | 43 | U | 43 | 330 |
| Carbazole | | 80 | J | 36 | 330 |
| 4-Chloroaniline | | 82 | U | 82 | 330 |
| 4-Chloro-3-methylphenol | | 66 | U | 66 | 330 |
| 2-Chloronaphthalene | | 10 | U | 10 | 330 |
| 2-Chlorophenol | | 21 | U | 21 | 330 |
| 4-Chlorophenyl phenyl ether | | 21 | U | 21 | 330 |
| Chrysene | | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | | 19 | U | 19 | 330 |
| Dibenzofuran | | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | | 14 | U | 14 | 330 |
| 3,3'-Dichlorobenzidine | | 90 | U | 90 | 660 |
| 2,4-Dichlorophenol | | 10 | U | 10 | 330 |
| Diethyl phthalate | | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | | 66 | U | 66 | 330 |
| Dimethyl phthalate | | 23 | J | 23 | 330 |
| Di-n-butyl phthalate | | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | | 330 | U | 330 | 660 |
| 2,4-Dinitrophenol | | 330 | U | 330 | 830 |
| 2,4-Dinitrotoluene | | 66 | U | 66 | 330 |
| 2,6-Dinitrotoluene | | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | | 14 | U | 14 | 330 |
| Fluoranthene | | 36 | U | 36 | 330 |
| Fluorene | | 18 | U | 18 | 330 |
| Hexachlorobenzene | | 29 | U | 29 | 330 |
| Hexachlorobutadiene | | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | | 50 | U | 50 | 330 |
| Hexachloroethane | | 21 | U | 21 | 330 |
| Indeno[1,2,3-cd]pyrene | | 22 | U | 22 | 330 |
| Isophorone | | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | | 19 | U | 19 | 330 |

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR8**

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18950 | | Instrument ID: | MSS_K |
| Preparation: | 3550C | Prep Batch: 280-18249 | | Lab File ID: | K4464.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.5 g |
| Date Analyzed: | 06/10/2010 1132 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | | 33 | U | 33 | 330 |
| Naphthalene | | 31 | U | 31 | 330 |
| 2-Nitroaniline | | 50 | U | 50 | 330 |
| 3-Nitroaniline | | 73 | U | 73 | 330 |
| 4-Nitroaniline | | 73 | U | 73 | 330 |
| Nitrobenzene | | 22 | U | 22 | 330 |
| 2-Nitrophenol | | 10 | U | 10 | 330 |
| 4-Nitrophenol | | 97 | U | 97 | 660 |
| N-Nitrosodi-n-propylamine | | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | | 21 | U | 21 | 330 |
| Pentachlorophenol | | 330 | U | 330 | 660 |
| Phenanthrene | | 17 | U | 17 | 330 |
| Phenol | | 18 | U | 18 | 330 |
| Pyrene | | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | | 10 | U | 10 | 330 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 67 | | 50 - 120 |
| 2-Fluorophenol | 75 | | 53 - 120 |
| Nitrobenzene-d5 | 70 | | 50 - 120 |
| Phenol-d5 | 71 | | 52 - 120 |
| Terphenyl-d14 | 89 | | 55 - 120 |
| 2,4,6-Tribromophenol | 58 | | 51 - 120 |

000060

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR8

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | |
|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18950 | Instrument ID: | MSS_K |
| Preparation: | 3550C | Prep Batch: 280-18249 | Lab File ID: | K4464.D |
| Dilution: | 1.0 | | Initial Weight/Volume: | 30.5 g |
| Date Analyzed: | 06/10/2010 1132 | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | Injection Volume: | 0.5 uL |

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

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Unknown | 1.62 | 600 | N J |
| | Unknown | 3.15 | 17000 | N J |
| | Unknown | 10.37 | 320 | N J |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

7/11/10

**Client Sample ID:** J19XR9

Lab Sample ID: 280-3716-15
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/13/2010 1335
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2779.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/03/2010 1509 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | 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 | | 41 | U | 41 | 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 J | 13 | 310 |
| 3,3'-Dichlorobenzidine | | 85 | U | 85 | 620 |
| 2,4-Dichlorophenol | | 9.4 | U | 9.4 | 310 |
| Diethyl phthalate | | 25 | U | 25 | 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 |
| 2-Methylnaphthalene | | 18 | U | 18 | 310 |

000062

Client: Washington Closure Hanford

7/6/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR9

Lab Sample ID: 280-3716-15
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/13/2010 1335
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2779.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/03/2010 1509 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 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 J | 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 | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 60 | | 50 - 120 |
| 2-Fluorophenol | 57 | | 53 - 120 |
| Nitrobenzene-d5 | 64 | | 50 - 120 |
| Phenol-d5 | 70 | | 52 - 120 |
| Terphenyl-d14 | 71 | | 55 - 120 |
| 2,4,6-Tribromophenol | 57 | | 51 - 120 |

000063

Client: Washington Closure Hanford

7/16/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR9**

Lab Sample ID: 280-3716-15
Client Matrix: Solid

% Moisture: 2.4

Date Sampled: 05/13/2010 1335
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2779.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/03/2010 1509 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000064

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XT0**

Lab Sample ID: 280-3716-16
Client Matrix: Solid % Moisture: 1.0

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2780.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/03/2010 1528 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Acenaphthene | | 9.5 | U | 9.5 | 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 | | 24 | U | 24 | 310 |
| Benzo[ghi]perylene | | 15 | U | 15 | 310 |
| Benzo[k]fluoranthene | | 37 | U | 37 | 310 |
| Bis(2-chloroethoxy)methane | | 21 | U | 21 | 310 |
| Bis(2-chloroethyl)ether | | 15 | U | 15 | 310 |
| bis (2-chloroisopropyl) ether | | 21 | U | 21 | 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 | | 33 | U | 33 | 310 |
| 4-Chloroaniline | | 76 | U | 76 | 310 |
| 4-Chloro-3-methylphenol | | 61 | U | 61 | 310 |
| 2-Chloronaphthalene | | 9.3 | U | 9.3 | 310 |
| 2-Chlorophenol | | 19 | U | 19 | 310 |
| 4-Chlorophenyl phenyl ether | | 19 | U | 19 | 310 |
| Chrysene | | 25 | U | 25 | 310 |
| Dibenz(a,h)anthracene | | 18 | U | 18 | 310 |
| Dibenzofuran | | 19 | U | 19 | 310 |
| 1,2-Dichlorobenzene | | 20 | U | 20 | 310 |
| 1,3-Dichlorobenzene | | 11 | U | 11 | 310 |
| 1,4-Dichlorobenzene | | 13 | U J | 13 | 310 |
| 3,3'-Dichlorobenzidine | | 83 | U | 83 | 610 |
| 2,4-Dichlorophenol | | 9.3 | U | 9.3 | 310 |
| Diethyl phthalate | | 24 | U | 24 | 310 |
| 2,4-Dimethylphenol | | 61 | U | 61 | 310 |
| Dimethyl phthalate | | 21 | U | 21 | 310 |
| Di-n-butyl phthalate | | 27 | U | 27 | 310 |
| 4,6-Dinitro-2-methylphenol | | 310 | U | 310 | 610 |
| 2,4-Dinitrophenol | | 310 | U | 310 | 760 |
| 2,4-Dinitrotoluene | | 61 | U | 61 | 310 |
| 2,6-Dinitrotoluene | | 26 | U | 26 | 310 |
| Di-n-octyl phthalate | | 13 | U | 13 | 310 |
| Fluoranthene | | 33 | U | 33 | 310 |
| Fluorene | | 17 | U | 17 | 310 |
| Hexachlorobenzene | | 27 | U | 27 | 310 |
| Hexachlorobutadiene | | 9.3 | U | 9.3 | 310 |
| Hexachlorocyclopentadiene | | 46 | U | 46 | 310 |
| Hexachloroethane | | 20 | U | 20 | 310 |
| Indeno[1,2,3-cd]pyrene | | 20 | U | 20 | 310 |
| Isophorone | | 16 | U | 16 | 310 |
| 2-Methylnaphthalene | | 18 | U | 18 | 310 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XT0**

Lab Sample ID: 280-3716-16
Client Matrix: Solid

% Moisture: 1.0

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2780.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/03/2010 1528 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| 2-Methylphenol | | 12 | U | 12 | 310 |
| 3 & 4 Methylphenol | | 31 | U | 31 | 310 |
| Naphthalene | | 29 | U | 29 | 310 |
| 2-Nitroaniline | | 46 | U | 46 | 310 |
| 3-Nitroaniline | | 68 | U | 68 | 310 |
| 4-Nitroaniline | | 67 | U | 67 | 310 |
| Nitrobenzene | | 20 | U | 20 | 310 |
| 2-Nitrophenol | | 9.3 | U | 9.3 | 310 |
| 4-Nitrophenol | | 90 | U | 90 | 610 |
| N-Nitrosodi-n-propylamine | | 29 | U | 29 | 310 |
| N-Nitrosodiphenylamine | | 19 | U | 19 | 310 |
| Pentachlorophenol | | 310 | U J | 310 | 610 |
| 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 | | 9.3 | U | 9.3 | 310 |
| 2,4,6-Trichlorophenol | | 9.3 | U | 9.3 | 310 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 62 | | 50 - 120 |
| 2-Fluorophenol | 59 | | 53 - 120 |
| Nitrobenzene-d5 | 66 | | 50 - 120 |
| Phenol-d5 | 70 | | 52 - 120 |
| Terphenyl-d14 | 72 | | 55 - 120 |
| 2,4,6-Tribromophenol | 54 | | 51 - 120 |

000066

Client: Washington Closure Hanford

7/11/10

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XT0**

Lab Sample ID: 280-3716-16
Client Matrix: Solid
% Moisture: 1.0

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 280-18135 | | Instrument ID: | MSS_Y |
| Preparation: | 3550C | Prep Batch: 280-16642 | | Lab File ID: | Y2780.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.7 g |
| Date Analyzed: | 06/03/2010 1528 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found:** 0

| Cas Number | Analyte | RT | Est. Result (ug/Kg) | Qualifier |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000067

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR3**

Lab Sample ID: 280-3716-1
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1055
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 019B1901.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.6 g |
| Date Analyzed: | 06/07/2010 2308 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 920 | U | 920 | 3700 |
| C10-C28 | | 630 | U | 630 | 3700 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 52 | | 49 - 115 |

7/16/10

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR4**

Lab Sample ID: 280-3716-2
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 022B2201.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.8 g |
| Date Analyzed: | 06/08/2010 0034 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 920 | U | 920 | 3700 |
| C10-C28 | | 630 | U | 630 | 3700 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 65 | | 49 - 115 |

7/11/10

000069

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR5**

Lab Sample ID: 280-3716-3
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1245
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 023B2301.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.9 g |
| Date Analyzed: | 06/08/2010 0102 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 980 | U | 980 | 3900 |
| C10-C28 | | 670 | U | 670 | 3900 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 65 | | 49 - 115 |

7/6/10

000070

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR6**

Lab Sample ID: 280-3716-4
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1305
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 024B2401.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.7 g |
| Date Analyzed: | 06/08/2010 0131 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 59000 | | 980 | 4000 |
| C10-C28 | | 30000 | | 670 | 4000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 64 | | 49 - 115 |

7/11/10

000071

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** J19XR7

Lab Sample ID: 280-3716-5
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 1310
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 025B2501.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.5 g |
| Date Analyzed: | 06/08/2010 0159 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 990 | U | 990 | 4000 |
| C10-C28 | | 900 | J | 670 | 4000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 63 | | 49 - 115 |

7/11/10

000072

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XP8**

Lab Sample ID: 280-3716-6
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 0950
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 027B2701.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.8 g |
| Date Analyzed: | 06/08/2010 0255 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 920 | U | 920 | 3700 |
| C10-C28 | | 630 | J | 630 | 3700 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 59 | | 49 - 115 |

7/14/10

000073

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XP9**

Lab Sample ID: 280-3716-7
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/13/2010 0955
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 028B2801.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.2 g |
| Date Analyzed: | 06/08/2010 0323 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 940 | U | 940 | 3800 |
| C10-C28 | | 990 | J | 640 | 3800 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 66 | | 49 - 115 |

7/11/10

000074

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR0**

Lab Sample ID: 280-3716-8
Client Matrix: Solid
% Moisture: 1.3

Date Sampled: 05/13/2010 1025
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 029B2901.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.1 g |
| Date Analyzed: | 06/08/2010 0350 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 970 | U | 970 | 3900 |
| C10-C28 | | 790 | J | 660 | 3900 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 58 | | 49 - 115 |

7/14/10

000075

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR1**

Lab Sample ID: 280-3716-9
Client Matrix: Solid
% Moisture: 0.7

Date Sampled: 05/13/2010 1030
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 030B3001.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.5 g |
| Date Analyzed: | 06/08/2010 0418 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 9800 | | 930 | 3700 |
| C10-C28 | | 3700 | | 630 | 3700 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 57 | | 49 - 115 |

7/11/10

000076

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR2**

Lab Sample ID: 280-3716-10
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 1050
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 031B3101.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.0 g |
| Date Analyzed: | 06/08/2010 0446 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 1600 | J | 980 | 3900 |
| C10-C28 | | 1200 | J | 660 | 3900 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 62 | | 49 - 115 |

7/11/10

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW8**

Lab Sample ID: 280-3716-11
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/13/2010 0925
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 032B3201.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.7 g |
| Date Analyzed: | 06/08/2010 0514 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 3000 | J | 950 | 3800 |
| C10-C28 | | 1700 | J | 650 | 3800 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 62 | | 49 - 115 |

7/11/10

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XW9**

Lab Sample ID: 280-3716-12
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/13/2010 0930
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 033B3301.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 32.5 g |
| Date Analyzed: | 06/08/2010 0542 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 930 | U | 930 | 3700 |
| C10-C28 | | 1000 | J | 630 | 3700 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 58 | | 49 - 115 |

7/11/10

000079

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XX0**

Lab Sample ID: 280-3716-13
Client Matrix: Solid
% Moisture: 2.3

Date Sampled: 05/13/2010 0935
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 034B3401.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.7 g |
| Date Analyzed: | 06/08/2010 0610 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 2300 | J | 1000 | 4000 |
| C10-C28 | | 1200 | J | 680 | 4000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 61 | | 49 - 115 |

5/11/10

000080

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR8**

Lab Sample ID: 280-3716-14
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/13/2010 1330
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 035B3501.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.9 g |
| Date Analyzed: | 06/08/2010 0638 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 950 | U | 950 | 3800 |
| C10-C28 | | 660 | J | 650 | 3800 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 63 | | 49 - 115 |

7/16/10

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XR9**

Lab Sample ID: 280-3716-15
Client Matrix: Solid
% Moisture: 2.4

Date Sampled: 05/13/2010 1335
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 036B3601.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.2 g |
| Date Analyzed: | 06/08/2010 0706 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 1000 | U | 1000 | 4100 |
| C10-C28 | | 690 | U | 690 | 4100 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 60 | | 49 - 115 |

7/11/10

000082

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Client Sample ID:** **J19XT0**

Lab Sample ID: 280-3716-16
Client Matrix: Solid
% Moisture: 1.0

Date Sampled: 05/13/2010 1235
Date Received: 05/20/2010 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 280-18657 | | Instrument ID: | GCS_U |
| Preparation: | 3550C | Prep Batch: 280-16782 | | Lab File ID: | 038B3801.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.6 g |
| Date Analyzed: | 06/08/2010 0802 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| C10-C36 | | 990 | U | 990 | 4000 |
| C10-C28 | | 670 | U | 670 | 4000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 56 | | 49 - 115 |

7/11/10

## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

## CASE NARRATIVE

### Client: Washington Closure Hanford

### Project: WASHINGTON CLOSURE HANFORD

### Report Number: 280-3716-1

**SDG #: J00791**
**SAF#: RC-075**

**Date SDG Closed: May 20, 2010**
**Data Deliverable: 21 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J19XR3 | 280-3716-1 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR4 | 280-3716-2 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR5 | 280-3716-3 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR6 | 280-3716-4 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR7 | 280-3716-5 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XP8 | 280-3716-6 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XP9 | 280-3716-7 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR0 | 280-3716-8 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR1 | 280-3716-9 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR2 | 280-3716-10 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XW8 | 280-3716-11 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XW9 | 280-3716-12 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XX0 | 280-3716-13 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR8 | 280-3716-14 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XR9 | 280-3716-15 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |
| J19XT0 | 280-3716-16 | 6010/7471/WTPH-D+/8270A | 6010B/7471A/NWTPH-D+/8270C |

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.

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 5/20/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.6 C.

**GC/MS SEMIVOLATILES - SW846 8270C**
Samples J19XR1, J19XR2 and J19XR8 exhibited surrogate recoveries outside the control limits. No matrix effects were obvious that would explain the failures. Upon re-extraction and reanalysis, surrogate recoveries were 100% in control. Both the original and reanalysis data have been provided, as re-extraction was unavoidably performed outside the recommended sample holding times.

Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J19XR8 analyzed in batch 280-18249 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".

Acenaphthene was recovered outside the control limits in the MS aliquot of the MS/MSD performed on sample J19XW9 in batch 280-16642, and the associated sample result has been flagged "T". In addition, the MS exhibited the percent recovery outside the control limits biased low for surrogate 2-Fluorophenol. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Surrogate 2,4,6-Tribromophenol was recovered outside the control limits biased low in the method blank associated with re-extract batch 280-18249. Further corrective action outside the recommended sample holding time was not initiated, and data are reported as is.

No other anomalies were encountered.

**GC SEMIVOLATILES - NWTPH-Dx - DRO**
No anomalies were encountered.

**Total Metals - SW846 6010B/7471A**
Serial dilution of a digestate in batch 280-16904 indicates that physical and chemical interferences are present for Calcium, Chromium, Cobalt, Iron, Manganese, Nickel, Silicon and Zinc. Results have been flagged with an "L".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J19XR4, J19XR5, J19XR7, J19XP9, J19XR0, J19XR8 and J19XT0 required a 2x dilution prior to the analysis of Beryllium, Cobalt, Copper, Lead and/or Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been elevated accordingly.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J19XR3, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron, and Manganese in the Matrix Spike performed on sample J19XR3; therefore, control limits are not applicable.

Low levels of Mercury are present in the method blank associated with batch 280-18461. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "J".

No other anomalies were encountered.

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 3 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH | Price Code 8L | Data Turnaround<br>21 Days |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Deep Zone | | SAF No.<br>RC-075 | | |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver | | |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A | | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 – Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J19XP8 | SOIL | 5/13/10 | 0950 | X | X | X | X | X | X | X | X | X | |
| J19XP9 | SOIL | 5/13/10 | 0955 | X | X | X | X | X | X | X | X | X | |
| J19XR0 | SOIL | 5/13/10 | 1025 | X | X | X | X | X | X | X | X | X | |
| J19XR1 | SOIL | 5/13/10 | 1030 | X | X | X | X | X | X | X | X | X | |
| J19XR2 | SOIL | 5/13/10 | ~~1055~~ 1040 | X | X | X | X | X | X | X | X | X | |

**CHAIN OF POSSESSION** — Sign/Print Names 1050

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Josh Sellers | 5-13-10 1430 | DWoodEarl | 5/13/10 1430 |
| DWoodEarl | 5/13/10 1645 | J. E. Baur | 5-13-10 1645 |
| J. E. Baur | 5-18-10 1430 | Lana Blaco / ANGEL | 5-18-10 1430 |
| Lana Blaco / ANGEL | 5-18-10 1400 | Lana Miles | 5/20/10 0430 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

REVIEWED BY JRE DATE 5-18-10

J00791

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

AR JKR 5/20/10 2.6

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 2 of 3 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner | Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 8L | Data Turnaround: 21 Days | | |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | | SAF No.: RC-075 |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 | COA: R118D12000 | Method of Shipment: Hand Deliver |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

880000

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D + | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J19XR3 | SOIL | 5/13/10 | 1055 | X | X | X | X | X | X | X | X | X | X |
| J19XR4 | SOIL | 5/13/10 | 1235 | X | X | X | X | X | X | X | X | X | X |
| J19XR5 | SOIL | 5/13/10 | 1245 | X | X | X | X | X | X | X | X | X | X |
| J19XR6 | SOIL | 5/13/10 | 1305 | X | X | X | X | X | X | X | X | X | X |
| J19XR7 | SOIL | 5/13/10 | 1310 | X | X | X | X | X | X | X | X | X | X |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J Sellers | 5-13-10 1430 | | 5/13/10 1430 |
| | 5/13/10 1645 | J. E. Bond | 5-13-10 1645 |
| J. E. Bond WCH | 5-18-10 1430 | TACR | 5-18-10 1400 |
| TACR | 5/19/10 1400 | | 5/20/10 0930 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

Ship to Dorsey. J00791

REVIEWED BY JRE DATE 5-18-10

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 |



06/15/2010

WCH-EE-011

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 2 of 2 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH | Price Code 8L | Data Turnaround<br>21 Days |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Deep Zone | | SAF No.<br>RC-075 | | |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver | | |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A | | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

680000

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | | None | None | None | None | None | | |
| Type of Container | G/P | G/P | G | aG | | G/P | G/P | G/P | G/P | G/P | | |
| No. of Container(s) | 1 | 0 | 1 | 1 | | 1 | 0 | 0 | 0 | 0 | | |
| Volume | 125mL | 60mL | 125mL | 125mL | | 500mL | 60mL | 60mL | 60mL | 60mL | | |
| SAMPLE ANALYSIS | See item (1) in Special instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 – Total Sr | Isotopic Plutonium | Isotopic Uranium | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
| J19XR8 | SOIL | 5/13/10 | 1330 | X | X | X | X | X | X | X | X | X |
| J19XR9 | SOIL | 5/13/10 | 1335 | X | X | X | X | X | X | X | X | X |
| J19XT0 | SOIL | 5/13/10 | ~~1245~~ 1235 | X | X | X | X | X | X | X | X | X |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Josh Sellers | 5-13-10 1430 | Dwooten | 5/13/10 1430 |
| Dwooten | 5/13/10 1645 | J. E. Beal | 5-13-10 1645 |
| J. E. Beal WCH | 5-18-10 1430 | TAIR / Angel Flores ANGEL | 5-18-10 1430 |
| TAIR / Angel Flores ANGEL | 5-19-10 1400 | L. Miller | 5/20/10 0930 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

000791

REVIEWED BY JRE DATE 5-18-10

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



06/15/2010

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-161 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector<br>J Sellers | Company Contact<br>J Kessner | Telephone No.<br>509-375-4688 | Project Coordinator<br>KESSNER, JH |
| Price Code 8L | Data Turnaround<br>21 Days | | |
| Project Designation<br>100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location<br>118-D-1 Burial Ground Focus | | SAF No.<br>RC-075 |
| Ice Chest No.<br>N/A | Field Logbook No.<br>EL-1607-8 | COA<br>R118D12000 | Method of Shipment<br>Hand Deliver |
| Shipped To<br>TestAmerica Incorporated, Richland | Offsite Property No.<br>N/A | | Bill of Lading/Air Bill No.<br>N/A |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

060090

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~J19XW7~~ 5/12/10 | SOIL | | | | | | | | | | | | |
| J19XW8 | SOIL | 5/13/10 | 0925 | X | X | X | X | X | X | X | X | X | |
| J19XW9 | SOIL | 5/13/10 | 0930 | X | X | X | X | X | X | X | X | X | |
| J19XX0 | SOIL | 5/13/10 | 0935 | X | X | X | X | X | X | X | X | X | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J Sellers | 5-13-10 1430 | Doodeat | 5/13/10 1430 |
| Doodeat | 5/13/10 1645 | J. E Bear | 5-13-10 1645 |
| J. E. Bear | 5-18-10 1430 | TALL | 5-18-10 1430 |
| TALL | 5-20-10 1400 | Lori Muller | 5/20/10 0938 |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

REVIEWED BY JRC DATE 5-18-10

JOO791

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

**Appendix 5**

**Data Validation Supporting Documentation**

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: | 118-D-1 | | DATA PACKAGE: | J00791 | |
| VALIDATOR: | ELR | LAB: TAL | | DATE: 7/2/10 | |
| | | | SDG: | J00791 | |
| ANALYSES PERFORMED | | | | | |
| SW-846 8260 | | SW-846 8260 (TCLP) | SW-846 8270 | TPH-D | SW-846 8270 (TCLP) |
| | | | | | |

| SAMPLES/MATRIX | | | | |
|---|---|---|---|---|
| J19XP8 | J19XP9 | J19XR0 | J19XR1 | J19XR2 |
| J19XR3 | J19XR4 | J19XR5 | J19XR6 | J19XR7 |
| J19XR8 | J19XR9 | J19XT0 | J19XW8 | J19XW9 |
| J19XX0 | | | | |
| J19XR1-R | J19XR2-R | J19XR8-R | Soil | |

## 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

## 2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

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

Comments:

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

## 3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

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

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

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

Comments: no FB

## 4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

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

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

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

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

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

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

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

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

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

Comments: Surrogate < R8, R2, R1 — Fluorobenzene; R8 — 2,4,6-tribromophenol > J all associated

MS — 1,2-dichlorobenzene + MS/MSD — Pentachlorophenol > prep batch 42 — J all

no PAS

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

## 5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

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

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

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

Comments: _____

## 6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

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

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

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

## 7. HOLDING TIMES (all levels )

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

## 8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

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

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

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

Comments: _____

## 9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

## Appendix 6

## Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-16642**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-16642/1-A | Analysis Batch: | 280-17984 | Instrument ID: | MSS_Y |
| Client Matrix: | Solid | Prep Batch: | 280-16642 | Lab File ID: | Y2736.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.7 g |
| Date Analyzed: | 06/02/2010 1517 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 10 | U | 10 | 320 |
| Acenaphthylene | 17 | U | 17 | 320 |
| Anthracene | 17 | U | 17 | 320 |
| Benzo[a]anthracene | 20 | U | 20 | 320 |
| Benzo[a]pyrene | 20 | U | 20 | 320 |
| Benzo[b]fluoranthene | 26 | U | 26 | 320 |
| Benzo[ghi]perylene | 16 | U | 16 | 320 |
| Benzo[k]fluoranthene | 39 | U | 39 | 320 |
| Bis(2-chloroethoxy)methane | 22 | U | 22 | 320 |
| Bis(2-chloroethyl)ether | 16 | U | 16 | 320 |
| bis (2-chloroisopropyl) ether | 22 | U | 22 | 320 |
| Bis(2-ethylhexyl) phthalate | 45 | U | 45 | 320 |
| 4-Bromophenyl phenyl ether | 19 | U | 19 | 320 |
| Butyl benzyl phthalate | 42 | U | 42 | 320 |
| Carbazole | 35 | U | 35 | 320 |
| 4-Chloroaniline | 80 | U | 80 | 320 |
| 4-Chloro-3-methylphenol | 64 | U | 64 | 320 |
| 2-Chloronaphthalene | 9.8 | U | 9.8 | 320 |
| 2-Chlorophenol | 21 | U | 21 | 320 |
| 4-Chlorophenyl phenyl ether | 21 | U | 21 | 320 |
| Chrysene | 26 | U | 26 | 320 |
| Dibenz(a,h)anthracene | 19 | U | 19 | 320 |
| Dibenzofuran | 20 | U | 20 | 320 |
| 1,2-Dichlorobenzene | 21 | U | 21 | 320 |
| 1,3-Dichlorobenzene | 12 | U | 12 | 320 |
| 1,4-Dichlorobenzene | 13 | U | 13 | 320 |
| 3,3'-Dichlorobenzidine | 88 | U | 88 | 640 |
| 2,4-Dichlorophenol | 9.8 | U | 9.8 | 320 |
| Diethyl phthalate | 25 | U | 25 | 320 |
| 2,4-Dimethylphenol | 64 | U | 64 | 320 |
| Dimethyl phthalate | 22 | U | 22 | 320 |
| Di-n-butyl phthalate | 28 | U | 28 | 320 |
| 4,6-Dinitro-2-methylphenol | 320 | U | 320 | 640 |
| 2,4-Dinitrophenol | 330 | U | 330 | 810 |
| 2,4-Dinitrotoluene | 64 | U | 64 | 320 |
| 2,6-Dinitrotoluene | 27 | U | 27 | 320 |
| Di-n-octyl phthalate | 14 | U | 14 | 320 |
| Fluoranthene | 35 | U | 35 | 320 |
| Fluorene | 18 | U | 18 | 320 |
| Hexachlorobenzene | 28 | U | 28 | 320 |
| Hexachlorobutadiene | 9.8 | U | 9.8 | 320 |
| Hexachlorocyclopentadiene | 49 | U | 49 | 320 |
| Hexachloroethane | 21 | U | 21 | 320 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-16642**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-16642/1-A | Analysis Batch: | 280-17984 | Instrument ID: | MSS_Y |
| Client Matrix: | Solid | Prep Batch: | 280-16642 | Lab File ID: | Y2736.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.7 g |
| Date Analyzed: | 06/02/2010 1517 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/21/2010 1710 | | | Injection Volume: | 0.5 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | 21 | U | 21 | 320 |
| Isophorone | 17 | U | 17 | 320 |
| 2-Methylnaphthalene | 19 | U | 19 | 320 |
| 2-Methylphenol | 13 | U | 13 | 320 |
| 3 & 4 Methylphenol | 32 | U | 32 | 320 |
| Naphthalene | 30 | U | 30 | 320 |
| 2-Nitroaniline | 49 | U | 49 | 320 |
| 3-Nitroaniline | 71 | U | 71 | 320 |
| 4-Nitroaniline | 71 | U | 71 | 320 |
| Nitrobenzene | 21 | U | 21 | 320 |
| 2-Nitrophenol | 9.8 | U | 9.8 | 320 |
| 4-Nitrophenol | 95 | U | 95 | 640 |
| N-Nitrosodi-n-propylamine | 30 | U | 30 | 320 |
| N-Nitrosodiphenylamine | 21 | U | 21 | 320 |
| Pentachlorophenol | 320 | U | 320 | 640 |
| Phenanthrene | 17 | U | 17 | 320 |
| Phenol | 18 | U | 18 | 320 |
| Pyrene | 12 | U | 12 | 320 |
| 1,2,4-Trichlorobenzene | 27 | U | 27 | 320 |
| 2,4,5-Trichlorophenol | 9.8 | U | 9.8 | 320 |
| 2,4,6-Trichlorophenol | 9.8 | U | 9.8 | 320 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 64 | 50 - 120 |
| 2-Fluorophenol | 62 | 53 - 120 |
| Nitrobenzene-d5 | 70 | 50 - 120 |
| Phenol-d5 | 75 | 52 - 120 |
| Terphenyl-d14 | 78 | 55 - 120 |
| 2,4,6-Tribromophenol | 62 | 51 - 120 |

**Method Blank TICs- Batch: 280-16642**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

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Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Lab Control Sample - Batch: 280-16642**

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

Lab Sample ID: LCS 280-16642/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/02/2010 1536
Date Prepared: 05/21/2010 1710

Analysis Batch: 280-17984
Prep Batch: 280-16642
Units: ug/Kg

Instrument ID: MSS_Y
Lab File ID: Y2737.D
Initial Weight/Volume: 30.8 g
Final Weight/Volume: 1000 uL
Injection Volume: 0.5 uL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 2600 | 1450 | 56 | 52 - 120 | |
| Anthracene | 2600 | 1710 | 66 | 57 - 120 | |
| Carbazole | 2600 | 1700 | 65 | 54 - 120 | |
| 4-Chloro-3-methylphenol | 2600 | 1690 | 65 | 57 - 120 | |
| 2-Chlorophenol | 2600 | 1640 | 63 | 53 - 120 | |
| 1,4-Dichlorobenzene | 2600 | 1510 | 58 | 46 - 120 | |
| 2,4-Dinitrotoluene | 2600 | 1680 | 65 | 53 - 120 | |
| 2-Methylnaphthalene | 2600 | 1540 | 59 | 55 - 120 | |
| 2-Methylphenol | 2600 | 1650 | 63 | 51 - 120 | |
| 4-Nitrophenol | 2600 | 1770 | 68 | 41 - 120 | |
| N-Nitrosodi-n-propylamine | 2600 | 1750 | 67 | 51 - 120 | |
| Pentachlorophenol | 2600 | 1590 | 61 | 30 - 120 | |
| Phenol | 2600 | 1780 | 68 | 54 - 120 | |
| Pyrene | 2600 | 1640 | 63 | 50 - 120 | |
| 1,2,4-Trichlorobenzene | 2600 | 1430 | 55 | 50 - 120 | |
| 2,4,6-Trichlorophenol | 2600 | 1690 | 65 | 50 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 57 | 50 - 120 |
| 2-Fluorophenol | 54 | 53 - 120 |
| Nitrobenzene-d5 | 59 | 50 - 120 |
| Phenol-d5 | 66 | 52 - 120 |
| Terphenyl-d14 | 63 | 55 - 120 |
| 2,4,6-Tribromophenol | 61 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-16642**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-3716-12 | Analysis Batch: 280-17984 | Instrument ID: | MSS_Y | |
| Client Matrix: | Solid | Prep Batch: 280-16642 | Lab File ID: | Y2762.D | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 31.0 g | |
| Date Analyzed: | 06/02/2010 2330 | | Final Weight/Volume: | 1000 uL | |
| Date Prepared: | 05/21/2010 1710 | | Injection Volume: | 0.5 uL | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-3716-12 | Analysis Batch: 280-17984 | Instrument ID: | MSS_Y | |
| Client Matrix: | Solid | Prep Batch: 280-16642 | Lab File ID: | Y2763.D | |
| Dilution: | 1.0 | | Initial Weight/Volume: | 31.4 g | |
| Date Analyzed: | 06/02/2010 2349 | | Final Weight/Volume: | 1000 uL | |
| Date Prepared: | 05/21/2010 1710 | | Injection Volume: | 0.5 uL | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 50 | 57 | 52 - 120 | 11 | 30 | T | |
| Anthracene | 61 | 65 | 57 - 120 | 4 | 30 | | |
| Carbazole | 61 | 65 | 54 - 120 | 6 | 30 | | |
| 4-Chloro-3-methylphenol | 62 | 64 | 57 - 120 | 3 | 30 | | |
| 2-Chlorophenol | 56 | 64 | 53 - 120 | 12 | 30 | | |
| 1,4-Dichlorobenzene | 49 | 56 | 46 - 120 | 11 | 30 | | |
| 2,4-Dinitrotoluene | 61 | 64 | 53 - 120 | 4 | 30 | | |
| 2-Methylnaphthalene | 56 | 61 | 55 - 120 | 7 | 30 | | |
| 2-Methylphenol | 55 | 63 | 51 - 120 | 12 | 30 | | |
| 4-Nitrophenol | 62 | 68 | 41 - 120 | 7 | 30 | | |
| N-Nitrosodi-n-propylamine | 59 | 67 | 51 - 120 | 11 | 30 | | |
| Pentachlorophenol | 46 | 48 | 30 - 120 | 3 | 30 | | |
| Phenol | 61 | 69 | 54 - 120 | 11 | 30 | | |
| Pyrene | 59 | 65 | 50 - 120 | 8 | 38 | | |
| 1,2,4-Trichlorobenzene | 52 | 57 | 50 - 120 | 7 | 30 | | |
| 2,4,6-Trichlorophenol | 58 | 63 | 50 - 120 | 7 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 52 | 59 | 50 - 120 |
| 2-Fluorophenol | 48 | 54 | 53 - 120 |
| Nitrobenzene-d5 | 57 | 62 | 50 - 120 |
| Phenol-d5 | 58 | 66 | 52 - 120 |
| Terphenyl-d14 | 60 | 65 | 55 - 120 |
| 2,4,6-Tribromophenol | 56 | 62 | 51 - 120 |

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Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-18249**

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

Lab Sample ID: MB 280-18249/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/10/2010 0834
Date Prepared: 06/07/2010 1300

Analysis Batch: 280-18950
Prep Batch: 280-18249
Units: ug/Kg

Instrument ID: MSS_K
Lab File ID: K4455.D
Initial Weight/Volume: 30.0 g
Final Weight/Volume: 1000 uL
Injection Volume: 0.5 uL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 10 | U | 10 | 330 |
| Acenaphthylene | 17 | U | 17 | 330 |
| Anthracene | 17 | U | 17 | 330 |
| Benzo[a]anthracene | 20 | U | 20 | 330 |
| Benzo[a]pyrene | 20 | U | 20 | 330 |
| Benzo[b]fluoranthene | 26 | U | 26 | 330 |
| Benzo[ghi]perylene | 16 | U | 16 | 330 |
| Benzo[k]fluoranthene | 40 | U | 40 | 330 |
| Bis(2-chloroethoxy)methane | 23 | U | 23 | 330 |
| Bis(2-chloroethyl)ether | 17 | U | 17 | 330 |
| bis (2-chloroisopropyl) ether | 23 | U | 23 | 330 |
| Bis(2-ethylhexyl) phthalate | 46 | U | 46 | 330 |
| 4-Bromophenyl phenyl ether | 19 | U | 19 | 330 |
| Butyl benzyl phthalate | 43 | U | 43 | 330 |
| Carbazole | 36 | U | 36 | 330 |
| 4-Chloroaniline | 82 | U | 82 | 330 |
| 4-Chloro-3-methylphenol | 66 | U | 66 | 330 |
| 2-Chloronaphthalene | 10 | U | 10 | 330 |
| 2-Chlorophenol | 21 | U | 21 | 330 |
| 4-Chlorophenyl phenyl ether | 21 | U | 21 | 330 |
| Chrysene | 27 | U | 27 | 330 |
| Dibenz(a,h)anthracene | 19 | U | 19 | 330 |
| Dibenzofuran | 20 | U | 20 | 330 |
| 1,2-Dichlorobenzene | 22 | U | 22 | 330 |
| 1,3-Dichlorobenzene | 12 | U | 12 | 330 |
| 1,4-Dichlorobenzene | 14 | U | 14 | 330 |
| 3,3'-Dichlorobenzidine | 90 | U | 90 | 660 |
| 2,4-Dichlorophenol | 10 | U | 10 | 330 |
| Diethyl phthalate | 26 | U | 26 | 330 |
| 2,4-Dimethylphenol | 66 | U | 66 | 330 |
| Dimethyl phthalate | 23 | U | 23 | 330 |
| Di-n-butyl phthalate | 29 | U | 29 | 330 |
| 4,6-Dinitro-2-methylphenol | 330 | U | 330 | 660 |
| 2,4-Dinitrophenol | 330 | U | 330 | 830 |
| 2,4-Dinitrotoluene | 66 | U | 66 | 330 |
| 2,6-Dinitrotoluene | 28 | U | 28 | 330 |
| Di-n-octyl phthalate | 14 | U | 14 | 330 |
| Fluoranthene | 36 | U | 36 | 330 |
| Fluorene | 18 | U | 18 | 330 |
| Hexachlorobenzene | 29 | U | 29 | 330 |
| Hexachlorobutadiene | 10 | U | 10 | 330 |
| Hexachlorocyclopentadiene | 50 | U | 50 | 330 |
| Hexachloroethane | 21 | U | 21 | 330 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-18249**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-18249/1-A | Analysis Batch: | 280-18950 | Instrument ID: | MSS_K |
| Client Matrix: | Solid | Prep Batch: | 280-18249 | Lab File ID: | K4455.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.0 g |
| Date Analyzed: | 06/10/2010 0834 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | | Injection Volume: | 0.5 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | 22 | U | 22 | 330 |
| Isophorone | 17 | U | 17 | 330 |
| 2-Methylnaphthalene | 19 | U | 19 | 330 |
| 2-Methylphenol | 13 | U | 13 | 330 |
| 3 & 4 Methylphenol | 33 | U | 33 | 330 |
| Naphthalene | 31 | U | 31 | 330 |
| 2-Nitroaniline | 50 | U | 50 | 330 |
| 3-Nitroaniline | 73 | U | 73 | 330 |
| 4-Nitroaniline | 73 | U | 73 | 330 |
| Nitrobenzene | 22 | U | 22 | 330 |
| 2-Nitrophenol | 10 | U | 10 | 330 |
| 4-Nitrophenol | 97 | U | 97 | 660 |
| N-Nitrosodi-n-propylamine | 31 | U | 31 | 330 |
| N-Nitrosodiphenylamine | 21 | U | 21 | 330 |
| Pentachlorophenol | 330 | U | 330 | 660 |
| Phenanthrene | 17 | U | 17 | 330 |
| Phenol | 18 | U | 18 | 330 |
| Pyrene | 12 | U | 12 | 330 |
| 1,2,4-Trichlorobenzene | 28 | U | 28 | 330 |
| 2,4,5-Trichlorophenol | 10 | U | 10 | 330 |
| 2,4,6-Trichlorophenol | 10 | U | 10 | 330 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 54 | 50 - 120 |
| 2-Fluorophenol | 62 | 53 - 120 |
| Nitrobenzene-d5 | 58 | 50 - 120 |
| Phenol-d5 | 55 | 52 - 120 |
| Terphenyl-d14 | 69 | 55 - 120 |
| 2,4,6-Tribromophenol | 46 | 51 - 120 |

**Method Blank TICs- Batch: 280-18249**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| | Unknown | 3.14 | 11300 | N J |
| | Unknown | 1.62 | 53900 | N J |

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Lab Control Sample - Batch: 280-18249**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-18249/2-A | Analysis Batch: | 280-18950 | Instrument ID: | MSS_K |
| Client Matrix: | Solid | Prep Batch: | 280-18249 | Lab File ID: | K4456.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.4 g |
| Date Analyzed: | 06/10/2010 0854 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | | Injection Volume: | 0.5 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 2630 | 1790 | 68 | 52 - 120 | |
| Anthracene | 2630 | 2000 | 76 | 57 - 120 | |
| Carbazole | 2630 | 1770 | 67 | 54 - 120 | |
| 4-Chloro-3-methylphenol | 2630 | 2060 | 78 | 57 - 120 | |
| 2-Chlorophenol | 2630 | 1880 | 71 | 53 - 120 | |
| 1,4-Dichlorobenzene | 2630 | 1680 | 64 | 46 - 120 | |
| 2,4-Dinitrotoluene | 2630 | 1970 | 75 | 53 - 120 | |
| 2-Methylnaphthalene | 2630 | 1940 | 74 | 55 - 120 | |
| 2-Methylphenol | 2630 | 1750 | 66 | 51 - 120 | |
| 4-Nitrophenol | 2630 | 2050 | 78 | 41 - 120 | |
| N-Nitrosodi-n-propylamine | 2630 | 1870 | 71 | 51 - 120 | |
| Pentachlorophenol | 2630 | 1780 | 68 | 30 - 120 | |
| Phenol | 2630 | 1970 | 75 | 54 - 120 | |
| Pyrene | 2630 | 1900 | 72 | 50 - 120 | |
| 1,2,4-Trichlorobenzene | 2630 | 1590 | 60 | 50 - 120 | |
| 2,4,6-Trichlorophenol | 2630 | 1740 | 66 | 50 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 66 | 50 - 120 |
| 2-Fluorophenol | 78 | 53 - 120 |
| Nitrobenzene-d5 | 66 | 50 - 120 |
| Phenol-d5 | 75 | 52 - 120 |
| Terphenyl-d14 | 78 | 55 - 120 |
| 2,4,6-Tribromophenol | 70 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-18249**

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

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 280-3716-14 | Analysis Batch: 280-18950 | Instrument ID: MSS_K |
| Client Matrix: | Solid | Prep Batch: 280-18249 | Lab File ID: K4465.D |
| Dilution: | 1.0 | | Initial Weight/Volume: 30.2 g |
| Date Analyzed: | 06/10/2010 1152 | | Final Weight/Volume: 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | Injection Volume: 0.5 uL |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 280-3716-14 | Analysis Batch: 280-18950 | Instrument ID: MSS_K |
| Client Matrix: | Solid | Prep Batch: 280-18249 | Lab File ID: K4466.D |
| Dilution: | 1.0 | | Initial Weight/Volume: 30.8 g |
| Date Analyzed: | 06/10/2010 1212 | | Final Weight/Volume: 1000 uL |
| Date Prepared: | 06/07/2010 1300 | | Injection Volume: 0.5 uL |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 67 | 66 | 52 - 120 | 4 | 30 | | |
| Anthracene | 77 | 75 | 57 - 120 | 5 | 30 | | |
| Carbazole | 65 | 64 | 54 - 120 | 2 | 30 | | |
| 4-Chloro-3-methylphenol | 73 | 70 | 57 - 120 | 7 | 30 | | |
| 2-Chlorophenol | 63 | 62 | 53 - 120 | 3 | 30 | | |
| 1,4-Dichlorobenzene | 53 | 53 | 46 - 120 | 2 | 30 | | |
| 2,4-Dinitrotoluene | 78 | 76 | 53 - 120 | 4 | 30 | | |
| 2-Methylnaphthalene | 66 | 66 | 55 - 120 | 2 | 30 | | |
| 2-Methylphenol | 64 | 63 | 51 - 120 | 3 | 30 | | |
| 4-Nitrophenol | 81 | 79 | 41 - 120 | 4 | 30 | | |
| N-Nitrosodi-n-propylamine | 69 | 67 | 51 - 120 | 6 | 30 | | |
| Pentachlorophenol | 55 | 52 | 30 - 120 | 8 | 30 | | |
| Phenol | 66 | 65 | 54 - 120 | 4 | 30 | | |
| Pyrene | 74 | 74 | 50 - 120 | 2 | 38 | | |
| 1,2,4-Trichlorobenzene | 57 | 57 | 50 - 120 | 2 | 30 | | |
| 2,4,6-Trichlorophenol | 64 | 62 | 50 - 120 | 6 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 66 | 50 - 120 |
| 2-Fluorophenol | 70 | 67 | 53 - 120 |
| Nitrobenzene-d5 | 65 | 64 | 50 - 120 |
| Phenol-d5 | 67 | 66 | 52 - 120 |
| Terphenyl-d14 | 80 | 79 | 55 - 120 |
| 2,4,6-Tribromophenol | 64 | 63 | 51 - 120 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-18612**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-18612/1-A | Analysis Batch: | 280-19069 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-18612 | Lab File ID: | D5594.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 31.6 g |
| Date Analyzed: | 06/10/2010 1423 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 9.8 | U | 9.8 | 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 | 44 | U | 44 | 310 |
| 4-Bromophenyl phenyl ether | 18 | U | 18 | 310 |
| Butyl benzyl phthalate | 41 | U | 41 | 310 |
| Carbazole | 34 | U | 34 | 310 |
| 4-Chloroaniline | 78 | U | 78 | 310 |
| 4-Chloro-3-methylphenol | 63 | U | 63 | 310 |
| 2-Chloronaphthalene | 9.5 | U | 9.5 | 310 |
| 2-Chlorophenol | 20 | U | 20 | 310 |
| 4-Chlorophenyl phenyl ether | 20 | U | 20 | 310 |
| Chrysene | 26 | U | 26 | 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 | 630 |
| 2,4-Dichlorophenol | 9.5 | U | 9.5 | 310 |
| Diethyl phthalate | 25 | U | 25 | 310 |
| 2,4-Dimethylphenol | 63 | U | 63 | 310 |
| Dimethyl phthalate | 22 | U | 22 | 310 |
| Di-n-butyl phthalate | 28 | U | 28 | 310 |
| 4,6-Dinitro-2-methylphenol | 310 | U | 310 | 630 |
| 2,4-Dinitrophenol | 320 | U | 320 | 780 |
| 2,4-Dinitrotoluene | 63 | U | 63 | 310 |
| 2,6-Dinitrotoluene | 27 | U | 27 | 310 |
| Di-n-octyl phthalate | 14 | U | 14 | 310 |
| Fluoranthene | 34 | U | 34 | 310 |
| Fluorene | 17 | U | 17 | 310 |
| Hexachlorobenzene | 28 | U | 28 | 310 |
| Hexachlorobutadiene | 9.5 | U | 9.5 | 310 |
| Hexachlorocyclopentadiene | 47 | U | 47 | 310 |
| Hexachloroethane | 20 | U | 20 | 310 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-18612**

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

Lab Sample ID: MB 280-18612/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/10/2010 1423
Date Prepared: 06/09/2010 1145

Analysis Batch: 280-19069
Prep Batch: 280-18612
Units: ug/Kg

Instrument ID: MSS_D
Lab File ID: D5594.D
Initial Weight/Volume: 31.6 g
Final Weight/Volume: 1000 uL
Injection Volume: 0.5 uL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | 21 | U | 21 | 310 |
| Isophorone | 16 | U | 16 | 310 |
| 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 | 69 | U | 69 | 310 |
| Nitrobenzene | 21 | U | 21 | 310 |
| 2-Nitrophenol | 9.5 | U | 9.5 | 310 |
| 4-Nitrophenol | 92 | U | 92 | 630 |
| N-Nitrosodi-n-propylamine | 29 | U | 29 | 310 |
| N-Nitrosodiphenylamine | 20 | U | 20 | 310 |
| Pentachlorophenol | 310 | U | 310 | 630 |
| Phenanthrene | 16 | U | 16 | 310 |
| Phenol | 17 | U | 17 | 310 |
| Pyrene | 11 | U | 11 | 310 |
| 1,2,4-Trichlorobenzene | 27 | U | 27 | 310 |
| 2,4,5-Trichlorophenol | 9.5 | U | 9.5 | 310 |
| 2,4,6-Trichlorophenol | 9.5 | U | 9.5 | 310 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 83 | 50 - 120 |
| 2-Fluorophenol | 85 | 53 - 120 |
| Nitrobenzene-d5 | 88 | 50 - 120 |
| Phenol-d5 | 83 | 52 - 120 |
| Terphenyl-d14 | 100 | 55 - 120 |
| 2,4,6-Tribromophenol | 72 | 51 - 120 |

**Method Blank TICs- Batch: 280-18612**

| Cas Number | Analyte | RT | Est. Result | Qual |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |

000106

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Lab Control Sample - Batch: 280-18612**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-18612/2-A | Analysis Batch: | 280-19069 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-18612 | Lab File ID: | D5586.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 31.6 g |
| Date Analyzed: | 06/10/2010 1154 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 2530 | 1840 | 73 | 52 - 120 | |
| Anthracene | 2530 | 2070 | 82 | 57 - 120 | |
| Carbazole | 2530 | 2050 | 81 | 54 - 120 | |
| 4-Chloro-3-methylphenol | 2530 | 1920 | 76 | 57 - 120 | |
| 2-Chlorophenol | 2530 | 2100 | 83 | 53 - 120 | |
| 1,4-Dichlorobenzene | 2530 | 1880 | 74 | 46 - 120 | |
| 2,4-Dinitrotoluene | 2530 | 2190 | 87 | 53 - 120 | |
| 2-Methylnaphthalene | 2530 | 1950 | 77 | 55 - 120 | |
| 2-Methylphenol | 2530 | 2030 | 80 | 51 - 120 | |
| 4-Nitrophenol | 2530 | 2250 | 89 | 41 - 120 | |
| N-Nitrosodi-n-propylamine | 2530 | 2160 | 85 | 51 - 120 | |
| Pentachlorophenol | 2530 | 1730 | 68 | 30 - 120 | |
| Phenol | 2530 | 2050 | 81 | 54 - 120 | |
| Pyrene | 2530 | 2190 | 87 | 50 - 120 | |
| 1,2,4-Trichlorobenzene | 2530 | 1990 | 79 | 50 - 120 | |
| 2,4,6-Trichlorophenol | 2530 | 2020 | 80 | 50 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 50 - 120 |
| 2-Fluorophenol | 88 | 53 - 120 |
| Nitrobenzene-d5 | 84 | 50 - 120 |
| Phenol-d5 | 85 | 52 - 120 |
| Terphenyl-d14 | 87 | 55 - 120 |
| 2,4,6-Tribromophenol | 80 | 51 - 120 |

000107

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-18612**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-3716-9 | Analysis Batch: | 280-19069 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-18612 | Lab File ID: | D5587.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 31.2 g |
| Date Analyzed: | 06/10/2010 1213 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-3716-9 | Analysis Batch: | 280-19069 | Instrument ID: | MSS_D |
| Client Matrix: | Solid | Prep Batch: | 280-18612 | Lab File ID: | D5588.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/10/2010 1231 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 06/09/2010 1145 | | | Injection Volume: | 0.5 uL |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 73 | 78 | 52 - 120 | 9 | 30 | | |
| Anthracene | 88 | 88 | 57 - 120 | 3 | 30 | | |
| Carbazole | 87 | 88 | 54 - 120 | 5 | 30 | | |
| 4-Chloro-3-methylphenol | 79 | 79 | 57 - 120 | 2 | 30 | | |
| 2-Chlorophenol | 77 | 75 | 53 - 120 | 1 | 30 | | |
| 1,4-Dichlorobenzene | 66 | 65 | 46 - 120 | 0 | 30 | | |
| 2,4-Dinitrotoluene | 83 | 87 | 53 - 120 | 8 | 30 | | |
| 2-Methylnaphthalene | 77 | 77 | 55 - 120 | 4 | 30 | | |
| 2-Methylphenol | 76 | 74 | 51 - 120 | 0 | 30 | | |
| 4-Nitrophenol | 87 | 89 | 41 - 120 | 5 | 30 | | |
| N-Nitrosodi-n-propylamine | 80 | 79 | 51 - 120 | 2 | 30 | | |
| Pentachlorophenol | 58 | 61 | 30 - 120 | 9 | 30 | | |
| Phenol | 79 | 77 | 54 - 120 | 0 | 30 | | |
| Pyrene | 87 | 91 | 50 - 120 | 7 | 38 | | |
| 1,2,4-Trichlorobenzene | 72 | 73 | 50 - 120 | 5 | 30 | | |
| 2,4,6-Trichlorophenol | 81 | 83 | 50 - 120 | 5 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 82 | 85 | 50 - 120 |
| 2-Fluorophenol | 83 | 82 | 53 - 120 |
| Nitrobenzene-d5 | 87 | 82 | 50 - 120 |
| Phenol-d5 | 84 | 81 | 52 - 120 |
| Terphenyl-d14 | 88 | 91 | 55 - 120 |
| 2,4,6-Tribromophenol | 79 | 81 | 51 - 120 |

000108

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Method Blank - Batch: 280-16782**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-16782/1-A | Analysis Batch: | 280-18657 | Instrument ID: | GCS_U |
| Client Matrix: | Solid | Prep Batch: | 280-16782 | Lab File ID: | 017B1701.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.2 g |
| Date Analyzed: | 06/07/2010 2210 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| C10-C36 | 990 | U | 990 | 4000 |
| C10-C28 | 670 | U | 670 | 4000 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 62 | 49 - 115 |

**Lab Control Sample - Batch: 280-16782**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-16782/2-A | Analysis Batch: | 280-18657 | Instrument ID: | GCS_U |
| Client Matrix: | Solid | Prep Batch: | 280-16782 | Lab File ID: | 018B1801.D |
| Dilution: | 1.0 | Units: | ug/Kg | Initial Weight/Volume: | 30.3 g |
| Date Analyzed: | 06/07/2010 2239 | | | Final Weight/Volume: | 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | | Injection Volume: | 1 uL |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| C10-C36 | 66000 | 56600 | 86 | 57 - 115 | |
| C10-C28 | 66000 | 56000 | 85 | 53 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 70 | 49 - 115 |

Client: Washington Closure Hanford

Job Number: 280-3716-1
Sdg Number: J00791

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-16782**

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

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 280-3716-16 | Analysis Batch: 280-18657 | Instrument ID: GCS_U |
| Client Matrix: | Solid | Prep Batch: 280-16782 | Lab File ID: 039B3901.D |
| Dilution: | 1.0 | | Initial Weight/Volume: 30.3 g |
| Date Analyzed: | 06/08/2010 0830 | | Final Weight/Volume: 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | Injection Volume: 1 uL |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 280-3716-16 | Analysis Batch: 280-18657 | Instrument ID: GCS_U |
| Client Matrix: | Solid | Prep Batch: 280-16782 | Lab File ID: 040B4001.D |
| Dilution: | 1.0 | | Initial Weight/Volume: 30.3 g |
| Date Analyzed: | 06/08/2010 0858 | | Final Weight/Volume: 1000 uL |
| Date Prepared: | 05/24/2010 1545 | | Injection Volume: 1 uL |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| C10-C36 | 82 | 82 | 57 - 115 | 1 | 23 | | |
| C10-C28 | 81 | 80 | 56 - 115 | 1 | 23 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 62 | 57 | 49 - 115 |

000110

Date: 12 July 2010
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 118-D-1
Subject: Wet Chemistry - Data Package No. J00791-TAL

## INTRODUCTION

This memo presents the results of data validation on Data Package No. J00791 prepared by TestAmerica Laboratory Inc. (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|---|---|---|---|---|
| J19XP8 | 5/13/10 | Soil | C | See note 1 |
| J19XP9 | 5/13/10 | Soil | C | See note 1 |
| J19XR0 | 5/13/10 | Soil | C | See note 1 |
| J19XR1 | 5/13/10 | Soil | C | See note 1 |
| J19XR2 | 5/13/10 | Soil | C | See note 1 |
| J19XR3 | 5/13/10 | Soil | C | See note 1 |
| J19XR4 | 5/13/10 | Soil | C | See note 1 |
| J19XR5 | 5/13/10 | Soil | C | See note 1 |
| J19XR6 | 5/13/10 | Soil | C | See note 1 |
| J19XR7 | 5/13/10 | Soil | C | See note 1 |
| J19XR8 | 5/13/10 | Soil | C | See note 1 |
| J19XR9 | 5/13/10 | Soil | C | See note 1 |
| J19XT0 | 5/13/10 | Soil | C | See note 1 |
| J19XW8 | 5/13/10 | Soil | C | See note 1 |
| J19XW9 | 5/13/10 | Soil | C | See note 1 |
| J19XX0 | 5/13/10 | Soil | C | See note 1 |

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

## DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within: 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J19XR4/J19XT0) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package J00791 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

**MAJOR DEFICIENCIES**

None found.

**MINOR DEFICIENCIES**

None found.

## REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

## Appendix 1

## Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

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

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

## Appendix 2

## Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

| SDG: J00791 | REVIEWER: ELR | Project: 118-D-1 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: No qualifiers assigned | | | |

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

**Appendix 3**

**Annotated Laboratory Reports**

## Sample Results Summary

Date: 23-Jun-10

### TestAmerica TARL

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

Report No. : 44110

SDG No: J00791

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | MDC or MDA | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 0140415 | 7196_CR6 | | | | | | | | |
| | J19XP8 | | | | | | | | |
| | L1Q9C1AA | HEXCHROME | 1.48E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.48E-01 | 1.55E-01 | |
| | J19XP9 | | | | | | | | |
| | L1Q9F1AA | HEXCHROME | 1.51E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.51E-01 | 1.55E-01 | |
| | J19XR0 | | | | | | | | |
| | L1Q9H1AA | HEXCHROME | 1.53E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.53E-01 | 1.55E-01 | |
| | J19XR1 | | | | | | | | |
| | L1Q9J1AA | HEXCHROME | 1.42E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.42E-01 | 1.55E-01 | |
| | J19XR2 | | | | | | | | |
| | L1Q9P1AA | HEXCHROME | 3.44E-01 +- 0.0E+00 | | mg/kg | N/A | 1.44E-01 | 1.55E-01 | |
| | J19XR3 | | | | | | | | |
| | L1Q521AA | HEXCHROME | 1.54E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.54E-01 | 1.55E-01 | |
| | L1Q521AP | HEXCHROME | 1.54E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.54E-01 | 3.50E-01 | 0.0 |
| | J19XR4 | | | | | | | | |
| | L1Q7N1AA | HEXCHROME | 1.39E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.39E-01 | 1.55E-01 | |
| | J19XR5 | | | | | | | | |
| | L1Q771AA | HEXCHROME | 1.54E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.54E-01 | 1.55E-01 | |
| | J19XR6 | | | | | | | | |
| | L1Q851AA | HEXCHROME | 1.52E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.52E-01 | 1.55E-01 | |
| | J19XR7 | | | | | | | | |
| | L1Q9A1AA | HEXCHROME | 1.48E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.48E-01 | 1.55E-01 | |
| | J19XR8 | | | | | | | | |
| | L1Q9X1AA | HEXCHROME | 1.52E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.52E-01 | 1.55E-01 | |
| | J19XR9 | | | | | | | | |
| | L1RAE1AA | HEXCHROME | 1.52E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.52E-01 | 1.55E-01 | |
| | J19XT0 | | | | | | | | |
| | L1RAG1AA | HEXCHROME | 1.52E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.52E-01 | 1.55E-01 | |
| | J19XW8 | | | | | | | | |
| | L1RAK1AA | HEXCHROME | 1.40E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.40E-01 | 1.55E-01 | |
| | J19XW9 | | | | | | | | |
| | L1RAL1AA | HEXCHROME | 1.45E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.45E-01 | 1.55E-01 | |
| | J19XX0 | | | | | | | | |
| | L1RAM1AA | HEXCHROME | 1.42E-01 +- 0.0E+00 | U | mg/kg | N/A | 1.42E-01 | 1.55E-01 | |

No. of Results: 289

7/6/10

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RPD - Relative Percent Difference.

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

000010

## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

TestAmerica Laboratories, Inc.

June 23, 2010

Attention: Joan Kessner

| | | |
|---|---|---|
| SAF Number | : | RC-075 |
| Date SDG Closed | : | May 18, 2010 |
| Number of Samples | : | Sixteen (16) |
| Sample Type | : | Soil |
| SDG Number | : | J00791 |
| Data Deliverable | : | 21 – Day / Summary |

## CASE NARRATIVE

### I. Introduction

On May 18, 2010 sixteen 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 |
|---|---|---|---|
| J19XP8 | L1Q9C | SOIL | 5/18/10 |
| J19XP9 | L1Q9F | SOIL | 5/18/10 |
| J19XR0 | L1Q9H | SOIL | 5/18/10 |
| J19XR1 | L1Q9J | SOIL | 5/18/10 |
| J19XR2 | L1Q9P | SOIL | 5/18/10 |
| J19XR3 | L1Q52 | SOIL | 5/18/10 |
| J19XR4 | L1Q7N | SOIL | 5/18/10 |
| J19XR5 | L1Q77 | SOIL | 5/18/10 |
| J19XR6 | L1Q85 | SOIL | 5/18/10 |
| J19XR7 | L1Q9A | SOIL | 5/18/10 |
| J19XR8 | L1Q9X | SOIL | 5/18/10 |
| J19XR9 | L1RAE | SOIL | 5/18/10 |
| J19XT0 | L1RAG | SOIL | 5/18/10 |
| J19XW8 | L1RAK | SOIL | 5/18/10 |
| J19XW9 | L1RAL | SOIL | 5/18/10 |
| J19XX0 | L1RAM | SOIL | 5/18/10 |

## II. Sample Receipt

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

## III. Analytical Results/Methodology

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

The requested analyses were:

**Alpha Spectroscopy**
Plutonium-238, -239/240 by method RL-ALP-002 (RICH-RC-5010)*
Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039)*
**Gas Proportional Counting**
Strontium-90 by method RL-GPC-003 (RICH-RC-5006)*
**Gamma Spectroscopy**
Gamma Spec by method RL-GAM-001 (RICH-RC-5017)*
**Liquid Scintillation Counting**
Technetium-99 by method RL-LSC-013 (RICH-RC-5078)*
Tritium by method RL-LSC-005 (RICH-RC-5007)*
Carbon-14 by method RL-LSC-008 (RICH-RC-5022)*
Nickel-63 by method RL-LCS-017 (RICH-RC-5069)*
**Chemical Analysis**
Hexavalent Chromium by EPA method 7196A

*SOP ID's changed effective 7-01-2008. Attached is a cross reference until SOP ID's are changed in all systems.

## IV. Quality Control

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

QC and sample results are reported in the same units.

## V. Comments

**Alpha Spectroscopy**
Plutonium-238, -239/240 by method RL-ALP-002 (RICH-RC-5010):
The LCS, batch blank, samples and sample duplicate (J19XR3) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039):
The LCS, batch blank, samples and sample duplicate (J19XR4) results are within contractual requirements.

**Gas Proportional Counting**

Strontium-90 by method RL-GPC-003 (RICH-RC-5006):
The LCS, batch blank, samples and sample duplicate (J19XR1) results are within contractual requirements.

**Gamma Spectroscopy**

Gamma Spec by method RL-GAM-001 (RICH-RC-5017):
There was insufficient volume for a duplicate. Sample J19XR0 was recounted on a different detector for the duplicate (J19XR0 DUP). The MDAs for the Europium isotopes for several samples were not met due to the reduced count time. Except as noted, the LCS, batch blank, samples and sample duplicate (J19XR0) results are within contractual requirements.

**Liquid Scintillation Counting**

Technetium-99 by method RL-LSC-013 (RICH-RC-5078):
The LCS, batch blank, samples, sample duplicate (J19XR7), and sample matrix spike (J19XP8) results are within contractual requirements.

Tritium by method RL-LSC-005 (RICH-RC-5007):
The LCS, batch blank, samples and sample duplicate (J19XP9) results are within contractual requirements.

Carbon-14 by method RL-LSC-008 (RICH-RC-5022):
The LCS, batch blank, samples and sample duplicate (J19XR5) results are within contractual requirements.

Nickel-63 by method RL-LCS-017 (RICH-RC-5069):
The LCS, batch blank, samples and sample duplicate (J19XR6) results are within contractual requirements.

**Chemical Analysis**

Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J19XR3), sample matrix spike (J19XR3), and matrix spike duplicate (J19XR3) 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:

Sandra Seger
Project Manager

000014

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-161 | Page 1 of 1 |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Focus | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potential Rad (<DOT limits)*

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~J19XW7~~ 05/12/10 | SOIL | | | | | | | | | | | |
| J19XW8 LLRAK | SOIL | 5/13/10 | 0925 | X | X | X | X | X | X | X | X | X |
| J19XW9 LLRAC | SOIL | 5/13/10 | 0930 | X | X | X | X | X | X | X | X | X |
| J19XX0 LLRAM | SOIL | 5/13/10 | 0935 | X | X | X | X | X | X | X | X | X |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers | 5-13-10 1430 | Dwoodfall | 5/13/10 1430 |
| Dwoodfall | 5/13/10 1645 | J. E. Bowe | 5-13-10 1645 |
| J-E. Bowe | 5-18-10 1430 | TRL Angela Lane | 5-18-10 1430 |
| | | | |
| | | | |
| | | | |

**~~SPECIAL INSTRUCTIONS~~**
Add Technetium-99 - liquid scintillation as radiological analysis.
~~(1) ICP Metals - 6010B (Close-out list)~~ {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) (Mercury)
(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

10 5 1910
JE-190567
SDG1J00791
DUE-6/8/10
CW 5/19/10

REVIEWED BY JRC DATE 5-19-10

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

TestAmerica

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| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 1 of 3 |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 – Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J19XP8 L1QPK | SOIL | 5/13/10 | 0950 | X | X | X | X | X | X | X | X | X | |
| J19XP9 L1QPF | SOIL | 5/13/10 | 0955 | X | X | X | X | X | X | X | X | X | |
| J19XR0 L1QPH | SOIL | 5/13/10 | 1025 | X | X | X | X | X | X | X | X | X | |
| J19XR1 L1QPJ | SOIL | 5/13/10 | 1030 | X | X | X | X | X | X | X | X | X | |
| J19XR2 L1QPP | SOIL | 5/13/10 | ~~1055~~ 1050 | X | X | X | X | X | X | X | X | X | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / John Sellers | 5-13-10 1430 | D Woodward | 5/13/10 1430 |
| D Woodward | 5/13/10 1645 | J. E. Baird | 5-13-10 1645 |
| J. E. Baird | 5-18-10 1438 | Tracy Allen / [illegible] | 5-18-10 1433 |
| | | | |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JOE190567
SPG100791
DUE 6/28/10
109
RWS 5/19/10

REVIEWED BY JEE DATE 5-18-10

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

TestAmerica

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| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-075-158 | Page 2 of 2 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner — Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 — COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 – Total Sr | Isotopic Plutonium | Isotopic Uranium | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J19XR3 L1Q5P | SOIL | 5/13/10 | 1055 | X | X | X | X | X | X | X | X | X |
| J19XR4 L1Q7N | SOIL | 5/13/10 | 1235 | X | X | X | X | X | X | X | X | X |
| J19XR5 L1Q77 | SOIL | 5/13/10 | 1245 | X | X | X | X | X | X | X | X | X |
| J19XR6 L1Q85 | SOIL | 5/13/10 | 1305 | X | X | X | X | X | X | X | X | X |
| J19XR7 L1Q9A | SOIL | 5/13/10 | 1310 | X | X | X | X | X | X | X | X | X |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Sellers / Josh Sellers | 5-13-10 1430 | DWOOD01 | 5/13/10 1430 |
| DWOOD01 | 5/13/10 1645 | J. E. Bond | 5-13-10 1645 |
| J. E. Bond WCH | 5-18-10 1430 | THCR / Angel Garcia | 5-18-10 1430 |
| | | | |
| | | | |
| | | | |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JOE190567
JDB100791
DUE 4/8/10
109

REVIEWED BY LRE DATE 5-18-10

RW 5/19/10

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

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

WCH-EE-011

TestAmerica

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| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | RC-075-158 | Page 1 of 1 |
|---|---|---|---|---|
| Collector: J Sellers | Company Contact: J Kessner | Telephone No.: 509-375-4688 | Project Coordinator: KESSNER, JH | Price Code: 8L — Data Turnaround: 21 Days |
| Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot | Sampling Location: 118-D-1 Burial Ground Deep Zone | | SAF No.: RC-075 | |
| Ice Chest No.: N/A | Field Logbook No.: EL-1607-8 | COA: R118D12000 | Method of Shipment: Hand Deliver | |
| Shipped To: TestAmerica Incorporated, Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potential Rad (<DOT limits)*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None | None | None | None | |
| Type of Container | G/P | G/P | G | aG | G/P | G/P | G/P | G/P | G/P | |
| No. of Container(s) | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| Volume | 125mL | 60mL | 125mL | 125mL | 500mL | 60mL | 60mL | 60mL | 60mL | |

JOE190567

MPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | See item (1) in Special instructions. | Chromium Hex - 7196 | TPH-Diesel Range - WTPH-D+ | Semi-VOA - 8270A (TCL) | See item (2) in Special Instructions. | Carbon-14; Tritium - H3 | Nickel-63; Strontium-89,90 -- Total Sr | Isotopic Plutonium | Isotopic Uranium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J19XR8 L1Q9X | SOIL | 5/13/10 | 1330 | X | X | X | X | X | X | X | X | X |
| J19XR9 L1RAE | SOIL | 5/13/10 | 1335 | X | X | X | X | X | X | X | X | X |
| J19XT0 L1/AG1 | SOIL | 5/13/10 | ~~1245~~ 1235 | X | X | X | X | X | X | X | X | X |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By/Removed From: J. Sellers / Josh Sellers | Date/Time: 5-13-10 1430 | Received By/Stored In: D. Woolery | Date/Time: 5/13/10 1430 |
| Relinquished By/Removed From: D. Woolery | Date/Time: 5/13/10 1645 | Received By/Stored In: J. E. Beard | Date/Time: 5-13-10 1645 |
| Relinquished By/Removed From: J. E. Beard | Date/Time: 5-18-10 1430 | Received By/Stored In: TAHC / Angela Angela | Date/Time: 5.18.10 1430 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

**SPECIAL INSTRUCTIONS**

Add Technetium-99 - liquid scintillation to radiological analysis.

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

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

JOE190567
DUE 6-8-10
SDG J00791

REVIEWED BY JRE
DATE 5-18-10

Matrix *
S=Soil
SD=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 |

RW 5/19/10

WCH-EE-011

TestAmerica

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## Appendix 5

## Data Validation Supporting Documentation

# GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: 118-D-1 | | | DATA PACKAGE: J00791 | | |
| VALIDATOR: ELR | | LAB: TAL | | DATE: 7/2/10 | |
| | | | SDG: J00791 | | |

| ANALYSES PERFORMED | | | | | |
|---|---|---|---|---|---|
| Anions/IC | TOC | TOX | TPH-418.1 | Oil and Grease | Alkalinity |
| Ammonia | BOD/COD | Chloride | Chromium-VI | pH | $NO_3/NO_2$ |
| Sulfate | TDS | TKN | Phosphate | | |
| | | | | | |

| SAMPLES/MATRIX | | | | |
|---|---|---|---|---|
| J19XD8 | J19XD9 | J19XR0 | J19XR1 | J19XR2 |
| J19XR3 | J19XR4 | J19XR5 | J19XR6 | J19XR7 |
| J19XR8 | J19NR9 | J19XT0 | J19XW9 | J19XX0 |
| J19XW8 | | | | |
| | | | | Soil |

## 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

## 2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

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

Comments: _____

# GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

## 3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

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

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

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

Comments: no FB

## 4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A

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

Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A

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

LCS/BSS samples analyzed? ..... Yes No N/A

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

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

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

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

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

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

Comments: no PAS

# GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

## 5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

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

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

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

Comments:

## 6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

# GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

## 7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

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

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

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

Comments:

## Appendix 6

## Additional Documentation Requested by Client

## QC Results Summary

Date: 23-Jun-10

## TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 44110

SDG No.: J00791

| Batch Work Order | Parameter | Result +- Uncertainty ( 2s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDC\|MDA |
|---|---|---|---|---|---|---|---|---|
| L1R1A1AC | TC-99 | 6.12E+01 +- 4.0E+00 | | pCi/g | 100% | 90% | -0.1 | 6.08E-01 |
| 0140132 MATRIX SPIKE, J19XP8 | | | | | | | | |
| L1Q9C1AL | TC-99 | 2.02E+02 +- 1.2E+01 | | pCi/g | 100% | 89% | -0.1 | 6.12E-01 |
| 906.0_H3_LSC | | | | | | | | |
| 0140134 BLANK QC, | | | | | | | | |
| L1R1L1AA | H-3 | 4.37E-01 +- 1.5E-01 | | pCi/g | 100% | | | 3.08E-01 |
| 0140134 LCS, | | | | | | | | |
| L1R1L1AC | H-3 | 2.90E+00 +- 2.4E-01 | | pCi/g | 100% | 107% | 0.1 | 3.08E-01 |
| 7196_CR6 | | | | | | | | |
| 0140415 BLANK QC, | | | | | | | | |
| L1VK51AA | HEXCHROME | 1.55E-01 +- 0.0E+00 | U | mg/kg | N/A | | | 1.55E-01 |
| 0140415 LCS, | | | | | | | | |
| L1VK51AC | HEXCHROME | 1.82E+01 +- 0.0E+00 | | mg/kg | N/A | 91% | -0.1 | 1.55E-01 |
| 0140415 MATRIX SPIKE, J19XR3 | | | | | | | | |
| L1Q521AC | HEXCHROME | 8.32E+00 +- 0.0E+00 | | mg/kg | N/A | 83% | -0.2 | 1.54E-01 |

No. of Results: 29

TestAmerica

rptSTLRchQcSummary V5.2.5 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 or Total Uncert or not identified by gamma scan software.