# SAF-RC-009
# ERDF Full List Leachate Analysis
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

No Distribution Required KW 9/2/16
INITIAL/DATE

**COMMENTS:**

**SDG J02198** **SAF-RC-009**

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

**Waste Site: ERDF Leachate Tank, Summer 2016**

Analytical Data Package Prepared For

# Washington Closure Hanford

Radiochemical Analysis By

## TestAmerica Inc

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

**Assigned Laboratory Code: TARL**

*Data Package Contains* 109 *Pages*

**Report No.: 69157**

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

| SDG No. | Order No. | Client Sample ID (List Order) | Lot-Sa No. | Work Order | Report DB ID | Batch No. |
|---|---|---|---|---|---|---|
| J02198 | RC-009 | J1V931 | J6G140414-1 | M8XLQ1AP | 9M8XLQ10 | 6197012 |
| | | J1V931 | J6G140414-1 | M8XLQ1AR | 9M8XLQ10 | 6197013 |
| | | J1V931 | J6G140414-1 | M8XLQ1AF | 9M8XLQ10 | 6197014 |
| | | J1V931 | J6G140414-1 | M8XLQ1AD | 9M8XLQ10 | 6197015 |
| | | J1V931 | J6G140414-1 | M8XLQ1AQ | 9M8XLQ10 | 6197016 |
| | | J1V931 | J6G140414-1 | M8XLQ1AJ | 9M8XLQ10 | 6197017 |
| | | J1V931 | J6G140414-1 | M8XLQ1AH | 9M8XLQ10 | 6197018 |
| | | J1V931 | J6G140414-1 | M8XLQ1AN | 9M8XLQ10 | 6197019 |
| | | J1V931 | J6G140414-1 | M8XLQ1AC | 9M8XLQ10 | 6197020 |
| | | J1V931 | J6G140414-1 | M8XLQ2AA | 9M8XLQ20 | 6197021 |
| | | J1V931 | J6G140414-1 | M8XLQ1AE | 9M8XLQ10 | 6197022 |
| | | J1V931 | J6G140414-1 | M8XLQ2AL | 9M8XLQ20 | 6197023 |
| | | J1V931 | J6G140414-1 | M8XLQ1AK | 9M8XLQ10 | 6197024 |
| | | J1V932 | J6G140414-2 | M8XLR1AP | 9M8XLR10 | 6197012 |
| | | J1V932 | J6G140414-2 | M8XLR1AR | 9M8XLR10 | 6197013 |
| | | J1V932 | J6G140414-2 | M8XLR1AF | 9M8XLR10 | 6197014 |
| | | J1V932 | J6G140414-2 | M8XLR1AD | 9M8XLR10 | 6197015 |
| | | J1V932 | J6G140414-2 | M8XLR1AQ | 9M8XLR10 | 6197016 |
| | | J1V932 | J6G140414-2 | M8XLR1AJ | 9M8XLR10 | 6197017 |
| | | J1V932 | J6G140414-2 | M8XLR1AH | 9M8XLR10 | 6197018 |
| | | J1V932 | J6G140414-2 | M8XLR1AN | 9M8XLR10 | 6197019 |
| | | J1V932 | J6G140414-2 | M8XLR1AC | 9M8XLR10 | 6197020 |
| | | J1V932 | J6G140414-2 | M8XLR1AA | 9M8XLR10 | 6197021 |
| | | J1V932 | J6G140414-2 | M8XLR1AE | 9M8XLR10 | 6197022 |
| | | J1V932 | J6G140414-2 | M8XLR1AL | 9M8XLR10 | 6197023 |
| | | J1V932 | J6G140414-2 | M8XLR1AK | 9M8XLR10 | 6197024 |

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

August 15, 2016

Attention: Joan Kessner

| | | |
|---|---|---|
| SAF Number | : | RC-009 |
| Date SDG Closed | : | July 12, 2016 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Water |
| SDG Number | : | J02198 |
| Data Deliverable | : | 21– Day / Summary |

## CASE NARRATIVE

### I. Introduction

On July 12, 2016, two water samples were received at TestAmerica for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

| WCH ID# | TARL ID# | MATRIX | DATE OF RECEIPT |
|---|---|---|---|
| J1V931 | M8XLQ | WATER | 7/12/16 |
| J1V932 | M8XLR | WATER | 7/12/16 |

### 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-001
Thorium-228,230,232 by method RL-ALP-016
Uranium 234, 235 and 238 by method RL-ALP-015

**Gas Proportional Counting**
Gross Alpha by method RL-GPC-001
Gross Beta by method RL-GPC-001
Strontium-90 by method RL-GPC-010
Total Radium by method RL-RA-002
**Gamma Spectroscopy**
Gamma Spec by method RL-GAM-001
Iodine-129 (LL) by method RL-GAM-002
**Liquid Scintillation Counting**
Technetium-99 by method RL-LSC-014
Tritium by method RL-LSC-005
Carbon-14 by method RL-LSC-008
**Laser Induced Phosphorimetry**
Total Uranium by method RL-KPA-003

## IV. Quality Control

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

QC and sample results are reported in the same units.

## V. Comments

**Alpha Spectroscopy**
Plutonium-238, -239/240 by method RL-ALP-001:
The LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

Thorium-228,230,232 by method RL-ALP-016:
The LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

**Gas Proportional Counting**
Gross Alpha by method RL-GPC-001:
The achieved MDA for the samples and sample duplicate (J1V931) exceeded the CRDL due to the aliquot reductions based on the weight screening results. The sample and sample duplicate (J1V931) agreement was not within the acceptance limits in the original count; they were recounted for an acceptable agreement. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

Gross Beta by method RL-GPC-001:
The achieved MDA for the samples and sample duplicate (J1V931) exceeded the CRDL due to the aliquot reductions based on the weight screening results. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

Strontium-90 by method RL-GPC-010:
The LCS, batch blank, samples and sample duplicate (J1V932) results are within contractual requirements.

Total Alpha Radium by method RL-RA-002:
The LCS, batch blank, samples and sample duplicate (J1V931) results are within contractual requirements.

**Gamma Spectroscopy**
Gamma Spec by method RL-GAM-001:
The LCS, batch blank, samples and sample duplicate (J1V932) results are within contractual requirements.

Iodine-129 (LL) by method RL-GAM-002:
The LCS, batch blank, samples and sample duplicate (J1V932) results are within contractual requirements.

**Liquid Scintillation Counting**
Technetium-99 by method RL-LSC-014:
The LCS, batch blank, samples, sample duplicate (J1V932) and sample matrix spike (J1V932) results are within contractual requirements.

Tritium by method RL-LSC-005:
The LCS, batch blank, samples and sample duplicate (J1V932) results are within contractual requirements.

Carbon-14 by method RL-LSC-008:
The LCS, batch blank, samples and sample duplicate (J1V932) results are within contractual requirements.

**Total Uranium**
Total Uranium by method RL-KPA-003:
The LCS, batch blank, samples, sample duplicate (J1V931) and sample matrix spike (J1V931) results are within contractual requirements.

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

Reviewed and approved:

Rhonda Wagar
Project Manager

## Drinking Water Method Cross References

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

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

## Uncertainty Estimation

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

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

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

## Report Definitions

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

# Sample Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

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

**Report No. :** 69157

**SDG No:** J02198

| Batch | Client Id Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 6197012 C14_CHEM_LSC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AP | C-14 | 8.85E+01 +- 1.3E+01 | | pCi/L | 100% | 1.82E+01 | 2.00E+02 | |
| J1V932 | | | | | | | | | |
| | M8XLR1AP | C-14 | 8.99E+01 +- 1.3E+01 | | pCi/L | 100% | 1.80E+01 | 2.00E+02 | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1AT | C-14 | 8.64E+01 +- 1.2E+01 | | pCi/L | 100% | 1.80E+01 | 2.00E+02 | 3.9 |
| 6197018 SRISO_SEP_PRECIP_GPC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AH | STRONTIUM | 9.91E+00 +- 2.8E+00 | | pCi/L | 77% | 1.56E+00 | 2.00E+00 | |
| J1V932 | | | | | | | | | |
| | M8XLR1AH | STRONTIUM | 8.91E+00 +- 2.6E+00 | | pCi/L | 76% | 1.42E+00 | 2.00E+00 | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1A1 | STRONTIUM | 8.54E+00 +- 2.5E+00 | | pCi/L | 75% | 1.50E+00 | 2.00E+00 | 4.3 |
| 6197024 RL-ALP-002 | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AK | PU-238 | -2.59E-02 +- 3.7E-01 | U | pCi/L | 95% | 7.27E-01 | 1.00E+00 | |
| | | PU239/40 | 1.80E-01 +- 3.7E-01 | U | pCi/L | 95% | 5.85E-01 | 1.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ1A2 | PU-238 | -9.86E-03 +- 3.3E-01 | U | pCi/L | 107% | 5.79E-01 | 1.00E+00 | -89.6 |
| | | PU239/40 | -2.30E-02 +- 3.3E-01 | U | pCi/L | 107% | 6.49E-01 | 1.00E+00 | 258.5 |
| J1V932 | | | | | | | | | |
| | M8XLR1AK | PU-238 | 0.00E+00 +- 3.3E-01 | U | pCi/L | 106% | 5.21E-01 | 1.00E+00 | |
| | | PU239/40 | -1.64E-02 +- 3.3E-01 | U | pCi/L | 106% | 6.16E-01 | 1.00E+00 | |
| 6197022 THISO_IE_PRECIP_AEA | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AE | TH-228 | 6.71E-02 +- 1.0E-01 | U | pCi/L | 111% | 1.34E-01 | 1.00E+00 | |
| | | TH-230 | 2.99E-02 +- 7.2E-02 | U | pCi/L | 111% | 1.31E-01 | 1.00E+00 | |
| | | TH-232 | -2.85E-03 +- 7.1E-02 | U | pCi/L | 111% | 1.18E-01 | 1.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ1A0 | TH-228 | 0.00E+00 +- 7.1E-02 | U | pCi/L | 109% | 1.20E-01 | 1.00E+00 | 200.0 |
| | | TH-230 | 3.46E-02 +- 7.0E-02 | U | pCi/L | 109% | 1.17E-01 | 1.00E+00 | 14.6 |
| | | TH-232 | 0.00E+00 +- 6.9E-02 | U | pCi/L | 109% | 1.17E-01 | 1.00E+00 | -200.0 |
| J1V932 | | | | | | | | | |
| | M8XLR1AE | TH-228 | 1.39E-01 +- 1.5E-01 | U | pCi/L | 114% | 1.55E-01 | 1.00E+00 | |
| | | TH-230 | 5.91E-02 +- 1.1E-01 | U | pCi/L | 114% | 1.58E-01 | 1.00E+00 | |
| | | TH-232 | 0.00E+00 +- 7.4E-02 | U | pCi/L | 114% | 1.19E-01 | 1.00E+00 | |
| 6197023 UISO_PLATE_AEA | | | | | | | | | |
| J1V931 | | | | | | | | | |

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rptTALRchSaSummary2 V5.6 A2002

RPD - Relative Percent Difference.

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

# Sample Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

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

**Report No. :** 69157

**SDG No:** J02198

| Batch | Client Id Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 6197023 UISO_PLATE_AEA | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ2AL | U-234 | 2.39E+02 +- 4.2E+01 | | pCi/L | 90% | 4.64E-01 | 1.00E+00 | |
| | | U-235 | 2.67E+01 +- 5.3E+00 | | pCi/L | 90% | 3.26E-01 | 1.00E+00 | |
| | | U-238 | 2.09E+02 +- 3.7E+01 | | pCi/L | 90% | 5.12E-01 | 1.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ2A1 | U-234 | 2.38E+02 +- 4.1E+01 | | pCi/L | 96% | 4.15E-01 | 1.00E+00 | 0.5 |
| | | U-235 | 2.41E+01 +- 4.8E+00 | | pCi/L | 96% | 3.16E-01 | 1.00E+00 | 10.1 |
| | | U-238 | 2.21E+02 +- 3.8E+01 | | pCi/L | 96% | 4.76E-01 | 1.00E+00 | 5.5 |
| J1V932 | | | | | | | | | |
| | M8XLR1AL | U-234 | 2.41E+02 +- 4.2E+01 | | pCi/L | 95% | 3.44E-01 | 1.00E+00 | |
| | | U-235 | 2.38E+01 +- 4.9E+00 | | pCi/L | 95% | 2.70E-01 | 1.00E+00 | |
| | | U-238 | 2.19E+02 +- 3.9E+01 | | pCi/L | 95% | 3.64E-01 | 1.00E+00 | |
| 6197013 I129_SEP_LEPS_GS | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AR | I129 | 1.77E-01 +- 2.9E-01 | U | pCi/L | 84% | 5.80E-01 | 1.00E+00 | |
| J1V932 | | | | | | | | | |
| | M8XLR1AR | I129 | 3.16E-01 +- 5.0E-01 | U | pCi/L | 96% | 7.66E-01 | 1.00E+00 | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1AU | I129 | 1.11E-01 +- 5.5E-01 | U | pCi/L | 99% | 1.02E+00 | 1.00E+00 | 95.9 |
| 6197014 GAMMA LL: COBALT 60 LL | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AF | AMERICIUM 241 | -1.36E+01 +- 1.5E+01 | U | pCi/L | | 2.51E+01 | | |
| | | CO-60 | 1.26E+00 +- 2.0E+00 | U | pCi/L | | 3.95E+00 | 2.50E+01 | |
| | | CS-137 | -1.68E-01 +- 1.9E+00 | U | pCi/L | | 3.28E+00 | 1.50E+01 | |
| | | EU-152 | -1.16E+00 +- 4.7E+00 | U | pCi/L | | 8.16E+00 | 5.00E+01 | |
| | | EU-154 | -9.31E-02 +- 5.4E+00 | U | pCi/L | | 1.00E+01 | 5.00E+01 | |
| | | EU-155 | 9.90E-01 +- 4.6E+00 | U | pCi/L | | 8.18E+00 | 5.00E+01 | |
| | | K-40 | -5.38E+01 +- 5.2E+01 | U | pCi/L | | 1.06E+02 | | |
| J1V932 | | | | | | | | | |
| | M8XLR1AF | AMERICIUM 241 | 2.13E+00 +- 9.3E+00 | U | pCi/L | | 1.71E+01 | | |
| | | CO-60 | 9.92E-01 +- 1.7E+00 | U | pCi/L | | 3.46E+00 | 2.50E+01 | |
| | | CS-137 | 1.51E-01 +- 1.3E+00 | U | pCi/L | | 2.36E+00 | 1.50E+01 | |
| | | EU-152 | 4.17E-01 +- 3.2E+00 | U | pCi/L | | 5.72E+00 | 5.00E+01 | |
| | | EU-154 | 3.34E+00 +- 4.8E+00 | U | pCi/L | | 9.68E+00 | 5.00E+01 | |
| | | EU-155 | -3.59E+00 +- 3.6E+00 | U | pCi/L | | 5.72E+00 | 5.00E+01 | |
| | | K-40 | 1.76E+01 +- 3.7E+01 | U | pCi/L | | 2.74E+01 | | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1AV | AMERICIUM 241 | -5.70E+00 +- 1.5E+01 | U | pCi/L | | 2.48E+01 | | -437.8 |

TestAmerica Inc

rptTALRchSaSummary2 V5.6 A2002

RPD - Relative Percent Difference.

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

# Sample Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

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

**Report No. :** 69157

**SDG No:** J02198

| Batch | Client Id Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 6197014 GAMMA LL: COBALT 60 LL | | | | | | | | | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1AV | CO-60 | 1.54E+00 +- 2.0E+00 | U | pCi/L | | 4.06E+00 | 2.50E+01 | 43.4 |
| | | CS-137 | -8.13E-01 +- 1.9E+00 | U | pCi/L | | 3.18E+00 | 1.50E+01 | -291.4 |
| | | EU-152 | -1.49E+00 +- 4.8E+00 | U | pCi/L | | 8.26E+00 | 5.00E+01 | -354.8 |
| | | EU-154 | -1.91E+00 +- 6.5E+00 | U | pCi/L | | 1.15E+01 | 5.00E+01 | 737.6 |
| | | EU-155 | 2.97E+00 +- 4.5E+00 | U | pCi/L | | 8.30E+00 | 5.00E+01 | -2114.4 |
| | | K-40 | -4.32E+01 +- 5.2E+01 | U | pCi/L | | 1.06E+02 | | -473.5 |
| 6197019 RATOT_AEAGEA | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AN | TOTAL ALPHA RA | 1.51E-01 +- 2.4E-01 | U | pCi/L | 90% | 4.09E-01 | 1.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ1AV | TOTAL ALPHA RA | 6.55E-02 +- 2.2E-01 | U | pCi/L | 87% | 4.12E-01 | 1.00E+00 | 78.8 |
| J1V932 | | | | | | | | | |
| | M8XLR1AN | TOTAL ALPHA RA | -2.71E-02 +- 2.5E-01 | U | pCi/L | 77% | 5.35E-01 | 1.00E+00 | |
| 6197020 9310_ALPHABETA_GPC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AC | Beta | 3.99E+02 +- 5.3E+01 | | pCi/L | 100% | 7.43E+00 | 4.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ1AW | Beta | 4.00E+02 +- 5.4E+01 | | pCi/L | 100% | 7.45E+00 | 4.00E+00 | 0.5 |
| J1V932 | | | | | | | | | |
| | M8XLR1AC | Beta | 3.87E+02 +- 5.0E+01 | | pCi/L | 100% | 6.69E+00 | 4.00E+00 | |
| 6197021 9310_ALPHABETA_GPC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ2AA | Alpha | 2.90E+02 +- 7.5E+01 | | pCi/L | 100% | 1.12E+01 | 3.00E+00 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ2AX | Alpha | 3.09E+02 +- 8.0E+01 | | pCi/L | 100% | 1.35E+01 | 3.00E+00 | 6.1 |
| J1V932 | | | | | | | | | |
| | M8XLR1AA | Alpha | 3.33E+02 +- 8.8E+01 | | pCi/L | 100% | 1.29E+01 | 3.00E+00 | |
| 6197015 TRITIUM_DIST_LSC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AD | H-3 | 5.85E+04 +- 1.8E+03 | | pCi/L | 100% | 3.07E+02 | 4.00E+02 | |
| J1V932 | | | | | | | | | |
| | M8XLR1AD | H-3 | 5.78E+04 +- 1.7E+03 | | pCi/L | 100% | 3.07E+02 | 4.00E+02 | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1AW | H-3 | 5.81E+04 +- 1.8E+03 | | pCi/L | 100% | 3.08E+02 | 4.00E+02 | 0.6 |
| 6197016 TC99_ETVDSK_LSC | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AQ | TC-99 | 1.75E+02 +- 9.0E+00 | | pCi/L | 100% | 8.96E+00 | 1.50E+01 | |

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**RPD** - Relative Percent Difference.

**U Qual** - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

# Sample Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

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

**Report No. :** 69157

**SDG No:** J02198

| Batch | Client Id Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | MDL | CRDL | RPD |
|---|---|---|---|---|---|---|---|---|---|
| 6197016 TC99_ETVDSK_LSC | | | | | | | | | |
| J1V932 | | | | | | | | | |
| | M8XLR1AQ | TC-99 | 2.20E+02 +- 1.0E+01 | | pCi/L | 100% | 9.37E+00 | 1.50E+01 | |
| J1V932 DUP | | | | | | | | | |
| | M8XLR1A0 | TC-99 | 2.09E+02 +- 9.9E+00 | | pCi/L | 100% | 9.11E+00 | 1.50E+01 | 4.8 |
| 6197017 UTOT_KPA | | | | | | | | | |
| J1V931 | | | | | | | | | |
| | M8XLQ1AJ | TOTAL-URANIUM | 6.50E+02 +- 8.1E+01 | | ug/L | | 7.62E-02 | 1.40E-01 | |
| J1V931 DUP | | | | | | | | | |
| | M8XLQ1AU | TOTAL-URANIUM | 6.59E+02 +- 8.2E+01 | | ug/L | | 8.28E-02 | 1.40E-01 | 1.4 |
| J1V932 | | | | | | | | | |
| | M8XLR1AJ | TOTAL-URANIUM | 6.36E+02 +- 7.9E+01 | | ug/L | | 8.15E-02 | 1.40E-01 | |

**No. of Results:** 72

TestAmerica Inc RPD - Relative Percent Difference.

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# QC Results Summary

## TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

**Date:** 15-Aug-16

**Report No. :** 69157

**SDG No.:** J02198

| Batch Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDL |
|---|---|---|---|---|---|---|---|---|
| **C14_CHEM_LSC** | | | | | | | | |
| 6197012 BLANK QC, | | | | | | | | |
| M8XMC1AA | C-14 | -1.78E+01 +- 8.6E+00 | U | pCi/L | 100% | | | 1.80E+01 |
| 6197012 LCS, | | | | | | | | |
| M8XMC1AC | C-14 | 4.81E+02 +- 3.2E+01 | | pCi/L | 100% | 98% | 0.0 | 1.85E+01 |
| **SRISO_SEP_PRECIP_GPC** | | | | | | | | |
| 6197018 BLANK QC, | | | | | | | | |
| M8XMT1AA | STRONTIUM | 5.56E-01 +- 7.9E-01 | U | pCi/L | 85% | | | 1.30E+00 |
| 6197018 LCS, | | | | | | | | |
| M8XMT1AC | STRONTIUM | 1.58E+01 +- 4.1E+00 | | pCi/L | 80% | 113% | 0.1 | 1.42E+00 |
| **RL-ALP-002** | | | | | | | | |
| 6197024 BLANK QC, | | | | | | | | |
| M8XNC1AA | PU-238 | -1.23E-02 +- 3.1E-01 | U | pCi/L | 91% | | | 5.62E-01 |
| | PU239/40 | -1.54E-02 +- 3.1E-01 | U | pCi/L | 91% | | | 5.79E-01 |
| 6197024 LCS, | | | | | | | | |
| M8XNC1AC | PU239/40 | 2.24E+01 +- 6.6E+00 | | pCi/L | 86% | 96% | 0.0 | 7.06E-01 |
| **THISO_IE_PRECIP_AEA** | | | | | | | | |
| 6197022 BLANK QC, | | | | | | | | |
| M8XM51AA | TH-228 | 4.63E-02 +- 1.3E-01 | U | pCi/L | 85% | | | 2.70E-01 |
| | TH-230 | 2.26E-02 +- 8.9E-02 | U | pCi/L | 85% | | | 2.20E-01 |
| | TH-232 | -1.04E-02 +- 8.8E-02 | U | pCi/L | 85% | | | 1.90E-01 |
| 6197022 LCS, | | | | | | | | |
| M8XM51AC | TH-230 | 1.40E+01 +- 2.9E+00 | | pCi/L | 91% | 125% | 0.2 | 2.23E-01 |
| **UISO_PLATE_AEA** | | | | | | | | |
| 6197023 BLANK QC, | | | | | | | | |
| M8XM71AA | U-234 | 3.28E-01 +- 3.5E-01 | U | pCi/L | 76% | | | 3.46E-01 |
| | U-235 | 8.21E-02 +- 1.7E-01 | U | pCi/L | 76% | | | 2.89E-01 |
| | U-238 | 5.09E-01 +- 4.3E-01 | | pCi/L | 76% | | | 2.89E-01 |
| 6197023 LCS, | | | | | | | | |
| M8XM71AC | U-234 | 1.86E+01 +- 4.0E+00 | | pCi/L | 88% | 113% | 0.1 | 2.92E-01 |
| | U-235 | 5.29E-01 +- 4.1E-01 | | pCi/L | 88% | 70% | -0.3 | 2.55E-01 |
| | U-238 | 1.90E+01 +- 4.1E+00 | | pCi/L | 88% | 110% | 0.1 | 2.92E-01 |
| **I129_SEP_LEPS_GS** | | | | | | | | |
| 6197013 BLANK QC, | | | | | | | | |
| M8XMD1AA | I129 | 1.62E-02 +- 1.6E-01 | U | pCi/L | 98% | | | 2.90E-01 |
| 6197013 LCS, | | | | | | | | |
| M8XMD1AC | I129 | 1.70E+01 +- 2.1E+00 | | pCi/L | 97% | 89% | -0.1 | 6.15E-01 |
| **GAMMA LL: COBALT 60 LL** | | | | | | | | |
| 6197014 BLANK QC, | | | | | | | | |
| M8XMG1AA | AMERICIUM 241 | -7.95E-02 +- 9.2E+00 | U | pCi/L | | | | 1.68E+01 |
| | CO-60 | 1.66E-01 +- 1.7E+00 | U | pCi/L | | | | 3.23E+00 |
| | CS-137 | -3.87E-03 +- 1.3E+00 | U | pCi/L | | | | 2.35E+00 |

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Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

# QC Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

**Report No. :** 69157

**SDG No.:** J02198

| Batch Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDL |
|---|---|---|---|---|---|---|---|---|
| M8XMG1AA | EU-152 | -1.95E+00 +- 3.5E+00 | U | pCi/L | | | | 5.92E+00 |
| | EU-154 | -1.61E+00 +- 4.4E+00 | U | pCi/L | | | | 7.80E+00 |
| | EU-155 | 1.19E+00 +- 3.0E+00 | U | pCi/L | | | | 5.34E+00 |
| | K-40 | 6.98E+00 +- 3.4E+01 | U | pCi/L | | | | 6.90E+01 |
| 6197014 LCS, | | | | | | | | |
| M8XMG1AC | CO-60 | 4.23E+01 +- 9.1E+00 | | pCi/L | | 108% | 0.1 | 4.08E+00 |
| | CS-137 | 4.79E+01 +- 8.1E+00 | | pCi/L | | 95% | 0.0 | 3.68E+00 |
| | EU-152 | 9.18E+01 +- 1.7E+01 | | pCi/L | | 114% | 0.1 | 9.94E+00 |
| **RATOT_AEAGEA** | | | | | | | | |
| 6197019 BLANK QC, | | | | | | | | |
| M8XMW1AA | TOTAL ALPHA RA | 1.27E-01 +- 2.6E-01 | U | pCi/L | 85% | | | 4.53E-01 |
| 6197019 LCS, | | | | | | | | |
| M8XMW1AC | TOTAL ALPHA RA | 6.24E+00 +- 1.7E+00 | | pCi/L | 85% | 98% | 0.0 | 4.29E-01 |
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 6197020 BLANK QC, | | | | | | | | |
| M8XM01AA | Beta | 3.15E-01 +- 9.0E-01 | U | pCi/L | 100% | | | 1.51E+00 |
| 6197020 LCS, | | | | | | | | |
| M8XM01AC | Beta | 2.03E+01 +- 3.0E+00 | | pCi/L | 100% | 93% | -0.1 | 1.42E+00 |
| **9310_ALPHABETA_GPC** | | | | | | | | |
| 6197021 BLANK QC, | | | | | | | | |
| M8XM21AA | Alpha | -5.50E-02 +- 3.8E-01 | U | pCi/L | 100% | | | 7.17E-01 |
| 6197021 LCS, | | | | | | | | |
| M8XM21AC | Alpha | 2.27E+01 +- 5.8E+00 | | pCi/L | 100% | 109% | 0.1 | 6.78E-01 |
| **TRITIUM_DIST_LSC** | | | | | | | | |
| 6197015 BLANK QC, | | | | | | | | |
| M8XMJ1AA | H-3 | 4.15E+01 +- 1.5E+02 | U | pCi/L | 100% | | | 3.15E+02 |
| 6197015 LCS, | | | | | | | | |
| M8XMJ1AC | H-3 | 3.17E+03 +- 2.6E+02 | | pCi/L | 100% | 117% | 0.2 | 3.24E+02 |
| **TC99_ETVDSK_LSC** | | | | | | | | |
| 6197016 BLANK QC, | | | | | | | | |
| M8XMM1AA | TC-99 | 3.61E+00 +- 4.4E+00 | U | pCi/L | 100% | | | 9.21E+00 |
| 6197016 LCS, | | | | | | | | |
| M8XMM1AC | TC-99 | 1.01E+02 +- 7.2E+00 | | pCi/L | 100% | 94% | -0.1 | 9.18E+00 |
| 6197016 MATRIX SPIKE, J1V932 | | | | | | | | |
| M8XLR1AX | TC-99 | 4.60E+02 +- 2.3E+01 | | pCi/L | 100% | 87% | -0.1 | 8.94E+00 |
| **UTOT_KPA** | | | | | | | | |
| 6197017 BLANK QC, | | | | | | | | |
| M8XMP1AA | TOTAL-URANIUM | 0.00E+00 +- 0.0E+00 | U | ug/L | | | | 7.97E-02 |
| 6197017 LCS, | | | | | | | | |
| M8XMP1AC | TOTAL-URANIUM | 3.44E+00 +- 3.5E-01 | | ug/L | | 99% | 0.0 | 8.03E-02 |
| M8XMP1AD | TOTAL-URANIUM | 3.59E+01 +- 4.5E+00 | | ug/L | | 99% | 0.0 | 8.38E-02 |
| 6197017 MATRIX SPIKE, J1V931 | | | | | | | | |
| M8XLQ1AT | TOTAL-URANIUM | 4.32E+01 +- 1.2E+02 | | ug/L | | 139% | 0.4 | 7.23E-02 |

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Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

# QC Results Summary

**Date:** 15-Aug-16

## TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

**Report No. :** 69157

**SDG No.:** J02198

| Batch Work Order | Parameter | Result +- CSU ( 2 s) | Qual | Units | Tracer Yield | LCS Recovery | Bias | MDL |
|---|---|---|---|---|---|---|---|---|

No. of Results: 44

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

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# FORM I

## SAMPLE RESULTS

**Date:** 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-1 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V931 | **COC No. :** | RC-009-022 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197012 | C14_CHEM_LSC | | | **Work Order:** M8XLQ1AP | | | **Report DB ID:** 9M8XLQ10 | | | | | |
| C-14 | 8.85E+01 | | 1.0E+01 | 1.3E+01 | 1.82E+01 | pCi/L | 100% | *(4.9)* | 8/2/16 05:53 p | | 0.075 | LSC4 |
| | | | | | | 8.77E+00 | 2.00E+02 | *(14.1)* | | | L | |
| **Batch:** 6197013 | I129_SEP_LEPS_GS | | | **Work Order:** M8XLQ1AR | | | **Report DB ID:** 9M8XLQ10 | | | | | |
| I129 | 1.77E-01 | U | 2.9E-01 | 2.9E-01 | 5.80E-01 | pCi/L | 84% | *0.31* | 7/29/16 03:24 p | | 2.008 | LEP5$1 |
| | | | | | | 2.45E-01 | 1.00E+00 | *(1.2)* | | | L | |
| **Batch:** 6197014 | GAMMA LL: COBALT 60 LL | | | **Work Order:** M8XLQ1AF | | | **Report DB ID:** 9M8XLQ10 | | | | | |
| AMERICIUM 241 | -1.36E+01 | U | 1.5E+01 | 1.5E+01 | 2.51E+01 | pCi/L | | *-0.54* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | | *-(1.8)* | | | L | |
| CO-60 | 1.26E+00 | U | 2.0E+00 | 2.0E+00 | 3.95E+00 | pCi/L | | *0.32* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | 2.50E+01 | *(1.3)* | | | L | |
| CS-137 | -1.68E-01 | U | 1.9E+00 | 1.9E+00 | 3.28E+00 | pCi/L | | *-0.05* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | 1.50E+01 | *-0.18* | | | L | |
| EU-152 | -1.16E+00 | U | 4.7E+00 | 4.7E+00 | 8.16E+00 | pCi/L | | *-0.14* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | 5.00E+01 | *-0.5* | | | L | |
| EU-154 | -9.31E-02 | U | 5.4E+00 | 5.4E+00 | 1.00E+01 | pCi/L | | *-0.01* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | 5.00E+01 | *-0.03* | | | L | |
| EU-155 | 9.90E-01 | U | 4.6E+00 | 4.6E+00 | 8.18E+00 | pCi/L | | *0.12* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | 5.00E+01 | *0.43* | | | L | |
| K-40 | -5.38E+01 | U | 5.2E+01 | 5.2E+01 | 1.06E+02 | pCi/L | | *-0.51* | 7/27/16 10:14 a | | 2.1149 | GER12$1 |
| | | | | | | | | *-(2.1)* | | | L | |
| **Batch:** 6197015 | TRITIUM_DIST_LSC | | | **Work Order:** M8XLQ1AD | | | **Report DB ID:** 9M8XLQ10 | | | | | |

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**V5.6 A2002**

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

# FORM I

## SAMPLE RESULTS

**Date:** 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-1 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V931 | **COC No. :** | RC-009-022 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H-3 | 5.85E+04 | | 8.1E+02 | 1.8E+03 | 3.07E+02 | pCi/L | 100% | (190.2) | 7/29/16 09:12 a | | 0.00502 | LSC9 |
| | | | | | | 1.46E+02 | 4.00E+02 | (66.3) | | | L | |
| **Batch:** 6197016 | TC99_ETVDSK_LSC | | | **Work Order:** | M8XLQ1AQ | | **Report DB ID:** | 9M8XLQ10 | | | | |
| TC-99 | 1.75E+02 | | 7.9E+00 | 9.0E+00 | 8.96E+00 | pCi/L | 100% | (19.6) | 8/2/16 05:55 p | | 0.1317 | LSC10 |
| | | | | | | 4.29E+00 | 1.50E+01 | (39.) | | | L | |
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XLQ1AJ | | **Report DB ID:** | 9M8XLQ10 | | | | |
| TOTAL-URANIUM | 6.50E+02 | | | 8.1E+01 | 7.62E-02 | ug/L | | (8529.9) | 8/10/16 03:40 p | | 27.5 | KPAW3 |
| | | | | | | 2.70E-02 | 1.40E-01 | (16.) | | | ML | |
| **Batch:** 6197018 | SRISO_SEP_PRECIP_GPC | | | **Work Order:** | M8XLQ1AH | | **Report DB ID:** | 9M8XLQ10 | | | | |
| STRONTIUM | 9.91E+00 | | 1.7E+00 | 2.8E+00 | 1.56E+00 | pCi/L | 77% | (6.3) | 8/4/16 08:14 p | | 0.5031 | GPC31A |
| | | | | | | 7.11E-01 | 2.00E+00 | (7.1) | | | L | |
| **Batch:** 6197019 | RATOT_AEAGEA | | | **Work Order:** | M8XLQ1AN | | **Report DB ID:** | 9M8XLQ10 | | | | |
| TOTAL ALPHA RA | 1.51E-01 | U | 2.4E-01 | 2.4E-01 | 4.09E-01 | pCi/L | 90% | 0.37 | 8/8/16 11:32 a | | 0.5044 | GPC24D |
| | | | | | | 1.55E-01 | 1.00E+00 | (1.2) | | | L | |
| **Batch:** 6197020 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLQ1AC | | **Report DB ID:** | 9M8XLQ10 | | | | |
| Beta | 3.99E+02 | | 1.4E+01 | 5.3E+01 | 7.43E+00 | pCi/L | 100% | (53.6) | 8/3/16 05:39 p | | 0.0539 | GPC32D |
| | | | | | | 3.57E+00 | 4.00E+00 | (15.1) | | | L | |
| **Batch:** 6197021 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLQ2AA | | **Report DB ID:** | 9M8XLQ20 | | | | |
| Alpha | 2.90E+02 | | 2.2E+01 | 7.5E+01 | 1.12E+01 | pCi/L | 100% | (26.1) | 8/9/16 04:49 p | | 0.0265 | GPC22A |
| | | | | | | 5.05E+00 | 3.00E+00 | (7.7) | | | L | |
| **Batch:** 6197022 | THISO_IE_PRECIP_AEA | | | **Work Order:** | M8XLQ1AE | | **Report DB ID:** | 9M8XLQ10 | | | | |

TestAmerica Inc
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V5.6 A2002

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

# FORM I

## SAMPLE RESULTS

**Date:** 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-1 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V931 | **COC No. :** | RC-009-022 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 6.71E-02 | U | 1.0E-01 | 1.0E-01 | 1.34E-01 | pCi/L | 111% | *0.5* | 8/5/16 09:30 p | | 0.2059 | ALP423 |
| | | | | | | 4.05E-02 | 1.00E+00 | *(1.3)* | | | L | |
| TH-230 | 2.99E-02 | U | 7.2E-02 | 7.2E-02 | 1.31E-01 | pCi/L | 111% | *0.23* | 8/5/16 09:30 p | | 0.2059 | ALP423 |
| | | | | | | 3.96E-02 | 1.00E+00 | *0.83* | | | L | |
| TH-232 | -2.85E-03 | U | 7.1E-02 | 7.1E-02 | 1.18E-01 | pCi/L | 111% | *-0.02* | 8/5/16 09:30 p | | 0.2059 | ALP423 |
| | | | | | | 3.33E-02 | 1.00E+00 | *-0.08* | | | L | |
| **Batch:** 6197023 | UISO_PLATE_AEA | | | **Work Order:** | M8XLQ2AL | | **Report DB ID:** | 9M8XLQ20 | | | | |
| U-234 | 2.39E+02 | | 7.9E+00 | 4.2E+01 | 4.64E-01 | pCi/L | 90% | *(514.8)* | 8/11/16 05:16 p | | 0.2024 | ALP3 |
| | | | | | | 1.65E-01 | 1.00E+00 | *(11.5)* | | | L | |
| U-235 | 2.67E+01 | | 2.6E+00 | 5.3E+00 | 3.26E-01 | pCi/L | 90% | *(81.7)* | 8/11/16 05:16 p | | 0.2024 | ALP3 |
| | | | | | | 9.72E-02 | 1.00E+00 | *(10.1)* | | | L | |
| U-238 | 2.09E+02 | | 7.4E+00 | 3.7E+01 | 5.12E-01 | pCi/L | 90% | *(408.5)* | 8/11/16 05:16 p | | 0.2024 | ALP3 |
| | | | | | | 1.90E-01 | 1.00E+00 | *(11.5)* | | | L | |
| | | | | | | | | ***Ratio U-234/238 = 1.1*** | | | | |
| **Batch:** 6197024 | RL-ALP-002 | | | **Work Order:** | M8XLQ1AK | | **Report DB ID:** | 9M8XLQ10 | | | | |
| PU-238 | -2.59E-02 | U | 3.7E-01 | 3.7E-01 | 7.27E-01 | pCi/L | 95% | *-0.04* | 8/10/16 01:03 p | | 0.2 | ALP24 |
| | | | | | | 1.73E-01 | 1.00E+00 | *-0.14* | | | L | |
| PU239/40 | 1.80E-01 | U | 3.7E-01 | 3.7E-01 | 5.85E-01 | pCi/L | 95% | *0.31* | 8/10/16 01:03 p | | 0.2 | ALP24 |
| | | | | | | 1.06E-01 | 1.00E+00 | *0.97* | | | L | |

**No. of Results:** 24 **Comments:**

TestAmerica Inc
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V5.6 A2002

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

# FORM I

## SAMPLE RESULTS

**Date:** 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-2 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V932 | **COC No. :** | RC-009-023 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197012 | C14_CHEM_LSC | | | **Work Order:** | M8XLR1AP | | **Report DB ID:** | 9M8XLR10 | | | | |
| C-14 | **8.99E+01** | | 1.0E+01 | 1.3E+01 | 1.80E+01 | pCi/L | 100% | *(5.)* | 8/2/16 06:56 p | | 0.075 | LSC4 |
| | | | | | | 8.69E+00 | 2.00E+02 | *(14.3)* | | | L | |
| **Batch:** 6197013 | I129_SEP_LEPS_GS | | | **Work Order:** | M8XLR1AR | | **Report DB ID:** | 9M8XLR10 | | | | |
| I129 | **3.16E-01** | U | 5.0E-01 | 5.0E-01 | 7.66E-01 | pCi/L | 96% | *0.41* | 7/29/16 05:30 p | | 1.0002 | LEP5$1 |
| | | | | | | 3.72E-01 | 1.00E+00 | *(1.3)* | | | L | |
| **Batch:** 6197014 | GAMMA LL: COBALT 60 LL | | | **Work Order:** | M8XLR1AF | | **Report DB ID:** | 9M8XLR10 | | | | |
| AMERICIUM 241 | **2.13E+00** | U | 9.3E+00 | 9.3E+00 | 1.71E+01 | pCi/L | | *0.12* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | | *0.46* | | | L | |
| CO-60 | **9.92E-01** | U | 1.7E+00 | 1.7E+00 | 3.46E+00 | pCi/L | | *0.29* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | 2.50E+01 | *(1.1)* | | | L | |
| CS-137 | **1.51E-01** | U | 1.3E+00 | 1.3E+00 | 2.36E+00 | pCi/L | | *0.06* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | 1.50E+01 | *0.24* | | | L | |
| EU-152 | **4.17E-01** | U | 3.2E+00 | 3.2E+00 | 5.72E+00 | pCi/L | | *0.07* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | 5.00E+01 | *0.26* | | | L | |
| EU-154 | **3.34E+00** | U | 4.8E+00 | 4.8E+00 | 9.68E+00 | pCi/L | | *0.34* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | 5.00E+01 | *(1.4)* | | | L | |
| EU-155 | **-3.59E+00** | U | 3.6E+00 | 3.6E+00 | 5.72E+00 | pCi/L | | *-0.63* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | 5.00E+01 | *-(2.)* | | | L | |
| K-40 | **1.76E+01** | U | 3.7E+01 | 3.7E+01 | 2.74E+01 | pCi/L | | *0.64* | 7/27/16 10:15 a | | 2.1189 | GER13$1 |
| | | | | | | | | *0.94* | | | L | |
| **Batch:** 6197015 | TRITIUM_DIST_LSC | | | **Work Order:** | M8XLR1AD | | **Report DB ID:** | 9M8XLR10 | | | | |

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V5.6 A2002

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

# FORM I

## SAMPLE RESULTS

**Date:** 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-2 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V932 | **COC No. :** | RC-009-023 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H-3 | 5.78E+04 | | 8.1E+02 | 1.7E+03 | 3.07E+02 | pCi/L | 100% | (188.4) | 7/29/16 10:34 a | | 0.00501 | LSC9 |
| | | | | | | 1.46E+02 | 4.00E+02 | (66.2) | | | L | |
| **Batch:** 6197016 | TC99_ETVDSK_LSC | | | **Work Order:** | M8XLR1AQ | | **Report DB ID:** | 9M8XLR10 | | | | |
| TC-99 | 2.20E+02 | | 8.9E+00 | 1.0E+01 | 9.37E+00 | pCi/L | 100% | (23.5) | 8/2/16 07:00 p | | 0.1257 | LSC10 |
| | | | | | | 4.49E+00 | 1.50E+01 | (42.7) | | | L | |
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XLR1AJ | | **Report DB ID:** | 9M8XLR10 | | | | |
| TOTAL-URANIUM | 6.36E+02 | | | 7.9E+01 | 8.15E-02 | ug/L | | (7800.5) | 8/10/16 03:46 p | | 25.7 | KPAW3 |
| | | | | | | 2.88E-02 | 1.40E-01 | (16.) | | | ML | |
| **Batch:** 6197018 | SRISO_SEP_PRECIP_GPC | | | **Work Order:** | M8XLR1AH | | **Report DB ID:** | 9M8XLR10 | | | | |
| STRONTIUM | 8.91E+00 | | 1.6E+00 | 2.6E+00 | 1.42E+00 | pCi/L | 76% | (6.3) | 8/4/16 08:14 p | | 0.5194 | GPC31B |
| | | | | | | 6.40E-01 | 2.00E+00 | (7.) | | | L | |
| **Batch:** 6197019 | RATOT_AEAGEA | | | **Work Order:** | M8XLR1AN | | **Report DB ID:** | 9M8XLR10 | | | | |
| TOTAL ALPHA RA | -2.71E-02 | U | 2.5E-01 | 2.5E-01 | 5.35E-01 | pCi/L | 77% | -0.05 | 8/8/16 12:47 p | | 0.5001 | GPC24B |
| | | | | | | 2.13E-01 | 1.00E+00 | -0.22 | | | L | |
| **Batch:** 6197020 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLR1AC | | **Report DB ID:** | 9M8XLR10 | | | | |
| Beta | 3.87E+02 | | 1.4E+01 | 5.0E+01 | 6.69E+00 | pCi/L | 100% | (57.8) | 8/3/16 05:39 p | | 0.0513 | GPC32B |
| | | | | | | 3.20E+00 | 4.00E+00 | (15.4) | | | L | |
| **Batch:** 6197021 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLR1AA | | **Report DB ID:** | 9M8XLR10 | | | | |
| Alpha | 3.33E+02 | | 2.4E+01 | 8.8E+01 | 1.29E+01 | pCi/L | 100% | (25.9) | 8/5/16 11:45 p | | 0.0256 | GPC23A |
| | | | | | | 5.87E+00 | 3.00E+00 | (7.5) | | | L | |
| **Batch:** 6197022 | THISO_IE_PRECIP_AEA | | | **Work Order:** | M8XLR1AE | | **Report DB ID:** | 9M8XLR10 | | | | |

**TestAmerica Inc**
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**V5.6 A2002**

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

# FORM I

## SAMPLE RESULTS

Date: 15-Aug-16

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica Inc** | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | **J6G140414-2** | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | **J1V932** | **COC No. :** | RC-009-023 | **Matrix:** | WATER |

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | **1.39E-01** | U | 1.5E-01 | 1.5E-01 | 1.55E-01 | pCi/L | 114% | *0.9* | 8/5/16 09:30 p | | 0.2059 | ALP425 |
| | | | | | | 5.21E-02 | 1.00E+00 | *(1.8)* | | | L | |
| TH-230 | **5.91E-02** | U | 1.1E-01 | 1.1E-01 | 1.58E-01 | pCi/L | 114% | *0.37* | 8/5/16 09:30 p | | 0.2059 | ALP425 |
| | | | | | | 5.49E-02 | 1.00E+00 | *(1.1)* | | | L | |
| TH-232 | **0.00E+00** | U | 0.0E+00 | 7.4E-02 | 1.19E-01 | pCi/L | 114% | *0.* | 8/5/16 09:30 p | | 0.2059 | ALP425 |
| | | | | | | 3.45E-02 | 1.00E+00 | *0.* | | | L | |
| **Batch:** 6197023 | UISO_PLATE_AEA | | | **Work Order:** | M8XLR1AL | | **Report DB ID:** | 9M8XLR10 | | | | |
| U-234 | **2.41E+02** | | 8.2E+00 | 4.2E+01 | 3.44E-01 | pCi/L | 95% | *(701.1)* | 8/9/16 04:49 p | | 0.2021 | ALP414 |
| | | | | | | 1.01E-01 | 1.00E+00 | *(11.4)* | | | L | |
| U-235 | **2.38E+01** | | 2.6E+00 | 4.9E+00 | 2.70E-01 | pCi/L | 95% | *(88.3)* | 8/9/16 04:49 p | | 0.2021 | ALP414 |
| | | | | | | 6.54E-02 | 1.00E+00 | *(9.8)* | | | L | |
| U-238 | **2.19E+02** | | 7.8E+00 | 3.9E+01 | 3.64E-01 | pCi/L | 95% | *(601.3)* | 8/9/16 04:49 p | | 0.2021 | ALP414 |
| | | | | | | 1.11E-01 | 1.00E+00 | *(11.3)* | | | L | |
| | | | | | | | | ***Ratio U-234/238 = 1.1*** | | | | |
| **Batch:** 6197024 | RL-ALP-002 | | | **Work Order:** | M8XLR1AK | | **Report DB ID:** | 9M8XLR10 | | | | |
| PU-238 | **0.00E+00** | U | 0.0E+00 | 3.3E-01 | 5.21E-01 | pCi/L | 106% | *0.* | 8/10/16 01:05 p | | 0.201 | ALP42 |
| | | | | | | 9.44E-02 | 1.00E+00 | *0.* | | | L | |
| PU239/40 | **-1.64E-02** | U | 3.3E-01 | 3.3E-01 | 6.16E-01 | pCi/L | 106% | *-0.03* | 8/10/16 01:05 p | | 0.201 | ALP42 |
| | | | | | | 1.38E-01 | 1.00E+00 | *-0.1* | | | L | |

**No. of Results:** 24 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.6 A2002

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

# FORM II

Date: 15-Aug-16

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica Inc** | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | **J6G140414-1** | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | **J1V931 DUP** | **COC No. :** | RC-009-022 | **Matrix:** | WATER |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XLQ1AU | **Report DB ID:** | M8XLQ1UR | | **Orig Sa DB ID:** 9M8XLQ10 | | | |
| TOTAL-URANIUM | 6.59E+02 | | | 8.2E+01 | 8.28E-02 | ug/L | | (7954.3) | 8/10/16 03:44 p | | 25.3 | KPAW3 |
| | 6.50E+02 | | **RPD** | **1.4** | | 1.40E-01 | | (16.) | | | ML | |
| **Batch:** 6197019 | RATOT_AEAGEA | | | **Work Order:** | M8XLQ1AV | **Report DB ID:** | M8XLQ1VR | | **Orig Sa DB ID:** 9M8XLQ10 | | | |
| TOTAL ALPHA RA | 6.55E-02 | U | 2.1E-01 | 2.2E-01 | 4.12E-01 | pCi/L | 87% | 0.16 | 8/8/16 12:47 p | | 0.5174 | GPC24A |
| | 1.51E-01 | U | **RPD** | **78.8** | | 1.00E+00 | | 0.61 | | | L | |
| **Batch:** 6197020 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLQ1AW | **Report DB ID:** | M8XLQ1WR | | **Orig Sa DB ID:** 9M8XLQ10 | | | |
| Beta | 4.00E+02 | | 1.4E+01 | 5.4E+01 | 7.45E+00 | pCi/L | 100% | (53.8) | 8/3/16 05:39 p | | 0.0539 | GPC32A |
| | 3.99E+02 | | **RPD** | **0.5** | | 4.00E+00 | | (14.8) | | | L | |
| **Batch:** 6197021 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XLQ2AX | **Report DB ID:** | M8XLQ2XR | | **Orig Sa DB ID:** 9M8XLQ20 | | | |
| Alpha | 3.09E+02 | | 2.4E+01 | 8.0E+01 | 1.35E+01 | pCi/L | 100% | (22.8) | 8/9/16 04:49 p | | 0.0271 | GPC22C |
| | 2.90E+02 | | **RPD** | **6.1** | | 3.00E+00 | | (7.7) | | | L | |
| **Batch:** 6197022 | THISO_IE_PRECIP_AEA | | | **Work Order:** | M8XLQ1A0 | **Report DB ID:** | M8XLQ10R | | **Orig Sa DB ID:** 9M8XLQ10 | | | |
| TH-228 | 0.00E+00 | U | 0.0E+00 | 7.1E-02 | 1.20E-01 | pCi/L | 109% | 0. | 8/5/16 09:30 p | | 0.2036 | ALP424 |
| | 6.71E-02 | U | **RPD** | **200.0** | | 1.00E+00 | | 0. | | | L | |
| TH-230 | 3.46E-02 | U | 6.9E-02 | 7.0E-02 | 1.17E-01 | pCi/L | 109% | 0.3 | 8/5/16 09:30 p | | 0.2036 | ALP424 |
| | 2.99E-02 | U | **RPD** | **14.6** | | 1.00E+00 | | 0.99 | | | L | |
| TH-232 | 0.00E+00 | U | 0.0E+00 | 6.9E-02 | 1.17E-01 | pCi/L | 109% | 0. | 8/5/16 09:30 p | | 0.2036 | ALP424 |
| | -2.85E-03 | U | **RPD** | **-200.0** | | 1.00E+00 | | 0. | | | L | |

TestAmerica Inc
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**RPD** - Relative Percent Difference.
**MDC|MDA,Lc** - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
**U Qual** - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

# FORM II

Date: 15-Aug-16

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica Inc** | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | **J6G140414-1** | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | **J1V931 DUP** | **COC No. :** | RC-009-022 | **Matrix:** | WATER |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197023 | UISO_PLATE_AEA | | | **Work Order:** M8XLQ2A1 | | **Report DB ID:** M8XLQ21R | | | **Orig Sa DB ID:** 9M8XLQ20 | | | |
| U-234 | 2.38E+02 | | 7.7E+00 | 4.1E+01 | 4.15E-01 | pCi/L | 96% | (572.3) | 8/11/16 05:16 p | | 0.2037 | ALP4 |
| | 2.39E+02 | | **RPD** | **0.5** | | 1.00E+00 | | (11.6) | | | L | |
| U-235 | 2.41E+01 | | 2.5E+00 | 4.8E+00 | 3.16E-01 | pCi/L | 96% | (76.4) | 8/11/16 05:16 p | | 0.2037 | ALP4 |
| | 2.67E+01 | | **RPD** | **10.1** | | 1.00E+00 | | (10.1) | | | L | |
| U-238 | 2.21E+02 | | 7.4E+00 | 3.8E+01 | 4.76E-01 | pCi/L | 96% | (464.2) | 8/11/16 05:16 p | | 0.2037 | ALP4 |
| | 2.09E+02 | | **RPD** | **5.5** | | 1.00E+00 | | (11.6) | | | L | |
| | | | | | | ***Ratio U-234/238 = 1.1*** | | | ***Alpha Spec Result Sum = 4.8E+02*** | | | |
| **Batch:** 6197024 | RL-ALP-002 | | | **Work Order:** M8XLQ1A2 | | **Report DB ID:** M8XLQ12R | | | **Orig Sa DB ID:** 9M8XLQ10 | | | |
| PU-238 | -9.86E-03 | U | 3.3E-01 | 3.3E-01 | 5.79E-01 | pCi/L | 107% | -0.02 | 8/10/16 01:04 p | | 0.2003 | ALP39 |
| | -2.59E-02 | U | **RPD** | **-89.6** | | 1.00E+00 | | -0.06 | | | L | |
| PU239/40 | -2.30E-02 | U | 3.3E-01 | 3.3E-01 | 6.49E-01 | pCi/L | 107% | -0.04 | 8/10/16 01:04 p | | 0.2003 | ALP39 |
| | 1.80E-01 | U | **RPD** | **258.5** | | 1.00E+00 | | -0.14 | | | L | |
| | | | | | | | | | ***Alpha Spec Result Sum = 4.8E+02*** | | | |

**No. of Results:** 12 **Comments:**



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

# FORM II

Date: 15-Aug-16

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | **TestAmerica Inc** | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | **J6G140414-2** | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | **J1V932 DUP** | **COC No. :** | RC-009-023 | **Matrix:** | WATER |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197012 | C14_CHEM_LSC | | | **Work Order:** | M8XLR1AT | **Report DB ID:** | M8XLR1TR | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| C-14 | 8.64E+01 | | 9.9E+00 | 1.2E+01 | 1.80E+01 | pCi/L | 100% | (4.8) | 8/2/16 08:00 p | | 0.075 | LSC4 |
| | 8.99E+01 | | **RPD** | **3.9** | | 2.00E+02 | | (13.9) | | | L | |
| **Batch:** 6197013 | I129_SEP_LEPS_GS | | | **Work Order:** | M8XLR1AU | **Report DB ID:** | M8XLR1UR | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| I129 | 1.11E-01 | U | 5.5E-01 | 5.5E-01 | 1.02E+00 | pCi/L | 99% | 0.11 | 7/29/16 09:04 p | | 1.0001 | LEP5$1 |
| | 3.16E-01 | U | **RPD** | **95.9** | | 1.00E+00 | | 0.41 | | | L | |
| **Batch:** 6197014 | GAMMA LL: COBALT 60 LL | | | **Work Order:** | M8XLR1AV | **Report DB ID:** | M8XLR1VR | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| AMERICIUM 241 | -5.70E+00 | U | 1.5E+01 | 1.5E+01 | 2.48E+01 | pCi/L | | -0.23 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 2.13E+00 | U | **RPD** | **-437.8** | | | | -0.78 | | | L | |
| CO-60 | 1.54E+00 | U | 2.0E+00 | 2.0E+00 | 4.06E+00 | pCi/L | | 0.38 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 9.92E-01 | U | **RPD** | **43.4** | | 2.50E+01 | | (1.5) | | | L | |
| CS-137 | -8.13E-01 | U | 1.9E+00 | 1.9E+00 | 3.18E+00 | pCi/L | | -0.26 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 1.51E-01 | U | **RPD** | **-291.4** | | 1.50E+01 | | -0.86 | | | L | |
| EU-152 | -1.49E+00 | U | 4.8E+00 | 4.8E+00 | 8.26E+00 | pCi/L | | -0.18 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 4.17E-01 | U | **RPD** | **-354.8** | | 5.00E+01 | | -0.63 | | | L | |
| EU-154 | -1.91E+00 | U | 6.5E+00 | 6.5E+00 | 1.15E+01 | pCi/L | | -0.17 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 3.34E+00 | U | **RPD** | **737.6** | | 5.00E+01 | | -0.59 | | | L | |
| EU-155 | 2.97E+00 | U | 4.5E+00 | 4.5E+00 | 8.30E+00 | pCi/L | | 0.36 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | -3.59E+00 | U | **RPD** | **-2114.4** | | 5.00E+01 | | (1.3) | | | L | |
| K-40 | -4.32E+01 | U | 5.2E+01 | 5.2E+01 | 1.06E+02 | pCi/L | | -0.41 | 7/27/16 02:16 p | | 2.1189 | GER12$1 |
| | 1.76E+01 | U | **RPD** | **-473.5** | | | | -(1.7) | | | L | |

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

# FORM II

Date: 15-Aug-16

## DUPLICATE RESULTS

| | | | | | |
|---|---|---|---|---|---|
| **Lab Name:** | TestAmerica Inc | **SDG:** | J02198 | **Collection Date:** | 7/12/2016 7:20:00 AM |
| **Lot-Sample No.:** | J6G140414-2 | **Report No. :** | 69157 | **Received Date:** | 7/12/2016 3:15:00 PM |
| **Client Sample ID:** | J1V932 DUP | **COC No. :** | RC-009-023 | **Matrix:** | WATER |

| Parameter | Result, Orig Rst | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197015 | TRITIUM_DIST_LSC | | | **Work Order:** | M8XLR1AW | **Report DB ID:** | M8XLR1WR | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| H-3 | 5.81E+04 | | 8.1E+02 | 1.8E+03 | 3.08E+02 | pCi/L | 100% | (188.9) | 7/29/16 11:56 a | | 0.00501 | LSC9 |
| | 5.78E+04 | | **RPD** | **0.6** | | 4.00E+02 | | (66.2) | | | L | |
| **Batch:** 6197016 | TC99_ETVDSK_LSC | | | **Work Order:** | M8XLR1A0 | **Report DB ID:** | M8XLR10R | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| TC-99 | 2.09E+02 | | 8.5E+00 | 9.9E+00 | 9.11E+00 | pCi/L | 100% | (23.) | 8/2/16 09:09 p | | 0.1295 | LSC10 |
| | 2.20E+02 | | **RPD** | **4.8** | | 1.50E+01 | | (42.3) | | | L | |
| **Batch:** 6197018 | SRISO_SEP_PRECIP_GPC | | | **Work Order:** | M8XLR1A1 | **Report DB ID:** | M8XLR11R | | **Orig Sa DB ID:** 9M8XLR10 | | | |
| STRONTIUM | 8.54E+00 | | 1.6E+00 | 2.5E+00 | 1.50E+00 | pCi/L | 75% | (5.7) | 8/4/16 08:14 p | | 0.5126 | GPC31C |
| | 8.91E+00 | | **RPD** | **4.3** | | 2.00E+00 | | (6.9) | | | L | |

**No. of Results:** 12 **Comments:**



RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

# FORM II

# BLANK RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Lc | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197012 | C14_CHEM_LSC | | | **Work Order:** | M8XMC1AA | | **Report DB ID:** | M8XMC1AB | | | | |
| C-14 | -1.78E+01 | U | 7.1E+00 | 8.6E+00 | 1.80E+01 | pCi/L | 100% | -0.99 | 8/2/16 09:04 p | | 0.075 | LSC4 |
| | | | | | 8.72E+00 | 2.00E+02 | | -(4.1) | | | L | |
| **Batch:** 6197024 | RL-ALP-002 | | | **Work Order:** | M8XNC1AA | | **Report DB ID:** | M8XNC1AB | | | | |
| PU-238 | -1.23E-02 | U | 3.1E-01 | 3.1E-01 | 5.62E-01 | pCi/L | 91% | -0.02 | 8/10/16 01:06 p | | 0.202 | ALP43 |
| | | | | | 1.22E-01 | 1.00E+00 | | -0.08 | | | L | |
| PU239/40 | -1.54E-02 | U | 3.1E-01 | 3.1E-01 | 5.79E-01 | pCi/L | 91% | -0.03 | 8/10/16 01:06 p | | 0.202 | ALP43 |
| | | | | | 1.30E-01 | 1.00E+00 | | -0.1 | | | L | |
| **Batch:** 6197023 | UISO_PLATE_AEA | | | **Work Order:** | M8XM71AA | | **Report DB ID:** | M8XM71AB | | | | |
| U-234 | 3.28E-01 | U | 3.4E-01 | 3.5E-01 | 3.46E-01 | pCi/L | 76% | 0.95 | 8/9/16 04:50 p | | 0.2045 | ALP419 |
| | | | | | 8.75E-02 | 1.00E+00 | | (1.9) | | | L | |
| U-235 | 8.21E-02 | U | 1.7E-01 | 1.7E-01 | 2.89E-01 | pCi/L | 76% | 0.28 | 8/9/16 04:50 p | | 0.2045 | ALP419 |
| | | | | | 6.13E-02 | 1.00E+00 | | 0.96 | | | L | |
| U-238 | 5.09E-01 | | 4.2E-01 | 4.3E-01 | 2.89E-01 | pCi/L | 76% | (1.8) | 8/9/16 04:50 p | | 0.2045 | ALP419 |
| | | | | | 6.13E-02 | 1.00E+00 | | (2.4) | | | L | |
| | | | | | | | *Ratio U-234/238 = 0.6* | | | | | |
| **Batch:** 6197022 | THISO_IE_PRECIP_AEA | | | **Work Order:** | M8XM51AA | | **Report DB ID:** | M8XM51AB | | | | |
| TH-228 | 4.63E-02 | U | 1.3E-01 | 1.3E-01 | 2.70E-01 | pCi/L | 85% | 0.17 | 8/5/16 09:31 p | | 0.2023 | ALP426 |
| | | | | | 9.19E-02 | 1.00E+00 | | 0.72 | | | L | |
| TH-230 | 2.26E-02 | U | 8.8E-02 | 8.9E-02 | 2.20E-01 | pCi/L | 85% | 0.1 | 8/5/16 09:31 p | | 0.2023 | ALP426 |
| | | | | | 6.88E-02 | 1.00E+00 | | 0.51 | | | L | |
| TH-232 | -1.04E-02 | U | 8.8E-02 | 8.8E-02 | 1.90E-01 | pCi/L | 85% | -0.05 | 8/5/16 09:31 p | | 0.2023 | ALP426 |
| | | | | | 5.44E-02 | 1.00E+00 | | -0.24 | | | L | |

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

# FORM II

## BLANK RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Lc | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197015 | TRITIUM_DIST_LSC | | | **Work Order:** | M8XMJ1AA | | **Report DB ID:** | M8XMJ1AB | | | | |
| H-3 | 4.15E+01 | U | 1.3E+02 | 1.5E+02 | 3.15E+02 | pCi/L | 100% | 0.13 | 7/29/16 01:18 p | | 0.00501 | LSC9 |
| | | | | | 1.50E+02 | 4.00E+02 | | 0.57 | | | L | |
| **Batch:** 6197014 | GAMMA LL: COBALT 60 LL | | | **Work Order:** | M8XMG1AA | | **Report DB ID:** | M8XMG1AB | | | | |
| AMERICIUM 241 | -7.95E-02 | U | 9.2E+00 | 9.2E+00 | 1.68E+01 | pCi/L | | 0. | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | | | -0.02 | | | L | |
| CO-60 | 1.66E-01 | U | 1.7E+00 | 1.7E+00 | 3.23E+00 | pCi/L | | 0.05 | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | 2.50E+01 | | 0.19 | | | L | |
| CS-137 | -3.87E-03 | U | 1.3E+00 | 1.3E+00 | 2.35E+00 | pCi/L | | 0. | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | 1.50E+01 | | -0.01 | | | L | |
| EU-152 | -1.95E+00 | U | 3.5E+00 | 3.5E+00 | 5.92E+00 | pCi/L | | -0.33 | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | 5.00E+01 | | -(1.1) | | | L | |
| EU-154 | -1.61E+00 | U | 4.4E+00 | 4.4E+00 | 7.80E+00 | pCi/L | | -0.21 | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | 5.00E+01 | | -0.74 | | | L | |
| EU-155 | 1.19E+00 | U | 3.0E+00 | 3.0E+00 | 5.34E+00 | pCi/L | | 0.22 | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | 5.00E+01 | | 0.8 | | | L | |
| K-40 | 6.98E+00 | U | 3.4E+01 | 3.4E+01 | 6.90E+01 | pCi/L | | 0.1 | 7/27/16 02:16 p | | 2.0004 | GER13$1 |
| | | | | | | | | 0.41 | | | L | |
| **Batch:** 6197021 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XM21AA | | **Report DB ID:** | M8XM21AB | | | | |
| Alpha | -5.50E-02 | U | 3.8E-01 | 3.8E-01 | 7.17E-01 | pCi/L | 100% | -0.08 | 8/5/16 11:45 p | | 0.2026 | GPC23C |
| | | | | | 3.21E-01 | 3.00E+00 | | -0.29 | | | L | |
| **Batch:** 6197020 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XM01AA | | **Report DB ID:** | M8XM01AB | | | | |
| Beta | 3.15E-01 | U | 9.0E-01 | 9.0E-01 | 1.51E+00 | pCi/L | 100% | 0.21 | 8/3/16 05:39 p | | 0.2079 | GPC32C |
| | | | | | 7.22E-01 | 4.00E+00 | | 0.7 | | | L | |

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

# FORM II

# BLANK RESULTS

Date: 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU (2 s) | MDL, Lc | Rpt Unit, CRDL | Yield | Rst/MDL, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197013 | I129_SEP_LEPS_GS | | | **Work Order:** | M8XMD1AA | | **Report DB ID:** | M8XMD1AB | | | | |
| I129 | 1.62E-02 | U | 1.6E-01 | 1.6E-01 | 2.90E-01 | pCi/L | 98% | 0.06 | 8/1/16 10:24 a | | 2.002 | LEP5$1 |
| | | | | | 1.43E-01 | 1.00E+00 | | 0.2 | | | L | |
| **Batch:** 6197019 | RATOT_AEAGEA | | | **Work Order:** | M8XMW1AA | | **Report DB ID:** | M8XMW1AB | | | | |
| TOTAL ALPHA RA | 1.27E-01 | U | 2.5E-01 | 2.6E-01 | 4.53E-01 | pCi/L | 85% | 0.28 | 8/8/16 12:47 p | | 0.5273 | GPC24C |
| | | | | | 1.77E-01 | 1.00E+00 | | 0.99 | . | | L | |
| **Batch:** 6197018 | SRISO_SEP_PRECIP_GPC | | | **Work Order:** | M8XMT1AA | | **Report DB ID:** | M8XMT1AB | | | | |
| STRONTIUM | 5.56E-01 | U | 7.8E-01 | 7.9E-01 | 1.30E+00 | pCi/L | 85% | 0.43 | 8/4/16 08:14 p | | 0.5045 | GPC31D |
| | | | | | 5.86E-01 | 2.00E+00 | | (1.4) | | | L | |
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XMP1AA | | **Report DB ID:** | M8XMP1AB | | | | |
| TOTAL-URANIUM | 0.00E+00 | U | | 0.0E+00 | 7.97E-02 | ug/L | | 0. | 8/10/16 03:48 p | | 26.3 | KPAW3 |
| | | | | | 2.82E-02 | 1.40E-01 | | N/A | | | ML | |
| **Batch:** 6197016 | TC99_ETVDSK_LSC | | | **Work Order:** | M8XMM1AA | | **Report DB ID:** | M8XMM1AB | | | | |
| TC-99 | 3.61E+00 | U | 3.9E+00 | 4.4E+00 | 9.21E+00 | pCi/L | 100% | 0.39 | 8/2/16 10:14 p | | 0.1281 | LSC10 |
| | | | | | 4.41E+00 | 1.50E+01 | | (1.6) | | | L | |

**No. of Results:** 24 **Comments:**

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V5.6 A2002

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

# FORM II

## LCS RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL | Report Unit | Yield | Expected | Expected Uncert | Recovery, Bias | Analysis, Prep Date | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197012 | C14_CHEM_LSC | | | **Work Order:** | M8XMC1AC | | **Report DB ID:** | M8XMC1CS | | | | | |
| C-14 | 4.81E+02 | | 1.7E+01 | 3.2E+01 | 1.85E+01 | pCi/L | 100% | 4.91E+02 | 9.8E+00 | 98% | 8/2/16 10:07 p | 0.075 | LSC4 |
| | | | | | | | **Rec Limits:** | | | 0.0 | | L | |
| **Batch:** 6197024 | RL-ALP-002 | | | **Work Order:** | M8XNC1AC | | **Report DB ID:** | M8XNC1CS | | | | | |
| PU239/40 | 2.24E+01 | | 4.2E+00 | 6.6E+00 | 7.06E-01 | pCi/L | 86% | 2.33E+01 | 2.7E-01 | 96% | 8/10/16 01:07 p | 0.2027 | ALP44 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.0 | | L | |
| **Batch:** 6197023 | UISO_PLATE_AEA | | | **Work Order:** | M8XM71AC | | **Report DB ID:** | M8XM71CS | | | | | |
| U-234 | 1.86E+01 | | 2.4E+00 | 4.0E+00 | 2.92E-01 | pCi/L | 88% | 1.65E+01 | 8.7E-02 | 113% | 8/9/16 04:50 p | 0.2 | ALP422 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.1 | | L | |
| U-235 | 5.29E-01 | | 4.0E-01 | 4.1E-01 | 2.55E-01 | pCi/L | 88% | 7.52E-01 | 4.0E-03 | 70% | 8/9/16 04:50 p | 0.2 | ALP422 |
| | | | | | | | **Rec Limits:** | 70 | 130 | -0.3 | | L | |
| U-238 | 1.90E+01 | | 2.4E+00 | 4.1E+00 | 2.92E-01 | pCi/L | 88% | 1.73E+01 | 9.1E-02 | 110% | 8/9/16 04:50 p | 0.2 | ALP422 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.1 | | L | |
| **Batch:** 6197022 | THISO_IE_PRECIP_AEA | | | **Work Order:** | M8XM51AC | | **Report DB ID:** | M8XM51CS | | | | | |
| TH-230 | 1.40E+01 | | 1.5E+00 | 2.9E+00 | 2.23E-01 | pCi/L | 91% | 1.12E+01 | 1.2E-01 | 125% | 8/5/16 09:32 p | 0.2019 | ALP427 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.2 | | L | |
| **Batch:** 6197015 | TRITIUM_DIST_LSC | | | **Work Order:** | M8XMJ1AC | | **Report DB ID:** | M8XMJ1CS | | | | | |
| H-3 | 3.17E+03 | | 2.3E+02 | 2.6E+02 | 3.24E+02 | pCi/L | 100% | 2.71E+03 | 8.1E+01 | 117% | 7/29/16 02:40 p | 0.00502 | LSC9 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.2 | | L | |
| **Batch:** 6197014 | GAMMA LL: COBALT 60 LL | | | **Work Order:** | M8XMG1AC | | **Report DB ID:** | M8XMG1CS | | | | | |
| CO-60 | 4.23E+01 | | 9.1E+00 | 9.1E+00 | 4.08E+00 | pCi/L | | 3.93E+01 | 3.4E-01 | 108% | 7/27/16 06:27 p | 2.0009 | GER12$1 |
| | | | | | | | **Rec Limits:** | 70 | 130 | 0.1 | | L | |

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

**rptSTLRchLcs**
**V5.6 A2002**

# FORM II

## LCS RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL | Report Unit | Yield | Expected | Expected Uncert | Recovery, Bias | Analysis, Prep Date | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CS-137 | 4.79E+01 | | 8.1E+00 | 8.1E+00 | 3.68E+00 | pCi/L | | 5.03E+01 | 5.7E-01 | 95% | 7/27/16 06:27 p | 2.0009 | GER12$1 |
| | | | | | | | Rec Limits: | 70 | 130 | 0.0 | | L | |
| EU-152 | 9.18E+01 | | 1.7E+01 | 1.7E+01 | 9.94E+00 | pCi/L | | 8.04E+01 | 1.1E+00 | 114% | 7/27/16 06:27 p | 2.0009 | GER12$1 |
| | | | | | | | Rec Limits: | 70 | 130 | 0.1 | | L | |
| **Batch:** 6197021 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XM21AC | | **Report DB ID:** | M8XM21CS | | | | | |
| Alpha | 2.27E+01 | | 1.6E+00 | 5.8E+00 | 6.78E-01 | pCi/L | 100% | 2.09E+01 | 2.1E-01 | 109% | 8/5/16 11:45 p | 0.216 | GPC23D |
| | | | | | | | Rec Limits: | 70 | 130 | 0.1 | | L | |
| **Batch:** 6197020 | 9310_ALPHABETA_GPC | | | **Work Order:** | M8XM01AC | | **Report DB ID:** | M8XM01CS | | | | | |
| Beta | 2.03E+01 | | 1.6E+00 | 3.0E+00 | 1.42E+00 | pCi/L | 100% | 2.17E+01 | 1.6E-01 | 93% | 8/3/16 09:09 p | 0.2083 | GPC31B |
| | | | | | | | Rec Limits: | 70 | 130 | -0.1 | | L | |
| **Batch:** 6197013 | I129_SEP_LEPS_GS | | | **Work Order:** | M8XMD1AC | | **Report DB ID:** | M8XMD1CS | | | | | |
| I129 | 1.70E+01 | | 2.1E+00 | 2.1E+00 | 6.15E-01 | pCi/L | 97% | 1.92E+01 | 3.1E-01 | 89% | 8/1/16 01:54 p | 2.0008 | LEP5$1 |
| | | | | | | | Rec Limits: | 70 | 130 | -0.1 | | L | |
| **Batch:** 6197019 | RATOT_AEAGEA | | | **Work Order:** | M8XMW1AC | | **Report DB ID:** | M8XMW1CS | | | | | |
| TOTAL ALPHA RA | 6.24E+00 | | 9.9E-01 | 1.7E+00 | 4.29E-01 | pCi/L | 85% | 6.33E+00 | 7.2E-02 | 98% | 8/8/16 12:47 p | 0.5011 | GPC24D |
| | | | | | | | Rec Limits: | 70 | 130 | 0.0 | | L | |
| **Batch:** 6197018 | SRISO_SEP_PRECIP_GPC | | | **Work Order:** | M8XMT1AC | | **Report DB ID:** | M8XMT1CS | | | | | |
| STRONTIUM | 1.58E+01 | | 2.0E+00 | 4.1E+00 | 1.42E+00 | pCi/L | 80% | 1.40E+01 | 9.9E-02 | 113% | 8/4/16 08:14 p | 0.5011 | GPC32C |
| | | | | | | | Rec Limits: | 70 | 130 | 0.1 | | L | |
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XMP1AC | | **Report DB ID:** | M8XMP1CS | | | | | |
| TOTAL-URANIUM | 3.44E+00 | | | 3.5E-01 | 8.03E-02 | ug/L | | 3.49E+00 | 1.9E-02 | 99% | 8/10/16 03:53 p | 26.1 | KPAW3 |
| | | | | | | | Rec Limits: | 70 | 130 | 0.0 | | ML | |
| **Batch:** 6197017 | UTOT_KPA | | | **Work Order:** | M8XMP1AD | | **Report DB ID:** | M8XMP1DS | | | | | |

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

**rptSTLRchLcs**
**V5.6 A2002**

# FORM II

## LCS RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc

**Matrix:** WATER

**SDG:** J02198

**Report No. :** 69157

| Parameter | Result | Qual | Count Error ( 2 s) | CSU ( 2 s) | MDL | Report Unit | Yield | Expected | Expected Uncert | Recovery, Bias | Analysis, Prep Date | Aliquot Size | Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL-URANIUM | 3.59E+01 | | | 4.5E+00 | 8.38E-02 | ug/L | | 3.62E+01 | 2.0E-01 | 99% | 8/10/16 04:00 p | 25.0 | KPAW3 |
| | | | | | | | Rec Limits: | 70 | 130 | 0.0 | | ML | |
| **Batch:** 6197016 | TC99_ETVDSK_LSC | | | **Work Order:** | M8XMM1AC | | **Report DB ID:** | M8XMM1CS | | | | | |
| TC-99 | 1.01E+02 | | 6.6E+00 | 7.2E+00 | 9.18E+00 | pCi/L | 100% | 1.07E+02 | 6.3E-01 | 94% | 8/2/16 11:19 p | 0.1286 | LSC10 |
| | | | | | | | Rec Limits: | 70 | 130 | -0.1 | | L | |

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

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

rptSTLRchLcs
V5.6 A2002

# FORM II

## MATRIX SPIKE RESULTS

**Date:** 15-Aug-16

**Lab Name:** TestAmerica Inc **SDG:** J02198

**Lot-Sample No.:** J6G140414-1, J1V931 **Report No. :** 69157 **Matrix:** WATER

| Parameter | SpikeResult, Orig Rst | Qual | Count Error (2 s) | CSU (2 s) | MDC\|MDA | Rpt Unit | Yield | Rec-overy | Expected, Uncert | Analysis, Prep Date | Aliquot Size | Analy Method, Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch:** 6197017 | **Work Order:** M8XLQ1AT | | | **Report DB ID:** M8XLQ1TW | | | **Orig Sa DB ID:** 9M8XLQ10 | | | | | |
| TOTAL-URANIUM | 4.32E+01 | | | 1.2E+02 | 7.23E-02 | ug/L | | 138.57% | 3.12E+01 | 8/10/16 03:42 p | 29.0 | UTOT_KPA |
| | 6.50E+02 | | | | | | | | 1.7E-01 | | ML | KPAW3 |

**Number of Results:** 1

**Comments:**

TestAmerica Inc
rptSTLRchMs
V5.6 A2002

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

# FORM II

## MATRIX SPIKE RESULTS

Date: 15-Aug-16

**Lab Name:** TestAmerica Inc **SDG:** J02198

**Lot-Sample No.:** J6G140414-2, J1V932 **Report No. :** 69157 **Matrix:** WATER

| Parameter | SpikeResult, Orig Rst | Qual | Count Error (2 s) | CSU (2 s) | MDC\|MDA | Rpt Unit | Yield | Rec-overy | Expected, Uncert | Analysis, Prep Date | Aliquot Size | Analy Method, Primary Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Batch: 6197016 | Work Order: M8XLR1AX | | | Report DB ID: M8XLR1XW | | | Orig Sa DB ID: 9M8XLR10 | | | | | |
| TC-99 | 4.60E+02 | | 1.4E+01 | 2.3E+01 | 8.94E+00 | pCi/L | 100% | 86.52% | 5.32E+02 | 8/2/16 08:05 p | 0.1319 | TC99_ETVDSK_LSC |
| | 2.20E+02 | | | | | | | | 3.2E+00 | | L | LSC10 |

**Number of Results:** 1

**Comments:**

TestAmerica Inc
rptSTLRchMs
V5.6 A2002

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/12/2016 10:15:26 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197024; RPUISO Pulso by ALP
**SDG, Matrix:** J02198; WATER

| | |
|---|---|
| **1.0 COC** | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | Yes ✓ No N/A |
| **2.0 QC Batch** | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | Yes ✓ No N/A |
| 2.2 Are the QC appropriate for the analysis included in the batch? | Yes ✓ No N/A |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | Yes ✓ No N/A |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | Yes ✓ No N/A |
| **3.0 QC & Samples** | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | Yes ✓ No N/A |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | Yes ✓ No N/A |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | Yes No N/A ✓ |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | Yes ✓ No N/A |
| 3.5 Are the sample yields and MDAs within contract limits? | Yes ✓ No N/A |
| **4.0 Raw Data** | |
| 4.1 Were results calculated in the correct units? | Yes ✓ No N/A |
| 4.2 Were analysis volumes entered correctly? | Yes ✓ No N/A |
| 4.3 Were Yields entered correctly? | Yes ✓ No N/A |
| 4.4 Were spectra reviewed/meet contractual requirements? | Yes ✓ No N/A |
| 4.5 Were raw counts reviewed for anomalies? | Yes ✓ No N/A |
| **5.0 Other** | |
| 5.1 Are all nonconformances included and noted? | Yes No N/A ✓ |
| 5.2 Are all required forms filled out? | Yes ✓ No N/A |
| 5.3 Was the correct methodology used? | Yes ✓ No N/A |
| 5.4 Was transcription checked? | Yes ✓ No N/A |
| 5.5 Were all calculations checked at a minimum frequency? | Yes ✓ No N/A |
| 5.6 Are worksheet entries complete and correct? | Yes ✓ No N/A |
| 6.0 Comments on any No response: | |

**First Level** [signature] **Date** 8/12/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 6197024

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

Comments on any "No" response:
CRDL = 1.0 pCi/L

Second Level Review: Rhonda [illegible] Date: 8/15/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/8/2016 10:22:04 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197022; RTHISO Thlso by ALP
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/8/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 6197022

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

Comments on any "No" response:
CRDL = 1.0 pCi/L

Second Level Review: [signature] Date: 8/8/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/12/2016 10:24:58 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197023; RUISO UIso by ALP
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** Jodie C **Date** 8/12/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 601 97023

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | ✓ | | |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Nonconformances (NCM) included and noted? | ✓ RW 8/15/16 | | ✓ |
| 2. Was the correct methodology used? | ✓ | | |
| 3. Were units checked? | ✓ | | |

Comments on any "No" response:
CRDL = 1.0 pCi/L

Second Level Review: [signature] Date: 8/15/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/11/2016 10:01:01 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197021; RALPHA-A Alpha by GPC-Am
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/11/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 6197021

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

Comments on any "No" response:
CRDL = 3.0 pCi/L
See NCM #: 10-33115

Second Level Review: [signature] Date: 8/11/16

DR-001, Rev. 01, 10/30/2013

# Clouseau
# Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-33115**
NCM Initiated By: Lisa Antonson
Date Opened: 08/11/2016
Date Closed:

Classification: **Anomaly**
Status: **QAREVIEW**
Production Area: Environmental - Prep
Tests: Alpha by GPC-Am
Lot #'s (Sample #'s): J6G140414 (1,2), J6G150000 (21),
QC Batches: 6197021,

Nonconformance: MDA not met
Subcategory: Data accepted

## Problem Description / Root Cause

| Name | Date | Description |
|---|---|---|
| Lisa Antonson | 08/11/2016 | MDA is not met for the samples in this batch due to reduced aliquot based on weight screens. Sample results exceed MDA, data accepted.<br><br>The dups did not agree in the first count of this batch. A recount brought them within limits. |

## Corrective Action

| Name | Date | Corrective Action |
|---|---|---|
| Lisa Antonson | 08/11/2016 | None |

## Client Notification Summary

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

## Quality Assurance Verification

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

## Approval History

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

Date Printed: 8/11/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/4/2016 1:21:23 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197020; RBETA-SR Beta by GPC-Sr/Y
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/4/16

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QAS_RADCALCv4.9.4

Page 1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** C197020

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

Comments on any "No" response:
CRDL = 4.0 pCi/L
See NCM #: 16-33087

Second Level Review: [signature] Date: 8/5/16

DR-001, Rev. 01, 10/30/2013

# Clouseau
# Nonconformance Memo

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NCM #: **10-33087**
NCM Initiated By: Lisa Antonson
Date Opened: 08/04/2016
Date Closed:

Classification: **Anomaly**
Status: **QAREVIEW**
Production Area: Environmental - Prep
Tests: Beta by GPC-Sr/Y
Lot #'s (Sample #'s): J6G140414 (1,2), J6G150000 (20),
QC Batches: 6197020,

Nonconformance: MDA not met
Subcategory: Data accepted

## Problem Description / Root Cause

| Name | Date | Description |
|---|---|---|
| Lisa Antonson | 08/04/2016 | MDA exceeds CRDL for the client samples in this batch due to reduced aliquots based on weight screens. |

## Corrective Action

| Name | Date | Corrective Action |
|---|---|---|
| Lisa Antonson | 08/04/2016 | None |

## Client Notification Summary

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

## Quality Assurance Verification

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

## Approval History

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

Date Printed: 8/4/2016

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# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/5/2016 9:10:38 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197018; RSRTOT SrTot by GPC
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** Jodie G **Date** 8/5/16

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

**Batch Number:** 619708

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

Comments on any "No" response:
CRDL = 2.0 pCi/L

Second Level Review: [signature] Date: 8/5/16

DR-001, Rev. 01, 10/30/2013

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# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/9/2016 11:29:30 AM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197019; RRATOT RaTot by GPC
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/9/16

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THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 6197019

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

Comments on any "No" response:
CRDL = 1.0 pCi/L

Second Level Review: [signature] Date: 8/9/16 [illegible] 8/9/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/28/2016 12:05:44 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197014; RGAMMA Gamma by GER
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 7/28/16

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

**Batch Number:** 6197014

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

Comments on any "No" response:

Second Level Review: [signature] Date: 8/1/16

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THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/4/2016 1:35:22 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197013; RGAMLEPS Gamma by LEPS
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** Jodie G **Date** 8/4/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 0197013

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

Comments on any "No" response:
CRDL = 10pCi/L

Second Level Review: [signature] Date: 8/5/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/8/2016 1:12:51 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197016; RTC99 Tc-99 by LSC
**SDG, Matrix:** J02198; WATER

| | |
|---|---|
| **1.0 COC** | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | Yes ✓ No N/A |
| **2.0 QC Batch** | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | Yes ✓ No N/A |
| 2.2 Are the QC appropriate for the analysis included in the batch? | Yes ✓ No N/A |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | Yes ✓ No N/A |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | Yes No N/A ✓ |
| **3.0 QC & Samples** | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | Yes ✓ No N/A |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | Yes ✓ No N/A |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | Yes ✓ No N/A |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | Yes ✓ No N/A |
| 3.5 Are the sample yields and MDAs within contract limits? | Yes ✓ No N/A |
| **4.0 Raw Data** | |
| 4.1 Were results calculated in the correct units? | Yes ✓ No N/A |
| 4.2 Were analysis volumes entered correctly? | Yes ✓ No N/A |
| 4.3 Were Yields entered correctly? | Yes No N/A ✓ |
| 4.4 Were spectra reviewed/meet contractual requirements? | Yes No N/A ✓ |
| 4.5 Were raw counts reviewed for anomalies? | Yes ✓ No N/A |
| **5.0 Other** | |
| 5.1 Are all nonconformances included and noted? | Yes No N/A ✓ |
| 5.2 Are all required forms filled out? | Yes ✓ No N/A |
| 5.3 Was the correct methodology used? | Yes ✓ No N/A |
| 5.4 Was transcription checked? | Yes ✓ No N/A |
| 5.5 Were all calculations checked at a minimum frequency? | Yes No N/A ✓ |
| 5.6 Are worksheet entries complete and correct? | Yes ✓ No N/A |
| 6.0 Comments on any No response: | |

**First Level** [signature] **Date** 8/8/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 697016

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

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

Second Level Review: [signature] Date: 8/29/16

DR-001, Rev. 01, 10/30/2013

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THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/4/2016 1:25:57 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197015; RTRITIUM H-3 by LSC
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/4/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 619705

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

Comments on any "No" response:
CRDL = 400 pCi/L

Second Level Review: Rhonda Wfay Date: 8/5/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/8/2016 1:35:40 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197012; RI131GPC C-14 Digestion
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/8/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 619-7012

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

Comments on any "No" response:
CRDL = 200pCi/L

Second Level Review: [signature] Date: 8/8/16

DR-001, Rev. 01, 10/30/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/11/2016 12:00:14 PM

**Lot No., Due Date:** J6G140414; 08/02/2016
**Client, Site:** 127642; S00W235B00 HANFORD
**QC Batch No., Method Test:** 6197017; RUNAT UNat by KPA
**SDG, Matrix:** J02198; WATER

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

6.0 Comments on any No response:

**First Level** [signature] **Date** 8/11/16

TestAmerica Richland
QAS_RADCALCv4.9.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

**Batch Number:** 6197017

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

Comments on any "No" response:
CRDL = 1.0 ug/L

Second Level Review: [signature] Date: 8/11/16

DR-001, Rev. 01, 10/30/2013

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-022



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: RRC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

Other Labs Shipped To: TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| Preservation | Cool <=6C | None | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | None | HNO3 to pH <2 | None | HNO3 to pH <2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Type of Container | G/P | G/P | G/P | G/P | G/P | G/P | G/P | G/P | P | G/P |
| No. of Container(s) | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 2 | 2 |
| Volume | 500mL | 125mL | 1000mL | 1000mL | 250mL | 500mL | 1000mL | 1000mL | 250mL | 1000mL |
| Sample Analysis | Chromium Hex - 7196 | Carbon-14 | See item (7) in Special Instructions | Gross Alpha; Gross Beta | Total Uranium | Technetium-99 | I-129 Low Level | Total Radium | Tritium - H3 | Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V931 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
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**CHAIN OF POSSESSION** — **Sign/Print Names**

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| J. Downing / J. Downing WAI | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1515 | J. Bock, TARL | 7-12-16 1515 |
| | | | |
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| | | | |

**FINAL SAMPLE DISPOSITION**: Disposal Method | Disposed By | Date/Time

**SPECIAL INSTRUCTIONS**

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

M8XLQ

J6G140414

# 3452

J02198

J6G140414

REVIEWED BY KW DATE 7/12/16

300-3452 COC

WCH-EE-011

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-009-022 | Page 2 of 2 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

Other Labs Shipped To: TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | HNO3 to pH <2 | | | | | | | | | | | |
| Type of Container | G/P | | | | | | | | | | | |
| No. of Container(s) | 2 | | | | | | | | | | | |
| Volume | 1000mL | | | | | | | | | | | |
| Sample Analysis | Strontium-89,90 -- Total Sr | | | | | | | | | | | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V931 | WATER | 7-12-16 | 0720 | ✓ | | | | | | | | | |
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**CHAIN OF POSSESSION** — **Sign/Print Names**

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing / M. Downing WAI | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1515 | Jack J. Beck TALR | 7-12-16 1515 |
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**FINAL SAMPLE DISPOSITION**: Disposal Method | Disposed By | Date/Time

**SPECIAL INSTRUCTIONS**

J6G140414

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-023



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |
| Other Labs Shipped To: TestAmerica Denver | | | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool <=6C | None | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | None | HNO3 to pH <2 | None | HNO3 to pH <2 |
| Type of Container | G/P | G/P | G/P | G/P | G/P | G/P | G/P | G/P | P | G/P |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| Volume | 500mL | 125mL | 1000mL | 1000mL | 250mL | 500mL | 1000mL | 1000mL | 250mL | 1000mL |
| Sample Analysis | Chromium Hex - 7196 | Carbon-14 | See item (7) in Special Instructions | Gross Alpha; Gross Beta | Total Uranium | Technetium-99 | I-129 Low Level | Total Radium | Tritium - H3 | Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V932 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | | | | | | | | |
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**CHAIN OF POSSESSION** — **Sign/Print Names**

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing / M. Downing (VAL) | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson (Ford) | 7-12-16 1515 | J. Bock, TARL / Bock | 7-12-16 / 1515 |
| 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 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

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

J6G140414 M8XLR

#3452
J02198

J6G140414

REVIEWED BY KW
DATE 7/12/16

WCH-EE-011

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-009-023 | Page 2 of 2 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

Other Labs Shipped To: TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | HNO3 to pH <2 | | | | | | | | | | | |
| Type of Container | G/P | | | | | | | | | | | |
| No. of Container(s) | 1 | | | | | | | | | | | |
| Volume | 1000mL | | | | | | | | | | | |
| Sample Analysis | Strontium-89,90 -- Total Sr | | | | | | | | | | | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V932 | WATER | 7-12-16 | 0720 ~~0945~~ TRE 7-12-16 | ✓ | | | | | | | | | |
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| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| WAI M. Downing | 7-12-16 0945 | T.R. Edmundson | 7-12-16 0945 |
| WCH T.R. Edmundson | 7-12-16 1515 | J. Bock, TARL | 7-12-16/1515 |
| | | | |
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| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

Jdb 140414

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Sample Check-in List

Date/Time Received: 7-12-16 / 1515 Container GM Screen Result: (Airlock) 0 cpm Initials [ ]
Sample GM Screen Result (Sample Receiving) 0 cpm Initials [ ]

Client: WCH SDG #: J02198 SAF #: RC-009 NA [ ]

Lot Number: #3452; 3661140414

Chain of Custody # RC-009-022; 023

Shipping Container ID or Air Bill Number : _____ NA [ ]

Samples received inside shipping container/cooler/box Yes [ ] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: 7.8 °C Ice NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: 3x125mLp; 6x250mLp; 6x500mLp; 22xLp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
9. Samples have: ___tape ___hazard labels ___custody seals ___appropriate sample labels
10. Matrix: ___A (FLT, Wipe, Solid, Soil) ___I (Water) ___S (Air, Niosh 7400) ___T (Biological, Ni-63)
11. Samples:
___are in good condition ___are leaking ___are broken
___have air bubbles (Only for samples requiring no head space) ___Other _____
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of $HNO_3$ added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
14. Description of anomalies (include sample numbers): NA [ ] _____
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [ ]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

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

Sample Check-in List completed by Sample Custodian:
Signature: _____ Date: 7-12-16

Client Notification needed? Yes [ ] No [X] Date: _____
By: _____
Person contacted: _____

[X] No action necessary; process as is

Project Manager _____ Date 7-14-16

7/28/2016 9:14:59 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

6D Pu Prp PRP004, Sep ALP002(ALP015)
SO Plutonium-238,239/40 by Alpha Spec
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

**Batch: 6197024 WATER pCi/L PM, Quote: RW2, 27023**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSO

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AK<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 200.00g,in | 200.00g | PUTC14606<br>07/07/16,pd<br>01/01/10,r | | | | 50 | 24 ~~38~~<br>8/10/16 JM | 1332 8/10/16 | TM | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | | Beta: |
| 2 M8XLQ-1-A2-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 200.30g,in | 200.30g | PUTC14605<br>07/07/16,pd<br>01/01/10,r | | | | | 39 | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | | Beta: |
| 3 M8XLR-1-AK<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 201.00g,in | 201.00g | PUTC14608<br>07/07/16,pd<br>01/01/10,r | | | | | 42 | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | Alpha: | | | Beta: |
| 4 M8XNC-1-AA-B<br>J6G150000-24-BLK<br>07/28/2016 09:13 pd | | | 202.00g,in | 202.00g | PUTC14607<br>07/07/16,pd<br>01/01/10,r | | | | | 43 | | | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | Alpha: | | | Beta: |
| 5 M8XNC-1-AC-C<br>J6G150000-24-LCS<br>07/28/2016 09:14 pd | | | 202.70g,in | 202.70g | PUSH0490<br>06/23/16,pd<br>01/01/10,r | | | | | 44 | | | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | Alpha: | | | Beta: |

7/28/2016 9:15:00 AM

# Sample Preparation/Analysis

6D Pu Prp PRP004, Sep ALP002(ALP015)
SO Plutonium-238,239/40 by Alpha Spec
5I CLIENT: HANFORD

Balance Id:1120403183,,

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197024 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 "
M8XNC-BLK CS-15-00102,P-16-00282,omments

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AK-SAMP Constituent List:
  PU-238      RDL:1.00E+00    pCi/L    LCL:       UCL:       RPD:       PU-239     RDL:1.00E+00    pCi/L    LCL:70     UCL:130    RPD:20
  Pu-242      RDL:            pCi/L    LCL:20     UCL:105    RPD:20
M8XNC1AA-BLK:
  PU-238      RDL:1.00E+00    pCi/L    LCL:       UCL:       RPD:       PU-239     RDL:1.00E+00    pCi/L    LCL:       UCL:       RPD:
  Pu-242      RDL:            pCi/L    LCL:20     UCL:105    RPD:20
M8XNC1AC-LCS:
  PU-239      RDL:1           pCi/L    LCL:70     UCL:130    RPD:20     Pu-242     RDL:            pCi/L    LCL:20     UCL:105    RPD:20

M8XLQ1AK-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XNC1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XNC1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

8/12/2016 10:14:22 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/13/2015, 8/17/2016, Batch: '6197024', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197024** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 9:07:35 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:16:02 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 9:07:35 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 9:14:59 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | FussnerC | Sep2C | 8/8/2016 12:14:25 PM | RL-ALP-016 REVISION 7 |
| *SC* | | | WoodT | InCnt1 | 8/8/2016 1:33:51 PM | RL-CI-008 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/11/2016 9:25:28 PM | RL-CI-008 REVISION 6 |
| *SC* | | | carnesj | Rev1C | 8/12/2016 10:13:51 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 9:14:59 | | |
| *AC* | | | **FussnerC** | 8/8/2016 12:14:25 PM | | |
| *AC* | | | **WoodT** | 8/8/2016 1:33:51 PM | | |
| *AC* | | | **BullJ** | 8/11/2016 9:25:28 PM | | |
| *AC* | | | **carnesj** | 8/12/2016 10:13:51 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 6

ICOCFractions v4.9.4

7/28/2016 9:19:17 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

9N Thiso Prp PRP004, Sep ALP005(ALP016)
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

**Batch: 6197022** **WATER** **pCi/L** **PM, Quote: RW2, 27023**

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AE<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 205.90g,in<br>AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | 205.90g | THTC32446<br>07/08/16,pd<br>06/03/16,r | | | | | Scr: 423 | 8/4/1600 Alpha: 0.312 | | Beta: |
| 2 M8XLQ-1-A0-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 203.60g,in<br>AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | 203.60g | THTC32445<br>07/08/16,pd<br>06/03/16,r | | | | | Scr: 424 | Alpha: | | Beta: |
| 3 M8XLR-1-AE<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 205.90g,in<br>AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | 205.90g | THTC32447<br>07/08/16,pd<br>06/03/16,r | | | | | Scr: 425 | Alpha: | | Beta: |
| 4 M8XM5-1-AA-B<br>J6G150000-22-BLK<br>07/28/2016 09:18 pd | | | 202.30g,in<br>AmtRec: #Containers: 1 | 202.30g | THTC32448<br>07/08/16,pd<br>06/03/16,r | | | | | Scr: 426 | Alpha: | | Beta: |
| 5 M8XM5-1-AC-C<br>J6G150000-22-LCS<br>07/28/2016 09:18 pd | | | 201.90g,in<br>AmtRec: #Containers: 1 | 201.90g | THSI4555<br>07/08/16,pd<br>06/03/16,r | | | | | Scr: 427 | Alpha: D ANAL | | Beta: |

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 5 Prep_SamplePrep v4.8.69

7/28/2016 9:19:18 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

9N Thiso Prp PRP004, Sep ALP005(ALP016)
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197022 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 "

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AE-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-228 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | Th-230 | RDL:1.00E+00 | pCi/L | LCL:70 | UCL:130 | RPD:20 |
| Th-232 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | Th-234 | RDL: | pCi/L | LCL:20 | UCL:115 | RPD:20 |

M8XM51AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-228 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | Th-230 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |
| Th-232 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | Th-234 | RDL: | pCi/L | LCL:20 | UCL:115 | RPD:20 |

M8XM51AC-LCS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-230 | RDL:1 | pCi/L | LCL:70 | UCL:130 | RPD:20 | Th-234 | RDL: | pCi/L | LCL:20 | UCL:115 | RPD:20 |

M8XLQ1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM51AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM51AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/8/2016 10:21:12 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/9/2015, 8/13/2016, Batch: '6197022', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| 6197022 | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 9:15:13 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:57 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 9:15:13 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 9:19:21 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | CarnesM | Sep1C | 8/3/2016 3:47:13 PM | RL-ALP-001 REVISION 5 |
| *SC* | | | BullJ | InCnt1 | 8/5/2016 12:12:02 PM | RL-CI-008 REVISION 6 |
| *SC* | | | FussnerC | Sep2C | 8/5/2016 1:13:03 PM | RL-ALP-016 REVISION 7 |
| *SC* | | | DawkinsO | CalcC | 8/7/2016 9:14:32 PM | RL-CI-008 REVISION 6 |
| *SC* | | | antonsonl | Rev1C | 8/8/2016 10:20:54 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 9:19:21 | | |
| *AC* | | | **CarnesM** | 8/3/2016 3:47:13 PM | | |
| *AC* | | | **BullJ** | 8/5/2016 12:12:02 PM | | |
| *AC* | | | **FussnerC** | 8/5/2016 1:13:03 PM | | |
| *AC* | | | **DawkinsO** | 8/7/2016 9:14:32 PM | | |
| *AC* | | | **antonsonl** | 8/8/2016 10:20:54 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 7

ICOCFractions v4.9.4

7/28/2016 9:23:53 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

7Y Uiso Prp PRP004/PRP010, Sep ALP004(ALP015)
SR Uranium-234,235,238 by Alpha Spec
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197023 WATER pCi/L** PM, Quote: RW2, 27023

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AL<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 202.40g,in | 202.40g | UITC34024<br>06/24/16,pd<br>06/15/01,r | | | | | 6 | 1740 | 8/9/16 | TMB |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | | Beta: |
| 2 M8XLQ-1-A1-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 203.70g,in | 203.70g | UITC34031<br>07/15/16,pd<br>06/15/01,r | | | | 413 | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | | Beta: |
| 3 M8XLR-1-AL<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 202.10g,in | 202.10g | UITC34032<br>07/15/16,pd<br>06/15/01,r | | | | 414 | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | Alpha: | | | Beta: |
| 4 M8XM7-1-AA-B<br>J6G150000-23-BLK<br>07/28/2016 09:22 pd | | | 204.50g,in | 204.50g | UITC34033<br>07/15/16,pd<br>06/15/01,r | | | | 419 | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | | | Beta: |
| 5 M8XM7-1-AC-C<br>J6G150000-23-LCS<br>07/28/2016 09:23 pd | | | 200.00g,in | 200.00g | UISH2119<br>07/13/16,pd<br>06/15/01,r | | | | 422 | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | | | Beta: |

7/28/2016 9:23:54 AM

# Sample Preparation/Analysis

**7Y Uiso Prp PRP004/PRP010, Sep ALP004(ALP015)**
**SR Uranium-234,235,238 by Alpha Spec**
**5I CLIENT: HANFORD**

**Balance Id:1120403183,,**

**Pipet #:** _____

**AnalyDueDate: 08/02/2016**

**Sep1 DT/Tm Tech:**

**Batch: 6197023** **pCi/L**
SEQ Batch, Test: None

**Sep2 DT/Tm Tech:**

**Prep Tech: WattN**

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Urani m aliqout batch # 6197023 7/28/16 N.W"
M8XM7-BLK CommentsS-15-00102,P-16-00282

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AL-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |

M8XM71AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |

M8XM71AC-LCS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | Uranium | RDL: | pCi/L | LCL:70 | UCL:130 | RPD:20 |

M8XLQ1AL-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM71AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM71AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

*** RE-COUNT REQUEST ***

DUE DATE 8/2/16

CUSTOMER UCH

ANALYSIS Uiso

MATRIX water

LOT NUMBER J16G1L104LL

SAMPLE DELIVERY GROUP

OLD BATCH NUMBER L197023

NEW BATCH NUMBER

100

| LAB SAMPLE ID | CLIENT ID | REASON FOR REQUEST & ANALYSIS COMMENTS |
|---|---|---|
| 1) M8XLQ1AL | | > U235 out of limits |
| 2) M8XLQ1A1 X | | |
| 3) | | |
| 4) | | |
| 5) | | |
| 6) | | |
| 7) | | |
| 8) | | |
| 9) | | |
| 10) | | |
| 11) | | |
| 12) | | |
| 13) | | |
| 14) | | |
| 15) | | |
| 16) | | |
| 17) | | |
| 18) | | |
| 19) | | |
| 20) | | |

RC-126 Rev 6, 9/10

8/11/2016 4:01:49 PM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

7Y Ulso Prp PRP004/PRP010, Sep ALP004(ALP015)
SR Uranium-234,235,238 by Alpha Spec
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197023 WATER pCi/L** PM, Quote: RW2, 27023

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: CarnesM,WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AL<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 202.40g,in | 202.40g | UITC34024<br>06/24/16,pd<br>06/15/01,r | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 M8XLQ-1-A1-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 203.70g,in | 203.70g | UITC34031<br>07/15/16,pd<br>06/15/01,r | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 M8XLQ-2-AL<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | | | | | | | | 3 | 1806 | 8/11/16 | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 M8XLQ-2-A1-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | | | | | | | | 4 | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 5 M8XLR-1-AL<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 202.10g,in | 202.10g | UITC34032<br>07/15/16,pd<br>06/15/01,r | | | | | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 6 M8XM7-1-AA-B<br>J6G150000-23-BLK<br>07/28/2016 09:22 pd | | | 204.50g,in | 204.50g | UITC34033<br>07/15/16,pd<br>06/15/01,r | | | | | | | | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |
| 7 M8XM7-1-AC-C<br>J6G150000-23-LCS<br>07/28/2016 09:23 pd | | | 200.00g,in | 200.00g | UISH2119<br>07/13/16,pd<br>06/15/01,r | | | | | | | | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 7 ICOC v4.9.0

8/11/2016 4:01:51 PM

# Sample Preparation/Analysis

**7Y Ulso Prp PRP004/PRP010, Sep ALP004(ALP015)**
**SR Uranium-234,235,238 by Alpha Spec**
**5I CLIENT: HANFORD**

**Balance Id:1120403183,,**

**Pipet #:** _____

**AnalyDueDate: 08/02/2016**

**Sep1 DT/Tm Tech:**

**Batch: 6197023** **pCi/L**
SEQ Batch, Test: None

**Sep2 DT/Tm Tech:**

**Prep Tech: WattN**

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Urani m aliqout batch # 6197023 7/28/16 N.W"
M8XM7-BLK CommentsS-15-00102,P-16-00282

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AL-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |

M8XM71AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1 | pCi/L | LCL: | UCL: | RPD: |

M8XM71AC-LCS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | Uranium | RDL: | pCi/L | LCL:70 | UCL:130 | RPD:20 |

M8XLQ1AL-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM71AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM71AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/12/2016 11:05:04 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/13/2015, 8/17/2016, Batch: '6197023', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197023** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 9:19:42 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:59 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 9:19:42 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 9:22:46 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | CarnesM | Sep2C | 8/8/2016 2:01:25 PM | RL-ALP-015 REVISION 7 |
| *SC* | | | MohammedJ | InCnt1 | 8/8/2016 2:50:55 PM | RL-CI-008 REVISION 6 |
| *SC* | | | BullJ | InCnt1 | 8/8/2016 2:51:43 PM | RL-CI-008 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/9/2016 8:22:44 PM | RL-CI-008 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/11/2016 9:25:37 PM | RL-CI-008 REVISION 6 |
| *SC* | | | carnesj | Rev1C | 8/12/2016 10:23:58 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 9:22:46 | | |
| *AC* | | | **CarnesM** | 8/8/2016 2:01:25 PM | | |
| *AC* | | | **MohammedJ** | 8/8/2016 2:50:55 PM | | |
| *AC* | | | **BullJ** | 8/8/2016 2:51:43 PM | | |
| *AC* | | | **BullJ** | 8/9/2016 8:22:44 PM | | |
| *AC* | | | **BullJ** | 8/11/2016 9:25:37 PM | | |
| *AC* | | | **carnesj** | 8/12/2016 10:23:58 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 8

ICOCFractions v4.9.4

8/3/2016 10:36:18 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

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

AZ Gross Alpha Prp GPC001
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197021 WATER pCi/L** PM, Quote: RW2, 27023

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 **M8XLQ-1-AA** J6G140414-1-SAMP 07/12/2016 07:20 | | | 26.50g,in | 26.50g | | | | 32.70mg | 240 | 24B | 8/5/16 0900 ~~0144~~ 2109 | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | | Scr: | Alpha: | | Beta: |
| 2 **M8XLQ-1-AX-X** J6G140414-1-DUP 07/12/2016 07:20 | | | 27.10g,in | 27.10g | | | | 38.60mg | 240 | 24C | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | | Scr: | Alpha: | | Beta: |
| 3 **M8XLR-1-AA** J6G140414-2-SAMP 07/12/2016 07:20 | | | 25.60g,in | 25.60g | | | | 36.40mg | 240 | 23A | 0144 8/5/16 OK | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | | Scr: | Alpha: | | Beta: |
| 4 **M8XM2-1-AA-B** J6G150000-21-BLK 07/29/2016 10:22 pd | | | 202.60g,in | 202.60g | | | | 0.10mg | 240 | 23C | | | |
| | | | AmtRec: | #Containers: 1 | | | | | | Scr: | Alpha: | | Beta: |
| 5 **M8XM2-1-AC-C** J6G150000-21-LCS 07/29/2016 10:22 pd | | | 216.00g,in | 216.00g | ASD5953 04/14/16,pd 04/04/05,r | | | 0.50mg | 240 | 23D | | | |
| | | | AmtRec: | #Containers: 1 | | | | | | Scr: | Alpha: | | Beta: |

8/3/2016 10:36:20 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

AZ Gross Alpha Prp GPC001
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197021 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LedesmaA,WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Uranium aliqout batch # 6197023 7/28/16 N.W"
M8XM2-BLK CommentsS-15-00102,P-16-00282," Aliqouts reduced due to weight screen results 7/29/16 N.W",P-16-0025,P-16-00237

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AA-SAMP Constituent List:
  ALPHA       RDL:3          pCi/L     LCL:        UCL:        RPD:
M8XM21AA-BLK:
  ALPHA       RDL:3          pCi/L     LCL:        UCL:        RPD:
M8XM21AC-LCS:
  Am-241      RDL:           pCi/L     LCL:70      UCL:130     RPD:20

M8XLQ1AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XM21AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XM21AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

*** RE-COUNT REQUEST ***

DUE DATE 8/21/16

CUSTOMER UCH

ANALYSIS Alpha

MATRIX Water

LOT NUMBER JEG1K04H1

SAMPLE DELIVERY GROUP

OLD BATCH NUMBER L197021

NEW BATCH NUMBER

240

| LAB SAMPLE ID | CLIENT ID | REASON FOR REQUEST & ANALYSIS COMMENTS |
|---|---|---|
| 1) M8XLQ1AA | | Dups out. |
| 2) M8XLQ1AX | | |
| 3) | | |
| 4) | | |
| 5) | | |
| 6) | | |
| 7) | | |
| 8) | | |
| 9) | | |
| 10) | | |
| 11) | | |
| 12) | | |
| 13) | | |
| 14) | | |
| 15) | | |
| 16) | | |
| 17) | | |
| 18) | | |
| 19) | | |
| 20) | | |

RC-126 Rev 6, 9/10

8/9/2016 8:05:43 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

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

AZ Gross Alpha Prp GPC001
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197021 WATER pCi/L** PM, Quote: RW2, 27023

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: CarnesM,WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 **M8XLQ-1-AA** J6G140414-1-SAMP 07/12/2016 07:20 | | | 26.50g,in | 26.50g | | | | 32.70mg | 240 | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 **M8XLQ-1-AX-X** J6G140414-1-DUP 07/12/2016 07:20 | | | 27.10g,in | 27.10g | | | | 38.60mg | 240 | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 M8XLQ-2-AA J6G140414-1-SAMP 07/12/2016 07:20 | | | | | | | | | 240 | 22A | 1548 | 8/9/16 gm | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 M8XLQ-2-AX-X J6G140414-1-DUP 07/12/2016 07:20 | | | | | | | | | | 22C | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 5 **M8XLR-1-AA** J6G140414-2-SAMP 07/12/2016 07:20 | | | 25.60g,in | 25.60g | | | | 36.40mg | 240 | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 6 **M8XM2-1-AA-B** J6G150000-21-BLK 07/29/2016 10:22 pd | | | 202.60g,in | 202.60g | | | | 0.10mg | 240 | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 7 **M8XM2-1-AC-C** J6G150000-21-LCS 07/29/2016 10:22 pd | | | 216.00g,in | 216.00g | ASD5953 04/14/16,pd 04/04/05,r | | | 0.50mg | 240 | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 7 ICOC v4.9.0

8/9/2016 8:05:45 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

AZ Gross Alpha Prp GPC001
S7 Gross Alpha by GPC using Am-241 curve
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197021 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LedesmaA,WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Urani m aliqout batch # 6197023 7/28/16 N.W"
M8XM2-BLK CommentsS-15-00102,P-16-00282," Aliqouts reduced due to weight screen results 7/29/16 N.W",P-16-002 5,P-16-00237

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AA-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| ALPHA | RDL:3 | pCi/L | LCL: | UCL: | RPD: |
| M8XM21AA-BLK: | | | | | |
| ALPHA | RDL:3 | pCi/L | LCL: | UCL: | RPD: |
| M8XM21AC-LCS: | | | | | |
| Am-241 | RDL: | pCi/L | LCL:70 | UCL:130 | RPD:20 |

M8XLQ1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM21AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM21AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/11/2016 9:59:54 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/12/2015, 8/16/2016, Batch: '6197021', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197021** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/29/2016 10:18:50 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:54 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/29/2016 10:18:50 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/29/2016 10:23:11 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | LedesmaA | Prep1C | 8/3/2016 11:11:31 AM | RL-GPC-001 REVISION 5 |
| *SC* | | | WoodT | InCnt1 | 8/3/2016 1:04:08 PM | RL-CI-006 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/8/2016 9:13:00 PM | RL-CI-006 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/9/2016 8:10:17 PM | RL-CI-006 REVISION 6 |
| *SC* | | | antonsonl | Rev1C | 8/11/2016 9:57:10 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/29/2016 10:23:11 | | |
| *AC* | | | **LedesmaA** | 8/3/2016 11:11:31 | | |
| *AC* | | | **WoodT** | 8/3/2016 1:04:08 PM | | |
| *AC* | | | **BullJ** | 8/8/2016 9:13:00 PM | | |
| *AC* | | | **BullJ** | 8/9/2016 8:10:17 PM | | |
| *AC* | | | **antonsonl** | 8/11/2016 9:57:10 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 7

ICOCFractions v4.9.4

8/3/2016 11:01:40 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

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

BC Gross Beta Prp GPC001
S8 Gross Beta by GPC using Sr/Y-90 curve
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197020 WATER pCi/L** PM, Quote: RW2, 27023

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 **M8XLQ-1-AC** J6G140414-1-SAMP 07/12/2016 07:20 | | | 53.90g,in | 53.90g | | | | 115.60mg | 200 | 32D | 8/3/16 1919 | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 **M8XLQ-1-AW-X** J6G140414-1-DUP 07/12/2016 07:20 | | | 53.90g,in | 53.90g | | | | 121.50mg | 200 | 32A | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 **M8XLR-1-AC** J6G140414-2-SAMP 07/12/2016 07:20 | | | 51.30g,in | 51.30g | | | | 112.80mg | 200 | 32B | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 **M8XM0-1-AA-B** J6G150000-20-BLK 07/29/2016 10:25 pd | | | 207.90g,in | 207.90g | | | | -0.30mg | 200 | 32C | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 5 **M8XM0-1-AC-C** J6G150000-20-LCS 07/29/2016 10:26 pd | | | 208.30g,in | 208.30g | BESB5021 06/10/16,pd 10/01/01,r | | | 0.20mg | 200 | 31B | 8/3/16 2249 | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |

8/3/2016 11:01:41 AM

# Sample Preparation/Analysis

Balance Id:1120403183,B145441330

BC Gross Beta Prp GPC001
S8 Gross Beta by GPC using Sr/Y-90 curve
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197020 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LedesmaA,WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Uranium aliqout batch # 6197023 7/28/16 N.W"
M8XM0-BLK CommentsS-15-00102,P-16-00282," Aliqouts reduced due to weight screen results 7/29/16 N.W",P-16-0025,P-16-00238

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AC-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| BETA | RDL:4 | pCi/L | LCL: | UCL: | RPD: |
| M8XM01AA-BLK: | | | | | |
| BETA | RDL:4 | pCi/L | LCL: | UCL: | RPD: |
| M8XM01AC-LCS: | | | | | |
| Sr-90 | RDL: | pCi/L | LCL:70 | UCL:130 | RPD:20 |

M8XLQ1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM01AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XM01AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/4/2016 1:19:15 PM

# ICOC Fraction Transfer/Status Report

ByDate: 8/5/2015, 8/9/2016, Batch: '6197020', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197020** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/29/2016 10:23:29 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:51 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/29/2016 10:23:29 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/29/2016 10:26:56 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | LedesmaA | Prep1C | 8/3/2016 11:10:08 AM | RL-GPC-001 REVISION 5 |
| *SC* | | | WoodT | InCnt1 | 8/3/2016 1:04:33 PM | RL-CI-006 REVISION 6 |
| *SC* | | | DawkinsO | CalcC | 8/4/2016 12:13:31 AM | RL-CI-006 REVISION 6 |
| *SC* | | | antonsonl | Rev1C | 8/4/2016 1:19:05 PM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/29/2016 10:26:56 | | |
| *AC* | | | **LedesmaA** | 8/3/2016 11:10:08 | | |
| *AC* | | | **WoodT** | 8/3/2016 1:04:33 PM | | |
| *AC* | | | **DawkinsO** | 8/4/2016 12:13:31 | | |
| *AC* | | | **antonsonl** | 8/4/2016 1:19:05 PM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 6

ICOCFractions v4.9.4

8/4/2016 4:54:16 PM

# Sample Preparation/Analysis

Balance Id:1120403183,B425712682

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

**CG Sr-Total Prp/Sep GPC003**
**TH Total Strontium by GPC**
**5I CLIENT: HANFORD**

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech: 08/04/2016 12:56,CarnesM

**Batch: 6197018 WATER pCi/L PM, Quote: RW2, 27023**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSO

Prep Tech: CarnesM,WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 **M8XLQ-1-AH** J6G140414-1-SAMP | | | 503.10g,in | 503.10g | SRTC6146 07/08/16 | | | 9.30mg | | | 8/4/16 AD 2039 | | |
| 07/12/2016 07:20 | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | 08/04/2016 12:56,s1 | | | | Scr: 31A | Alpha: | | Beta: | |
| 2 **M8XLR-1-AH** J6G140414-2-SAMP | | | 519.40g,in | 519.40g | SRTC6148 07/08/16 | | | 9.20mg | | | | | |
| 07/12/2016 07:20 | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: 31B | Alpha: | | Beta: | |
| 3 **M8XLR-1-A1-X** J6G140414-2-DUP | | | 512.60g,in | 512.60g | SRTC6147 07/08/16 | | | 9.10mg | | | | | |
| 07/12/2016 07:20 | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: 31C | Alpha: | | Beta: | |
| 4 **M8XMT-1-AA-B** J6G150000-18-BLK | | | 504.50g,in | 504.50g | SRTC6149 07/08/16 | | | 10.30mg | | | | | |
| 07/28/2016 08:50 pd | | | AmtRec: | #Containers: 1 | | | | | Scr: 31D | Alpha: | | Beta: | |
| 5 **M8XMT-1-AC-C** J6G150000-18-LCS | | | 501.10g,in | 501.10g | STSF1035 07/06/16 | | | 9.70mg | 32C | | | | |
| 07/28/2016 08:50 pd | | | AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | | Beta: | |

8/4/2016 4:54:18 PM

# Sample Preparation/Analysis

**CG Sr-Total Prp/Sep GPC003**
**TH Total Strontium by GPC**
**5I CLIENT: HANFORD**

**Balance Id:1120403183,B425712682**

**Pipet #:** _____

**AnalyDueDate: 08/02/2016**

**Sep1 DT/Tm Tech:**

**Batch: 6197018** **pCi/L**
SEQ Batch, Test: None

**Sep2 DT/Tm Tech:**

**Prep Tech: ,WattN**

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Uranium aliqout batch # 6197023 7/28/16 N.W"

```
All Clients for Batch:
    127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AH-SAMP Constituent List:
  Sr-90       RDL:2          pCi/L     LCL:70      UCL:130     RPD:20
M8XMT1AA-BLK:
  Sr-90       RDL:2          pCi/L     LCL:        UCL:        RPD:
M8XMT1AC-LCS:
  Sr-90       RDL:2          pCi/L     LCL:70      UCL:130     RPD:20

M8XLQ1AH-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMT1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMT1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

8/5/2016 9:11:06 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/6/2015, 8/10/2016, Batch: '6197018', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197018** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 8:46:25 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:45 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 8:46:25 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 8:51:49 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | DawkinsO | InCnt1 | 8/4/2016 6:43:21 PM | RL-CI-006 REVISION 6 |
| *SC* | | | carnesj | Rev1C | 8/5/2016 9:10:58 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 8:51:49 | | |
| *AC* | | | **DawkinsO** | 8/4/2016 6:43:21 PM | | |
| *AC* | | | **carnesj** | 8/5/2016 9:10:58 AM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 4

ICOCFractions v4.9.4

8/5/2016 1:13:27 PM

# Sample Preparation/Analysis

Balance Id:1120403183,B425712682

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

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
5I CLIENT: HANFORD

Pipet #: C

Sep1 DT/Tm Tech: 8-5-16 11:40am

**AnalyDueDate: 08/02/2016**

**Batch: 6197019 WATER pCi/L** PM, Quote: RW2, 27023

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: CarnesM,WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AN<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 504.40g,in | 504.40g | RATC28692<br>06/14/16,pd<br>01/27/16,r | | | 15.30mg | | 24D | 1157 | 8/8/16 | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | Beta: | |
| 2 M8XLQ-1-AV-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 517.40g,in | 517.40g | RATC28691<br>06/14/16,pd<br>01/27/16,r | | | 14.80mg | | 24A | 1312 | 8/8/16 | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | Alpha: | | Beta: | |
| 3 M8XLR-1-AN<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 500.10g,in | 500.10g | RATC28694<br>06/14/16,pd<br>01/27/16,r | | | 13.10mg | | 24B | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | Alpha: | | Beta: | |
| 4 M8XMW-1-AA-B<br>J6G150000-19-BLK<br>07/28/2016 08:28 pd | | | 527.30g,in | 527.30g | RATC28693<br>06/14/16,pd<br>01/27/16,r | | | 14.50mg | | 24C | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | | Beta: | |
| 5 M8XMW-1-AC-C<br>J6G150000-19-LCS<br>07/28/2016 08:29 pd | | | 501.10g,in | 501.10g | RTSA5138<br>03/24/16,pd<br>01/27/16,r | | | 14.40mg | | 24D | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | Alpha: | | Beta: | |

8/5/2016 1:13:27 PM

# Sample Preparation/Analysis

Balance Id:1120482733,1118102363,1120403

**BQ Total Alpha Radium Prp/Sep RA002**
**TD Total Alpha Radium by GPC**
**5I CLIENT: HANFORD**

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197019** **pCi/L**
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Uranium aliqout batch # 6197023 7/28/16 N.W"
M8XMW-BLK CommentsS-15-00102,P-16-00222,P-16-00219,P-16-00226,P-16-00225,S-15-00222,S-15-00277,P-16-00081

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AN-SAMP Constituent List:
  RA          RDL:1          pCi/L     LCL:        UCL:        RPD:
M8XMW1AA-BLK:
  RA          RDL:1          pCi/L     LCL:        UCL:        RPD:
M8XMW1AC-LCS:
  Ra-226      RDL:           pCi/L     LCL:70      UCL:130     RPD:20

M8XLQ1AN-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMW1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMW1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

8/9/2016 11:28:36 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/10/2015, 8/14/2016, Batch: '6197019', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197019** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 8:24:17 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:48 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 8:24:17 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 8:29:49 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | RichardsonB | Sep1C | 8/5/2016 11:34:52 AM | RL-RA-002 REV5 |
| *SC* | | | WoodT | InCnt1 | 8/5/2016 1:31:03 PM | RL-CI-006 REVISION 6 |
| *SC* | | | BullJ | CalcC | 8/8/2016 9:12:54 PM | RL-CI-006 REVISION 6 |
| *SC* | | | antonsonl | Rev1C | 8/9/2016 11:28:27 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 8:29:49 | | |
| *AC* | | | **RichardsonB** | 8/5/2016 11:34:52 | | |
| *AC* | | | **WoodT** | 8/5/2016 1:31:03 PM | | |
| *AC* | | | **BullJ** | 8/8/2016 9:12:54 PM | | |
| *AC* | | | **antonsonl** | 8/9/2016 11:28:27 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 6

ICOCFractions v4.9.4

7/22/2016 2:33:49 PM

# Sample Preparation/Analysis

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

**AW Gamma Prp GAM001**
**TA Gamma by HPGE**
**5I CLIENT: HANFORD**

**Balance Id:1120482733,,**
**Pipet #:** _____
**Sep1 DT/Tm Tech:**
**Sep2 DT/Tm Tech:**
**Prep Tech: ,FussnerC**

**AnalyDueDate: 08/02/2016**

**Batch: 6197014 WATER pCi/L PM, Quote: RW2, 27023**

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSC

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AF<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 2114.90g,in<br>AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | 2114.90g | | | | | 200<br>Scr: | G12<br>Alpha: | 1335 | 7/27/16<br>Beta: | |
| 2 M8XLR-1-AF<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 2118.90g,in<br>AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | 2118.90g | | | | | | G13<br>Scr: | Alpha: | | Beta: |
| 3 M8XLR-1-AV-X<br>J6G140414-2-DUP<br>07/12/2016 07:20 | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | | G12<br>Scr: | 1736<br>Alpha: | | Beta: |
| 4 M8XMG-1-AA-B<br>J6G150000-14-BLK<br>07/22/2016 14:31 pd | | | 2000.40g,in<br>AmtRec: #Containers: 1 | 2000.40g | | | | | | G13<br>Scr: | Alpha: | | Beta: |
| 5 M8XMG-1-AC-C<br>J6G150000-14-LCS<br>07/22/2016 14:32 pd | | | 2000.90g,in<br>AmtRec: #Containers: 1 | 2000.90g | QCAG2165<br>06/29/16,pd<br>07/15/00,r | | | | | G12<br>Scr: | 2147 7/27/16<br>Alpha: | | Beta: |

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 5
pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.69

7/22/2016 2:33:50 PM

# Sample Preparation/Analysis

AW Gamma Prp GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Balance Id:1120482733,,

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197014 pCi/L

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: FussnerC

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

**Comments:** M8XMG-BLK S-15-00102,P-16-00282

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AF-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Co-60 | RDL:2.50E+01 | pCi/L | LCL: | UCL: | RPD: | Cs-137 | RDL:1.50E+01 | pCi/L | LCL:70 | UCL:130 | RPD:20 |
| Cs-137DA | RDL:1.50E+01 | pCi/L | LCL:70 | UCL:130 | RPD:20 | Eu-152 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: |
| Eu-154 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: | Eu-155 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: |
| K-40 | RDL:6.00E+00 | pCi/L | LCL: | UCL: | RPD: | | | | | | |

M8XMG1AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Co-60 | RDL:2.50E+01 | pCi/L | LCL: | UCL: | RPD: | Cs-137 | RDL:1.50E+01 | pCi/L | LCL: | UCL: | RPD: |
| Cs-137DA | RDL:1.50E+01 | pCi/L | LCL: | UCL: | RPD: | Eu-152 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: |
| Eu-154 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: | Eu-155 | RDL:5.00E+01 | pCi/L | LCL: | UCL: | RPD: |
| K-40 | RDL:6.00E+00 | pCi/L | LCL: | UCL: | RPD: | | | | | | |

M8XMG1AC-LCS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cs-137 | RDL:15 | pCi/L | LCL:70 | UCL:130 | RPD:20 | Cs-137DA | RDL:15 | pCi/L | LCL:70 | UCL:130 | RPD:20 |
| K-40 | RDL:6 | pCi/L | LCL:70 | UCL:130 | RPD:20 | Ra-226 | RDL:-- | pCi/L | LCL:70 | UCL:130 | RPD:20 |
| RA-228 | RDL:-- | pCi/L | LCL:70 | UCL:130 | RPD:20 | RA-228DA | RDL:-- | pCi/L | LCL:70 | UCL:130 | RPD:20 |
| U-238 | RDL:-- | pCi/L | LCL:70 | UCL:130 | RPD:20 | | | | | | |

M8XLQ1AF-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

M8XMG1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

M8XMG1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

7/28/2016 12:04:05 PM

# ICOC Fraction Transfer/Status Report

ByDate: 7/29/2015, 8/2/2016, Batch: '6197014', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197014** | | | | | | |
| *AC* | | **Rev1C** | **FussnerC** | 7/22/2016 2:26:24 PM | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:35 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | FussnerC | InPrep | 7/22/2016 2:26:24 PM | RL-PRP-004 REVISION 4 |
| *SC* | | | FussnerC | Prep1C | 7/22/2016 2:33:37 PM | RL-PRP-004 REVISION 4 |
| *SC* | | | FussnerC | Prep2C | 7/26/2016 12:22:54 PM | RL-GAM-001 REVISION 6 |
| *SC* | | | WoodT | InCnt1 | 7/26/2016 12:48:09 PM | RL-CI-007 REVISION 5 |
| *SC* | | | DawkinsO | CalcC | 7/27/2016 11:47:10 PM | RL-CI-007 REVISION 5 |
| *SC* | | | antonsonl | Rev1C | 7/28/2016 12:03:45 PM | RL-DR-001 Rev 7 |
| *AC* | | | **FussnerC** | 7/22/2016 2:33:37 PM | | |
| *AC* | | | **FussnerC** | 7/26/2016 12:22:54 | | |
| *AC* | | | **WoodT** | 7/26/2016 12:48:09 | | |
| *AC* | | | **DawkinsO** | 7/27/2016 11:47:10 | | |
| *AC* | | | **antonsonl** | 7/28/2016 12:03:45 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 6

ICOCFractions v4.9.4

7/28/2016 3:20:02 PM

# Sample Preparation/Analysis

Balance Id:1120482733,B425712682

127642, Washington Closure Hanford LLC
Bechtel Hanford, Inc.

BN I-129 Prp/Sep GAM002
TB Gamma by LEPD
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197013 WATER pCi/L PM, Quote: RW2, 27023**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSO.

Prep Tech: WattN,FussnerC

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AR<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 2008.00g,in | 2008.00g | ITA16158<br>07/12/16,pd<br>05/18/16,r | | IFA | 31.00mg | 100 | L5 | 1704 | 7/29/16 MD | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 M8XLR-1-AR<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 1000.20g,in | 1000.20g | ITA16157<br>07/12/16,pd<br>05/18/16,r | | | 35.40mg | | L5 | 1910 | 7/29/16 MD | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 M8XLR-1-AU-X<br>J6G140414-2-DUP<br>07/12/2016 07:20 | | | 1000.10g,in | 1000.10g | ITA16156<br>07/12/16,pd<br>05/18/16,r | | | 36.50mg | | L5 | 2244 | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 M8XMD-1-AA-B<br>J6G150000-13-BLK<br>07/22/2016 14:43 pd | | | 2002.00g,in | 2002.00g | ITA16155<br>07/12/16,pd<br>05/18/16,r | | | 36.10mg | | L5 | 1344 | 8/1/16 MD | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |
| 5 M8XMD-1-AC-C<br>J6G150000-13-LCS<br>07/22/2016 14:45 pd | | | 2000.80g,in | 2000.80g | ISD2028<br>06/22/16,pd<br>05/18/16,r | | | 50.80mg | | L5 | 1534 | | |
| | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |

7/28/2016 3:20:03 PM

# Sample Preparation/Analysis

Balance Id:1120482733,B425712682

BN I-129 Prp/Sep GAM002
TB Gamma by LEPD
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197013 pCi/L
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: FussnerC

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W J6G140414-1-18"," Used Remainder of bottle for Plutonium Aliqouts batch # 6197024 7/28/16 N.W"
M8XLR-SAMP CommentsJ6G140414-2-5," Used whole bottle for aliqouts 7/28/16 J6G140414-2-6"," Used Remainder of bottle on Uranium aliqout batch # 6197023 7/28/16 N.W"
M8XMD-BLK S-15-00102

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AR-SAMP Constituent List:
  I-129       RDL:5          pCi/L     LCL:70      UCL:130     RPD:20
M8XMD1AA-BLK:
  I-129       RDL:5          pCi/L     LCL:        UCL:        RPD:
M8XMD1AC-LCS:
  I-129       RDL:5          pCi/L     LCL:70      UCL:130     RPD:20

M8XLQ1AR-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMD1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMD1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

8/4/2016 1:33:53 PM

# ICOC Fraction Transfer/Status Report

ByDate: 8/5/2015, 8/9/2016, Batch: '6197013', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| 6197013 | | | | | | |
| *AC* | | **Rev1C** | **FussnerC** | 7/22/2016 2:36:46 PM | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:32 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | FussnerC | InPrep | 7/22/2016 2:36:46 PM | RL-PRP-004 REVISION 4 |
| *SC* | | | FussnerC | Prep1C | 7/22/2016 2:46:51 PM | RL-PRP-004 REVISION 4 |
| *SC* | | | NortonJ | InSep1 | 7/28/2016 12:08:41 PM | RL-GAM-002 REV6 |
| *SC* | | | WoodT | CalcC | 8/2/2016 11:11:57 AM | RL-CI-007 REVISION 5 |
| *SC* | | | carnesj | Rev1C | 8/4/2016 1:33:44 PM | RL-DR-001 Rev 7 |
| *AC* | | | **FussnerC** | 7/22/2016 2:46:51 PM | | |
| *AC* | | | **NortonJ** | 7/28/2016 12:08:41 | | |
| *AC* | | | **WoodT** | 8/2/2016 11:11:57 | | |
| *AC* | | | **carnesj** | 8/4/2016 1:33:44 PM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 5

ICOCFractions v4.9.4

7/28/2016 8:41:03 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

FP Tc-99 Prp/Sep LSC014
S5 Technetium-99 by Liquid Scint
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197016 WATER pCi/L** PM, Quote: RW2, 27023

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 **M8XLQ-1-AQ** J6G140414-1-SAMP 07/12/2016 07:20 | | | 131.70g,in | 131.70g | | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 **M8XLR-1-AQ** J6G140414-2-SAMP 07/12/2016 07:20 | | | 125.70g,in | 125.70g | | | | | | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 **M8XLR-1-AX-S** J6G140414-2-MS 07/12/2016 07:20 | | | 131.90g,in | 131.90g | TCSE3408 07/12/16,pd 09/01/96,r | | | | | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 **M8XLR-1-A0-X** J6G140414-2-DUP 07/12/2016 07:20 | | | 129.50g,in | 129.50g | | | | | | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 5 **M8XMM-1-AA-B** J6G150000-16-BLK 07/28/2016 08:40 pd | | | 128.10g,in | 128.10g | | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 6 **M8XMM-1-AC-C** J6G150000-16-LCS 07/28/2016 08:40 pd | | | 128.60g,in | 128.60g | TCSB0923 05/25/16,pd 09/01/96,r | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 7 **M8XMM-1-AD-BN** J6G150000-16-IBLK 07/15/2016 09:14 pd | | | | | | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |

7/28/2016 8:41:06 AM

# Sample Preparation/Analysis

FP Tc-99 Prp/Sep LSC014
S5 Technetium-99 by Liquid Scint
5I CLIENT: HANFORD

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

**AnalyDueDate: 08/02/2016**

**Batch: 6197016** pCi/L
SEQ Batch, Test: None

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliquots 7/28/16 N.W"

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AQ-SAMP Constituent List:
Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20
M8XLR1AX-MS:

M8XMM1AA-BLK:
Tc-99 RDL:15 pCi/L LCL: UCL: RPD:
M8XMM1AC-LCS:
Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20
M8XMM1AD-IBLK:
Tc-99 RDL:15 pCi/L LCL: UCL: RPD:

M8XLQ1AQ-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XLR1AX-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMM1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMM1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMM1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/8/2016 1:12:05 PM

# ICOC Fraction Transfer/Status Report

ByDate: 8/9/2015, 8/13/2016, Batch: '6197016', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197016** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 8:38:11 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:40 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 8:38:11 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 8:41:06 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | CarnesM | Sep1C | 8/1/2016 1:54:18 PM | RL-LSC-014 REVISION 4 |
| *SC* | | | WoodT | CalcC | 8/1/2016 2:09:43 PM | RL-CI-005 REVISION 5 |
| *SC* | | | WoodT | CalcC | 8/4/2016 11:07:11 AM | RL-CI-005 REVISION 5 |
| *SC* | | | antonsonl | Rev1C | 8/8/2016 1:11:47 PM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 8:41:06 | | |
| *AC* | | | **CarnesM** | 8/1/2016 1:54:18 PM | | |
| *AC* | | | **WoodT** | 8/1/2016 2:09:43 PM | | |
| *AC* | | | **WoodT** | 8/4/2016 11:07:11 | | |
| *AC* | | | **antonsonl** | 8/8/2016 1:11:47 PM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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ICOCFractions v4.9.4

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7/15/2016 9:14:20 AM

# Sample Preparation/Analysis

Balance Id:,,

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

**AR H-3 Prp/Sep LSC005**
**S6 Tritium by Liquid Scint**
**5I CLIENT: HANFORD**

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197015 WATER pCi/L**
SEQ Batch, Test: None

**PM, Quote: RW2, 27023**

Sep2 DT/Tm Tech:

Prep Tech:

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AD<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | Sat | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | 80min | Scr: | Alpha: | Beta: | |
| 2 M8XLR-1-AD<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | Scr: | Alpha: | Beta: | |
| 3 M8XLR-1-AW-X<br>J6G140414-2-DUP<br>07/12/2016 07:20 | | | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | Scr: | Alpha: | Beta: | |
| 4 M8XMJ-1-AA-B<br>J6G150000-15-BLK<br>07/15/2016 09:14 pd | | | | | AmtRec: #Containers: 1 | | | | | Scr: | Alpha: | Beta: | |
| 5 M8XMJ-1-AC-C<br>J6G150000-15-LCS<br>07/15/2016 09:14 pd | | | | | AmtRec: #Containers: 1 | | | | | Scr: | Alpha: | Beta: | |
| 6 M8XMJ-1-AD-BN<br>J6G150000-15-IBLK<br>07/15/2016 09:14 pd | | | | | AmtRec: #Containers: 1 | | | | | Scr: | Alpha: | Beta: | |

7/15/2016 9:14:21 AM

# Sample Preparation/Analysis

AR H-3 Prp/Sep LSC005
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

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

AnalyDueDate: 08/02/2016

Batch: 6197015 pCi/L
SEQ Batch, Test: None

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

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AD-SAMP Constituent List:
H-3 RDL:400 pCi/L LCL:70 UCL:130 RPD:20
M8XMJ1AA-BLK:

M8XMJ1AC-LCS:

M8XMJ1AD-IBLK:

M8XLQ1AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMJ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMJ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMJ1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/4/2016 1:24:17 PM

# ICOC Fraction Transfer/Status Report

ByDate: 8/5/2015, 8/9/2016, Batch: '6197015', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197015** | | | | | | |
| *AC* | | **Rev1C** | **WoodT** | 7/28/2016 2:33:50 PM | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:37 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WoodT | InCnt1 | 7/28/2016 2:33:50 PM | RL-CI-005 REVISION 5 |
| *SC* | | | WoodT | CalcC | 8/2/2016 10:39:10 AM | RL-CI-005 REVISION 5 |
| *SC* | | | carnesj | Rev1C | 8/4/2016 1:23:44 PM | RL-DR-001 Rev 7 |
| *AC* | | | **WoodT** | 8/2/2016 10:39:10 | | |
| *AC* | | | **carnesj** | 8/4/2016 1:23:44 PM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 3

ICOCFractions v4.9.4

7/15/2016 9:14:17 AM

# Sample Preparation/Analysis

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

**5S C-14 Prp/Sep LSC008**
**TC C-14 by LSC, Carbosorb**
**01 STANDARD TEST SET**

**AnalyDueDate: 08/02/2016**

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

**Batch: 6197012 WATER pCi/L PM, Quote: RW2, 27023**

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSO

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1 M8XLQ-1-AP** | | | 75 | | | | | | 60 | | | | |
| J6G140414-1-SAMP | | | | | | | | | | | | | |
| 07/12/2016 07:20 | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| **2 M8XLR-1-AP** | | | | | | | | | | | | | |
| J6G140414-2-SAMP | | | | | | | | | | | | | |
| 07/12/2016 07:20 | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| **3 M8XLR-1-AT-X** | | | | | | | | | | | | | |
| J6G140414-2-DUP | | | | | | | | | | | | | |
| 07/12/2016 07:20 | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| **4 M8XMC-1-AA-B** | | | | | | | | | | | | | |
| J6G150000-12-BLK | | | | | | | | | | | | | |
| 07/15/2016 09:14 pd | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |
| **5 M8XMC-1-AC-C** | | | | | | | | | | | | | |
| J6G150000-12-LCS | | | | | | | | | | | | | |
| 07/15/2016 09:14 pd | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |
| **6 M8XMC-1-AD-BN** | | | | | | | | | | | | | |
| J6G150000-12-IBLK | | | | | | | | | | | | | |
| 07/15/2016 09:14 pd | | | AmtRec: #Containers: 1 | | | | | | Scr: | | Alpha: | | Beta: |

7/15/2016 9:14:18 AM

# Sample Preparation/Analysis

5S C-14 Prp/Sep LSC008
TC C-14 by LSC, Carbosorb
01 STANDARD TEST SET

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

AnalyDueDate: 08/02/2016

Batch: 6197012 pCi/L
SEQ Batch, Test: None

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

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27023

M8XLQ1AP-SAMP Constituent List:
C-14 RDL:2.00E+02 pCi/L LCL: UCL: RPD:
M8XMC1AA-BLK:

M8XMC1AC-LCS:

M8XMC1AD-IBLK:

M8XLQ1AP-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMC1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMC1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M8XMC1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

8/8/2016 1:34:24 PM

# ICOC Fraction Transfer/Status Report

ByDate: 8/9/2015, 8/13/2016, Batch: '6197012', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197012** | | | | | | |
| *AC* | | **Rev1C** | **LedesmaA** | 8/2/2016 8:11:31 AM | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:29 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | LedesmaA | Sep1C | 8/2/2016 8:11:31 AM | RL-LSC-008 REVISION6 |
| *SC* | | | WoodT | CalcC | 8/4/2016 11:10:43 AM | RL-CI-005 REVISION 5 |
| *SC* | | | antonsonl | Rev1C | 8/8/2016 1:34:07 PM | RL-DR-001 Rev 7 |
| *AC* | | | **WoodT** | 8/4/2016 11:10:43 | | |
| *AC* | | | **antonsonl** | 8/8/2016 1:34:07 PM | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

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Grp Rec Cnt: 3

ICOCFractions v4.9.4

7/28/2016 8:45:40 AM

# Sample Preparation/Analysis

Balance Id:1120403183,,

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

DH UNat_Laser Prp KPA001
SS Total Uranium by KPA
5I CLIENT: HANFORD

Pipet #: _____

**AnalyDueDate: 08/02/2016**

Sep1 DT/Tm Tech:

**Batch: 6197017 WATER ug/L PM, Quote: RW2, 27023**

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: AMS5, BNTB, 6197012 5STC, 6197013 BNTB, 6197014 AWTA, 6197015 ARS6, 6197016 FPS5, 6197017 DHSS, 6197018 CGTH, 6197019 BQTD, 6197020 BCS8, 6197021 AZS7, 6197022 9NS1, 6197023 7YSR, 6197024 6DSO,

Prep Tech: WattN

| Work Ord, Lot, Sample Date | Total Amt/Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Tracer Yield | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 M8XLQ-1-AJ<br>J6G140414-1-SAMP<br>07/12/2016 07:20 | | | 27.50g,in | 27.50g | | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 2 M8XLQ-1-AT-S<br>J6G140414-1-MS<br>07/12/2016 07:20 | | | 29.00g,in | 29.00g | UNSM0722<br>06/08/16,pd<br>02/01/86,r | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 3 M8XLQ-1-AU-X<br>J6G140414-1-DUP<br>07/12/2016 07:20 | | | 25.30g,in | 25.30g | | | | | | | | | |
| | | | AmtRec: 2X125;4X250;2X500;14XLP #Containers: 22 | | | | | | Scr: | | Alpha: | | Beta: |
| 4 M8XLR-1-AJ<br>J6G140414-2-SAMP<br>07/12/2016 07:20 | | | 25.70g,in | 25.70g | | | | | | | | | |
| | | | AmtRec: 1X125;2X250;1X500;8XLP #Containers: 12 | | | | | | Scr: | | Alpha: | | Beta: |
| 5 M8XMP-1-AA-B<br>J6G150000-17-BLK<br>07/28/2016 08:44 pd | | | 26.30g,in | 26.30g | | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 6 M8XMP-1-AC-C<br>J6G150000-17-LCS<br>07/28/2016 08:45 pd | | | 26.10g,in | 26.10g | UNSL0357<br>06/08/16,pd<br>02/01/86,r | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |
| 7 M8XMP-1-AD-C<br>J6G150000-17-LCS<br>07/28/2016 08:45 pd | | | 25.00g,in | 25.00g | UNSM0723<br>06/08/16,pd<br>02/01/86,r | | | | | | | | |
| | | | AmtRec: | #Containers: 1 | | | | | Scr: | | Alpha: | | Beta: |

7/28/2016 8:45:58 AM

# Sample Preparation/Analysis

DH UNat_Laser Prp KPA001
SS Total Uranium by KPA
5I CLIENT: HANFORD

Balance Id:1120403183,,

Pipet #: _____

AnalyDueDate: 08/02/2016

Sep1 DT/Tm Tech:

Batch: 6197017 ug/L
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,WattN

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

**Comments:** M8XLQ-SAMP CommentsJ6G140414-1-19," Used full bottle for Aliqouts 7/28/16 N.W"

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27023

M8XLQ1AJ-SAMP Constituent List:
  Uranium      RDL:1.00E+00    ug/L      LCL:        UCL:        RPD:
M8XLQ1AT-MS Constituent List:

M8XMP1AA-BLK:
  Uranium      RDL:1.00E+00    ug/L      LCL:        UCL:        RPD:
M8XMP1AC-LCS:
  Uranium      RDL:0.144343    ug/L      LCL:70      UCL:130     RPD:20
M8XMP1AD-LCS:
  Uranium      RDL:0.144343    ug/L      LCL:70      UCL:130     RPD:20

M8XLQ1AJ-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XLQ1AT-MS Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMP1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMP1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M8XMP1AD-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

8/11/2016 11:59:07 AM

# ICOC Fraction Transfer/Status Report

ByDate: 8/12/2015, 8/16/2016, Batch: '6197017', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | SOPs,Reagents,Comments |
|---|---|---|---|---|---|---|
| **6197017** | | | | | | |
| *AC* | | **Rev1C** | **WattN** | 7/28/2016 8:41:45 | | |
| *SC* | | | campbellsc | IsBatched | 7/15/2016 9:15:43 AM | ICOC_RADCALC v4.9.0 |
| *SC* | | | WattN | InPrep | 7/28/2016 8:41:45 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | WattN | Prep1C | 7/28/2016 8:45:57 AM | RL-PRP-004 REVISION 4 |
| *SC* | | | CarnesM | Prep2C | 8/3/2016 4:07:37 PM | RL-KPA-001 REVISION 5 |
| *SC* | | | ArmstrongT | Cnt1C | 8/10/2016 4:01:23 PM | RL-KPA-003 REVISION 6 |
| *SC* | | | antonsonl | Rev1C | 8/11/2016 11:58:51 AM | RL-DR-001 Rev 7 |
| *AC* | | | **WattN** | 7/28/2016 8:45:57 | | |
| *AC* | | | **CarnesM** | 8/3/2016 4:07:37 PM | | |
| *AC* | | | **ArmstrongT** | 8/10/2016 4:01:23 PM | | |
| *AC* | | | **antonsonl** | 8/11/2016 11:58:51 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 5

ICOCFractions v4.9.4

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Richland
2800 George Washington Way
Richland, WA 99352
Tel: (509)375-3131

TestAmerica Job ID: 300-3452-1
TestAmerica Sample Delivery Group: J02198
Client Project/Site: ERDF Leachate Tank

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

Attn: Joan H Kessner

*Authorized for release by:*
*8/15/2016 2:46:52 PM*

Rhonda Wagar, QA Specialist
(509)375-3131
rhonda.wagar@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Qualifiers

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| U | Analyzed for but not detected. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains no Free Liquid |
| DER | Duplicate error ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision level concentration |
| MDA | Minimum detectable activity |
| EDL | Estimated Detection Limit |
| MDC | Minimum detectable concentration |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative error ratio |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Job ID: 300-3452-1

### Laboratory: TestAmerica Richland

**Narrative**

**Job Narrative**
**300-3452-1**
**J02198 / RC-009**

**Comments**
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.

**Receipt**
The samples were received on 7/12/2016 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 8.3º C.

**General Chemistry**
**Hexavalent Chromium by EPA method 7196A:**
The LCS, batch blank, samples, sample duplicate and sample matrix spike results are within contractual requirements.

# Detection Summary

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## Client Sample ID: J1V931 — Lab Sample ID: 300-3452-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.040 | 0.0080 | mg/L | 1 | | 7196A | Total/NA |

## Client Sample ID: J1V932 — Lab Sample ID: 300-3452-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.040 | 0.0080 | mg/L | 1 | | 7196A | Total/NA |

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## Client Sample ID: J1V931

**Lab Sample ID: 300-3452-1**

**Date Collected: 07/12/16 07:20**
**Matrix: Water**
**Date Received: 07/12/16 15:15**

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.040 | 0.0080 | mg/L | | | 07/12/16 17:14 | 1 |

## Client Sample ID: J1V932

**Lab Sample ID: 300-3452-2**

**Date Collected: 07/12/16 07:20**
**Matrix: Water**
**Date Received: 07/12/16 15:15**

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.040 | 0.0080 | mg/L | | | 07/12/16 17:18 | 1 |

# QC Sample Results

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## Method: 7196A - Chromium, Hexavalent

**Lab Sample ID: MB 300-5297/9** — **Client Sample ID: Method Blank**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5297**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0080 | U | 0.040 | 0.0080 | mg/L | | | 07/12/16 17:12 | 1 |

**Lab Sample ID: LCS 300-5297/10** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5297**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | | | 0.500 | 0.506 | | mg/L | | 101 | 75 - 125 | | |

**Lab Sample ID: 300-3452-1 MS** — **Client Sample ID: J1V931**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5297**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.750 | 0.919 | | mg/L | | 102 | 75 - 125 | | |

**Lab Sample ID: 300-3452-1 MSD** — **Client Sample ID: J1V931**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5297**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | 0.750 | 0.925 | | mg/L | | 103 | 75 - 125 | 1 | |

**Lab Sample ID: 300-3452-1 DU** — **Client Sample ID: J1V931**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5297**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.15 | | | 0.152 | | mg/L | | | | 1 | 20 |

# QC Association Summary

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## General Chemistry

### Analysis Batch: 5297

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 300-3452-1 | J1V931 | Total/NA | Water | 7196A | |
| 300-3452-2 | J1V932 | Total/NA | Water | 7196A | |
| MB 300-5297/9 | Method Blank | Total/NA | Water | 7196A | |
| LCS 300-5297/10 | Lab Control Sample | Total/NA | Water | 7196A | |
| 300-3452-1 MS | J1V931 | Total/NA | Water | 7196A | |
| 300-3452-1 MSD | J1V931 | Total/NA | Water | 7196A | |
| 300-3452-1 DU | J1V931 | Total/NA | Water | 7196A | |

# Lab Chronicle

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## Client Sample ID: J1V931

**Lab Sample ID: 300-3452-1**

**Date Collected: 07/12/16 07:20**
**Matrix: Water**
**Date Received: 07/12/16 15:15**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5297 | 07/12/16 17:14 | RLC | TAL RCH |

## Client Sample ID: J1V932

**Lab Sample ID: 300-3452-2**

**Date Collected: 07/12/16 07:20**
**Matrix: Water**
**Date Received: 07/12/16 15:15**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5297 | 07/12/16 17:18 | RLC | TAL RCH |

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

# Certification Summary

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

## Laboratory: TestAmerica Richland

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Washington | State Program | 10 | C565 | 08-13-17 |

The following analytes are included in this report, but certification is not offered by the governing authority:

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 7196A | | Water | Cr (VI) |

# Method Summary

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 7196A | Chromium, Hexavalent | SW846 | TAL RCH |

**Protocol References:**

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

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

# Sample Summary

Client: Washington Closure Hanford
Project/Site: ERDF Leachate Tank

TestAmerica Job ID: 300-3452-1
SDG: J02198

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 300-3452-1 | J1V931 | Water | 07/12/16 07:20 | 07/12/16 15:15 |
| 300-3452-2 | J1V932 | Water | 07/12/16 07:20 | 07/12/16 15:15 |

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-022



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: RRC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

Other Labs Shipped To: TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool <=6C | None | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | None | HNO3 to pH <2 | None | HNO3 to pH <2 |
| Type of Container | G/P | G/P | G/P | G/P | G/P | G/P | G/P | G/P | P | G/P |
| No. of Container(s) | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 2 | 2 |
| Volume | 500mL | 125mL | 1000mL | 1000mL | 250mL | 500mL | 1000mL | 1000mL | 250mL | 1000mL |
| Sample Analysis | Chromium Hex - 7196 | Carbon-14 | See item (7) in Special Instructions | Gross Alpha; Gross Beta | Total Uranium | Technetium-99 | I-129 Low Level | Total Radium | Tritium - H3 | Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V931 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| W. Downing / W. Downing WAI | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1515 | Bock J. Bock, TARL | 7-12-16/1515 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

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

#3452
J02198

REVIEWED BY KW
DATE 7/12/16

300-3452 COC

WCH-EE-011



8/15/2016

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-022



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |

Other Labs Shipped To: TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | HNO3 to pH <2 | | | | | | | | | | | |
| Type of Container | G/P | | | | | | | | | | | |
| No. of Container(s) | 2 | | | | | | | | | | | |
| Volume | 1000mL | | | | | | | | | | | |
| Sample Analysis | Strontium-89,90 – Total Sr | | | | | | | | | | | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V931 | WATER | 7-12-16 | 0720 | ✓ | | | | | | | | | |
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| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing/M. Downing WCH | 7-12-16 0945 | T.R. Edmundson T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson T.R. Edmundson WCH | 7-12-16 1515 | Bach J. Bach TAR | 7-12-16/1515 |
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| | | | |

| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

REVIEWED BY KW DATE 7/12/16

WCH-EE-011



8/19/2016

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-023



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-007 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Local Delivery |
| Shipped To: TestAmerica Richland | Offsite Property No.: N/A | | Bill of Lading/Air Bill No.: N/A |
| Other Labs Shipped To: TestAmerica Denver | | | |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| Sample No. | Matrix | Sample Date | Sample Time | Chromium Hex - 7196 | Carbon-14 | See item (7) in Special Instructions | Gross Alpha; Gross Beta | Total Uranium | Technetium-99 | I-129 Low Level | Total Radium | Tritium - H3 | Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | | | | Cool <=6C | None | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | HNO3 to pH <2 | None | HNO3 to pH <2 | None | HNO3 to pH <2 |
| Type of Container | | | | G/P | G/P | G/P | G/P | G/P | G/P | G/P | G/P | P | G/P |
| No. of Container(s) | | | | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| Volume | | | | 500mL | 125mL | 1000mL | 1000mL | 250mL | 500mL | 1000mL | 1000mL | 250mL | 1000mL |
| J1V932 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing / M. Downing VAL | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson | 7-12-16 1515 | J. Bock, TARL | 7-12-16 / 1515 |
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| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

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

#3452
J02198

REVIEWED BY KW
DATE 7/12/16

WCH-EE-011



8/19/2016

# Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-023



| | | | |
|---|---|---|---|
| **Collector** DOWNING, MK | **Company Contact** Joan Kessner | **Telephone No.** 375-4688 | **Project Coordinator** KESSNER, JH |
| **Price Code** 7D | **Data Turnaround** 21 Days | | |
| **Project Designation** ERDF Leachate Tank | **Sampling Location** ERDF Leachate tank 4, Summer 2016 | | **SAF No.** RC-009 |
| **Ice Chest No.** ERC-02-007 | **Field Logbook No.** EL-1626-03 | **COA** RERDF22560 | **Method of Shipment** Local Delivery |
| **Shipped To** TestAmerica Richland | **Offsite Property No.** N/A | | **Bill of Lading/Air Bill No.** N/A |

**Other Labs Shipped To**
TestAmerica Denver

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potentially radioactive, less than DOT limits*

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

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Preservation** | HNO3 to pH <2 | | | | | | | | | | | |
| **Type of Container** | G/P | | | | | | | | | | | |
| **No. of Container(s)** | 1 | | | | | | | | | | | |
| **Volume** | 1000mL | | | | | | | | | | | |
| **Sample Analysis** | Strontium-89,90 – Total Sr | | | | | | | | | | | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J1V932 | WATER | 7-12-16 | 0720 ~~0945~~ TRE 7-12-16 | ✓ | | | | | | | | | |
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| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| WAL M. Downing | 7-12-16 0945 | T.R. Edmundson J.R. Edmundson | 7-12-16 0945 |
| WCH T.R. Edmundson J.R. Edmundson | 7-12-16 1515 | J. Bock, TARL | 7-12-16/1515 |
| | | | |
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| | | | |

**FINAL SAMPLE DISPOSITION**: Disposal Method | Disposed By | Date/Time

**SPECIAL INSTRUCTIONS**

REVIEWED BY KW DATE 7/12/16

WCH-EE-011



8/15/2016

# Login Sample Receipt Checklist

Client: Washington Closure Hanford

Job Number: 300-3452-1
SDG Number: J02198

**Login Number: 3452**
**List Number: 1**
**Creator: Bock, Julie A**

**List Source: TestAmerica Richland**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# ANALYTICAL REPORT

Job Number: 280-85505-1

SDG Number: J02198

Job Description: SAF# RC-009

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

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Senior Project Manager
8/18/2016 2:20 PM

Kae E Yoder, Senior Project Manager
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0190
kae.yoder@testamericainc.com
08/18/2016
Revision: 1

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

The Lab Certification ID# is 4025.

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

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# CASE NARRATIVE
**Revision 1**

## Client: Washington Closure Hanford

## Project: WASHINGTON CLOSURE HANFORD

## Job Number: 280-85505-1

**SDG #: J02198**
**SAF#: RC-009**

**Date SDG Closed: July 14, 2016**
**Data Deliverable: 21 Day / Summary**

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|---|---|---|---|
| J1V931 | 280-85505-1 | 2320/300.0/2540C/2540D/350.1/353.2/410.4/ 9020/420.4/5310B/1664/9034/9012/8260/ 6010/7470/9050/9040/8015/8270/ WTPH-G/WTPH-D+/8151/8081/8082/8310 | 2320B/300.0/2540C/2540D/350.1/353.2/410.4/ 9020B/420.4/5310B/1664A/9034/9012A/8260B/ 6010B/6020/7470A/~~9050A~~/9040B/8015C/8270C/ NWTPH-Gx/NWTPH-Dx/8151A/8081A/8082/8310 |
| J1V932 | 280-85505-2 | 2320/300.0/2540C/2540D/350.1/353.2/410.4/ 9020/420.4/5310B/1664/9034/9012/8260/ 6010/7470/9050/9040/8015/8270/ WTPH-G/WTPH-D+/8151/8081/8082/8310 | 2320B/300.0/2540C/2540D/350.1/353.2/410.4/ 9020B/420.4/5310B/1664A/9034/9012A/8260B/ 6010B/6020/7470A/9050A/9040B/8015C/8270C/ NWTPH-Gx/NWTPH-Dx/8151A/8081A/8082/8310 |
| J1V933 | 280-85505-3 | 8260 | 8260B |

*The Uranium method substitution noted above, as agreed to by all parties, has no technical impact on the data.*

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

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**Revision 1 - 8/18/2016**
As instructed by the client on 8/17/2016, the Specific Conductance 9050A analysis for sample J1V931 was canceled due to an unrecoverable lab error.

**RECEIPT**
The samples were received on 7/13/2016 9:30 AM and 7/14/2016 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.7º C, 2.9º C, 3.4º C and 4.9º C.

**Receipt Exceptions**

It was noted that the VOA vials did not have labels affixed to them. There was one label for each set of VOA vials that was affixed to the bubble bag. Each label was transferred to one of the vials in each set. The client was notified on 7/15/2016.

**GC/MS VOLATILES - SW846 8260B**
The following compounds were not found as part of a TIC search performed for samples J1V931, J1V932 and J1V933: Acrylamide [79-06-1]; Formaldehyde [50-00-0]; 1,3-Butadiene [106-99-0]; Chlorodifluoromethane [75-45-6]; Dichloropropanol [26545-73-3]; Trichloromethanethiol [75-70-7]; Allyl alcohol (2-Propen-1-ol) [107-18-6]; Crotonaldehyde (2-Butenaldehyde) [4170-30-3]; Epichlorohydrin [106-89-8].

The GC/MS Volatiles analyses of samples J1V932 and J1V933 were performed 3 days outside the recommended sample holding times, due to analyst oversight. The client was notified on 8/2/2016.

The preservative used in the sample containers provided is not compatible with one of the Method 8260B analytes requested. Samples J1V931, J1V932 and J1V933 were received preserved with hydrochloric acid. The requested target analyte list includes 2-chloroethyl vinyl ether, an acid-labile compound that degrades in an acidic medium.

Methylene Chloride, a common laboratory contaminant, is present in the method blank associated with batch 280-334916 at a level exceeding the reporting limit. Because this common laboratory contaminant is present in the method blank at a level that is less than five times the reporting limit, corrective action is not required.

Low levels of Methylene chloride, a common laboratory contaminant, are present in the method blank associated with batch 280-335637. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

The LCS associated with batch 280-334916 exhibited the percent recovery outside the control limits, biased high, for Methylene Chloride, and the associated sample result has been flagged "T". As Methylene Chloride is not present at a level greater than the reporting limit in the associated sample, corrective action is deemed unnecessary.

2-Chloroethyl vinyl ether was not recovered in the MS/MSD performed on sample J1V931 in batch 280-334916 due to the acid preservative used in the sample. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Due to analyst oversight, MS/MSD analysis was not performed for batch 280-335637. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

A Continuing Calibration Verification (CCV) standard associated with samples in batch 280-334916 exhibited the %Difference (%D) value outside acceptance criteria, biased low, for 1-Butanol (-50.2%). The sample associated with this CCV was non-detect for the affected analyte. All CCC and SPCC compounds are in control; therefore, method criteria have been met and corrective action is deemed unnecessary.

No other anomalies were encountered.

**GC/MS SEMIVOLATILES - SW846 8270C**

The following compounds were not found as part of a TIC search performed for samples J1V931 and J1V932: 1-Acetyl-2-thiorurea [591-08-2]; 2,5-Diaminotoluene [95-70-5]; 2-Cyclohexyl-4,6-dinitrophenol [131-89-5]; Hexachlorophene [70-30-4].

Low levels of Benzyl alcohol are present in the method blank associated with batch 280-334208. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

A Continuing Calibration Verification (CCV) standard associated with samples in analysis batch 280-335194 exhibited the %Difference (%D) value outside acceptance criteria, biased low, for 4-Nitroquinoline-1-oxide (-50.1%). The samples associated with this CCV were non-detect for the affected analyte. All CCC and SPCC compounds are in control; therefore, method criteria have been met and corrective action is deemed unnecessary.

No other anomalies were encountered.

**GLYCOLS - SW846 8015C**

Surrogate 1,4-Butanediol was recovered outside the control limits, biased low, in samples J1V931 and J1V921. The laboratory noted that this anomaly was due to obvious matrix interference; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**METHANOL - SW846 8015C**

No anomalies were encountered.

**GRO - NWTPH-Gx**

The samples were collected in properly preserved vials for analysis of gasoline range organics (GRO). However, when verified by the laboratory, the pH was greater than 2 and the following sample was analyzed after 7 days from sampling: J1V932 (pH = 7).

No other anomalies were encountered.

**PESTICIDES - SW846 8081A**

The Pesticides 8081A extractions for samples J1V931 and J1V932 were performed 14 days outside the recommended 7 day sample holding times. The extractions were originally performed within the sample holding times; however, due to associated LCS failures, re-extraction was required. It can be noted that the original analysis sample results were non-detect and the LCS exhibited percent recoveries outside the control limits, biased low, as follows: 4,4'-DDE = 72% (lower limit 74), Aldrin = 34% (lower limit 44), Heptachlor = 45% (lower limit 52).

Low levels of delta-BHC are present in the method blank associated with batch 280-336109. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a “B”.

No other anomalies were encountered.

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

**HERBICIDES - SW846 8151A**
No anomalies were encountered.

**DRO - NWTPH-Dx**
Low levels of C10-C36 are present in the method blank associated with batch 280-334141. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

No other anomalies were encountered.

**PAHs - SW846 8310**
Surrogate Terphenyl-d14 recovered outside the control limits, biased low at 67% (lower limit 70%), in sample J1V931. No evidence of matrix interference was present and the sample was non-detect. It can be noted that the spike compound recoveries and surrogate recoveries for the MS/MSD performed on sample J1V931 were in control. The laboratory re-extracted the sample, unavoidably 13 days past the 7 day recommended sample holding time, and the surrogate was in control at 94% and the non-detect results were confirmed. Due to insufficient sample volume remaining, sample specific MS/MSD analysis could not be performed for the re-extract batch. The original analysis data have been reported as the non-detect sample results were confirmed and the sample specific batch MS/MSD was associated with the original analysis.

No other anomalies were encountered.

**TOTAL METALS - SW846 6010B/6020/7470A**
Serial dilution of a digestate in batch 280-334811 indicates that physical and chemical interferences are present for Uranium. Results have been flagged with an “X”.

Low levels of Thallium are present in the method blank associated with batch 280-334811. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Calcium and Uranium in the Matrix Spike performed on sample J1V931; therefore, control limits are not applicable.

The duplicate analysis of sample J1V931 exhibited RPD data outside the control limits for Thallium, and the associated sample result has been flagged “M”. There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**OIL & GREASE (HEM) - EPA 1664A**
No anomalies were encountered.

**ANIONS - MCAWW 300.0**
The orthophosphate as P analyses for samples J1V931 and J1V932 were performed 8-9 hours outside the recommended 48 hour sample holding times. The analyses were originally performed within the sample holding times; however, due to associated continuing calibration verification (CCV) failures, reanalysis was required.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, samples J1V931 and J1V932 required dilutions prior to the analysis of Nitrate as N, Chloride and Sulfate, and the associated results have been flagged with a “D”. The reporting limits have been adjusted relative to the dilutions required.

The orthophosphate as P Matrix Spike performed on sample J1V931 exhibited the percent recovery outside the control limits, and the associated sample result has been flagged “N”. There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**AMMONIA as N - MCAWW 350.1**
No anomalies were encountered.

**NITRATE NITRITE as N - MCAWW 353.2**
Each sample is analyzed to achieve the lowest possible reporting limit within the constraints of the method. Due to high constituent concentration, samples J1V931 and J1V932 had to be analyzed at dilutions, and the associated results have been flagged with a “D”. The reporting limits have been adjusted relative to the dilutions required.

The Matrix Spike performed on sample J1V931 exhibited the percent recovery outside the control limits, and the associated sample result has been flagged “N”. There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**CHEMICAL OXYGEN DEMAND - MCAWW 410.4**
No anomalies were encountered.

**PHENOLICS - MCAWW 420.4**
Phenolics are present at a level greater than half the reporting limit in the method blank associated with batch 280-335552. As no detectable concentrations of Phenolics are present in the associated samples, corrective action is deemed unnecessary.

No other anomalies were encountered.

**TOTAL CYANIDE - SW846 9012A**
Low levels of Total Cyanide are present in the method blank associated with batch 280-334663. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

No other anomalies were encountered.

**TOTAL ORGANIC HALOGENS (TOX) - SW846 9020B**
The laboratory noted that the containers submitted for samples J1V931 and J1V932 were received with excess headspace. This could cause volatile halides to evaporate, resulting in a low bias to the reported results.

Samples J1V931 and J1V932 exhibited elevated detection limits due to the limited sample volume used. The nominal sample amount could not be used due to the nature of the sample matrix.

No other anomalies were encountered.

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

**ALKALINITY - SM 2320B**
Low levels of Alkalinity are present in the method blank associated with batch 280-333888. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

No other anomalies were encountered.

**TOTAL DISSOLVED SOLIDS - SM 2540C**
Samples J1V931 and J1V932 exhibited elevated detection limits due to the limited sample volume used. The nominal sample amount could not be used due to high constituent concentration.

No other anomalies were encountered.

**TOTAL SUSPENDED SOLIDS - SM 2540D**
No anomalies were encountered.

**TOTAL ORGANIC CARBON - SM 5310B**
No anomalies were encountered.

**PH - SW846 9040B**
SU = standard units

Samples J1V931 and J1V932 were analyzed 14 days after sample receipt, due to analyst oversight. It can be noted that pH is a field parameter with a holding time of 15 minutes.

No other anomalies were encountered.

**SPECIFIC CONDUCTANCE - SW846 9050A**
No anomalies were encountered.

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | B | Analyte was found in the associated method blank as well as in the sample. |
| | U | Analyzed for but not detected. |
| | J | Indicates an Estimated Value for TICs |
| | T | LCS, LCSD: Recovery exceeds upper or lower control limits. |
| | T | MS, MSD: Recovery exceeds upper or lower control limits. |
| | N | Presumptive evidence of material. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| GC/MS Semi VOA | | |
| | B | Analyte was found in the associated method blank as well as in the sample. |
| | U | Analyzed for but not detected. |
| | J | Indicates an Estimated Value for TICs |
| | N | Presumptive evidence of material. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| GC VOA | | |
| | U | Analyzed for but not detected. |
| | * | Surrogate is outside acceptance limits. |
| GC Semi VOA | | |
| | B | Analyte was found in the associated method blank as well as in the sample. |
| | U | Analyzed for but not detected. |
| | N | LCS, LCSD: Recovery exceeds upper or lower control limits. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

# DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Lab Section | Qualifier | Description |
|---|---|---|
| HPLC/IC | | |
| | U | Analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | * | Surrogate is outside acceptance limits. |
| Metals | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| | M | Sample duplicate precision not met. |
| | X | Serial dilution in the analytical batch indicates that physical and chemical interferences are present. |
| | C | The analyte was detected in both the sample and the assoicated QC blank, and the sample concentration was </= 5X the blank concentration. |
| General Chemistry | | |
| | U | Analyzed for but not detected. |
| | B | Estimated result. Result is less than the RL, but greater than MDL |
| | N | MS, MSD: Spike recovery is outside acceptance limits. |
| | D | Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples. |
| | C | The analyte was detected in both the sample and the assoicated QC blank, and the sample concentration was </= 5X the blank concentration. |

# SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-85505-1 | J1V931 | Water | 07/12/2016 0720 | 07/13/2016 0930 |
| 280-85505-1MS | J1V931 | Water | 07/12/2016 0720 | 07/13/2016 0930 |
| 280-85505-1MSD | J1V931 | Water | 07/12/2016 0720 | 07/13/2016 0930 |
| 280-85505-2 | J1V932 | Water | 07/12/2016 0720 | 07/13/2016 0930 |
| 280-85505-3 | J1V933 | Water | 07/12/2016 0600 | 07/13/2016 0930 |

# METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL DEN | SW846 8260B | |
| Purge and Trap | TAL DEN | | SW846 5030B |
| Semivolatile Organic Compounds (GC/MS) | TAL DEN | SW846 8270C | |
| Liquid-Liquid Extraction (Continuous) | TAL DEN | | SW846 3520C |
| Glycols- Direct Injection (GC/FID) | TAL DEN | SW846 8015C | |
| Nonhalogenated Organic using GC/FID (Direct Aqueous Injection) | TAL DEN | SW846 8015C | |
| Northwest - Volatile Petroleum Products (GC) | TAL DEN | NWTPH NWTPH-Gx | |
| Purge and Trap | TAL DEN | | SW846 5030B |
| Organochlorine Pesticides (GC) | TAL DEN | SW846 8081A | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL DEN | | SW846 3510C |
| Polychlorinated Biphenyls (PCBs) by Gas Chromatography | TAL DEN | SW846 8082 | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL DEN | | SW846 3510C |
| Herbicides (GC) | TAL DEN | SW846 8151A | |
| Extraction (Herbicides) | TAL DEN | | SW846 8151A |
| Northwest - Semi-Volatile Petroleum Products (GC) | TAL DEN | NWTPH NWTPH-Dx | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL DEN | | SW846 3510C |
| PAHs (HPLC) | TAL DEN | SW846 8310 | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL DEN | | SW846 3510C |
| Metals (ICP) | TAL DEN | SW846 6010B | |
| Preparation, Total Metals | TAL DEN | | SW846 3010A |
| Metals (ICP/MS) | TAL DEN | SW846 6020 | |
| Preparation, Total Metals | TAL DEN | | SW846 3020A |
| Mercury (CVAA) | TAL DEN | SW846 7470A | |
| Preparation, Mercury | TAL DEN | | SW846 7470A |
| Oil & Grease (HEM) | TAL DEN | EPA 1664A | |
| HEM and SGT-HEM (SPE) | TAL DEN | | 1664A 1664A |
| Anions, Ion Chromatography | TAL DEN | MCAWW 300.0 | |
| Nitrogen, Ammonia | TAL DEN | MCAWW 350.1 | |
| Nitrogen, Nitrate-Nitrite | TAL DEN | MCAWW 353.2 | |
| COD | TAL DEN | MCAWW 410.4 | |
| Phenolics, Total Recoverable | TAL DEN | MCAWW 420.4 | |
| Distillation, Phenolics | TAL DEN | | Distill/Phenol |
| Total Cyanide (Automated Colorimetric] | TAL DEN | SW846 9012A | |
| Cyanide, Total and/or Amenable, Distillation | TAL DEN | | SW846 9012A |
| Organic Halides, Total (TOX) | TAL DEN | SW846 9020B | |
| Sulfide, Acid Soluble and Insoluble (Titrimetric) | TAL DEN | SW846 9034 | |
| Sulfide, Distillation (Acid Soluble and Insoluble) | TAL DEN | | SW846 9030B |
| pH | TAL DEN | SW846 9040B | |

# METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Specific Conductance | TAL DEN | SW846 9050A | |
| Alkalinity | TAL DEN | SM SM 2320B | |
| Solids, Total Dissolved (TDS) | TAL DEN | SM SM 2540C | |
| Solids, Total Suspended (TSS) | TAL DEN | SM SM 2540D | |
| Organic Carbon, Total (TOC) | TAL DEN | SM SM 5310B | |

## Lab References:

TAL DEN = TestAmerica Denver

## Method References:

1664A = EPA-821-98-002

EPA = US Environmental Protection Agency

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

NWTPH = Northwest Total Petroleum Hydrocarbon

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

# METHOD / ANALYST SUMMARY

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Seifert, Judy L | JLS |
| SW846 8270C | Kiekel, Daniel C | DCK |
| SW846 8015C | Moore, Tegan E | TEM |
| NWTPH NWTPH-Gx | Redman, Erin E | EER |
| SW846 8081A | Wells, David A | DAW |
| SW846 8082 | Jackson, Todd D | TDJ |
| SW846 8151A | Wells, David A | DAW |
| NWTPH NWTPH-Dx | Moore, Tegan E | TEM |
| SW846 6010B | Kelly, Cara M | CMK |
| SW846 6010B | Scott, Samantha J | SJS |
| SW846 6020 | Trudell, Lynn-Anne M | LMT |
| SW846 7470A | Henning, Christopher D | CDH |
| EPA 1664A | Stanfill, Kasey M | KMS |
| MCAWW 300.0 | Benson, Alex F | AFB |
| MCAWW 350.1 | Lawrence, Caitlyn M | CML |
| MCAWW 353.2 | Simons, Nicole A | NAS |
| MCAWW 410.4 | Jewell, Connie C | CCJ |
| MCAWW 420.4 | Lehman, Jeffrey M | JML |
| SW846 9012A | Lehman, Jeffrey M | JML |
| SW846 9020B | Paukovich, Natasia A | NAP |
| SW846 9034 | Lawrence, Caitlyn M | CML |
| SW846 9040B | Spedale, Morgan A | MAS |
| SW846 9050A | Martinez, Rut S | RSM |
| SM SM 2320B | Uge, Ikem E | IEU |
| SM SM 2540C | Greckel, Meagan N | MNG |
| SM SM 2540D | Cherry, Scott V | SVC |
| SM SM 5310B | Jewell, Connie C | CCJ |
| SW846 8310 | Fiedler, Heather K | HKF |

# SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | P0367.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1348 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1348 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,1-Trichloroethane | 0.16 | U | 0.16 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.42 | U | 0.42 | 3.0 |
| 1,1,2-Trichloroethane | 0.27 | U | 0.27 | 1.0 |
| 1,1-Dichloroethane | 0.22 | U | 0.22 | 1.0 |
| 1,1-Dichloroethene | 0.62 | J | 0.23 | 1.0 |
| 1,2,3-Trichloropropane | 0.33 | U | 0.33 | 2.5 |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 0.47 | 5.0 |
| 1,2-Dibromoethane | 0.18 | U | 0.18 | 1.0 |
| 1,2-Dichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,2-Dichloropropane | 0.18 | U | 0.18 | 1.0 |
| 1-Butanol | 17 | U | 17 | 60 |
| 2-Butanone (MEK) | 2.0 | U | 2.0 | 6.0 |
| 2-Chloroethyl vinyl ether | 0.69 | U T | 0.69 | 3.0 |
| 2-Hexanone | 1.7 | U | 1.7 | 5.0 |
| 2-Nitropropane | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 0.98 | 5.0 |
| Acetone | 1.9 | U | 1.9 | 10 |
| Acetonitrile | 9.6 | U | 9.6 | 30 |
| Acrolein | 2.8 | U | 2.8 | 20 |
| Acrylonitrile | 1.4 | U | 1.4 | 20 |
| Allyl chloride | 0.17 | U | 0.17 | 2.0 |
| Benzene | 0.16 | U | 0.16 | 1.0 |
| Bromodichloromethane | 0.17 | U | 0.17 | 1.0 |
| Bromoform | 0.19 | U | 0.19 | 1.0 |
| Bromomethane | 0.21 | U | 0.21 | 2.0 |
| Carbon disulfide | 0.45 | U | 0.45 | 2.0 |
| Carbon tetrachloride | 0.19 | U | 0.19 | 1.0 |
| Chlorobenzene | 0.17 | U | 0.17 | 1.0 |
| Chloroethane | 0.41 | U | 0.41 | 2.0 |
| Chloroform | 0.16 | U | 0.16 | 1.0 |
| Chloromethane | 0.33 | J | 0.30 | 2.0 |
| Chloroprene | 0.21 | U | 0.21 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| cis-1,3-Dichloropropene | 0.16 | U | 0.16 | 1.0 |
| Dibromochloromethane | 0.17 | U | 0.17 | 1.0 |
| Dibromomethane | 0.17 | U | 0.17 | 1.0 |
| Dichlorodifluoromethane | 0.31 | U | 0.31 | 2.0 |
| Ethyl acetate | 1.2 | U | 1.2 | 5.0 |
| Ethyl ether | 0.26 | U | 0.26 | 2.0 |
| Ethyl methacrylate | 0.86 | U | 0.86 | 3.0 |
| Ethylbenzene | 0.16 | U | 0.16 | 1.0 |
| Iodomethane | 0.23 | U | 0.23 | 1.0 |
| Isobutyl alcohol | 37 | U | 37 | 110 |
| Isopropylbenzene | 0.19 | U | 0.19 | 1.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | P0367.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1348 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1348 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methacrylonitrile | 1.6 | U | 1.6 | 10 |
| Methyl acetate | 1.6 | U | 1.6 | 5.0 |
| Methyl methacrylate | 1.1 | U | 1.1 | 4.0 |
| Methylene Chloride | 1.5 | J B T | 0.32 | 2.0 |
| Propionitrile | 3.7 | U | 3.7 | 20 |
| Styrene | 0.17 | U | 0.17 | 1.0 |
| Tetrachloroethene | 0.20 | U | 0.20 | 1.0 |
| Tetrahydrofuran | 2.0 | U | 2.0 | 7.0 |
| Toluene | 0.17 | U | 0.17 | 1.0 |
| trans-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| trans-1,3-Dichloropropene | 0.19 | U | 0.19 | 3.0 |
| trans-1,4-Dichloro-2-butene | 0.80 | U | 0.80 | 3.0 |
| Trichloroethene | 0.16 | U | 0.16 | 1.0 |
| Trichlorofluoromethane | 0.33 | J | 0.29 | 2.0 |
| Vinyl acetate | 0.94 | U | 0.94 | 3.0 |
| Vinyl chloride | 0.10 | U | 0.10 | 1.0 |
| Xylenes, Total | 0.19 | U | 0.19 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 119 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 109 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 109 | | 77 - 120 |
| Toluene-d8 (Surr) | 104 | | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID: J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | P0367.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1348 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1348 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found: 2**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 75-43-4 | Dichlorofluoromethane | 4.88 | 0.29 | J N |
| 60-34-4 | Hydrazine, methyl- | 6.66 | 1.5 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7351.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1230 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1230 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,1-Trichloroethane | 0.16 | U | 0.16 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.42 | U | 0.42 | 3.0 |
| 1,1,2-Trichloroethane | 0.27 | U | 0.27 | 1.0 |
| 1,1-Dichloroethane | 0.22 | U | 0.22 | 1.0 |
| 1,1-Dichloroethene | 0.24 | J | 0.23 | 1.0 |
| 1,2,3-Trichloropropane | 0.33 | U | 0.33 | 2.5 |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 0.47 | 5.0 |
| 1,2-Dibromoethane | 0.18 | U | 0.18 | 1.0 |
| 1,2-Dichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,2-Dichloropropane | 0.18 | U | 0.18 | 1.0 |
| 1-Butanol | 17 | U | 17 | 60 |
| 2-Butanone (MEK) | 2.0 | U | 2.0 | 6.0 |
| 2-Chloroethyl vinyl ether | 0.69 | U | 0.69 | 3.0 |
| 2-Hexanone | 1.7 | U | 1.7 | 5.0 |
| 2-Nitropropane | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 0.98 | 5.0 |
| Acetone | 1.9 | U | 1.9 | 10 |
| Acetonitrile | 9.6 | U | 9.6 | 30 |
| Acrolein | 2.8 | U | 2.8 | 20 |
| Acrylonitrile | 1.4 | U | 1.4 | 20 |
| Allyl chloride | 0.17 | U | 0.17 | 2.0 |
| Benzene | 0.16 | U | 0.16 | 1.0 |
| Bromodichloromethane | 0.17 | U | 0.17 | 1.0 |
| Bromoform | 0.19 | U | 0.19 | 1.0 |
| Bromomethane | 0.21 | U | 0.21 | 2.0 |
| Carbon disulfide | 0.45 | U | 0.45 | 2.0 |
| Carbon tetrachloride | 0.19 | U | 0.19 | 1.0 |
| Chlorobenzene | 0.17 | U | 0.17 | 1.0 |
| Chloroethane | 0.41 | U | 0.41 | 2.0 |
| Chloroform | 0.16 | U | 0.16 | 1.0 |
| Chloromethane | 0.30 | U | 0.30 | 2.0 |
| Chloroprene | 0.21 | U | 0.21 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| cis-1,3-Dichloropropene | 0.16 | U | 0.16 | 1.0 |
| Dibromochloromethane | 0.17 | U | 0.17 | 1.0 |
| Dibromomethane | 0.17 | U | 0.17 | 1.0 |
| Dichlorodifluoromethane | 0.31 | U | 0.31 | 2.0 |
| Ethyl acetate | 1.2 | U | 1.2 | 5.0 |
| Ethyl ether | 0.26 | U | 0.26 | 2.0 |
| Ethyl methacrylate | 0.86 | U | 0.86 | 3.0 |
| Ethylbenzene | 0.16 | U | 0.16 | 1.0 |
| Iodomethane | 0.23 | U | 0.23 | 1.0 |
| Isobutyl alcohol | 37 | U | 37 | 110 |
| Isopropylbenzene | 0.19 | U | 0.19 | 1.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7351.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1230 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1230 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methacrylonitrile | 1.6 | U | 1.6 | 10 |
| Methyl acetate | 1.6 | U | 1.6 | 5.0 |
| Methyl methacrylate | 1.1 | U | 1.1 | 4.0 |
| Methylene Chloride | 0.46 | J B | 0.32 | 2.0 |
| Propionitrile | 3.7 | U | 3.7 | 20 |
| Styrene | 0.17 | U | 0.17 | 1.0 |
| Tetrachloroethene | 0.20 | U | 0.20 | 1.0 |
| Tetrahydrofuran | 2.0 | U | 2.0 | 7.0 |
| Toluene | 0.17 | U | 0.17 | 1.0 |
| trans-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| trans-1,3-Dichloropropene | 0.19 | U | 0.19 | 3.0 |
| trans-1,4-Dichloro-2-butene | 0.80 | U | 0.80 | 3.0 |
| Trichloroethene | 0.16 | U | 0.16 | 1.0 |
| Trichlorofluoromethane | 0.29 | U | 0.29 | 2.0 |
| Vinyl acetate | 0.94 | U | 0.94 | 3.0 |
| Vinyl chloride | 0.10 | U | 0.10 | 1.0 |
| Xylenes, Total | 0.19 | U | 0.19 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 106 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 99 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 101 | | 77 - 120 |
| Toluene-d8 (Surr) | 97 | | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID: J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7351.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1230 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1230 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found: 4**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 75-43-4 | Dichlorofluoromethane | 2.94 | 0.31 | J N J |
| 67-63-0 | Isopropyl alcohol | 3.63 | 21 | J N J |
| 693-21-0 | Ethanol, 2,2'-oxybis-, dinitrate | 5.29 | 2.5 | N J |
| 556-67-2 | Cyclotetrasiloxane, octamethyl- | 13.02 | 1.3 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V933**

Lab Sample ID: 280-85505-3
Client Matrix: Water

Date Sampled: 07/12/2016 0600
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7352.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1254 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1254 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,1-Trichloroethane | 0.16 | U | 0.16 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.42 | U | 0.42 | 3.0 |
| 1,1,2-Trichloroethane | 0.27 | U | 0.27 | 1.0 |
| 1,1-Dichloroethane | 0.22 | U | 0.22 | 1.0 |
| 1,1-Dichloroethene | 0.23 | U | 0.23 | 1.0 |
| 1,2,3-Trichloropropane | 0.33 | U | 0.33 | 2.5 |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 0.47 | 5.0 |
| 1,2-Dibromoethane | 0.18 | U | 0.18 | 1.0 |
| 1,2-Dichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,2-Dichloropropane | 0.18 | U | 0.18 | 1.0 |
| 1-Butanol | 17 | U | 17 | 60 |
| 2-Butanone (MEK) | 2.0 | U | 2.0 | 6.0 |
| 2-Chloroethyl vinyl ether | 0.69 | U | 0.69 | 3.0 |
| 2-Hexanone | 1.7 | U | 1.7 | 5.0 |
| 2-Nitropropane | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 0.98 | 5.0 |
| Acetone | 1.9 | U | 1.9 | 10 |
| Acetonitrile | 9.6 | U | 9.6 | 30 |
| Acrolein | 2.8 | U | 2.8 | 20 |
| Acrylonitrile | 1.4 | U | 1.4 | 20 |
| Allyl chloride | 0.17 | U | 0.17 | 2.0 |
| Benzene | 0.16 | U | 0.16 | 1.0 |
| Bromodichloromethane | 0.17 | U | 0.17 | 1.0 |
| Bromoform | 0.19 | U | 0.19 | 1.0 |
| Bromomethane | 0.21 | U | 0.21 | 2.0 |
| Carbon disulfide | 0.45 | U | 0.45 | 2.0 |
| Carbon tetrachloride | 0.19 | U | 0.19 | 1.0 |
| Chlorobenzene | 0.17 | U | 0.17 | 1.0 |
| Chloroethane | 0.41 | U | 0.41 | 2.0 |
| Chloroform | 0.16 | U | 0.16 | 1.0 |
| Chloromethane | 0.30 | U | 0.30 | 2.0 |
| Chloroprene | 0.21 | U | 0.21 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| cis-1,3-Dichloropropene | 0.16 | U | 0.16 | 1.0 |
| Dibromochloromethane | 0.17 | U | 0.17 | 1.0 |
| Dibromomethane | 0.17 | U | 0.17 | 1.0 |
| Dichlorodifluoromethane | 0.31 | U | 0.31 | 2.0 |
| Ethyl acetate | 1.2 | U | 1.2 | 5.0 |
| Ethyl ether | 0.26 | U | 0.26 | 2.0 |
| Ethyl methacrylate | 0.86 | U | 0.86 | 3.0 |
| Ethylbenzene | 0.16 | U | 0.16 | 1.0 |
| Iodomethane | 0.23 | U | 0.23 | 1.0 |
| Isobutyl alcohol | 37 | U | 37 | 110 |
| Isopropylbenzene | 0.19 | U | 0.19 | 1.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V933**

Lab Sample ID: 280-85505-3
Client Matrix: Water

Date Sampled: 07/12/2016 0600
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7352.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1254 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1254 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methacrylonitrile | 1.6 | U | 1.6 | 10 |
| Methyl acetate | 1.6 | U | 1.6 | 5.0 |
| Methyl methacrylate | 1.1 | U | 1.1 | 4.0 |
| Methylene Chloride | 0.53 | J B | 0.32 | 2.0 |
| Propionitrile | 3.7 | U | 3.7 | 20 |
| Styrene | 0.17 | U | 0.17 | 1.0 |
| Tetrachloroethene | 0.20 | U | 0.20 | 1.0 |
| Tetrahydrofuran | 2.0 | U | 2.0 | 7.0 |
| Toluene | 0.17 | U | 0.17 | 1.0 |
| trans-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| trans-1,3-Dichloropropene | 0.19 | U | 0.19 | 3.0 |
| trans-1,4-Dichloro-2-butene | 0.80 | U | 0.80 | 3.0 |
| Trichloroethene | 0.16 | U | 0.16 | 1.0 |
| Trichlorofluoromethane | 0.29 | U | 0.29 | 2.0 |
| Vinyl acetate | 0.94 | U | 0.94 | 3.0 |
| Vinyl chloride | 0.10 | U | 0.10 | 1.0 |
| Xylenes, Total | 0.19 | U | 0.19 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 113 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 102 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 106 | | 77 - 120 |
| Toluene-d8 (Surr) | 102 | | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V933**

Lab Sample ID: 280-85505-3
Client Matrix: Water

Date Sampled: 07/12/2016 0600
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | H7352.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1254 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1254 | | | | |

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

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| | Unknown | 5.30 | 2.3 | N J |
| 541-05-9 | Cyclotrisiloxane, hexamethyl- | 9.52 | 1.7 | N J |
| 556-67-2 | Cyclotetrasiloxane, octamethyl- | 13.03 | 1.9 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24485.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 999.7 mL |
| Analysis Date: | 07/26/2016 2101 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | 1.7 | U | 1.7 | 10 |
| 1,2,4-Trichlorobenzene | 0.28 | U | 0.28 | 4.0 |
| 1,2-Dichlorobenzene | 0.23 | U | 0.23 | 4.0 |
| 1,2-Diphenylhydrazine | 0.23 | U | 0.23 | 10 |
| 1,3,5-Trinitrobenzene | 4.0 | U | 4.0 | 50 |
| 1,3-Dichlorobenzene | 0.30 | U | 0.30 | 10 |
| 1,3-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dichlorobenzene | 0.32 | U | 0.32 | 4.0 |
| 1,4-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dioxane | 1.7 | U | 1.7 | 20 |
| 1,4-Naphthoquinone | 14 | U | 14 | 50 |
| 1-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2,2'-oxybis[1-chloropropane] | 0.28 | U | 0.28 | 10 |
| 2,3,4,6-Tetrachlorophenol | 2.0 | U | 2.0 | 50 |
| 2,4,5-Trichlorophenol | 0.45 | U | 0.45 | 10 |
| 2,4,6-Trichlorophenol | 0.29 | U | 0.29 | 10 |
| 2,4-Dichlorophenol | 0.64 | U | 0.64 | 10 |
| 2,4-Dimethylphenol | 0.58 | U | 0.58 | 10 |
| 2,4-Dinitrophenol | 10 | U | 10 | 25 |
| 2,4-Dinitrotoluene | 1.7 | U | 1.7 | 10 |
| 2,6-Dichlorophenol | 1.4 | U | 1.4 | 10 |
| 2,6-Dinitrotoluene | 1.9 | U | 1.9 | 10 |
| 2-Acetylaminofluorene | 7.0 | U | 7.0 | 100 |
| 2-Chloronaphthalene | 0.26 | U | 0.26 | 4.0 |
| 2-Chlorophenol | 2.0 | U | 2.0 | 10 |
| 2-Methylnaphthalene | 0.29 | U | 0.29 | 4.0 |
| 2-Methylphenol | 0.98 | U | 0.98 | 10 |
| 2-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2-Nitroaniline | 1.7 | U | 1.7 | 10 |
| 2-Nitrophenol | 0.39 | U | 0.39 | 10 |
| 2-Picoline | 1.2 | U | 1.2 | 20 |
| 2-sec-Butyl-4,6-dinitrophenol | 4.0 | U | 4.0 | 20 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 3 & 4 Methylphenol | 0.25 | U | 0.25 | 10 |
| 3,3'-Dichlorobenzidine | 2.0 | U | 2.0 | 10 |
| 3,3'-Dimethylbenzidine | 4.0 | U | 4.0 | 20 |
| 3-Methylcholanthrene | 1.7 | U | 1.7 | 20 |
| 3-Methylphenol | 0.25 | U | 0.25 | 10 |
| 3-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4,6-Dinitro-2-methylphenol | 4.0 | U | 4.0 | 10 |
| 4-Aminobiphenyl | 4.5 | U | 4.5 | 50 |
| 4-Bromophenyl phenyl ether | 0.43 | U | 0.43 | 10 |
| 4-Chloro-3-methylphenol | 2.4 | U | 2.4 | 10 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 10 |
| 4-Chlorophenyl phenyl ether | 1.7 | U | 1.7 | 10 |
| 4-Methylphenol | 0.25 | U | 0.25 | 10 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24485.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 999.7 mL |
| Analysis Date: | 07/26/2016 2101 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4-Nitrophenol | 1.2 | U | 1.2 | 10 |
| 4-Nitroquinoline-1-oxide | 20 | U | 20 | 100 |
| 5-Nitro-o-toluidine | 1.4 | U | 1.4 | 20 |
| 7,12-Dimethylbenz(a)anthracene | 1.6 | U | 1.6 | 20 |
| a,a-Dimethylphenethylamine | 20 | U | 20 | 50 |
| Acenaphthene | 0.28 | U | 0.28 | 4.0 |
| Acenaphthylene | 0.49 | U | 0.49 | 4.0 |
| Acetophenone | 0.24 | U | 0.24 | 10 |
| Aniline | 2.0 | U | 2.0 | 10 |
| Anthracene | 0.42 | U | 0.42 | 4.0 |
| Aramite, Total | 9.2 | U | 9.2 | 18 |
| Benzaldehyde | 2.0 | U | 2.0 | 10 |
| Benzo[a]anthracene | 0.35 | U | 0.35 | 4.0 |
| Benzo[a]pyrene | 0.31 | U | 0.31 | 4.0 |
| Benzo[b]fluoranthene | 0.53 | U | 0.53 | 4.0 |
| Benzo[g,h,i]perylene | 0.50 | U | 0.50 | 4.0 |
| Benzo[k]fluoranthene | 0.46 | U | 0.46 | 4.0 |
| Benzoic acid | 10 | U | 10 | 25 |
| Benzyl alcohol | 0.57 | J B | 0.23 | 10 |
| Bis(2-chloroethoxy)methane | 0.97 | U | 0.97 | 10 |
| Bis(2-chloroethyl)ether | 0.41 | U | 0.41 | 10 |
| Bis(2-ethylhexyl) phthalate | 0.56 | U | 0.56 | 10 |
| Butyl benzyl phthalate | 1.0 | U | 1.0 | 4.0 |
| Chlorobenzilate | 0.66 | U | 0.66 | 10 |
| Chrysene | 0.54 | U | 0.54 | 4.0 |
| Diallate | 0.56 | U | 0.56 | 5.6 |
| Dibenz(a,h)anthracene | 0.51 | U | 0.51 | 4.0 |
| Dibenzofuran | 0.29 | U | 0.29 | 4.0 |
| Diethyl phthalate | 0.38 | U | 0.38 | 4.0 |
| Dimethoate | 1.1 | U | 1.1 | 20 |
| Dimethyl phthalate | 0.21 | U | 0.21 | 4.0 |
| Di-n-butyl phthalate | 1.2 | U | 1.2 | 4.0 |
| Di-n-octyl phthalate | 0.35 | U | 0.35 | 4.0 |
| Diphenylamine | 1.1 | U | 1.1 | 10 |
| Disulfoton | 1.1 | U | 1.1 | 50 |
| Ethyl methanesulfonate | 0.94 | U | 0.94 | 10 |
| Ethyl Parathion | 2.0 | U | 2.0 | 50 |
| Fluoranthene | 0.20 | U | 0.20 | 4.0 |
| Fluorene | 0.31 | U | 0.31 | 4.0 |
| Hexachlorobenzene | 0.66 | U | 0.66 | 10 |
| Hexachlorobutadiene | 3.3 | U | 3.3 | 10 |
| Hexachlorocyclopentadiene | 10 | U | 10 | 10 |
| Hexachloroethane | 2.1 | U | 2.1 | 10 |
| Hexachloropropene | 2.0 | U | 2.0 | 100 |
| Indeno[1,2,3-cd]pyrene | 0.65 | U | 0.65 | 4.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24485.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 999.7 mL |
| Analysis Date: | 07/26/2016 2101 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Isophorone | 0.21 | U | 0.21 | 10 |
| Isosafrole | 1.0 | U | 1.0 | 3.5 |
| Methapyrilene | 20 | U | 20 | 50 |
| Methyl methanesulfonate | 1.0 | U | 1.0 | 10 |
| Naphthalene | 0.29 | U | 0.29 | 4.0 |
| Nitrobenzene | 0.81 | U | 0.81 | 10 |
| N-Nitrosodiethylamine | 1.7 | U | 1.7 | 10 |
| N-Nitrosodimethylamine | 0.29 | U | 0.29 | 10 |
| N-Nitrosodi-n-butylamine | 1.2 | U | 1.2 | 10 |
| N-Nitrosodi-n-propylamine | 0.35 | U | 0.35 | 10 |
| n-Nitrosodiphenylamine(as diphenylamine) | 0.44 | U | 0.44 | 10 |
| N-Nitrosomethylethylamine | 1.8 | U | 1.8 | 10 |
| N-Nitrosomorpholine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopiperidine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopyrrolidine | 0.80 | U | 0.80 | 10 |
| o,o',o''-Triethylphosphorothioate | 2.0 | U | 2.0 | 50 |
| p-Dimethylamino azobenzene | 2.0 | U | 2.0 | 20 |
| Pentachlorobenzene | 2.0 | U | 2.0 | 10 |
| Pentachloroethane | 2.0 | U | 2.0 | 50 |
| Pentachloronitrobenzene | 2.0 | U | 2.0 | 50 |
| Pentachlorophenol | 20 | U | 20 | 50 |
| Phenacetin | 1.1 | U | 1.1 | 20 |
| Phenanthrene | 0.26 | U | 0.26 | 4.0 |
| Phenol | 2.0 | U | 2.0 | 10 |
| Phorate | 2.0 | U | 2.0 | 50 |
| p-Phenylene diamine | 5.0 | U | 5.0 | 100 |
| Pronamide | 2.0 | U | 2.0 | 20 |
| Pyrene | 0.37 | U | 0.37 | 10 |
| Pyridine | 1.7 | U | 1.7 | 20 |
| Safrole, Total | 1.1 | U | 1.1 | 20 |
| Tris(2,3-dibromopropyl)phosphate | 25 | U | 25 | 100 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2,4,6-Tribromophenol | 83 | | 48 - 135 |
| 2-Fluorobiphenyl | 66 | | 48 - 135 |
| 2-Fluorophenol | 58 | | 41 - 135 |
| Nitrobenzene-d5 | 61 | | 42 - 135 |
| Phenol-d5 | 64 | | 46 - 135 |
| Terphenyl-d14 | 46 | | 20 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24485.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 999.7 mL |
| Analysis Date: | 07/26/2016 2101 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

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

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 110-82-7 | Cyclohexane | 1.68 | 30 | N J |
| 994-05-8 | Butane, 2-methoxy-2-methyl- | 1.75 | 130 | N J |
| | Unknown | 3.12 | 13 | N J |
| | Unknown | 4.40 | 6.5 | N J |
| 104-76-7 | 1-Hexanol, 2-ethyl- | 4.66 | 33 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24488.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 996.3 mL |
| Analysis Date: | 07/26/2016 2221 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | 1.7 | U | 1.7 | 10 |
| 1,2,4-Trichlorobenzene | 0.28 | U | 0.28 | 4.0 |
| 1,2-Dichlorobenzene | 0.23 | U | 0.23 | 4.0 |
| 1,2-Diphenylhydrazine | 0.23 | U | 0.23 | 10 |
| 1,3,5-Trinitrobenzene | 4.0 | U | 4.0 | 50 |
| 1,3-Dichlorobenzene | 0.30 | U | 0.30 | 10 |
| 1,3-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dichlorobenzene | 0.32 | U | 0.32 | 4.0 |
| 1,4-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dioxane | 1.7 | U | 1.7 | 20 |
| 1,4-Naphthoquinone | 14 | U | 14 | 50 |
| 1-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2,2'-oxybis[1-chloropropane] | 0.28 | U | 0.28 | 10 |
| 2,3,4,6-Tetrachlorophenol | 2.0 | U | 2.0 | 50 |
| 2,4,5-Trichlorophenol | 0.45 | U | 0.45 | 10 |
| 2,4,6-Trichlorophenol | 0.29 | U | 0.29 | 10 |
| 2,4-Dichlorophenol | 0.64 | U | 0.64 | 10 |
| 2,4-Dimethylphenol | 0.58 | U | 0.58 | 10 |
| 2,4-Dinitrophenol | 10 | U | 10 | 25 |
| 2,4-Dinitrotoluene | 1.7 | U | 1.7 | 10 |
| 2,6-Dichlorophenol | 1.4 | U | 1.4 | 10 |
| 2,6-Dinitrotoluene | 1.9 | U | 1.9 | 10 |
| 2-Acetylaminofluorene | 7.0 | U | 7.0 | 100 |
| 2-Chloronaphthalene | 0.26 | U | 0.26 | 4.0 |
| 2-Chlorophenol | 2.0 | U | 2.0 | 10 |
| 2-Methylnaphthalene | 0.29 | U | 0.29 | 4.0 |
| 2-Methylphenol | 0.98 | U | 0.98 | 10 |
| 2-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2-Nitroaniline | 1.7 | U | 1.7 | 10 |
| 2-Nitrophenol | 0.39 | U | 0.39 | 10 |
| 2-Picoline | 1.2 | U | 1.2 | 20 |
| 2-sec-Butyl-4,6-dinitrophenol | 4.0 | U | 4.0 | 20 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 3 & 4 Methylphenol | 0.25 | U | 0.25 | 10 |
| 3,3'-Dichlorobenzidine | 2.0 | U | 2.0 | 10 |
| 3,3'-Dimethylbenzidine | 4.0 | U | 4.0 | 20 |
| 3-Methylcholanthrene | 1.7 | U | 1.7 | 20 |
| 3-Methylphenol | 0.25 | U | 0.25 | 10 |
| 3-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4,6-Dinitro-2-methylphenol | 4.0 | U | 4.0 | 10 |
| 4-Aminobiphenyl | 4.5 | U | 4.5 | 50 |
| 4-Bromophenyl phenyl ether | 0.43 | U | 0.43 | 10 |
| 4-Chloro-3-methylphenol | 2.4 | U | 2.4 | 10 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 10 |
| 4-Chlorophenyl phenyl ether | 1.7 | U | 1.7 | 10 |
| 4-Methylphenol | 0.25 | U | 0.25 | 10 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID: J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24488.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 996.3 mL |
| Analysis Date: | 07/26/2016 2221 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4-Nitrophenol | 1.2 | U | 1.2 | 10 |
| 4-Nitroquinoline-1-oxide | 20 | U | 20 | 100 |
| 5-Nitro-o-toluidine | 1.4 | U | 1.4 | 20 |
| 7,12-Dimethylbenz(a)anthracene | 1.6 | U | 1.6 | 20 |
| a,a-Dimethylphenethylamine | 20 | U | 20 | 50 |
| Acenaphthene | 0.28 | U | 0.28 | 4.0 |
| Acenaphthylene | 0.49 | U | 0.49 | 4.0 |
| Acetophenone | 0.24 | U | 0.24 | 10 |
| Aniline | 2.0 | U | 2.0 | 10 |
| Anthracene | 0.42 | U | 0.42 | 4.0 |
| Aramite, Total | 9.2 | U | 9.2 | 18 |
| Benzaldehyde | 2.0 | U | 2.0 | 10 |
| Benzo[a]anthracene | 0.35 | U | 0.35 | 4.0 |
| Benzo[a]pyrene | 0.31 | U | 0.31 | 4.0 |
| Benzo[b]fluoranthene | 0.53 | U | 0.53 | 4.0 |
| Benzo[g,h,i]perylene | 0.50 | U | 0.50 | 4.0 |
| Benzo[k]fluoranthene | 0.46 | U | 0.46 | 4.0 |
| Benzoic acid | 10 | U | 10 | 25 |
| Benzyl alcohol | 0.34 | J B | 0.23 | 10 |
| Bis(2-chloroethoxy)methane | 0.97 | U | 0.97 | 10 |
| Bis(2-chloroethyl)ether | 0.41 | U | 0.41 | 10 |
| Bis(2-ethylhexyl) phthalate | 0.56 | U | 0.56 | 10 |
| Butyl benzyl phthalate | 1.0 | U | 1.0 | 4.0 |
| Chlorobenzilate | 0.66 | U | 0.66 | 10 |
| Chrysene | 0.54 | U | 0.54 | 4.0 |
| Diallate | 0.56 | U | 0.56 | 5.6 |
| Dibenz(a,h)anthracene | 0.51 | U | 0.51 | 4.0 |
| Dibenzofuran | 0.29 | U | 0.29 | 4.0 |
| Diethyl phthalate | 0.38 | U | 0.38 | 4.0 |
| Dimethoate | 1.1 | U | 1.1 | 20 |
| Dimethyl phthalate | 0.21 | U | 0.21 | 4.0 |
| Di-n-butyl phthalate | 1.2 | U | 1.2 | 4.0 |
| Di-n-octyl phthalate | 0.35 | U | 0.35 | 4.0 |
| Diphenylamine | 1.1 | U | 1.1 | 10 |
| Disulfoton | 1.1 | U | 1.1 | 50 |
| Ethyl methanesulfonate | 0.95 | U | 0.95 | 10 |
| Ethyl Parathion | 2.0 | U | 2.0 | 50 |
| Fluoranthene | 0.20 | U | 0.20 | 4.0 |
| Fluorene | 0.31 | U | 0.31 | 4.0 |
| Hexachlorobenzene | 0.66 | U | 0.66 | 10 |
| Hexachlorobutadiene | 3.3 | U | 3.3 | 10 |
| Hexachlorocyclopentadiene | 10 | U | 10 | 10 |
| Hexachloroethane | 2.1 | U | 2.1 | 10 |
| Hexachloropropene | 2.0 | U | 2.0 | 100 |
| Indeno[1,2,3-cd]pyrene | 0.65 | U | 0.65 | 4.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24488.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 996.3 mL |
| Analysis Date: | 07/26/2016 2221 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Isophorone | 0.21 | U | 0.21 | 10 |
| Isosafrole | 1.0 | U | 1.0 | 3.5 |
| Methapyrilene | 20 | U | 20 | 50 |
| Methyl methanesulfonate | 1.0 | U | 1.0 | 10 |
| Naphthalene | 0.29 | U | 0.29 | 4.0 |
| Nitrobenzene | 0.81 | U | 0.81 | 10 |
| N-Nitrosodiethylamine | 1.7 | U | 1.7 | 10 |
| N-Nitrosodimethylamine | 0.29 | U | 0.29 | 10 |
| N-Nitrosodi-n-butylamine | 1.2 | U | 1.2 | 10 |
| N-Nitrosodi-n-propylamine | 0.35 | U | 0.35 | 10 |
| n-Nitrosodiphenylamine(as diphenylamine) | 0.44 | U | 0.44 | 10 |
| N-Nitrosomethylethylamine | 1.8 | U | 1.8 | 10 |
| N-Nitrosomorpholine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopiperidine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopyrrolidine | 0.81 | U | 0.81 | 10 |
| o,o',o''-Triethylphosphorothioate | 2.0 | U | 2.0 | 50 |
| p-Dimethylamino azobenzene | 2.0 | U | 2.0 | 20 |
| Pentachlorobenzene | 2.0 | U | 2.0 | 10 |
| Pentachloroethane | 2.0 | U | 2.0 | 50 |
| Pentachloronitrobenzene | 2.0 | U | 2.0 | 50 |
| Pentachlorophenol | 20 | U | 20 | 50 |
| Phenacetin | 1.1 | U | 1.1 | 20 |
| Phenanthrene | 0.26 | U | 0.26 | 4.0 |
| Phenol | 2.0 | U | 2.0 | 10 |
| Phorate | 2.0 | U | 2.0 | 50 |
| p-Phenylene diamine | 5.0 | U | 5.0 | 100 |
| Pronamide | 2.0 | U | 2.0 | 20 |
| Pyrene | 0.37 | U | 0.37 | 10 |
| Pyridine | 1.7 | U | 1.7 | 20 |
| Safrole, Total | 1.1 | U | 1.1 | 20 |
| Tris(2,3-dibromopropyl)phosphate | 25 | U | 25 | 100 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2,4,6-Tribromophenol | 90 | | 48 - 135 |
| 2-Fluorobiphenyl | 86 | | 48 - 135 |
| 2-Fluorophenol | 81 | | 41 - 135 |
| Nitrobenzene-d5 | 89 | | 42 - 135 |
| Phenol-d5 | 81 | | 46 - 135 |
| Terphenyl-d14 | 42 | | 20 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8270C | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Prep Method: | 3520C | Prep Batch: | 280-334208 | Lab File ID: | G6_24488.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 996.3 mL |
| Analysis Date: | 07/26/2016 2221 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |

**Tentatively Identified Compounds** **Number TIC's Found: 7**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 110-82-7 | Cyclohexane | 1.67 | 41 | N J |
| | Unknown | 1.75 | 210 | N J |
| | Unknown | 3.12 | 16 | N J |
| 21400-25-9 | 1-Propene, 1,1,2-trichloro- | 4.08 | 4.7 | N J |
| 124-18-5 | n-Decane | 4.40 | 4.0 | J N J |
| | Unknown | 4.66 | 25 | N J |
| 15972-60-8 | Alachlor | 9.65 | 1.8 | J N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8015C Glycols- Direct Injection (GC/FID)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8015C | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| | N/A | | N/A | Initial Weight/Volume: | 1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2106 | | | Injection Volume: | 0.5 uL |
| Prep Date: | N/A | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Ethylene glycol | 2000 | U | 2000 | 5000 |
| Propylene glycol | 2400 | U | 2400 | 5000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,4-Butanediol | 60 | * | 77 - 134 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8015C Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8015C | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| | N/A | | N/A | Initial Weight/Volume: | 1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | |
| Analysis Date: | 07/20/2016 1629 | | | Injection Volume: | 1 uL |
| Prep Date: | N/A | | | Result Type: | PRIMARY |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methanol | 0.15 | U | 0.15 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Propanol | 110 | | 50 - 150 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8015C Glycols- Direct Injection (GC/FID)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8015C | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| | N/A | | N/A | Initial Weight/Volume: | 1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2224 | | | Injection Volume: | 0.5 uL |
| Prep Date: | N/A | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Ethylene glycol | 2000 | U | 2000 | 5000 |
| Propylene glycol | 2400 | U | 2400 | 5000 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,4-Butanediol | 59 | * | 77 - 134 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8015C Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8015C | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| | N/A | | N/A | Initial Weight/Volume: | 1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | |
| Analysis Date: | 07/20/2016 1718 | | | Injection Volume: | 1 uL |
| Prep Date: | N/A | | | Result Type: | PRIMARY |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methanol | 0.15 | U | 0.15 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Propanol | 109 | | 50 - 150 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**NWTPH-Gx Northwest - Volatile Petroleum Products (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | NWTPH-Gx | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Prep Method: | 5030B | | N/A | Initial Weight/Volume: | 5 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2138 | | | Injection Volume: | 5 mL |
| Prep Date: | 07/25/2016 2138 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Gasoline | 10 | U | 10 | 25 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| a,a,a-Trifluorotoluene | 103 | | 82 - 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**NWTPH-Gx Northwest - Volatile Petroleum Products (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | NWTPH-Gx | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Prep Method: | 5030B | | N/A | Initial Weight/Volume: | 5 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2251 | | | Injection Volume: | 5 mL |
| Prep Date: | 07/25/2016 2251 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Gasoline | 10 | U | 10 | 25 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| a,a,a-Trifluorotoluene | 92 | | 82 - 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8081A Organochlorine Pesticides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8081A | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Prep Method: | 3510C | Prep Batch: | 280-334134 | Initial Weight/Volume: | 1025.2 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/28/2016 2016 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 0853 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0075 | U | 0.0075 | 0.098 |
| 4,4'-DDE | 0.0073 | U N | 0.0073 | 0.098 |
| 4,4'-DDT | 0.014 | U | 0.014 | 0.098 |
| Aldrin | 0.0058 | U N | 0.0058 | 0.049 |
| alpha-BHC | 0.0052 | U | 0.0052 | 0.049 |
| alpha-Chlordane | 0.0052 | U | 0.0052 | 0.49 |
| beta-BHC | 0.0085 | U | 0.0085 | 0.049 |
| delta-BHC | 0.0057 | U | 0.0057 | 0.049 |
| Dieldrin | 0.0061 | U | 0.0061 | 0.098 |
| Endosulfan I | 0.0057 | U | 0.0057 | 0.049 |
| Endosulfan II | 0.0068 | U | 0.0068 | 0.098 |
| Endosulfan sulfate | 0.0056 | U | 0.0056 | 0.098 |
| Endrin | 0.0077 | U | 0.0077 | 0.098 |
| Endrin aldehyde | 0.0086 | U | 0.0086 | 0.098 |
| Endrin ketone | 0.0068 | U | 0.0068 | 0.098 |
| gamma-BHC (Lindane) | 0.0067 | U | 0.0067 | 0.049 |
| gamma-Chlordane | 0.0089 | U | 0.0089 | 0.49 |
| Heptachlor | 0.0075 | U N | 0.0075 | 0.049 |
| Heptachlor epoxide | 0.0073 | U | 0.0073 | 0.049 |
| Methoxychlor | 0.013 | U | 0.013 | 0.49 |
| Toxaphene | 0.36 | U | 0.36 | 4.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 91 | | 34 - 122 |
| Tetrachloro-m-xylene | 72 | | 28 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8081A Organochlorine Pesticides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8081A | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Prep Method: | 3510C | Prep Batch: | 280-334134 | Initial Weight/Volume: | 1010.6 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/28/2016 2106 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 0853 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0076 | U | 0.0076 | 0.099 |
| 4,4'-DDE | 0.0074 | U N | 0.0074 | 0.099 |
| 4,4'-DDT | 0.015 | U | 0.015 | 0.099 |
| Aldrin | 0.0058 | U N | 0.0058 | 0.049 |
| alpha-BHC | 0.0052 | U | 0.0052 | 0.049 |
| alpha-Chlordane | 0.0052 | U | 0.0052 | 0.49 |
| beta-BHC | 0.0086 | U | 0.0086 | 0.049 |
| delta-BHC | 0.0057 | U | 0.0057 | 0.049 |
| Dieldrin | 0.0062 | U | 0.0062 | 0.099 |
| Endosulfan I | 0.0057 | U | 0.0057 | 0.049 |
| Endosulfan II | 0.0069 | U | 0.0069 | 0.099 |
| Endosulfan sulfate | 0.0056 | U | 0.0056 | 0.099 |
| Endrin | 0.0078 | U | 0.0078 | 0.099 |
| Endrin aldehyde | 0.0087 | U | 0.0087 | 0.099 |
| Endrin ketone | 0.0069 | U | 0.0069 | 0.099 |
| gamma-BHC (Lindane) | 0.0068 | U | 0.0068 | 0.049 |
| gamma-Chlordane | 0.0090 | U | 0.0090 | 0.49 |
| Heptachlor | 0.0076 | U N | 0.0076 | 0.049 |
| Heptachlor epoxide | 0.0074 | U | 0.0074 | 0.049 |
| Methoxychlor | 0.013 | U | 0.013 | 0.49 |
| Toxaphene | 0.36 | U | 0.36 | 4.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 105 | | 34 - 122 |
| Tetrachloro-m-xylene | 78 | | 28 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8082 | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Prep Method: | 3510C | Prep Batch: | 280-334134 | Initial Weight/Volume: | 1025.2 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/29/2016 1441 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 0853 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Aroclor 1016 | 0.12 | U | 0.12 | 0.49 |
| Aroclor 1221 | 0.21 | U | 0.21 | 0.49 |
| Aroclor 1232 | 0.16 | U | 0.16 | 0.49 |
| Aroclor 1242 | 0.10 | U | 0.10 | 0.49 |
| Aroclor 1248 | 0.089 | U | 0.089 | 0.49 |
| Aroclor 1254 | 0.11 | U | 0.11 | 0.49 |
| Aroclor 1260 | 0.16 | U | 0.16 | 0.49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 90 | | 30 - 136 |
| Tetrachloro-m-xylene | 73 | | 25 - 120 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8082 | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Prep Method: | 3510C | Prep Batch: | 280-334134 | Initial Weight/Volume: | 1010.6 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/29/2016 1546 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 0853 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Aroclor 1016 | 0.12 | U | 0.12 | 0.49 |
| Aroclor 1221 | 0.21 | U | 0.21 | 0.49 |
| Aroclor 1232 | 0.16 | U | 0.16 | 0.49 |
| Aroclor 1242 | 0.10 | U | 0.10 | 0.49 |
| Aroclor 1248 | 0.091 | U | 0.091 | 0.49 |
| Aroclor 1254 | 0.11 | U | 0.11 | 0.49 |
| Aroclor 1260 | 0.16 | U | 0.16 | 0.49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 100 | | 30 - 136 |
| Tetrachloro-m-xylene | 71 | | 25 - 120 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8151A | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Prep Method: | 8151A | Prep Batch: | 280-334158 | Initial Weight/Volume: | 1024.5 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/27/2016 1251 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 1052 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4,5-T | 0.19 | U | 0.19 | 0.98 |
| 2,4-D | 0.20 | U | 0.20 | 3.9 |
| 2,4-DB | 0.35 | U | 0.35 | 3.9 |
| Dalapon | 0.89 | U | 0.89 | 2.0 |
| Dicamba | 0.15 | U | 0.15 | 2.0 |
| Dichlorprop | 0.63 | U | 0.63 | 3.9 |
| Silvex (2,4,5-TP) | 0.17 | U | 0.17 | 0.98 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 70 | | 39 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8151A Herbicides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8151A | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Prep Method: | 8151A | Prep Batch: | 280-334158 | Initial Weight/Volume: | 1007.6 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Analysis Date: | 07/27/2016 1359 | | | Injection Volume: | 1 uL |
| Prep Date: | 07/19/2016 1052 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 2,4,5-T | 0.19 | U | 0.19 | 0.99 |
| 2,4-D | 0.21 | U | 0.21 | 4.0 |
| 2,4-DB | 0.36 | U | 0.36 | 4.0 |
| Dalapon | 0.90 | U | 0.90 | 2.0 |
| Dicamba | 0.15 | U | 0.15 | 2.0 |
| Dichlorprop | 0.65 | U | 0.65 | 4.0 |
| Silvex (2,4,5-TP) | 0.17 | U | 0.17 | 0.99 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| DCAA | 61 | | 39 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | NWTPH-Dx | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Prep Method: | 3510C | Prep Batch: | 280-334141 | Lab File ID: | 008F0901.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1051 mL |
| Analysis Date: | 07/27/2016 1821 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| C10-C36 | 110 | J B | 53 | 480 |
| C10-C28 | 73 | J | 31 | 240 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 97 | | 50 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

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

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | NWTPH-Dx | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Prep Method: | 3510C | Prep Batch: | 280-334141 | Lab File ID: | 011F1201.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1059.1 mL |
| Analysis Date: | 07/27/2016 1935 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| C10-C36 | 110 | J B | 53 | 470 |
| C10-C28 | 72 | J | 31 | 240 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 91 | | 50 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8310 PAHs (HPLC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8310 | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Prep Method: | 3510C | Prep Batch: | 280-334137 | Initial Weight/Volume: | 1002.1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 1 mL |
| Analysis Date: | 07/27/2016 1657 | | | Injection Volume: | 20 uL |
| Prep Date: | 07/19/2016 0930 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.043 | U | 0.043 | 1.0 |
| Acenaphthylene | 0.043 | U | 0.043 | 1.0 |
| Anthracene | 0.061 | U | 0.061 | 0.30 |
| Benzo[a]anthracene | 0.032 | U | 0.032 | 0.20 |
| Benzo[a]pyrene | 0.053 | U | 0.053 | 0.20 |
| Benzo[b]fluoranthene | 0.052 | U | 0.052 | 0.20 |
| Benzo[g,h,i]perylene | 0.020 | U | 0.020 | 0.20 |
| Benzo[k]fluoranthene | 0.023 | U | 0.023 | 0.10 |
| Chrysene | 0.028 | U | 0.028 | 0.20 |
| Dibenzo(a,h)anthracene | 0.054 | U | 0.054 | 0.30 |
| Fluoranthene | 0.081 | U | 0.081 | 0.40 |
| Fluorene | 0.099 | U | 0.099 | 0.30 |
| Indeno[1,2,3-cd]pyrene | 0.047 | U | 0.047 | 0.20 |
| Naphthalene | 0.055 | U | 0.055 | 1.0 |
| Phenanthrene | 0.095 | U | 0.095 | 0.30 |
| Pyrene | 0.043 | U | 0.043 | 0.20 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Terphenyl-d14 (SUR) | 67 | * | 70 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**8310 PAHs (HPLC)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8310 | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Prep Method: | 3510C | Prep Batch: | 280-334137 | Initial Weight/Volume: | 991.1 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 1 mL |
| Analysis Date: | 07/27/2016 1829 | | | Injection Volume: | 20 uL |
| Prep Date: | 07/19/2016 0930 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.044 | U | 0.044 | 1.0 |
| Acenaphthylene | 0.044 | U | 0.044 | 1.0 |
| Anthracene | 0.062 | U | 0.062 | 0.30 |
| Benzo[a]anthracene | 0.032 | U | 0.032 | 0.20 |
| Benzo[a]pyrene | 0.053 | U | 0.053 | 0.20 |
| Benzo[b]fluoranthene | 0.053 | U | 0.053 | 0.20 |
| Benzo[g,h,i]perylene | 0.020 | U | 0.020 | 0.20 |
| Benzo[k]fluoranthene | 0.023 | U | 0.023 | 0.10 |
| Chrysene | 0.028 | U | 0.028 | 0.20 |
| Dibenzo(a,h)anthracene | 0.055 | U | 0.055 | 0.30 |
| Fluoranthene | 0.082 | U | 0.082 | 0.40 |
| Fluorene | 0.10 | J | 0.10 | 0.30 |
| Indeno[1,2,3-cd]pyrene | 0.048 | U | 0.048 | 0.20 |
| Naphthalene | 0.056 | U | 0.056 | 1.0 |
| Phenanthrene | 0.096 | U | 0.096 | 0.30 |
| Pyrene | 0.043 | U | 0.043 | 0.20 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Terphenyl-d14 (SUR) | 94 | | 70 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 2332 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Aluminum | 0.046 | B | 0.018 | 0.050 |
| Antimony | 0.0031 | U | 0.0031 | 0.0060 |
| Arsenic | 0.0044 | U | 0.0044 | 0.010 |
| Barium | 0.071 | | 0.00058 | 0.0050 |
| Bismuth | 0.0067 | U | 0.0067 | 0.10 |
| Boron | 0.36 | | 0.0044 | 0.020 |
| Cadmium | 0.00049 | B | 0.00045 | 0.0020 |
| Chromium | 0.15 | | 0.00066 | 0.0020 |
| Cobalt | 0.0019 | B | 0.0012 | 0.010 |
| Lead | 0.0026 | U | 0.0026 | 0.0050 |
| Lithium | 0.021 | | 0.0091 | 0.020 |
| Nickel | 0.0081 | B | 0.0013 | 0.040 |
| Phosphorus | 0.025 | B | 0.014 | 3.0 |
| Potassium | 18.2 | | 0.24 | 3.0 |
| Selenium | 0.0049 | U | 0.0049 | 0.010 |
| Strontium | 1.2 | | 0.00030 | 0.010 |
| Tin | 0.0058 | U | 0.0058 | 0.10 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1401 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Beryllium | 0.00047 | U | 0.00047 | 0.0010 |
| Calcium | 236 | | 0.035 | 0.20 |
| Copper | 0.0060 | B | 0.0042 | 0.010 |
| Iron | 0.11 | | 0.022 | 0.050 |
| Magnesium | 71.5 | | 0.011 | 0.20 |
| Manganese | 0.0028 | B | 0.00025 | 0.0050 |
| Molybdenum | 0.0080 | B | 0.0031 | 0.020 |
| Silicon | 18.9 | | 0.035 | 0.50 |
| Silver | 0.00093 | U | 0.00093 | 0.0020 |
| Sodium | 182 | | 0.092 | 0.50 |
| Vanadium | 0.015 | | 0.0011 | 0.010 |
| Zinc | 0.0045 | U | 0.0045 | 0.010 |

**6020 Metals (ICP/MS)**

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**6020 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6020 | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Prep Method: | 3020A | Prep Batch: | 280-334811 | Lab File ID: | 096SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1753 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Thallium | 0.00012 | B C M | 0.000050 | 0.0010 |
| Tungsten | 0.00020 | U | 0.00020 | 0.0050 |
| Uranium | 0.60 | X | 0.000050 | 0.0010 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 7470A | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Prep Method: | 7470A | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1924 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.000027 | U | 0.000027 | 0.00020 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**6010B Metals (ICP)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 0026 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Aluminum | 0.018 | U | 0.018 | 0.050 |
| Antimony | 0.0031 | U | 0.0031 | 0.0060 |
| Arsenic | 0.0044 | U | 0.0044 | 0.010 |
| Barium | 0.079 | | 0.00058 | 0.0050 |
| Bismuth | 0.0067 | U | 0.0067 | 0.10 |
| Boron | 0.37 | | 0.0044 | 0.020 |
| Cadmium | 0.00045 | U | 0.00045 | 0.0020 |
| Chromium | 0.16 | | 0.00066 | 0.0020 |
| Cobalt | 0.0034 | B | 0.0012 | 0.010 |
| Lead | 0.0026 | U | 0.0026 | 0.0050 |
| Lithium | 0.023 | | 0.0091 | 0.020 |
| Nickel | 0.0081 | B | 0.0013 | 0.040 |
| Phosphorus | 0.022 | B | 0.014 | 3.0 |
| Potassium | 20.3 | | 0.24 | 3.0 |
| Selenium | 0.0064 | B | 0.0049 | 0.010 |
| Strontium | 1.3 | | 0.00030 | 0.010 |
| Tin | 0.0058 | U | 0.0058 | 0.10 |

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Prep Method: | 3010A | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1411 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Beryllium | 0.00047 | U | 0.00047 | 0.0010 |
| Calcium | 238 | | 0.035 | 0.20 |
| Copper | 0.0042 | U | 0.0042 | 0.010 |
| Iron | 0.022 | U | 0.022 | 0.050 |
| Magnesium | 73.1 | | 0.011 | 0.20 |
| Manganese | 0.00079 | B | 0.00025 | 0.0050 |
| Molybdenum | 0.0081 | B | 0.0031 | 0.020 |
| Silicon | 19.2 | | 0.035 | 0.50 |
| Silver | 0.00093 | U | 0.00093 | 0.0020 |
| Sodium | 186 | | 0.092 | 0.50 |
| Vanadium | 0.016 | | 0.0011 | 0.010 |
| Zinc | 0.0045 | U | 0.0045 | 0.010 |

**6020 Metals (ICP/MS)**

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Client Sample ID:** **J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

**6020 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6020 | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Prep Method: | 3020A | Prep Batch: | 280-334811 | Lab File ID: | 101SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1811 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Thallium | 0.00015 | B C | 0.000050 | 0.0010 |
| Tungsten | 0.00022 | B | 0.00020 | 0.0050 |
| Uranium | 0.60 | X | 0.000050 | 0.0010 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 7470A | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Prep Method: | 7470A | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1936 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.000027 | U | 0.000027 | 0.00020 |

**General Chemistry**

**Client Sample ID: J1V931**

Lab Sample ID: 280-85505-1
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 1.6 | U | mg/L | 1.6 | 4.9 | 1.0 | 1664A |
| Analysis Batch: 280-336002 | Analysis Date: 08/01/2016 1301 | | | | | | |
| Prep Batch: 280-335898 | Prep Date: 08/01/2016 0704 | | | | | | |
| Bromide | 0.11 | U | mg/L | 0.11 | 0.20 | 1.0 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0405 | | | | | | |
| Nitrate as N | 44.7 | D | mg/L | 0.42 | 2.5 | 10 | 300.0 |
| Analysis Batch: 280-333474 | Analysis Date: 07/14/2016 0552 | | | | | | |
| Chloride | 254 | D | mg/L | 2.5 | 30.0 | 10 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0552 | | | | | | |
| Nitrite as N | 0.049 | U | mg/L | 0.049 | 0.25 | 1.0 | 300.0 |
| Analysis Batch: 280-333474 | Analysis Date: 07/14/2016 0405 | | | | | | |
| Fluoride | 0.23 | B | mg/L | 0.060 | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0405 | | | | | | |
| Orthophosphate as P | 0.19 | U N | mg/L | 0.19 | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-333661 | Analysis Date: 07/14/2016 1525 | | | | | | |
| Sulfate | 590 | D | mg/L | 2.3 | 50.0 | 10 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0552 | | | | | | |
| Ammonia as N | 0.022 | U | mg/L | 0.022 | 0.10 | 1.0 | 350.1 |
| Analysis Batch: 280-334602 | Analysis Date: 07/21/2016 1940 | | | | | | |
| Nitrate Nitrite as N | 43.9 | N D | mg/L | 0.19 | 0.75 | 10 | 353.2 |
| Analysis Batch: 280-336720 | Analysis Date: 08/04/2016 1244 | | | | | | |
| Chemical Oxygen Demand | 24.6 | | mg/L | 4.1 | 20.0 | 1.0 | 410.4 |
| Analysis Batch: 280-334027 | Analysis Date: 07/18/2016 1010 | | | | | | |
| Phenolics, Total Recoverable | 0.0068 | U | mg/L | 0.0068 | 0.010 | 1.0 | 420.4 |
| Analysis Batch: 280-336746 | Analysis Date: 08/05/2016 1102 | | | | | | |
| Prep Batch: 280-335552 | Prep Date: 07/28/2016 1331 | | | | | | |
| Total Cyanide | 0.0059 | B C | mg/L | 0.0020 | 0.010 | 1.0 | 9012A |
| Analysis Batch: 280-334810 | Analysis Date: 07/23/2016 1036 | | | | | | |
| Prep Batch: 280-334663 | Prep Date: 07/22/2016 1045 | | | | | | |
| Total Organic Halogens - Dup | 0.051 | | mg/L | 0.015 | 0.040 | 1.0 | 9020B |
| Analysis Batch: 280-336034 | Analysis Date: 07/27/2016 1321 | | | | | | |
| Sulfide | 0.79 | U | mg/L | 0.79 | 4.0 | 1.0 | 9034 |
| Analysis Batch: 280-333826 | Analysis Date: 07/15/2016 1356 | | | | | | |
| Prep Batch: 280-333805 | Prep Date: 07/15/2016 1134 | | | | | | |
| Alkalinity | 217 | | mg/L | 1.1 | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-333888 | Analysis Date: 07/16/2016 0919 | | | | | | |
| Total Dissolved Solids | 1710 | | mg/L | 9.4 | 20.0 | 1.0 | SM 2540C |
| Analysis Batch: 280-334218 | Analysis Date: 07/19/2016 1331 | | | | | | |
| Total Suspended Solids | 32.0 | | mg/L | 1.1 | 4.0 | 1.0 | SM 2540D |
| Analysis Batch: 280-334068 | Analysis Date: 07/18/2016 1422 | | | | | | |
| Total Organic Carbon - Quad | 7.8 | | mg/L | 0.16 | 1.0 | 1.0 | SM 5310B |
| Analysis Batch: 280-335176 | Analysis Date: 07/25/2016 1554 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| pH | 7.94 | | SU | 0.100 | 0.100 | 1.0 | 9040B |
| Analysis Batch: 280-335415 | Analysis Date: 07/27/2016 1057 | | | | | | |

**General Chemistry**

**Client Sample ID: J1V932**

Lab Sample ID: 280-85505-2
Client Matrix: Water

Date Sampled: 07/12/2016 0720
Date Received: 07/13/2016 0930

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 1.5 | U | mg/L | 1.5 | 4.9 | 1.0 | 1664A |
| Analysis Batch: 280-336002 | Analysis Date: 08/01/2016 1301 | | | | | | |
| Prep Batch: 280-335898 | Prep Date: 08/01/2016 0704 | | | | | | |
| Bromide | 0.11 | U | mg/L | 0.11 | 0.20 | 1.0 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0458 | | | | | | |
| Nitrate as N | 44.3 | D | mg/L | 0.42 | 2.5 | 10 | 300.0 |
| Analysis Batch: 280-333474 | Analysis Date: 07/14/2016 0645 | | | | | | |
| Chloride | 254 | D | mg/L | 2.5 | 30.0 | 10 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0645 | | | | | | |
| Nitrite as N | 0.049 | U | mg/L | 0.049 | 0.25 | 1.0 | 300.0 |
| Analysis Batch: 280-333474 | Analysis Date: 07/14/2016 0458 | | | | | | |
| Fluoride | 0.23 | B | mg/L | 0.060 | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0458 | | | | | | |
| Orthophosphate as P | 0.19 | U | mg/L | 0.19 | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-333661 | Analysis Date: 07/14/2016 1625 | | | | | | |
| Sulfate | 591 | D | mg/L | 2.3 | 50.0 | 10 | 300.0 |
| Analysis Batch: 280-333475 | Analysis Date: 07/14/2016 0645 | | | | | | |
| Ammonia as N | 0.022 | U | mg/L | 0.022 | 0.10 | 1.0 | 350.1 |
| Analysis Batch: 280-334602 | Analysis Date: 07/21/2016 1946 | | | | | | |
| Nitrate Nitrite as N | 43.2 | D | mg/L | 0.19 | 0.75 | 10 | 353.2 |
| Analysis Batch: 280-336720 | Analysis Date: 08/04/2016 1250 | | | | | | |
| Chemical Oxygen Demand | 26.9 | | mg/L | 4.1 | 20.0 | 1.0 | 410.4 |
| Analysis Batch: 280-334027 | Analysis Date: 07/18/2016 1010 | | | | | | |
| Phenolics, Total Recoverable | 0.0068 | U | mg/L | 0.0068 | 0.010 | 1.0 | 420.4 |
| Analysis Batch: 280-336746 | Analysis Date: 08/05/2016 1102 | | | | | | |
| Prep Batch: 280-335552 | Prep Date: 07/28/2016 1331 | | | | | | |
| Total Cyanide | 0.0042 | B C | mg/L | 0.0020 | 0.010 | 1.0 | 9012A |
| Analysis Batch: 280-334810 | Analysis Date: 07/23/2016 1040 | | | | | | |
| Prep Batch: 280-334663 | Prep Date: 07/22/2016 1045 | | | | | | |
| Total Organic Halogens - Dup | 0.037 | B | mg/L | 0.015 | 0.040 | 1.0 | 9020B |
| Analysis Batch: 280-336034 | Analysis Date: 07/27/2016 1321 | | | | | | |
| Sulfide | 0.79 | U | mg/L | 0.79 | 4.0 | 1.0 | 9034 |
| Analysis Batch: 280-333826 | Analysis Date: 07/15/2016 1356 | | | | | | |
| Prep Batch: 280-333805 | Prep Date: 07/15/2016 1134 | | | | | | |
| Alkalinity | 229 | | mg/L | 1.1 | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-333888 | Analysis Date: 07/16/2016 0929 | | | | | | |
| Total Dissolved Solids | 1740 | | mg/L | 9.4 | 20.0 | 1.0 | SM 2540C |
| Analysis Batch: 280-334218 | Analysis Date: 07/19/2016 1331 | | | | | | |
| Total Suspended Solids | 1.6 | B | mg/L | 1.1 | 4.0 | 1.0 | SM 2540D |
| Analysis Batch: 280-334068 | Analysis Date: 07/18/2016 1422 | | | | | | |
| Total Organic Carbon - Quad | 7.8 | | mg/L | 0.16 | 1.0 | 1.0 | SM 5310B |
| Analysis Batch: 280-335176 | Analysis Date: 07/25/2016 1639 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| pH | 7.97 | | SU | 0.100 | 0.100 | 1.0 | 9040B |
| Analysis Batch: 280-335415 | Analysis Date: 07/27/2016 1108 | | | | | | |
| Specific Conductance | 2060 | | umho/cm | 1.00 | 1.00 | 1.0 | 9050A |
| Analysis Batch: 280-333864 | Analysis Date: 07/15/2016 2117 | | | | | | |

# QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

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

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | BFB %Rec | DBFM %Rec | TOL %Rec |
|---|---|---|---|---|---|
| 280-85505-1 | J1V931 | 119 | 109 | 109 | 104 |
| 280-85505-2 | J1V932 | 106 | 99 | 101 | 97 |
| 280-85505-3 | J1V933 | 113 | 102 | 106 | 102 |
| MB 280-334916/6 | | 107 | 112 | 101 | 108 |
| MB 280-335637/6 | | 113 | 105 | 107 | 105 |
| LCS 280-334916/4 | | 104 | 104 | 99 | 101 |
| LCS 280-335637/4 | | 113 | 94 | 103 | 111 |
| LCSD 280-335637/5 | | 118 | 100 | 108 | 111 |
| 280-85505-1 MS | J1V931 MS | 103 | 104 | 101 | 104 |
| 280-85505-1 MSD | J1V931 MSD | 107 | 107 | 101 | 100 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 (Surr) | 70-127 |
| BFB = 4-Bromofluorobenzene (Surr) | 78-120 |
| DBFM = Dibromofluoromethane (Surr) | 77-120 |
| TOL = Toluene-d8 (Surr) | 80-125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

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

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TBP %Rec | FBP %Rec | 2FP %Rec | NBZ %Rec | PHL %Rec | TPHL %Rec |
|---|---|---|---|---|---|---|---|
| 280-85505-1 | J1V931 | 83 | 66 | 58 | 61 | 64 | 46 |
| 280-85505-2 | J1V932 | 90 | 86 | 81 | 89 | 81 | 42 |
| MB 280-334208/1-A | | 83 | 78 | 80 | 84 | 85 | 92 |
| LCS 280-334208/2-A | | 98 | 87 | 82 | 85 | 86 | 90 |
| 280-85505-1 MS | J1V931 MS | 99 | 77 | 71 | 73 | 78 | 88 |
| 280-85505-1 MSD | J1V931 MSD | 96 | 76 | 67 | 71 | 72 | 60 |

| Surrogate | Acceptance Limits |
|---|---|
| TBP = 2,4,6-Tribromophenol | 48-135 |
| FBP = 2-Fluorobiphenyl | 48-135 |
| 2FP = 2-Fluorophenol | 41-135 |
| NBZ = Nitrobenzene-d5 | 42-135 |
| PHL = Phenol-d5 | 46-135 |
| TPHL = Terphenyl-d14 | 20-135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**8015C Glycols- Direct Injection (GC/FID)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | 14BD1 %Rec |
|---|---|---|
| 280-85505-1 | J1V931 | 60* |
| 280-85505-2 | J1V932 | 59* |
| MB 280-335251/26 | | 95 |
| LCS 280-335251/29 | | 98 |
| 280-85505-1 MS | J1V931 MS | 86 |
| 280-85505-1 MSD | J1V931 MSD | 83 |

| Surrogate | Acceptance Limits |
|---|---|
| 14BD = 1,4-Butanediol | 77-134 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**8015C Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | PPN2 %Rec |
|---|---|---|
| 280-85505-1 | J1V931 | 110 |
| 280-85505-2 | J1V932 | 109 |
| MB 280-334425/5 | | 111 |
| LCS 280-334425/6 | | 108 |
| LCSD 280-334425/7 | | 109 |
| 280-85505-1 MS | J1V931 MS | 107 |
| 280-85505-1 MSD | J1V931 MSD | 111 |

| Surrogate | Acceptance Limits |
|---|---|
| PPN = Propanol | 50-150 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**NWTPH-Gx Northwest - Volatile Petroleum Products (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TFT1 %Rec |
|---|---|---|
| 280-85505-1 | J1V931 | 103 |
| 280-85505-2 | J1V932 | 92 |
| MB 280-334991/22 | | 92 |
| LCS 280-334991/23 | | 92 |
| LCSD 280-334991/24 | | 92 |
| 280-85505-1 MS | J1V931 MS | 91 |
| 280-85505-1 MSD | J1V931 MSD | 92 |

| Surrogate | Acceptance Limits |
|---|---|
| TFT = a,a,a-Trifluorotoluene | 82-110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**8081A Organochlorine Pesticides (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCBP1 %Rec | TCX1 %Rec |
|---|---|---|---|
| 280-85505-1 | J1V931 | 91 | 72 |
| 280-85505-2 | J1V932 | 105 | 78 |
| MB 280-334134/1-A | | 107 | 62 |
| LCS 280-334134/2-A | | 99 | 61 |
| 280-85505-1 MS | J1V931 MS | 95 | 78 |
| 280-85505-1 MSD | J1V931 MSD | 96 | 82 |

| Surrogate | Acceptance Limits |
|---|---|
| DCBP = Decachlorobiphenyl | 34-122 |
| TCX = Tetrachloro-m-xylene | 28-115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

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

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCBP1 %Rec | TCX1 %Rec |
|---|---|---|---|
| 280-85505-1 | J1V931 | 90 | 73 |
| 280-85505-2 | J1V932 | 100 | 71 |
| MB 280-334134/1-A | | 95 | 61 |
| LCS 280-334134/3-A | | 98 | 53 |
| 280-85505-1 MS | J1V931 MS | 92 | 82 |
| 280-85505-1 MSD | J1V931 MSD | 98 | 86 |

| Surrogate | Acceptance Limits |
|---|---|
| DCBP = Decachlorobiphenyl | 30-136 |
| TCX = Tetrachloro-m-xylene | 25-120 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**8151A Herbicides (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCPAA1 %Rec |
|---|---|---|
| 280-85505-1 | J1V931 | 70 |
| 280-85505-2 | J1V932 | 61 |
| MB 280-334158/1-A | | 72 |
| LCS 280-334158/2-A | | 75 |
| 280-85505-1 MS | J1V931 MS | 72 |
| 280-85505-1 MSD | J1V931 MSD | 69 |

| Surrogate | Acceptance Limits |
|---|---|
| DCPAA = DCAA | 39-135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

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

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | OTPH %Rec |
|---|---|---|
| 280-85505-1 | J1V931 | 97 |
| 280-85505-2 | J1V932 | 91 |
| MB 280-334141/1-A | | 102 |
| LCS 280-334141/2-A | | 104 |
| 280-85505-1 MS | J1V931 MS | 104 |
| 280-85505-1 MSD | J1V931 MSD | 106 |

| Surrogate | Acceptance Limits |
|---|---|
| OTPH = o-Terphenyl | 50-115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## Surrogate Recovery Report

**8310 PAHs (HPLC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TPHd14 %Rec[1] |
|---|---|---|
| 280-85505-1 | J1V931 | 67* |
| 280-85505-2 | J1V932 | 94 |
| MB 280-334137/1-A | | 98 |
| LCS 280-334137/2-A | | 97 |
| 280-85505-1 MS | J1V931 MS | 96 |
| 280-85505-1 MSD | J1V931 MSD | 94 |

| Surrogate | Acceptance Limits |
|---|---|
| TPHd14 = Terphenyl-d14 (SUR) | 70-115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334916/6 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0356.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1006 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1006 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,1-Trichloroethane | 0.16 | U | 0.16 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.42 | U | 0.42 | 3.0 |
| 1,1,2-Trichloroethane | 0.27 | U | 0.27 | 1.0 |
| 1,1-Dichloroethane | 0.22 | U | 0.22 | 1.0 |
| 1,1-Dichloroethene | 0.23 | U | 0.23 | 1.0 |
| 1,2,3-Trichloropropane | 0.33 | U | 0.33 | 2.5 |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 0.47 | 5.0 |
| 1,2-Dibromoethane | 0.18 | U | 0.18 | 1.0 |
| 1,2-Dichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,2-Dichloropropane | 0.18 | U | 0.18 | 1.0 |
| 1-Butanol | 17 | U | 17 | 60 |
| 2-Butanone (MEK) | 2.0 | U | 2.0 | 6.0 |
| 2-Chloroethyl vinyl ether | 0.69 | U | 0.69 | 3.0 |
| 2-Hexanone | 1.7 | U | 1.7 | 5.0 |
| 2-Nitropropane | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 0.98 | 5.0 |
| Acetone | 1.9 | U | 1.9 | 10 |
| Acetonitrile | 9.6 | U | 9.6 | 30 |
| Acrolein | 2.8 | U | 2.8 | 20 |
| Acrylonitrile | 1.4 | U | 1.4 | 20 |
| Allyl chloride | 0.17 | U | 0.17 | 2.0 |
| Benzene | 0.16 | U | 0.16 | 1.0 |
| Bromodichloromethane | 0.17 | U | 0.17 | 1.0 |
| Bromoform | 0.19 | U | 0.19 | 1.0 |
| Bromomethane | 0.21 | U | 0.21 | 2.0 |
| Carbon disulfide | 0.45 | U | 0.45 | 2.0 |
| Carbon tetrachloride | 0.19 | U | 0.19 | 1.0 |
| Chlorobenzene | 0.17 | U | 0.17 | 1.0 |
| Chloroethane | 0.41 | U | 0.41 | 2.0 |
| Chloroform | 0.16 | U | 0.16 | 1.0 |
| Chloromethane | 0.30 | U | 0.30 | 2.0 |
| Chloroprene | 0.21 | U | 0.21 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| cis-1,3-Dichloropropene | 0.16 | U | 0.16 | 1.0 |
| Dibromochloromethane | 0.17 | U | 0.17 | 1.0 |
| Dibromomethane | 0.17 | U | 0.17 | 1.0 |
| Dichlorodifluoromethane | 0.31 | U | 0.31 | 2.0 |
| Ethyl acetate | 1.2 | U | 1.2 | 5.0 |
| Ethyl ether | 0.26 | U | 0.26 | 2.0 |
| Ethyl methacrylate | 0.86 | U | 0.86 | 3.0 |
| Ethylbenzene | 0.16 | U | 0.16 | 1.0 |
| Iodomethane | 0.23 | U | 0.23 | 1.0 |
| Isobutyl alcohol | 37 | U | 37 | 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334916/6 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0356.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1006 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1006 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Isopropylbenzene | 0.19 | U | 0.19 | 1.0 |
| Methacrylonitrile | 1.6 | U | 1.6 | 10 |
| Methyl acetate | 1.6 | U | 1.6 | 5.0 |
| Methyl methacrylate | 1.1 | U | 1.1 | 4.0 |
| Methylene Chloride | 2.72 | | 0.32 | 2.0 |
| Propionitrile | 3.7 | U | 3.7 | 20 |
| Styrene | 0.17 | U | 0.17 | 1.0 |
| Tetrachloroethene | 0.20 | U | 0.20 | 1.0 |
| Tetrahydrofuran | 2.0 | U | 2.0 | 7.0 |
| Toluene | 0.17 | U | 0.17 | 1.0 |
| trans-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| trans-1,3-Dichloropropene | 0.19 | U | 0.19 | 3.0 |
| trans-1,4-Dichloro-2-butene | 0.80 | U | 0.80 | 3.0 |
| Trichloroethene | 0.16 | U | 0.16 | 1.0 |
| Trichlorofluoromethane | 0.29 | U | 0.29 | 2.0 |
| Vinyl acetate | 0.94 | U | 0.94 | 3.0 |
| Vinyl chloride | 0.10 | U | 0.10 | 1.0 |
| Xylenes, Total | 0.19 | U | 0.19 | 2.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 107 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 112 | 78 - 120 |
| Dibromofluoromethane (Surr) | 101 | 77 - 120 |
| Toluene-d8 (Surr) | 108 | 80 - 125 |

**Method Blank TICs- Batch: 280-334916**

| Cas Number | Analyte | RT | Est. Result (ug/ | Qual |
|---|---|---|---|---|
| | Tentatively Identified Compound | | None | |
| 78-92-2 | sec-Butyl Alcohol | 6.67 | 28.1 | J N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334916/4 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0355.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 0946 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 0946 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5.00 | 5.01 | 100 | 65 - 135 | |
| 1,1,1-Trichloroethane | 5.00 | 4.85 | 97 | 65 - 135 | |
| 1,1,2,2-Tetrachloroethane | 5.00 | 5.49 | 110 | 58 - 135 | |
| 1,1,2-Trichloroethane | 5.00 | 5.17 | 103 | 64 - 135 | |
| 1,1-Dichloroethane | 5.00 | 5.02 | 100 | 65 - 135 | |
| 1,1-Dichloroethene | 5.00 | 4.46 | 89 | 65 - 136 | |
| 1,2,3-Trichloropropane | 5.00 | 5.64 | 113 | 65 - 135 | |
| 1,2-Dibromo-3-Chloropropane | 5.00 | 4.73 | 95 | 57 - 135 | J |
| 1,2-Dibromoethane | 5.00 | 5.01 | 100 | 65 - 135 | |
| 1,2-Dichloroethane | 5.00 | 5.73 | 115 | 65 - 135 | |
| 1,2-Dichloropropane | 5.00 | 5.33 | 107 | 64 - 135 | |
| 2-Butanone (MEK) | 20.0 | 23.5 | 117 | 44 - 177 | |
| 2-Chloroethyl vinyl ether | 5.00 | 4.68 | 94 | 10 - 159 | |
| 2-Hexanone | 20.0 | 19.9 | 99 | 57 - 139 | |
| 4-Methyl-2-pentanone (MIBK) | 20.0 | 20.7 | 104 | 60 - 150 | |
| Acetone | 20.0 | 22.3 | 112 | 39 - 156 | |
| Benzene | 5.00 | 5.10 | 102 | 65 - 135 | |
| Bromodichloromethane | 5.00 | 5.09 | 102 | 65 - 135 | |
| Bromoform | 5.00 | 4.85 | 97 | 62 - 135 | |
| Bromomethane | 5.00 | 5.01 | 100 | 45 - 135 | |
| Carbon disulfide | 5.00 | 4.35 | 87 | 55 - 143 | |
| Carbon tetrachloride | 5.00 | 4.73 | 95 | 65 - 135 | |
| Chlorobenzene | 5.00 | 5.08 | 102 | 65 - 135 | |
| Chloroethane | 5.00 | 4.73 | 95 | 46 - 136 | |
| Chloroform | 5.00 | 5.29 | 106 | 65 - 135 | |
| Chloromethane | 5.00 | 5.00 | 100 | 34 - 145 | |
| cis-1,2-Dichloroethene | 5.00 | 5.09 | 102 | 65 - 135 | |
| cis-1,3-Dichloropropene | 5.00 | 4.91 | 98 | 65 - 135 | |
| Dibromochloromethane | 5.00 | 4.70 | 94 | 65 - 135 | |
| Dibromomethane | 5.00 | 5.28 | 106 | 65 - 135 | |
| Dichlorodifluoromethane | 5.00 | 4.58 | 92 | 43 - 142 | |
| Ethylbenzene | 5.00 | 4.95 | 99 | 65 - 135 | |
| Isopropylbenzene | 5.00 | 4.99 | 100 | 65 - 135 | |
| Methylene Chloride | 5.00 | 7.29 | 146 | 54 - 141 | T |
| Styrene | 5.00 | 4.66 | 93 | 65 - 135 | |
| Tetrachloroethene | 5.00 | 4.56 | 91 | 65 - 135 | |
| Toluene | 5.00 | 5.09 | 102 | 65 - 135 | |
| trans-1,2-Dichloroethene | 5.00 | 4.95 | 99 | 65 - 135 | |
| trans-1,3-Dichloropropene | 5.00 | 4.90 | 98 | 65 - 135 | |
| Trichloroethene | 5.00 | 4.94 | 99 | 65 - 135 | |
| Trichlorofluoromethane | 5.00 | 4.31 | 86 | 53 - 137 | |
| Vinyl acetate | 10.0 | 10.3 | 103 | 11 - 187 | |
| Vinyl chloride | 5.00 | 4.80 | 96 | 40 - 137 | |
| Xylenes, Total | 10.0 | 9.72 | 97 | 65 - 135 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 104 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 104 | 78 - 120 |
| Dibromofluoromethane (Surr) | 99 | 77 - 120 |
| Toluene-d8 (Surr) | 101 | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0360.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1131 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1131 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0361.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1151 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1151 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 1,1,1,2-Tetrachloroethane | 103 | 97 | 65 - 135 | 7 | 20 | | |
| 1,1,1-Trichloroethane | 101 | 92 | 65 - 135 | 10 | 20 | | |
| 1,1,2,2-Tetrachloroethane | 108 | 112 | 58 - 135 | 4 | 20 | | |
| 1,1,2-Trichloroethane | 101 | 110 | 64 - 135 | 9 | 27 | | |
| 1,1-Dichloroethane | 102 | 98 | 65 - 135 | 5 | 21 | | |
| 1,1-Dichloroethene | 93 | 85 | 65 - 136 | 8 | 20 | | |
| 1,2,3-Trichloropropane | 109 | 119 | 65 - 135 | 8 | 23 | | |
| 1,2-Dibromo-3-Chloropropane | 85 | 100 | 57 - 135 | 16 | 22 | J | |
| 1,2-Dibromoethane | 95 | 95 | 65 - 135 | 0 | 27 | | |
| 1,2-Dichloroethane | 115 | 117 | 65 - 135 | 2 | 20 | | |
| 1,2-Dichloropropane | 108 | 110 | 64 - 135 | 2 | 20 | | |
| 2-Butanone (MEK) | 98 | 120 | 44 - 177 | 20 | 32 | | |
| 2-Chloroethyl vinyl ether | 0 | 0 | 10 - 159 | NC | 23 | U T | U T |
| 2-Hexanone | 92 | 104 | 57 - 139 | 12 | 25 | | |
| 4-Methyl-2-pentanone (MIBK) | 101 | 111 | 60 - 150 | 9 | 22 | | |
| Acetone | 100 | 117 | 39 - 156 | 15 | 23 | | |
| Benzene | 100 | 99 | 65 - 135 | 1 | 20 | | |
| Bromodichloromethane | 104 | 105 | 65 - 135 | 1 | 20 | | |
| Bromoform | 96 | 100 | 62 - 135 | 4 | 27 | | |
| Bromomethane | 97 | 97 | 45 - 135 | 0 | 33 | | |
| Carbon disulfide | 87 | 79 | 55 - 143 | 10 | 20 | | |
| Carbon tetrachloride | 98 | 89 | 65 - 135 | 9 | 21 | | |
| Chlorobenzene | 105 | 98 | 65 - 135 | 7 | 20 | | |
| Chloroethane | 91 | 92 | 46 - 136 | 1 | 25 | | |
| Chloroform | 108 | 105 | 65 - 135 | 3 | 20 | | |
| Chloromethane | 92 | 91 | 34 - 145 | 1 | 24 | | |
| cis-1,2-Dichloroethene | 100 | 98 | 65 - 135 | 2 | 20 | | |
| cis-1,3-Dichloropropene | 96 | 95 | 65 - 135 | 0 | 26 | | |
| Dibromochloromethane | 92 | 91 | 65 - 135 | 1 | 20 | | |
| Dibromomethane | 102 | 106 | 65 - 135 | 5 | 26 | | |
| Dichlorodifluoromethane | 85 | 84 | 43 - 142 | 0 | 30 | | |
| Ethylbenzene | 99 | 89 | 65 - 135 | 11 | 20 | | |
| Isopropylbenzene | 100 | 94 | 65 - 135 | 6 | 20 | | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0360.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1131 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1131 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334916 | Instrument ID: | VMS_P |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | P0361.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/25/2016 1151 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/25/2016 1151 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Methylene Chloride | 90 | 91 | 54 - 141 | 1 | 26 | | |
| Styrene | 92 | 89 | 65 - 135 | 4 | 26 | | |
| Tetrachloroethene | 92 | 80 | 65 - 135 | 14 | 20 | | |
| Toluene | 103 | 99 | 65 - 135 | 4 | 20 | | |
| trans-1,2-Dichloroethene | 97 | 91 | 65 - 135 | 6 | 24 | | |
| trans-1,3-Dichloropropene | 98 | 101 | 65 - 135 | 3 | 26 | | |
| Trichloroethene | 99 | 93 | 65 - 135 | 6 | 20 | | |
| Trichlorofluoromethane | 83 | 75 | 53 - 137 | 9 | 27 | | |
| Vinyl acetate | 99 | 108 | 11 - 187 | 9 | 24 | | |
| Vinyl chloride | 89 | 85 | 40 - 137 | 4 | 24 | | |
| Xylenes, Total | 100 | 92 | 65 - 135 | 9 | 20 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 103 | 107 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 104 | 107 | 78 - 120 |
| Dibromofluoromethane (Surr) | 101 | 101 | 77 - 120 |
| Toluene-d8 (Surr) | 104 | 100 | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: ug/L | | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/25/2016 1131 | | | Analysis Date: | 07/25/2016 1151 |
| Prep Date: | 07/25/2016 1131 | | | Prep Date: | 07/25/2016 1151 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | | MSD Result/Qual | |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 5.00 | 5.00 | 5.17 | | 4.83 | |
| 1,1,1-Trichloroethane | 0.16 | U | 5.00 | 5.00 | 5.06 | | 4.58 | |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 5.00 | 5.00 | 5.40 | | 5.59 | |
| 1,1,2-Trichloroethane | 0.27 | U | 5.00 | 5.00 | 5.04 | | 5.49 | |
| 1,1-Dichloroethane | 0.22 | U | 5.00 | 5.00 | 5.11 | | 4.88 | |
| 1,1-Dichloroethene | 0.62 | J | 5.00 | 5.00 | 5.27 | | 4.85 | |
| 1,2,3-Trichloropropane | 0.33 | U | 5.00 | 5.00 | 5.47 | | 5.94 | |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 5.00 | 5.00 | 4.27 | J | 5.01 | |
| 1,2-Dibromoethane | 0.18 | U | 5.00 | 5.00 | 4.77 | | 4.76 | |
| 1,2-Dichloroethane | 0.13 | U | 5.00 | 5.00 | 5.73 | | 5.87 | |
| 1,2-Dichloropropane | 0.18 | U | 5.00 | 5.00 | 5.40 | | 5.52 | |
| 2-Butanone (MEK) | 2.0 | U | 20.0 | 20.0 | 19.6 | | 24.0 | |
| 2-Chloroethyl vinyl ether | 0.69 | U | 5.00 | 5.00 | 0.69 | U T | 0.69 | U T |
| 2-Hexanone | 1.7 | U | 20.0 | 20.0 | 18.4 | | 20.8 | |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 20.0 | 20.0 | 20.2 | | 22.1 | |
| Acetone | 1.9 | U | 20.0 | 20.0 | 20.1 | | 23.3 | |
| Benzene | 0.16 | U | 5.00 | 5.00 | 5.00 | | 4.96 | |
| Bromodichloromethane | 0.17 | U | 5.00 | 5.00 | 5.22 | | 5.26 | |
| Bromoform | 0.19 | U | 5.00 | 5.00 | 4.79 | | 4.98 | |
| Bromomethane | 0.21 | U | 5.00 | 5.00 | 4.85 | | 4.83 | |
| Carbon disulfide | 0.45 | U | 5.00 | 5.00 | 4.37 | | 3.97 | |
| Carbon tetrachloride | 0.19 | U | 5.00 | 5.00 | 4.89 | | 4.46 | |
| Chlorobenzene | 0.17 | U | 5.00 | 5.00 | 5.25 | | 4.91 | |
| Chloroethane | 0.41 | U | 5.00 | 5.00 | 4.55 | | 4.58 | |
| Chloroform | 0.16 | U | 5.00 | 5.00 | 5.38 | | 5.23 | |
| Chloromethane | 0.33 | J | 5.00 | 5.00 | 4.94 | | 4.90 | |
| cis-1,2-Dichloroethene | 0.15 | U | 5.00 | 5.00 | 5.02 | | 4.92 | |
| cis-1,3-Dichloropropene | 0.16 | U | 5.00 | 5.00 | 4.78 | | 4.77 | |
| Dibromochloromethane | 0.17 | U | 5.00 | 5.00 | 4.60 | | 4.57 | |
| Dibromomethane | 0.17 | U | 5.00 | 5.00 | 5.08 | | 5.32 | |
| Dichlorodifluoromethane | 0.31 | U | 5.00 | 5.00 | 4.24 | | 4.22 | |
| Ethylbenzene | 0.16 | U | 5.00 | 5.00 | 4.97 | | 4.44 | |
| Isopropylbenzene | 0.19 | U | 5.00 | 5.00 | 4.99 | | 4.69 | |
| Methylene Chloride | 1.5 | J | 5.00 | 5.00 | 5.97 | | 6.00 | |
| Styrene | 0.17 | U | 5.00 | 5.00 | 4.61 | | 4.45 | |
| Tetrachloroethene | 0.20 | U | 5.00 | 5.00 | 4.60 | | 3.99 | |
| Toluene | 0.17 | U | 5.00 | 5.00 | 5.16 | | 4.96 | |
| trans-1,2-Dichloroethene | 0.15 | U | 5.00 | 5.00 | 4.85 | | 4.57 | |
| trans-1,3-Dichloropropene | 0.19 | U | 5.00 | 5.00 | 4.92 | | 5.06 | |
| Trichloroethene | 0.16 | U | 5.00 | 5.00 | 4.94 | | 4.64 | |
| Trichlorofluoromethane | 0.33 | J | 5.00 | 5.00 | 4.46 | | 4.08 | |
| Vinyl acetate | 0.94 | U | 10.0 | 10.0 | 9.86 | | 10.8 | |
| Vinyl chloride | 0.10 | U | 5.00 | 5.00 | 4.44 | | 4.25 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334916**

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

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/25/2016 1131 | | | Analysis Date: | 07/25/2016 1151 |
| Prep Date: | 07/25/2016 1131 | | | Prep Date: | 07/25/2016 1151 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Xylenes, Total | 0.19 | U | 10.0 | 10.0 | 10.0 | 9.19 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335637/6 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7349.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1144 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1144 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,1-Trichloroethane | 0.16 | U | 0.16 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 0.21 | U | 0.21 | 1.0 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.42 | U | 0.42 | 3.0 |
| 1,1,2-Trichloroethane | 0.27 | U | 0.27 | 1.0 |
| 1,1-Dichloroethane | 0.22 | U | 0.22 | 1.0 |
| 1,1-Dichloroethene | 0.23 | U | 0.23 | 1.0 |
| 1,2,3-Trichloropropane | 0.33 | U | 0.33 | 2.5 |
| 1,2-Dibromo-3-Chloropropane | 0.47 | U | 0.47 | 5.0 |
| 1,2-Dibromoethane | 0.18 | U | 0.18 | 1.0 |
| 1,2-Dichloroethane | 0.13 | U | 0.13 | 1.0 |
| 1,2-Dichloropropane | 0.18 | U | 0.18 | 1.0 |
| 1-Butanol | 17 | U | 17 | 60 |
| 2-Butanone (MEK) | 2.0 | U | 2.0 | 6.0 |
| 2-Chloroethyl vinyl ether | 0.69 | U | 0.69 | 3.0 |
| 2-Hexanone | 1.7 | U | 1.7 | 5.0 |
| 2-Nitropropane | 1.6 | U | 1.6 | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | 0.98 | U | 0.98 | 5.0 |
| Acetone | 1.9 | U | 1.9 | 10 |
| Acetonitrile | 9.6 | U | 9.6 | 30 |
| Acrolein | 2.8 | U | 2.8 | 20 |
| Acrylonitrile | 1.4 | U | 1.4 | 20 |
| Allyl chloride | 0.17 | U | 0.17 | 2.0 |
| Benzene | 0.16 | U | 0.16 | 1.0 |
| Bromodichloromethane | 0.17 | U | 0.17 | 1.0 |
| Bromoform | 0.19 | U | 0.19 | 1.0 |
| Bromomethane | 0.21 | U | 0.21 | 2.0 |
| Carbon disulfide | 0.45 | U | 0.45 | 2.0 |
| Carbon tetrachloride | 0.19 | U | 0.19 | 1.0 |
| Chlorobenzene | 0.17 | U | 0.17 | 1.0 |
| Chloroethane | 0.41 | U | 0.41 | 2.0 |
| Chloroform | 0.16 | U | 0.16 | 1.0 |
| Chloromethane | 0.30 | U | 0.30 | 2.0 |
| Chloroprene | 0.21 | U | 0.21 | 1.0 |
| cis-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| cis-1,3-Dichloropropene | 0.16 | U | 0.16 | 1.0 |
| Dibromochloromethane | 0.17 | U | 0.17 | 1.0 |
| Dibromomethane | 0.17 | U | 0.17 | 1.0 |
| Dichlorodifluoromethane | 0.31 | U | 0.31 | 2.0 |
| Ethyl acetate | 1.2 | U | 1.2 | 5.0 |
| Ethyl ether | 0.26 | U | 0.26 | 2.0 |
| Ethyl methacrylate | 0.86 | U | 0.86 | 3.0 |
| Ethylbenzene | 0.16 | U | 0.16 | 1.0 |
| Iodomethane | 0.23 | U | 0.23 | 1.0 |
| Isobutyl alcohol | 37 | U | 37 | 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335637/6 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7349.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1144 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1144 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Isopropylbenzene | 0.19 | U | 0.19 | 1.0 |
| Methacrylonitrile | 1.6 | U | 1.6 | 10 |
| Methyl acetate | 1.6 | U | 1.6 | 5.0 |
| Methyl methacrylate | 1.1 | U | 1.1 | 4.0 |
| Methylene Chloride | 0.385 | J | 0.32 | 2.0 |
| Propionitrile | 3.7 | U | 3.7 | 20 |
| Styrene | 0.17 | U | 0.17 | 1.0 |
| Tetrachloroethene | 0.20 | U | 0.20 | 1.0 |
| Tetrahydrofuran | 2.0 | U | 2.0 | 7.0 |
| Toluene | 0.17 | U | 0.17 | 1.0 |
| trans-1,2-Dichloroethene | 0.15 | U | 0.15 | 1.0 |
| trans-1,3-Dichloropropene | 0.19 | U | 0.19 | 3.0 |
| trans-1,4-Dichloro-2-butene | 0.80 | U | 0.80 | 3.0 |
| Trichloroethene | 0.16 | U | 0.16 | 1.0 |
| Trichlorofluoromethane | 0.29 | U | 0.29 | 2.0 |
| Vinyl acetate | 0.94 | U | 0.94 | 3.0 |
| Vinyl chloride | 0.10 | U | 0.10 | 1.0 |
| Xylenes, Total | 0.19 | U | 0.19 | 2.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 113 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 105 | 78 - 120 |
| Dibromofluoromethane (Surr) | 107 | 77 - 120 |
| Toluene-d8 (Surr) | 105 | 80 - 125 |

**Method Blank TICs- Batch: 280-335637**

| Cas Number | Analyte | RT | Est. Result (ug/ | Qual |
|---|---|---|---|---|
| | Unknown | 5.30 | 1.90 | N J |
| 541-05-9 | Cyclotrisiloxane, hexamethyl- | 9.53 | 1.25 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335637/4 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7347.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1058 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1058 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-335637/5 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7348.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1121 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1121 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| 1,1,1,2-Tetrachloroethane | 96 | 97 | 65 - 135 | 1 | 20 | | |
| 1,1,1-Trichloroethane | 95 | 94 | 65 - 135 | 1 | 20 | | |
| 1,1,2,2-Tetrachloroethane | 103 | 99 | 58 - 135 | 4 | 20 | | |
| 1,1,2-Trichloroethane | 93 | 96 | 64 - 135 | 3 | 27 | | |
| 1,1-Dichloroethane | 96 | 95 | 65 - 135 | 1 | 21 | | |
| 1,1-Dichloroethene | 83 | 83 | 65 - 136 | 0 | 20 | | |
| 1,2,3-Trichloropropane | 100 | 99 | 65 - 135 | 1 | 23 | | |
| 1,2-Dibromo-3-Chloropropane | 108 | 110 | 57 - 135 | 2 | 22 | | |
| 1,2-Dibromoethane | 102 | 103 | 65 - 135 | 1 | 27 | | |
| 1,2-Dichloroethane | 108 | 110 | 65 - 135 | 2 | 20 | | |
| 1,2-Dichloropropane | 102 | 103 | 64 - 135 | 0 | 20 | | |
| 2-Butanone (MEK) | 103 | 109 | 44 - 177 | 6 | 32 | | |
| 2-Chloroethyl vinyl ether | 87 | 89 | 10 - 159 | 3 | 23 | | |
| 2-Hexanone | 102 | 111 | 57 - 139 | 8 | 25 | | |
| 4-Methyl-2-pentanone (MIBK) | 103 | 114 | 60 - 150 | 10 | 22 | | |
| Acetone | 117 | 121 | 39 - 156 | 3 | 23 | | |
| Benzene | 98 | 98 | 65 - 135 | 0 | 20 | | |
| Bromodichloromethane | 102 | 103 | 65 - 135 | 1 | 20 | | |
| Bromoform | 107 | 107 | 62 - 135 | 1 | 27 | | |
| Bromomethane | 89 | 83 | 45 - 135 | 8 | 33 | | |
| Carbon disulfide | 88 | 87 | 55 - 143 | 1 | 20 | | |
| Carbon tetrachloride | 93 | 92 | 65 - 135 | 1 | 21 | | |
| Chlorobenzene | 97 | 96 | 65 - 135 | 1 | 20 | | |
| Chloroethane | 88 | 85 | 46 - 136 | 4 | 25 | | |
| Chloroform | 101 | 101 | 65 - 135 | 0 | 20 | | |
| Chloromethane | 93 | 86 | 34 - 145 | 8 | 24 | | |
| cis-1,2-Dichloroethene | 96 | 98 | 65 - 135 | 2 | 20 | | |
| cis-1,3-Dichloropropene | 106 | 103 | 65 - 135 | 2 | 26 | | |
| Dibromochloromethane | 97 | 97 | 65 - 135 | 0 | 20 | | |
| Dibromomethane | 105 | 104 | 65 - 135 | 0 | 26 | | |
| Dichlorodifluoromethane | 108 | 92 | 43 - 142 | 16 | 30 | | |
| Ethylbenzene | 93 | 90 | 65 - 135 | 3 | 20 | | |
| Isopropylbenzene | 95 | 92 | 65 - 135 | 3 | 20 | | |
| Methylene Chloride | 96 | 100 | 54 - 141 | 4 | 26 | | |
| Styrene | 93 | 95 | 65 - 135 | 2 | 26 | | |
| Tetrachloroethene | 89 | 86 | 65 - 135 | 4 | 20 | | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335637/4 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7347.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1058 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1058 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-335637/5 | Analysis Batch: | 280-335637 | Instrument ID: | VMS_H |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | H7348.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 07/29/2016 1121 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 07/29/2016 1121 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Toluene | 97 | 97 | 65 - 135 | 0 | 20 | | |
| trans-1,2-Dichloroethene | 93 | 95 | 65 - 135 | 1 | 24 | | |
| trans-1,3-Dichloropropene | 101 | 102 | 65 - 135 | 2 | 26 | | |
| Trichloroethene | 97 | 96 | 65 - 135 | 1 | 20 | | |
| Trichlorofluoromethane | 93 | 83 | 53 - 137 | 11 | 27 | | |
| Vinyl acetate | 95 | 94 | 11 - 187 | 1 | 24 | | |
| Vinyl chloride | 89 | 81 | 40 - 137 | 10 | 24 | | |
| Xylenes, Total | 93 | 92 | 65 - 135 | 1 | 20 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 113 | 118 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 94 | 100 | 78 - 120 |
| Dibromofluoromethane (Surr) | 103 | 108 | 77 - 120 |
| Toluene-d8 (Surr) | 111 | 111 | 80 - 125 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335637/4 | Units: ug/L | | LCSD Lab Sample ID: | LCSD 280-335637/5 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/29/2016 1058 | | | Analysis Date: | 07/29/2016 1121 |
| Prep Date: | 07/29/2016 1058 | | | Prep Date: | 07/29/2016 1121 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5.00 | 5.00 | 4.82 | 4.86 |
| 1,1,1-Trichloroethane | 5.00 | 5.00 | 4.75 | 4.69 |
| 1,1,2,2-Tetrachloroethane | 5.00 | 5.00 | 5.13 | 4.94 |
| 1,1,2-Trichloroethane | 5.00 | 5.00 | 4.63 | 4.79 |
| 1,1-Dichloroethane | 5.00 | 5.00 | 4.79 | 4.75 |
| 1,1-Dichloroethene | 5.00 | 5.00 | 4.15 | 4.17 |
| 1,2,3-Trichloropropane | 5.00 | 5.00 | 4.99 | 4.94 |
| 1,2-Dibromo-3-Chloropropane | 5.00 | 5.00 | 5.39 | 5.52 |
| 1,2-Dibromoethane | 5.00 | 5.00 | 5.09 | 5.14 |
| 1,2-Dichloroethane | 5.00 | 5.00 | 5.42 | 5.51 |
| 1,2-Dichloropropane | 5.00 | 5.00 | 5.12 | 5.13 |
| 2-Butanone (MEK) | 20.0 | 20.0 | 20.7 | 21.9 |
| 2-Chloroethyl vinyl ether | 5.00 | 5.00 | 4.33 | 4.45 |
| 2-Hexanone | 20.0 | 20.0 | 20.4 | 22.1 |
| 4-Methyl-2-pentanone (MIBK) | 20.0 | 20.0 | 20.6 | 22.8 |
| Acetone | 20.0 | 20.0 | 23.5 | 24.1 |
| Benzene | 5.00 | 5.00 | 4.91 | 4.90 |
| Bromodichloromethane | 5.00 | 5.00 | 5.10 | 5.15 |
| Bromoform | 5.00 | 5.00 | 5.36 | 5.33 |
| Bromomethane | 5.00 | 5.00 | 4.46 | 4.14 |
| Carbon disulfide | 5.00 | 5.00 | 4.41 | 4.36 |
| Carbon tetrachloride | 5.00 | 5.00 | 4.63 | 4.58 |
| Chlorobenzene | 5.00 | 5.00 | 4.84 | 4.78 |
| Chloroethane | 5.00 | 5.00 | 4.41 | 4.24 |
| Chloroform | 5.00 | 5.00 | 5.06 | 5.06 |
| Chloromethane | 5.00 | 5.00 | 4.67 | 4.32 |
| cis-1,2-Dichloroethene | 5.00 | 5.00 | 4.82 | 4.90 |
| cis-1,3-Dichloropropene | 5.00 | 5.00 | 5.28 | 5.16 |
| Dibromochloromethane | 5.00 | 5.00 | 4.87 | 4.85 |
| Dibromomethane | 5.00 | 5.00 | 5.24 | 5.22 |
| Dichlorodifluoromethane | 5.00 | 5.00 | 5.40 | 4.61 |
| Ethylbenzene | 5.00 | 5.00 | 4.64 | 4.52 |
| Isopropylbenzene | 5.00 | 5.00 | 4.75 | 4.59 |
| Methylene Chloride | 5.00 | 5.00 | 4.79 | 5.00 |
| Styrene | 5.00 | 5.00 | 4.65 | 4.74 |
| Tetrachloroethene | 5.00 | 5.00 | 4.43 | 4.28 |
| Toluene | 5.00 | 5.00 | 4.86 | 4.84 |
| trans-1,2-Dichloroethene | 5.00 | 5.00 | 4.67 | 4.73 |
| trans-1,3-Dichloropropene | 5.00 | 5.00 | 5.04 | 5.12 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-335637**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335637/4 | Units: ug/L | | LCSD Lab Sample ID: | LCSD 280-335637/5 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/29/2016 1058 | | | Analysis Date: | 07/29/2016 1121 |
| Prep Date: | 07/29/2016 1058 | | | Prep Date: | 07/29/2016 1121 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Trichloroethene | 5.00 | 5.00 | 4.84 | 4.79 |
| Trichlorofluoromethane | 5.00 | 5.00 | 4.64 | 4.15 |
| Vinyl acetate | 10.0 | 10.0 | 9.50 | 9.41 |
| Vinyl chloride | 5.00 | 5.00 | 4.46 | 4.03 |
| Xylenes, Total | 10.0 | 10.0 | 9.26 | 9.19 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334208/1-A | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24477.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/26/2016 1729 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | 1.7 | U | 1.7 | 10 |
| 1,2,4-Trichlorobenzene | 0.28 | U | 0.28 | 4.0 |
| 1,2-Dichlorobenzene | 0.23 | U | 0.23 | 4.0 |
| 1,2-Diphenylhydrazine | 0.23 | U | 0.23 | 10 |
| 1,3,5-Trinitrobenzene | 4.0 | U | 4.0 | 50 |
| 1,3-Dichlorobenzene | 0.30 | U | 0.30 | 10 |
| 1,3-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dichlorobenzene | 0.32 | U | 0.32 | 4.0 |
| 1,4-Dinitrobenzene | 2.0 | U | 2.0 | 10 |
| 1,4-Dioxane | 1.7 | U | 1.7 | 20 |
| 1,4-Naphthoquinone | 14 | U | 14 | 50 |
| 1-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2,2'-oxybis[1-chloropropane] | 0.28 | U | 0.28 | 10 |
| 2,3,4,6-Tetrachlorophenol | 2.0 | U | 2.0 | 50 |
| 2,4,5-Trichlorophenol | 0.45 | U | 0.45 | 10 |
| 2,4,6-Trichlorophenol | 0.29 | U | 0.29 | 10 |
| 2,4-Dichlorophenol | 0.64 | U | 0.64 | 10 |
| 2,4-Dimethylphenol | 0.58 | U | 0.58 | 10 |
| 2,4-Dinitrophenol | 10 | U | 10 | 25 |
| 2,4-Dinitrotoluene | 1.7 | U | 1.7 | 10 |
| 2,6-Dichlorophenol | 1.4 | U | 1.4 | 10 |
| 2,6-Dinitrotoluene | 1.9 | U | 1.9 | 10 |
| 2-Acetylaminofluorene | 7.0 | U | 7.0 | 100 |
| 2-Chloronaphthalene | 0.26 | U | 0.26 | 4.0 |
| 2-Chlorophenol | 2.0 | U | 2.0 | 10 |
| 2-Methylnaphthalene | 0.29 | U | 0.29 | 4.0 |
| 2-Methylphenol | 0.98 | U | 0.98 | 10 |
| 2-Naphthylamine | 3.1 | U | 3.1 | 10 |
| 2-Nitroaniline | 1.7 | U | 1.7 | 10 |
| 2-Nitrophenol | 0.39 | U | 0.39 | 10 |
| 2-Picoline | 1.2 | U | 1.2 | 20 |
| 2-sec-Butyl-4,6-dinitrophenol | 4.0 | U | 4.0 | 20 |
| 2-Toluidine | 1.4 | U | 1.4 | 10 |
| 3 & 4 Methylphenol | 0.25 | U | 0.25 | 10 |
| 3,3'-Dichlorobenzidine | 2.0 | U | 2.0 | 10 |
| 3,3'-Dimethylbenzidine | 4.0 | U | 4.0 | 20 |
| 3-Methylcholanthrene | 1.7 | U | 1.7 | 20 |
| 3-Methylphenol | 0.25 | U | 0.25 | 10 |
| 3-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4,6-Dinitro-2-methylphenol | 4.0 | U | 4.0 | 10 |
| 4-Aminobiphenyl | 4.5 | U | 4.5 | 50 |
| 4-Bromophenyl phenyl ether | 0.43 | U | 0.43 | 10 |
| 4-Chloro-3-methylphenol | 2.4 | U | 2.4 | 10 |
| 4-Chloroaniline | 2.1 | U | 2.1 | 10 |
| 4-Chlorophenyl phenyl ether | 1.7 | U | 1.7 | 10 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334208/1-A | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24477.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/26/2016 1729 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 4-Methylphenol | 0.25 | U | 0.25 | 10 |
| 4-Nitroaniline | 2.0 | U | 2.0 | 10 |
| 4-Nitrophenol | 1.2 | U | 1.2 | 10 |
| 4-Nitroquinoline-1-oxide | 20 | U | 20 | 100 |
| 5-Nitro-o-toluidine | 1.4 | U | 1.4 | 20 |
| 7,12-Dimethylbenz(a)anthracene | 1.6 | U | 1.6 | 20 |
| a,a-Dimethylphenethylamine | 20 | U | 20 | 50 |
| Acenaphthene | 0.28 | U | 0.28 | 4.0 |
| Acenaphthylene | 0.49 | U | 0.49 | 4.0 |
| Acetophenone | 0.24 | U | 0.24 | 10 |
| Aniline | 2.0 | U | 2.0 | 10 |
| Anthracene | 0.42 | U | 0.42 | 4.0 |
| Aramite, Total | 9.2 | U | 9.2 | 18 |
| Benzaldehyde | 2.0 | U | 2.0 | 10 |
| Benzo[a]anthracene | 0.35 | U | 0.35 | 4.0 |
| Benzo[a]pyrene | 0.31 | U | 0.31 | 4.0 |
| Benzo[b]fluoranthene | 0.53 | U | 0.53 | 4.0 |
| Benzo[g,h,i]perylene | 0.50 | U | 0.50 | 4.0 |
| Benzo[k]fluoranthene | 0.46 | U | 0.46 | 4.0 |
| Benzoic acid | 10 | U | 10 | 25 |
| Benzyl alcohol | 1.14 | J | 0.23 | 10 |
| Bis(2-chloroethoxy)methane | 0.97 | U | 0.97 | 10 |
| Bis(2-chloroethyl)ether | 0.41 | U | 0.41 | 10 |
| Bis(2-ethylhexyl) phthalate | 0.56 | U | 0.56 | 10 |
| Butyl benzyl phthalate | 1.0 | U | 1.0 | 4.0 |
| Chlorobenzilate | 0.66 | U | 0.66 | 10 |
| Chrysene | 0.54 | U | 0.54 | 4.0 |
| Diallate | 0.56 | U | 0.56 | 5.6 |
| Dibenz(a,h)anthracene | 0.51 | U | 0.51 | 4.0 |
| Dibenzofuran | 0.29 | U | 0.29 | 4.0 |
| Diethyl phthalate | 0.38 | U | 0.38 | 4.0 |
| Dimethoate | 1.1 | U | 1.1 | 20 |
| Dimethyl phthalate | 0.21 | U | 0.21 | 4.0 |
| Di-n-butyl phthalate | 1.2 | U | 1.2 | 4.0 |
| Di-n-octyl phthalate | 0.35 | U | 0.35 | 4.0 |
| Diphenylamine | 1.1 | U | 1.1 | 10 |
| Disulfoton | 1.1 | U | 1.1 | 50 |
| Ethyl methanesulfonate | 0.94 | U | 0.94 | 10 |
| Ethyl Parathion | 2.0 | U | 2.0 | 50 |
| Fluoranthene | 0.20 | U | 0.20 | 4.0 |
| Fluorene | 0.31 | U | 0.31 | 4.0 |
| Hexachlorobenzene | 0.66 | U | 0.66 | 10 |
| Hexachlorobutadiene | 3.3 | U | 3.3 | 10 |
| Hexachlorocyclopentadiene | 10 | U | 10 | 10 |
| Hexachloroethane | 2.1 | U | 2.1 | 10 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334208/1-A | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24477.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/26/2016 1729 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Hexachloropropene | 2.0 | U | 2.0 | 100 |
| Indeno[1,2,3-cd]pyrene | 0.65 | U | 0.65 | 4.0 |
| Isophorone | 0.21 | U | 0.21 | 10 |
| Isosafrole | 1.0 | U | 1.0 | 3.5 |
| Methapyrilene | 20 | U | 20 | 50 |
| Methyl methanesulfonate | 1.0 | U | 1.0 | 10 |
| Naphthalene | 0.29 | U | 0.29 | 4.0 |
| Nitrobenzene | 0.81 | U | 0.81 | 10 |
| N-Nitrosodiethylamine | 1.7 | U | 1.7 | 10 |
| N-Nitrosodimethylamine | 0.29 | U | 0.29 | 10 |
| N-Nitrosodi-n-butylamine | 1.2 | U | 1.2 | 10 |
| N-Nitrosodi-n-propylamine | 0.35 | U | 0.35 | 10 |
| n-Nitrosodiphenylamine(as diphenylamine) | 0.44 | U | 0.44 | 10 |
| N-Nitrosomethylethylamine | 1.8 | U | 1.8 | 10 |
| N-Nitrosomorpholine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopiperidine | 2.0 | U | 2.0 | 10 |
| N-Nitrosopyrrolidine | 0.80 | U | 0.80 | 10 |
| o,o',o''-Triethylphosphorothioate | 2.0 | U | 2.0 | 50 |
| p-Dimethylamino azobenzene | 2.0 | U | 2.0 | 20 |
| Pentachlorobenzene | 2.0 | U | 2.0 | 10 |
| Pentachloroethane | 2.0 | U | 2.0 | 50 |
| Pentachloronitrobenzene | 2.0 | U | 2.0 | 50 |
| Pentachlorophenol | 20 | U | 20 | 50 |
| Phenacetin | 1.1 | U | 1.1 | 20 |
| Phenanthrene | 0.26 | U | 0.26 | 4.0 |
| Phenol | 2.0 | U | 2.0 | 10 |
| Phorate | 2.0 | U | 2.0 | 50 |
| p-Phenylene diamine | 5.0 | U | 5.0 | 100 |
| Pronamide | 2.0 | U | 2.0 | 20 |
| Pyrene | 0.37 | U | 0.37 | 10 |
| Pyridine | 1.7 | U | 1.7 | 20 |
| Safrole, Total | 1.1 | U | 1.1 | 20 |
| Tris(2,3-dibromopropyl)phosphate | 25 | U | 25 | 100 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2,4,6-Tribromophenol | 83 | 48 - 135 |
| 2-Fluorobiphenyl | 78 | 48 - 135 |
| 2-Fluorophenol | 80 | 41 - 135 |
| Nitrobenzene-d5 | 84 | 42 - 135 |
| Phenol-d5 | 85 | 46 - 135 |
| Terphenyl-d14 | 92 | 20 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank TICs- Batch: 280-334208**

| Cas Number | Analyte | RT | Est. Result (ug/ | Qual |
|---|---|---|---|---|
| | Unknown | 1.51 | 9.55 | N J |
| 110-82-7 | Cyclohexane | 1.68 | 35.7 | N J |
| | Unknown | 1.75 | 178 | N J |
| | Unknown | 2.63 | 17.9 | N J |
| | Unknown | 3.12 | 28.9 | N J |
| 104-76-7 | 1-Hexanol, 2-ethyl- | 4.66 | 8.17 | N J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334208/2-A | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24478.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/26/2016 1756 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 80.0 | 55.0 | 69 | 44 - 135 | |
| 1,2-Dichlorobenzene | 80.0 | 48.9 | 61 | 42 - 135 | |
| 1,2-Diphenylhydrazine | 80.9 | 78.6 | 97 | 65 - 135 | |
| 1,3-Dichlorobenzene | 80.0 | 44.2 | 55 | 39 - 135 | |
| 1,4-Dichlorobenzene | 80.0 | 45.9 | 57 | 40 - 135 | |
| 2,2'-oxybis[1-chloropropane] | 80.0 | 73.9 | 92 | 55 - 135 | |
| 2,4,5-Trichlorophenol | 80.0 | 75.8 | 95 | 64 - 135 | |
| 2,4,6-Trichlorophenol | 80.0 | 79.1 | 99 | 62 - 135 | |
| 2,4-Dichlorophenol | 80.0 | 72.6 | 91 | 62 - 135 | |
| 2,4-Dimethylphenol | 80.0 | 62.6 | 78 | 44 - 135 | |
| 2,4-Dinitrophenol | 160 | 154 | 96 | 50 - 135 | |
| 2,4-Dinitrotoluene | 80.0 | 82.1 | 103 | 65 - 135 | |
| 2,6-Dinitrotoluene | 80.0 | 81.2 | 102 | 65 - 135 | |
| 2-Chloronaphthalene | 80.0 | 70.5 | 88 | 59 - 135 | |
| 2-Chlorophenol | 80.0 | 71.0 | 89 | 58 - 135 | |
| 2-Methylnaphthalene | 80.0 | 67.1 | 84 | 56 - 135 | |
| 2-Methylphenol | 80.0 | 72.0 | 90 | 62 - 135 | |
| 2-Nitroaniline | 80.0 | 81.4 | 102 | 65 - 135 | |
| 2-Nitrophenol | 80.0 | 73.0 | 91 | 65 - 135 | |
| 3 & 4 Methylphenol | 80.0 | 75.4 | 94 | 65 - 135 | |
| 3,3'-Dichlorobenzidine | 80.0 | 66.2 | 83 | 18 - 135 | |
| 3-Nitroaniline | 80.0 | 79.2 | 99 | 38 - 135 | |
| 4,6-Dinitro-2-methylphenol | 160 | 153 | 95 | 63 - 135 | |
| 4-Bromophenyl phenyl ether | 80.0 | 74.0 | 93 | 65 - 135 | |
| 4-Chloro-3-methylphenol | 80.0 | 74.6 | 93 | 65 - 135 | |
| 4-Chloroaniline | 80.0 | 72.2 | 90 | 30 - 135 | |
| 4-Chlorophenyl phenyl ether | 80.0 | 76.5 | 96 | 65 - 135 | |
| 4-Methylphenol | 80.0 | 75.4 | 94 | 65 - 135 | |
| 4-Nitroaniline | 80.0 | 83.2 | 104 | 65 - 135 | |
| 4-Nitrophenol | 160 | 169 | 106 | 56 - 135 | |
| Acenaphthene | 80.0 | 74.4 | 93 | 61 - 135 | |
| Acenaphthylene | 80.0 | 71.0 | 89 | 63 - 135 | |
| Aniline | 80.0 | 68.0 | 85 | 22 - 135 | |
| Anthracene | 80.0 | 74.6 | 93 | 65 - 135 | |
| Benzo[a]anthracene | 80.0 | 74.4 | 93 | 65 - 135 | |
| Benzo[a]pyrene | 80.0 | 74.9 | 94 | 65 - 135 | |
| Benzo[b]fluoranthene | 80.0 | 76.5 | 96 | 65 - 135 | |
| Benzo[g,h,i]perylene | 80.0 | 78.2 | 98 | 65 - 135 | |
| Benzo[k]fluoranthene | 80.0 | 79.2 | 99 | 65 - 135 | |
| Benzoic acid | 80.0 | 62.0 | 77 | 41 - 135 | |
| Benzyl alcohol | 80.0 | 73.8 | 92 | 65 - 135 | |
| Bis(2-chloroethoxy)methane | 80.0 | 72.6 | 91 | 65 - 135 | |
| Bis(2-chloroethyl)ether | 80.0 | 73.9 | 92 | 65 - 135 | |
| Bis(2-ethylhexyl) phthalate | 80.0 | 74.7 | 93 | 65 - 135 | |
| Butyl benzyl phthalate | 80.0 | 72.4 | 91 | 65 - 135 | |
| Chrysene | 80.0 | 75.7 | 95 | 65 - 135 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334208/2-A | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24478.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/26/2016 1756 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 80.0 | 73.3 | 92 | 63 - 135 | |
| Dibenzofuran | 80.0 | 74.5 | 93 | 64 - 135 | |
| Diethyl phthalate | 80.0 | 79.4 | 99 | 65 - 135 | |
| Dimethyl phthalate | 80.0 | 77.9 | 97 | 65 - 135 | |
| Di-n-butyl phthalate | 80.0 | 74.9 | 94 | 65 - 135 | |
| Di-n-octyl phthalate | 80.0 | 65.9 | 82 | 65 - 135 | |
| Fluoranthene | 80.0 | 78.0 | 97 | 65 - 135 | |
| Fluorene | 80.0 | 76.6 | 96 | 65 - 135 | |
| Hexachlorobenzene | 80.0 | 72.8 | 91 | 65 - 135 | |
| Hexachlorobutadiene | 80.0 | 47.1 | 59 | 35 - 135 | |
| Hexachlorocyclopentadiene | 80.0 | 26.1 | 33 | 10 - 135 | |
| Hexachloroethane | 80.0 | 39.8 | 50 | 32 - 135 | |
| Indeno[1,2,3-cd]pyrene | 80.0 | 70.7 | 88 | 65 - 135 | |
| Isophorone | 80.0 | 72.6 | 91 | 65 - 135 | |
| Naphthalene | 80.0 | 61.7 | 77 | 56 - 135 | |
| Nitrobenzene | 80.0 | 70.6 | 88 | 65 - 135 | |
| N-Nitrosodimethylamine | 80.0 | 69.0 | 86 | 62 - 150 | |
| N-Nitrosodi-n-propylamine | 80.0 | 76.3 | 95 | 65 - 135 | |
| n-Nitrosodiphenylamine(as diphenylamine) | 80.0 | 72.5 | 91 | 65 - 135 | |
| Pentachlorophenol | 160 | 146 | 91 | 52 - 135 | |
| Phenanthrene | 80.0 | 75.5 | 94 | 65 - 135 | |
| Phenol | 80.0 | 73.1 | 91 | 61 - 135 | |
| Pyrene | 80.0 | 73.2 | 91 | 65 - 135 | |
| Pyridine | 80.0 | 59.6 | 74 | 30 - 135 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2,4,6-Tribromophenol | 98 | 48 - 135 |
| 2-Fluorobiphenyl | 87 | 48 - 135 |
| 2-Fluorophenol | 82 | 41 - 135 |
| Nitrobenzene-d5 | 85 | 42 - 135 |
| Phenol-d5 | 86 | 46 - 135 |
| Terphenyl-d14 | 90 | 20 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24486.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 988.7 mL |
| Analysis Date: | 07/26/2016 2128 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24487.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1018 mL |
| Analysis Date: | 07/26/2016 2154 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 1,2,4-Trichlorobenzene | 71 | 69 | 44 - 135 | 6 | 42 | | |
| 1,2-Dichlorobenzene | 70 | 68 | 42 - 135 | 6 | 49 | | |
| 1,2-Diphenylhydrazine | 94 | 94 | 65 - 135 | 3 | 30 | | |
| 1,3-Dichlorobenzene | 68 | 66 | 39 - 135 | 7 | 51 | | |
| 1,4-Dichlorobenzene | 69 | 66 | 40 - 135 | 8 | 50 | | |
| 2,2'-oxybis[1-chloropropane] | 82 | 78 | 55 - 135 | 8 | 37 | | |
| 2,4,5-Trichlorophenol | 91 | 91 | 64 - 135 | 3 | 30 | | |
| 2,4,6-Trichlorophenol | 95 | 93 | 62 - 135 | 5 | 30 | | |
| 2,4-Dichlorophenol | 83 | 80 | 62 - 135 | 7 | 30 | | |
| 2,4-Dimethylphenol | 80 | 76 | 44 - 135 | 8 | 30 | | |
| 2,4-Dinitrophenol | 99 | 99 | 50 - 135 | 2 | 30 | | |
| 2,4-Dinitrotoluene | 100 | 101 | 65 - 135 | 2 | 32 | | |
| 2,6-Dinitrotoluene | 99 | 98 | 65 - 135 | 4 | 30 | | |
| 2-Chloronaphthalene | 80 | 79 | 59 - 135 | 4 | 30 | | |
| 2-Chlorophenol | 76 | 73 | 58 - 135 | 7 | 46 | | |
| 2-Methylnaphthalene | 79 | 78 | 56 - 135 | 4 | 32 | | |
| 2-Methylphenol | 82 | 78 | 62 - 135 | 8 | 40 | | |
| 2-Nitroaniline | 99 | 98 | 65 - 135 | 4 | 30 | | |
| 2-Nitrophenol | 79 | 78 | 65 - 135 | 5 | 38 | | |
| 3 & 4 Methylphenol | 89 | 85 | 65 - 135 | 7 | 36 | | |
| 3,3'-Dichlorobenzidine | 22 | 36 | 18 - 135 | 46 | 50 | | |
| 3-Nitroaniline | 86 | 88 | 38 - 135 | 1 | 30 | | |
| 4,6-Dinitro-2-methylphenol | 96 | 96 | 63 - 135 | 4 | 30 | | |
| 4-Bromophenyl phenyl ether | 92 | 90 | 65 - 135 | 4 | 30 | | |
| 4-Chloro-3-methylphenol | 95 | 93 | 65 - 135 | 5 | 30 | | |
| 4-Chloroaniline | 75 | 77 | 30 - 135 | 0 | 38 | | |
| 4-Chlorophenyl phenyl ether | 91 | 92 | 65 - 135 | 2 | 30 | | |
| 4-Methylphenol | 89 | 85 | 65 - 135 | 7 | 36 | | |
| 4-Nitroaniline | 92 | 93 | 65 - 135 | 2 | 34 | | |
| 4-Nitrophenol | 105 | 104 | 56 - 135 | 4 | 50 | | |
| Acenaphthene | 87 | 87 | 61 - 135 | 3 | 30 | | |
| Acenaphthylene | 84 | 83 | 63 - 135 | 4 | 30 | | |
| Aniline | 72 | 73 | 22 - 135 | 1 | 50 | | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24486.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 988.7 mL |
| Analysis Date: | 07/26/2016 2128 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24487.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1018 mL |
| Analysis Date: | 07/26/2016 2154 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Anthracene | 91 | 92 | 65 - 135 | 2 | 30 | | |
| Benzo[a]anthracene | 92 | 93 | 65 - 135 | 2 | 30 | | |
| Benzo[a]pyrene | 90 | 93 | 65 - 135 | 0 | 30 | | |
| Benzo[b]fluoranthene | 95 | 97 | 65 - 135 | 1 | 30 | | |
| Benzo[g,h,i]perylene | 97 | 101 | 65 - 135 | 1 | 30 | | |
| Benzo[k]fluoranthene | 96 | 98 | 65 - 135 | 1 | 30 | | |
| Benzoic acid | 94 | 94 | 41 - 135 | 3 | 45 | | |
| Benzyl alcohol | 86 | 82 | 65 - 135 | 7 | 37 | | |
| Bis(2-chloroethoxy)methane | 80 | 76 | 65 - 135 | 7 | 30 | | |
| Bis(2-chloroethyl)ether | 80 | 77 | 65 - 135 | 8 | 41 | | |
| Bis(2-ethylhexyl) phthalate | 97 | 96 | 65 - 135 | 3 | 30 | | |
| Butyl benzyl phthalate | 94 | 93 | 65 - 135 | 4 | 30 | | |
| Chrysene | 93 | 94 | 65 - 135 | 3 | 30 | | |
| Dibenz(a,h)anthracene | 95 | 96 | 63 - 135 | 1 | 30 | | |
| Dibenzofuran | 89 | 89 | 64 - 135 | 3 | 30 | | |
| Diethyl phthalate | 99 | 95 | 65 - 135 | 7 | 30 | | |
| Dimethyl phthalate | 95 | 95 | 65 - 135 | 3 | 30 | | |
| Di-n-butyl phthalate | 95 | 94 | 65 - 135 | 4 | 30 | | |
| Di-n-octyl phthalate | 89 | 89 | 65 - 135 | 3 | 30 | | |
| Fluoranthene | 97 | 97 | 65 - 135 | 3 | 30 | | |
| Fluorene | 93 | 92 | 65 - 135 | 3 | 30 | | |
| Hexachlorobenzene | 91 | 92 | 65 - 135 | 2 | 30 | | |
| Hexachlorobutadiene | 65 | 65 | 35 - 135 | 3 | 47 | | |
| Hexachlorocyclopentadiene | 31 | 32 | 10 - 135 | 2 | 66 | | |
| Hexachloroethane | 65 | 63 | 32 - 135 | 6 | 53 | | |
| Indeno[1,2,3-cd]pyrene | 87 | 91 | 65 - 135 | 1 | 30 | | |
| Isophorone | 82 | 80 | 65 - 135 | 5 | 30 | | |
| Naphthalene | 75 | 73 | 56 - 135 | 6 | 40 | | |
| Nitrobenzene | 81 | 79 | 65 - 135 | 5 | 39 | | |
| N-Nitrosodimethylamine | 76 | 72 | 62 - 150 | 7 | 36 | | |
| N-Nitrosodi-n-propylamine | 86 | 81 | 65 - 135 | 8 | 30 | | |
| n-Nitrosodiphenylamine(as diphenylamine) | 78 | 73 | 65 - 135 | 9 | 30 | | |
| Pentachlorophenol | 99 | 98 | 52 - 135 | 4 | 30 | | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24486.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 988.7 mL |
| Analysis Date: | 07/26/2016 2128 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335194 | Instrument ID: | SMS_G6 |
| Client Matrix: | Water | Prep Batch: | 280-334208 | Lab File ID: | G6_24487.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1018 mL |
| Analysis Date: | 07/26/2016 2154 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 1337 | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Phenanthrene | 94 | 94 | 65 - 135 | 4 | 30 | | |
| Phenol | 83 | 78 | 61 - 135 | 9 | 37 | | |
| Pyrene | 90 | 90 | 65 - 135 | 3 | 30 | | |
| Pyridine | 68 | 66 | 30 - 135 | 6 | 50 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 2,4,6-Tribromophenol | 99 | 96 | 48 - 135 |
| 2-Fluorobiphenyl | 77 | 76 | 48 - 135 |
| 2-Fluorophenol | 71 | 67 | 41 - 135 |
| Nitrobenzene-d5 | 73 | 71 | 42 - 135 |
| Phenol-d5 | 78 | 72 | 46 - 135 |
| Terphenyl-d14 | 88 | 60 | 20 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: ug/L | | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/26/2016 2128 | | | Analysis Date: | 07/26/2016 2154 |
| Prep Date: | 07/19/2016 1337 | | | Prep Date: | 07/19/2016 1337 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 0.28 | U | 80.9 | 78.6 | 57.5 | 54.3 |
| 1,2-Dichlorobenzene | 0.23 | U | 80.9 | 78.6 | 56.6 | 53.5 |
| 1,2-Diphenylhydrazine | 0.23 | U | 81.8 | 79.4 | 77.1 | 74.6 |
| 1,3-Dichlorobenzene | 0.30 | U | 80.9 | 78.6 | 55.3 | 51.6 |
| 1,4-Dichlorobenzene | 0.32 | U | 80.9 | 78.6 | 56.0 | 51.7 |
| 2,2'-oxybis[1-chloropropane] | 0.28 | U | 80.9 | 78.6 | 66.1 | 61.2 |
| 2,4,5-Trichlorophenol | 0.45 | U | 80.9 | 78.6 | 74.0 | 71.7 |
| 2,4,6-Trichlorophenol | 0.29 | U | 80.9 | 78.6 | 76.8 | 72.8 |
| 2,4-Dichlorophenol | 0.64 | U | 80.9 | 78.6 | 67.4 | 63.1 |
| 2,4-Dimethylphenol | 0.58 | U | 80.9 | 78.6 | 64.7 | 59.7 |
| 2,4-Dinitrophenol | 10 | U | 162 | 157 | 160 | 156 |
| 2,4-Dinitrotoluene | 1.7 | U | 80.9 | 78.6 | 81.0 | 79.2 |
| 2,6-Dinitrotoluene | 1.9 | U | 80.9 | 78.6 | 80.0 | 77.0 |
| 2-Chloronaphthalene | 0.26 | U | 80.9 | 78.6 | 64.9 | 62.3 |
| 2-Chlorophenol | 2.0 | U | 80.9 | 78.6 | 61.9 | 57.7 |
| 2-Methylnaphthalene | 0.29 | U | 80.9 | 78.6 | 63.8 | 61.0 |
| 2-Methylphenol | 0.98 | U | 80.9 | 78.6 | 66.5 | 61.1 |
| 2-Nitroaniline | 1.7 | U | 80.9 | 78.6 | 80.0 | 76.8 |
| 2-Nitrophenol | 0.39 | U | 80.9 | 78.6 | 63.8 | 60.9 |
| 3 & 4 Methylphenol | 0.25 | U | 80.9 | 78.6 | 71.8 | 67.0 |
| 3,3'-Dichlorobenzidine | 2.0 | U | 80.9 | 78.6 | 17.6 | 28.1 |
| 3-Nitroaniline | 2.0 | U | 80.9 | 78.6 | 69.7 | 68.8 |
| 4,6-Dinitro-2-methylphenol | 4.0 | U | 162 | 157 | 156 | 150 |
| 4-Bromophenyl phenyl ether | 0.43 | U | 80.9 | 78.6 | 74.0 | 70.9 |
| 4-Chloro-3-methylphenol | 2.4 | U | 80.9 | 78.6 | 76.9 | 73.1 |
| 4-Chloroaniline | 2.1 | U | 80.9 | 78.6 | 60.7 | 60.4 |
| 4-Chlorophenyl phenyl ether | 1.7 | U | 80.9 | 78.6 | 73.8 | 72.1 |
| 4-Methylphenol | 0.25 | U | 80.9 | 78.6 | 71.8 | 67.0 |
| 4-Nitroaniline | 2.0 | U | 80.9 | 78.6 | 74.2 | 72.9 |
| 4-Nitrophenol | 1.2 | U | 162 | 157 | 170 | 163 |
| Acenaphthene | 0.28 | U | 80.9 | 78.6 | 70.3 | 68.1 |
| Acenaphthylene | 0.49 | U | 80.9 | 78.6 | 68.2 | 65.3 |
| Aniline | 2.0 | U | 80.9 | 78.6 | 58.1 | 57.4 |
| Anthracene | 0.42 | U | 80.9 | 78.6 | 73.7 | 72.0 |
| Benzo[a]anthracene | 0.35 | U | 80.9 | 78.6 | 74.7 | 72.9 |
| Benzo[a]pyrene | 0.31 | U | 80.9 | 78.6 | 72.8 | 72.8 |
| Benzo[b]fluoranthene | 0.53 | U | 80.9 | 78.6 | 77.2 | 76.4 |
| Benzo[g,h,i]perylene | 0.50 | U | 80.9 | 78.6 | 78.5 | 79.3 |
| Benzo[k]fluoranthene | 0.46 | U | 80.9 | 78.6 | 77.9 | 76.7 |
| Benzoic acid | 10 | U | 80.9 | 78.6 | 76.0 | 73.7 |
| Benzyl alcohol | 0.57 | J | 80.9 | 78.6 | 70.0 | 65.2 |
| Bis(2-chloroethoxy)methane | 0.97 | U | 80.9 | 78.6 | 64.4 | 60.0 |
| Bis(2-chloroethyl)ether | 0.41 | U | 80.9 | 78.6 | 65.1 | 60.2 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334208**

**Method: 8270C**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/26/2016 2128 | | | Analysis Date: | 07/26/2016 2154 |
| Prep Date: | 07/19/2016 1337 | | | Prep Date: | 07/19/2016 1337 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Bis(2-ethylhexyl) phthalate | 0.56 | U | 80.9 | 78.6 | 78.3 | 75.8 |
| Butyl benzyl phthalate | 1.0 | U | 80.9 | 78.6 | 76.0 | 72.9 |
| Chrysene | 0.54 | U | 80.9 | 78.6 | 75.5 | 73.5 |
| Dibenz(a,h)anthracene | 0.51 | U | 80.9 | 78.6 | 76.6 | 75.6 |
| Dibenzofuran | 0.29 | U | 80.9 | 78.6 | 72.2 | 70.0 |
| Diethyl phthalate | 0.38 | U | 80.9 | 78.6 | 80.2 | 74.8 |
| Dimethyl phthalate | 0.21 | U | 80.9 | 78.6 | 76.7 | 74.8 |
| Di-n-butyl phthalate | 1.2 | U | 80.9 | 78.6 | 77.1 | 74.2 |
| Di-n-octyl phthalate | 0.35 | U | 80.9 | 78.6 | 72.1 | 70.2 |
| Fluoranthene | 0.20 | U | 80.9 | 78.6 | 78.7 | 76.6 |
| Fluorene | 0.31 | U | 80.9 | 78.6 | 74.9 | 72.5 |
| Hexachlorobenzene | 0.66 | U | 80.9 | 78.6 | 73.3 | 71.9 |
| Hexachlorobutadiene | 3.3 | U | 80.9 | 78.6 | 52.9 | 51.3 |
| Hexachlorocyclopentadiene | 10 | U | 80.9 | 78.6 | 25.2 | 24.8 |
| Hexachloroethane | 2.1 | U | 80.9 | 78.6 | 52.4 | 49.3 |
| Indeno[1,2,3-cd]pyrene | 0.65 | U | 80.9 | 78.6 | 70.5 | 71.1 |
| Isophorone | 0.21 | U | 80.9 | 78.6 | 66.0 | 62.7 |
| Naphthalene | 0.29 | U | 80.9 | 78.6 | 60.9 | 57.6 |
| Nitrobenzene | 0.81 | U | 80.9 | 78.6 | 65.2 | 62.1 |
| N-Nitrosodimethylamine | 0.29 | U | 80.9 | 78.6 | 61.3 | 57.0 |
| N-Nitrosodi-n-propylamine | 0.35 | U | 80.9 | 78.6 | 69.2 | 63.6 |
| n-Nitrosodiphenylamine(as diphenylamine) | 0.44 | U | 80.9 | 78.6 | 63.2 | 57.5 |
| Pentachlorophenol | 20 | U | 162 | 157 | 160 | 154 |
| Phenanthrene | 0.26 | U | 80.9 | 78.6 | 76.4 | 73.5 |
| Phenol | 2.0 | U | 80.9 | 78.6 | 67.4 | 61.5 |
| Pyrene | 0.37 | U | 80.9 | 78.6 | 73.1 | 70.7 |
| Pyridine | 1.7 | U | 80.9 | 78.6 | 55.0 | 51.7 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334425**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334425/5 | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 004B0501.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/20/2016 1541 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Methanol | 0.15 | U | 0.15 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Propanol | 111 | 50 - 150 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-334425**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334425/6 | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 005B0601.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/20/2016 1557 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |
| LCSD Lab Sample ID: | LCSD 280-334425/7 | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 006B0701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/20/2016 1613 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Methanol | 116 | 115 | 50 - 150 | 1 | 30 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Propanol | 108 | 109 | 50 - 150 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-334425**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334425/6 | Units: mg/L | | LCSD Lab Sample ID: | LCSD 280-334425/7 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/20/2016 1557 | | | Analysis Date: | 07/20/2016 1613 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Methanol | 2.99 | 2.99 | 3.47 | 3.45 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334425**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 008B0901.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/20/2016 1645 | | | Final Weight/Volume: | |
| Prep Date: | N/A | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334425 | Instrument ID: | SGC_A |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 009B1001.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/20/2016 1701 | | | Final Weight/Volume: | |
| Prep Date: | N/A | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Methanol | 126 | 115 | 50 - 150 | 9 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Propanol | 107 | 111 | 50 - 150 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334425**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | mg/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/20/2016 1645 | | | Analysis Date: | 07/20/2016 1701 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Methanol | 0.15 | U | 2.99 | 2.99 | 3.76 | 3.45 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335251**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335251/26 | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 010F2601.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2014 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | N/A | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ethylene glycol | 2000 | U | 2000 | 5000 |
| Propylene glycol | 2400 | U | 2400 | 5000 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,4-Butanediol | 95 | 77 - 134 |

**Lab Control Sample - Batch: 280-335251**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-335251/29 | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 011F2901.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2040 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | N/A | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ethylene glycol | 50100 | 45200 | 90 | 75 - 120 | |
| Propylene glycol | 49700 | 46200 | 93 | 73 - 124 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,4-Butanediol | 98 | 77 - 134 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-335251**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 013F3501.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2132 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | N/A | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335251 | Instrument ID: | SGC_Z2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 014F3801.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/26/2016 2158 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | N/A | | | Injection Volume: | 0.5 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Ethylene glycol | 87 | 91 | 75 - 120 | 5 | 20 | | |
| Propylene glycol | 91 | 93 | 73 - 124 | 2 | 20 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 1,4-Butanediol | 86 | 83 | 77 - 134 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-335251**

**Method: 8015C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/26/2016 2132 | | | Analysis Date: | 07/26/2016 2158 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Ethylene glycol | 2000 | U | 50100 | 50100 | 43500 | 45800 |
| Propylene glycol | 2400 | U | 49700 | 49700 | 45000 | 46000 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334991**

**Method: NWTPH-Gx**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334991/22 | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 022F2201.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2023 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 07/25/2016 2023 | | | Injection Volume: | 5 mL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Gasoline | 10 | U | 10 | 25 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| a,a,a-Trifluorotoluene | 92 | 82 - 110 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-334991**

**Method: NWTPH-Gx**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334991/23 | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 023F2301.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2048 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 07/25/2016 2048 | | | Injection Volume: | 5 mL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |
| LCSD Lab Sample ID: | LCSD 280-334991/24 | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 024F2401.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2113 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 07/25/2016 2113 | | | Injection Volume: | 5 mL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| Gasoline | 99 | 100 | 79 - 149 | 1 | 27 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| a,a,a-Trifluorotoluene | 92 | 92 | 82 - 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-334991**

**Method: NWTPH-Gx**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334991/23 | Units: ug/L | | LCSD Lab Sample ID: | LCSD 280-334991/24 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/25/2016 2048 | | | Analysis Date: | 07/25/2016 2113 |
| Prep Date: | 07/25/2016 2048 | | | Prep Date: | 07/25/2016 2113 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Gasoline | 101 | 101 | 99.4 | 100 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334991**

**Method: NWTPH-Gx**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 026F2601.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2202 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 07/25/2016 2202 | | | Injection Volume: | 5 mL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334991 | Instrument ID: | VGC_Q |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 027F2701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/25/2016 2227 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 07/25/2016 2227 | | | Injection Volume: | 5 mL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Gasoline | 98 | 100 | 79 - 149 | 2 | 27 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| a,a,a-Trifluorotoluene | 91 | 92 | 82 - 110 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334991**

**Method: NWTPH-Gx**
**Preparation: 5030B**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: ug/L | |
| Client Matrix: | Water | | |
| Dilution: | 1.0 | | |
| Analysis Date: | 07/25/2016 2202 | | |
| Prep Date: | 07/25/2016 2202 | | |
| Leach Date: | N/A | | |

| | |
|---|---|
| MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water |
| Dilution: | 1.0 |
| Analysis Date: | 07/25/2016 2227 |
| Prep Date: | 07/25/2016 2227 |
| Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Gasoline | 10 | U | 101 | 101 | 98.9 | 101 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334134**

**Method: 8081A**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334134/1-A | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07280029.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/28/2016 2123 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 4,4'-DDD | 0.0077 | U | 0.0077 | 0.10 |
| 4,4'-DDE | 0.0075 | U | 0.0075 | 0.10 |
| 4,4'-DDT | 0.015 | U | 0.015 | 0.10 |
| Aldrin | 0.0059 | U | 0.0059 | 0.050 |
| alpha-BHC | 0.0053 | U | 0.0053 | 0.050 |
| alpha-Chlordane | 0.0053 | U | 0.0053 | 0.50 |
| beta-BHC | 0.0087 | U | 0.0087 | 0.050 |
| delta-BHC | 0.0058 | U | 0.0058 | 0.050 |
| Dieldrin | 0.0063 | U | 0.0063 | 0.10 |
| Endosulfan I | 0.0058 | U | 0.0058 | 0.050 |
| Endosulfan II | 0.0070 | U | 0.0070 | 0.10 |
| Endosulfan sulfate | 0.0057 | U | 0.0057 | 0.10 |
| Endrin | 0.0079 | U | 0.0079 | 0.10 |
| Endrin aldehyde | 0.0088 | U | 0.0088 | 0.10 |
| Endrin ketone | 0.0070 | U | 0.0070 | 0.10 |
| gamma-BHC (Lindane) | 0.0069 | U | 0.0069 | 0.050 |
| gamma-Chlordane | 0.0091 | U | 0.0091 | 0.50 |
| Heptachlor | 0.0077 | U | 0.0077 | 0.050 |
| Heptachlor epoxide | 0.0075 | U | 0.0075 | 0.050 |
| Methoxychlor | 0.013 | U | 0.013 | 0.50 |
| Toxaphene | 0.37 | U | 0.37 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 107 | 34 - 122 |
| Tetrachloro-m-xylene | 62 | 28 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334134**

**Method: 8081A**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334134/2-A | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07280024.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/28/2016 2000 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 4,4'-DDD | 0.500 | 0.480 | 96 | 78 - 138 | |
| 4,4'-DDE | 0.500 | 0.359 | 72 | 74 - 124 | N |
| 4,4'-DDT | 0.500 | 0.449 | 90 | 72 - 139 | |
| Aldrin | 0.500 | 0.169 | 34 | 44 - 127 | N |
| alpha-BHC | 0.500 | 0.455 | 91 | 73 - 133 | |
| alpha-Chlordane | 0.500 | 0.402 | 80 | 75 - 128 | J |
| beta-BHC | 0.500 | 0.417 | 83 | 67 - 133 | |
| delta-BHC | 0.500 | 0.470 | 94 | 72 - 135 | |
| Dieldrin | 0.500 | 0.474 | 95 | 78 - 132 | |
| Endosulfan I | 0.500 | 0.471 | 94 | 73 - 128 | |
| Endosulfan II | 0.500 | 0.509 | 102 | 75 - 132 | |
| Endosulfan sulfate | 0.500 | 0.504 | 101 | 77 - 135 | |
| Endrin | 0.500 | 0.491 | 98 | 74 - 171 | |
| Endrin aldehyde | 0.500 | 0.450 | 90 | 59 - 136 | |
| Endrin ketone | 0.500 | 0.474 | 95 | 75 - 137 | |
| gamma-BHC (Lindane) | 0.500 | 0.463 | 93 | 71 - 132 | |
| gamma-Chlordane | 0.500 | 0.366 | 73 | 73 - 131 | J |
| Heptachlor | 0.500 | 0.226 | 45 | 52 - 129 | N |
| Heptachlor epoxide | 0.500 | 0.470 | 94 | 77 - 132 | |
| Methoxychlor | 0.500 | 0.482 | 96 | 67 - 150 | J |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 99 | 34 - 122 |
| Tetrachloro-m-xylene | 61 | 28 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334134**

**Method: 8081A**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07280026.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1010.2 mL |
| Analysis Date: | 07/28/2016 2033 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335548 | Instrument ID: | SGC_P1 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07280027.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1023.3 mL |
| Analysis Date: | 07/28/2016 2049 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 101 | 100 | 78 - 138 | 2 | 50 | | |
| 4,4'-DDE | 97 | 95 | 74 - 124 | 4 | 50 | | |
| 4,4'-DDT | 102 | 100 | 72 - 139 | 3 | 25 | | |
| Aldrin | 73 | 66 | 44 - 127 | 11 | 33 | | |
| alpha-BHC | 100 | 100 | 73 - 133 | 1 | 50 | | |
| alpha-Chlordane | 106 | 104 | 75 - 128 | 3 | 50 | | |
| beta-BHC | 88 | 89 | 67 - 133 | 0 | 50 | | |
| delta-BHC | 99 | 99 | 72 - 135 | 2 | 50 | | |
| Dieldrin | 103 | 102 | 78 - 132 | 3 | 22 | | |
| Endosulfan I | 101 | 99 | 73 - 128 | 2 | 50 | | |
| Endosulfan II | 106 | 105 | 75 - 132 | 3 | 50 | | |
| Endosulfan sulfate | 110 | 109 | 77 - 135 | 2 | 50 | | |
| Endrin | 108 | 107 | 74 - 171 | 3 | 39 | | |
| Endrin aldehyde | 99 | 98 | 59 - 136 | 2 | 50 | | |
| Endrin ketone | 101 | 99 | 75 - 137 | 3 | 50 | | |
| gamma-BHC (Lindane) | 99 | 100 | 71 - 132 | 1 | 26 | | |
| gamma-Chlordane | 95 | 93 | 73 - 131 | 3 | 50 | J | J |
| Heptachlor | 82 | 77 | 52 - 129 | 8 | 27 | | |
| Heptachlor epoxide | 107 | 107 | 77 - 132 | 1 | 50 | | |
| Methoxychlor | 102 | 100 | 67 - 150 | 3 | 50 | | J |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 95 | 96 | 34 - 122 |
| Tetrachloro-m-xylene | 78 | 82 | 28 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334134**

**Method: 8081A**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: ug/L | | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/28/2016 2033 | | | Analysis Date: | 07/28/2016 2049 |
| Prep Date: | 07/19/2016 0853 | | | Prep Date: | 07/19/2016 0853 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | | MSD Result/Qual | |
|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 0.0075 | U | 0.495 | 0.489 | 0.501 | | 0.491 | |
| 4,4'-DDE | 0.0073 | U | 0.495 | 0.489 | 0.481 | | 0.463 | |
| 4,4'-DDT | 0.014 | U | 0.495 | 0.489 | 0.505 | | 0.490 | |
| Aldrin | 0.0058 | U | 0.495 | 0.489 | 0.361 | | 0.322 | |
| alpha-BHC | 0.0052 | U | 0.495 | 0.489 | 0.493 | | 0.487 | |
| alpha-Chlordane | 0.0052 | U | 0.495 | 0.489 | 0.526 | | 0.509 | |
| beta-BHC | 0.0085 | U | 0.495 | 0.489 | 0.434 | | 0.435 | |
| delta-BHC | 0.0057 | U | 0.495 | 0.489 | 0.490 | | 0.481 | |
| Dieldrin | 0.0061 | U | 0.495 | 0.489 | 0.510 | | 0.497 | |
| Endosulfan I | 0.0057 | U | 0.495 | 0.489 | 0.498 | | 0.486 | |
| Endosulfan II | 0.0068 | U | 0.495 | 0.489 | 0.526 | | 0.512 | |
| Endosulfan sulfate | 0.0056 | U | 0.495 | 0.489 | 0.544 | | 0.530 | |
| Endrin | 0.0077 | U | 0.495 | 0.489 | 0.536 | | 0.521 | |
| Endrin aldehyde | 0.0086 | U | 0.495 | 0.489 | 0.489 | | 0.481 | |
| Endrin ketone | 0.0068 | U | 0.495 | 0.489 | 0.498 | | 0.484 | |
| gamma-BHC (Lindane) | 0.0067 | U | 0.495 | 0.489 | 0.490 | | 0.487 | |
| gamma-Chlordane | 0.0089 | U | 0.495 | 0.489 | 0.473 | J | 0.456 | J |
| Heptachlor | 0.0075 | U | 0.495 | 0.489 | 0.408 | | 0.378 | |
| Heptachlor epoxide | 0.0073 | U | 0.495 | 0.489 | 0.529 | | 0.524 | |
| Methoxychlor | 0.013 | U | 0.495 | 0.489 | 0.503 | | 0.489 | J |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334134**

**Method: 8082**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334134/1-A | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07291604.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/29/2016 1358 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aroclor 1016 | 0.12 | U | 0.12 | 0.50 |
| Aroclor 1221 | 0.21 | U | 0.21 | 0.50 |
| Aroclor 1232 | 0.17 | U | 0.17 | 0.50 |
| Aroclor 1242 | 0.10 | U | 0.10 | 0.50 |
| Aroclor 1248 | 0.092 | U | 0.092 | 0.50 |
| Aroclor 1254 | 0.11 | U | 0.11 | 0.50 |
| Aroclor 1260 | 0.16 | U | 0.16 | 0.50 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 95 | 30 - 136 |
| Tetrachloro-m-xylene | 61 | 25 - 120 |

**Lab Control Sample - Batch: 280-334134**

**Method: 8082**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334134/3-A | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07291605.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/29/2016 1419 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aroclor 1016 | 2.00 | 2.00 | 100 | 58 - 128 | |
| Aroclor 1260 | 2.00 | 2.15 | 108 | 69 - 140 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl | 98 | 30 - 136 |
| Tetrachloro-m-xylene | 53 | 25 - 120 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334134**

**Method: 8082**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07291607.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 986.4 mL |
| Analysis Date: | 07/29/2016 1502 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335704 | Instrument ID: | SGC_P3 |
| Client Matrix: | Water | Prep Batch: | 280-334134 | Lab File ID: | 07291608.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1007.2 mL |
| Analysis Date: | 07/29/2016 1524 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 0853 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 105 | 118 | 58 - 128 | 10 | 30 | | |
| Aroclor 1260 | 109 | 120 | 69 - 140 | 8 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl | 92 | 98 | 30 - 136 |
| Tetrachloro-m-xylene | 82 | 86 | 25 - 120 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334134**

**Method: 8082**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/29/2016 1502 | | | Analysis Date: | 07/29/2016 1524 |
| Prep Date: | 07/19/2016 0853 | | | Prep Date: | 07/19/2016 0853 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Aroclor 1016 | 0.12 | U | 2.03 | 1.99 | 2.12 | 2.34 |
| Aroclor 1260 | 0.16 | U | 2.03 | 1.99 | 2.20 | 2.38 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334158**

**Method: 8151A**
**Preparation: 8151A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334158/1-A | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Client Matrix: | Water | Prep Batch: | 280-334158 | Lab File ID: | 07270014.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1422 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 1052 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2,4,5-T | 0.19 | U | 0.19 | 1.0 |
| 2,4-D | 0.21 | U | 0.21 | 4.0 |
| 2,4-DB | 0.36 | U | 0.36 | 4.0 |
| Dalapon | 0.91 | U | 0.91 | 2.0 |
| Dicamba | 0.15 | U | 0.15 | 2.0 |
| Dichlorprop | 0.65 | U | 0.65 | 4.0 |
| Silvex (2,4,5-TP) | 0.17 | U | 0.17 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 72 | 39 - 135 |

**Lab Control Sample - Batch: 280-334158**

**Method: 8151A**
**Preparation: 8151A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334158/2-A | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Client Matrix: | Water | Prep Batch: | 280-334158 | Lab File ID: | 07270009.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1229 | Units: | ug/L | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 1052 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 2,4,5-T | 5.00 | 3.91 | 78 | 45 - 135 | |
| 2,4-D | 5.00 | 3.69 | 74 | 46 - 126 | J |
| 2,4-DB | 5.00 | 4.39 | 88 | 18 - 135 | |
| Dalapon | 5.00 | 3.74 | 75 | 52 - 119 | |
| Dicamba | 5.00 | 3.68 | 74 | 50 - 128 | |
| Dichlorprop | 5.00 | 3.58 | 72 | 44 - 121 | J |
| Silvex (2,4,5-TP) | 5.00 | 3.93 | 79 | 48 - 127 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| DCAA | 75 | 39 - 135 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334158**

**Method: 8151A**
**Preparation: 8151A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Client Matrix: | Water | Prep Batch: | 280-334158 | Lab File ID: | 07270011.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1031.6 mL |
| Analysis Date: | 07/27/2016 1314 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 1052 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335351 | Instrument ID: | SGC_M |
| Client Matrix: | Water | Prep Batch: | 280-334158 | Lab File ID: | 07270012.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1013 mL |
| Analysis Date: | 07/27/2016 1337 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | 07/19/2016 1052 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 2,4,5-T | 77 | 70 | 45 - 135 | 7 | 30 | | |
| 2,4-D | 66 | 64 | 46 - 126 | 2 | 30 | J | J |
| 2,4-DB | 64 | 58 | 18 - 135 | 7 | 30 | J | J |
| Dalapon | 73 | 72 | 52 - 119 | 1 | 30 | | |
| Dicamba | 67 | 65 | 50 - 128 | 1 | 30 | | |
| Dichlorprop | 64 | 62 | 44 - 121 | 1 | 30 | J | J |
| Silvex (2,4,5-TP) | 71 | 69 | 48 - 127 | 1 | 30 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| DCAA | 72 | 69 | 39 - 135 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334158**

**Method: 8151A**
**Preparation: 8151A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/27/2016 1314 | | | Analysis Date: | 07/27/2016 1337 |
| Prep Date: | 07/19/2016 1052 | | | Prep Date: | 07/19/2016 1052 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| | Sample | | MS Spike | MSD Spike | MS | | MSD | |
|---|---|---|---|---|---|---|---|---|
| Analyte | Result/Qual | | Amount | Amount | Result/Qual | | Result/Qual | |
| 2,4,5-T | 0.19 | U | 4.85 | 4.94 | 3.73 | | 3.48 | |
| 2,4-D | 0.20 | U | 4.85 | 4.94 | 3.22 | J | 3.16 | J |
| 2,4-DB | 0.35 | U | 4.85 | 4.94 | 3.10 | J | 2.89 | J |
| Dalapon | 0.89 | U | 4.85 | 4.94 | 3.55 | | 3.58 | |
| Dicamba | 0.15 | U | 4.85 | 4.94 | 3.27 | | 3.22 | |
| Dichlorprop | 0.63 | U | 4.85 | 4.94 | 3.12 | J | 3.07 | J |
| Silvex (2,4,5-TP) | 0.17 | U | 4.85 | 4.94 | 3.45 | | 3.40 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334141**

**Method: NWTPH-Dx**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334141/1-A | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Client Matrix: | Water | Prep Batch: | 280-334141 | Lab File ID: | 006F0701.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1732 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| C10-C36 | 56.3 | J | 56 | 500 |
| C10-C28 | 33 | U | 33 | 250 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 102 | 50 - 115 |

**Lab Control Sample - Batch: 280-334141**

**Method: NWTPH-Dx**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334141/2-A | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Client Matrix: | Water | Prep Batch: | 280-334141 | Lab File ID: | 007F0801.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1756 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| C10-C36 | 2000 | 1780 | 89 | 57 - 115 | |
| C10-C28 | 2000 | 1770 | 88 | 54 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| o-Terphenyl | 104 | 50 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334141**

**Method: NWTPH-Dx**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Client Matrix: | Water | Prep Batch: | 280-334141 | Lab File ID: | 009F1001.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1017.6 mL |
| Analysis Date: | 07/27/2016 1846 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335331 | Instrument ID: | SGC_U2a |
| Client Matrix: | Water | Prep Batch: | 280-334141 | Lab File ID: | 010F1101.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 993.4 mL |
| Analysis Date: | 07/27/2016 1910 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0937 | | | Injection Volume: | 1 uL |
| Leach Date: | N/A | | | | |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| C10-C36 | 88 | 82 | 50 - 115 | 4 | 31 | | |
| C10-C28 | 89 | 83 | 50 - 115 | 4 | 31 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 104 | 106 | 50 - 115 |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334141**

**Method: NWTPH-Dx**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/27/2016 1846 | | | Analysis Date: | 07/27/2016 1910 |
| Prep Date: | 07/19/2016 0937 | | | Prep Date: | 07/19/2016 0937 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| C10-C36 | 110 | J | 1970 | 2010 | 1850 | 1770 |
| C10-C28 | 73 | J | 1970 | 2010 | 1830 | 1750 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334137**

**Method: 8310**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334137/1-A | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Client Matrix: | Water | Prep Batch: | 280-334137 | Lab File ID: | G0727014.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1556 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0930 | | | Injection Volume: | 20 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Acenaphthene | 0.043 | U | 0.043 | 1.0 |
| Acenaphthylene | 0.043 | U | 0.043 | 1.0 |
| Anthracene | 0.061 | U | 0.061 | 0.30 |
| Benzo[a]anthracene | 0.032 | U | 0.032 | 0.20 |
| Benzo[a]pyrene | 0.053 | U | 0.053 | 0.20 |
| Benzo[b]fluoranthene | 0.053 | U | 0.053 | 0.20 |
| Benzo[g,h,i]perylene | 0.020 | U | 0.020 | 0.20 |
| Benzo[k]fluoranthene | 0.023 | U | 0.023 | 0.10 |
| Chrysene | 0.028 | U | 0.028 | 0.20 |
| Dibenzo(a,h)anthracene | 0.055 | U | 0.055 | 0.30 |
| Fluoranthene | 0.081 | U | 0.081 | 0.40 |
| Fluorene | 0.099 | U | 0.099 | 0.30 |
| Indeno[1,2,3-cd]pyrene | 0.047 | U | 0.047 | 0.20 |
| Naphthalene | 0.056 | U | 0.056 | 1.0 |
| Phenanthrene | 0.095 | U | 0.095 | 0.30 |
| Pyrene | 0.043 | U | 0.043 | 0.20 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Terphenyl-d14 (SUR) | 98 | 70 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334137**

**Method: 8310**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334137/2-A | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Client Matrix: | Water | Prep Batch: | 280-334137 | Lab File ID: | G0727015.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 07/27/2016 1627 | Units: | ug/L | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0930 | | | Injection Volume: | 20 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acenaphthene | 20.0 | 18.1 | 90 | 62 - 115 | |
| Acenaphthylene | 20.0 | 17.3 | 86 | 63 - 115 | |
| Anthracene | 20.0 | 18.1 | 90 | 68 - 115 | |
| Benzo[a]anthracene | 20.0 | 18.1 | 90 | 73 - 117 | |
| Benzo[a]pyrene | 20.0 | 19.1 | 95 | 71 - 115 | |
| Benzo[b]fluoranthene | 20.0 | 18.5 | 93 | 68 - 115 | |
| Benzo[g,h,i]perylene | 20.0 | 19.3 | 97 | 69 - 123 | |
| Benzo[k]fluoranthene | 20.0 | 18.5 | 92 | 75 - 115 | |
| Chrysene | 20.0 | 18.0 | 90 | 74 - 118 | |
| Dibenzo(a,h)anthracene | 20.0 | 18.0 | 90 | 73 - 115 | |
| Fluoranthene | 20.0 | 17.9 | 90 | 73 - 115 | |
| Fluorene | 20.0 | 17.9 | 89 | 70 - 115 | |
| Indeno[1,2,3-cd]pyrene | 20.0 | 19.7 | 99 | 73 - 119 | |
| Naphthalene | 20.0 | 17.0 | 85 | 51 - 115 | |
| Phenanthrene | 20.0 | 17.7 | 88 | 62 - 115 | |
| Pyrene | 20.0 | 18.9 | 95 | 68 - 116 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Terphenyl-d14 (SUR) | 97 | 70 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334137**

**Method: 8310**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Client Matrix: | Water | Prep Batch: | 280-334137 | Lab File ID: | G0727017.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 972.9 mL |
| Analysis Date: | 07/27/2016 1728 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0930 | | | Injection Volume: | 20 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335329 | Instrument ID: | CHHPLC_G |
| Client Matrix: | Water | Prep Batch: | 280-334137 | Lab File ID: | G0727018.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1019.6 mL |
| Analysis Date: | 07/27/2016 1759 | | | Final Weight/Volume: | 1 mL |
| Prep Date: | 07/19/2016 0930 | | | Injection Volume: | 20 uL |
| Leach Date: | N/A | | | Column ID: | PRIMARY |

| Analyte | % Rec. MS | % Rec. MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 84 | 82 | 62 - 115 | 7 | 27 | | |
| Acenaphthylene | 81 | 80 | 63 - 115 | 6 | 25 | | |
| Anthracene | 88 | 86 | 68 - 115 | 6 | 22 | | |
| Benzo[a]anthracene | 90 | 88 | 73 - 117 | 7 | 20 | | |
| Benzo[a]pyrene | 95 | 92 | 71 - 115 | 7 | 20 | | |
| Benzo[b]fluoranthene | 93 | 90 | 68 - 115 | 8 | 20 | | |
| Benzo[g,h,i]perylene | 96 | 93 | 69 - 123 | 7 | 20 | | |
| Benzo[k]fluoranthene | 92 | 90 | 75 - 115 | 7 | 20 | | |
| Chrysene | 90 | 88 | 74 - 118 | 7 | 20 | | |
| Dibenzo(a,h)anthracene | 89 | 87 | 73 - 115 | 7 | 20 | | |
| Fluoranthene | 90 | 88 | 73 - 115 | 6 | 21 | | |
| Fluorene | 87 | 85 | 70 - 115 | 7 | 26 | | |
| Indeno[1,2,3-cd]pyrene | 98 | 95 | 73 - 119 | 7 | 20 | | |
| Naphthalene | 73 | 73 | 51 - 115 | 4 | 31 | | |
| Phenanthrene | 87 | 85 | 62 - 115 | 7 | 22 | | |
| Pyrene | 95 | 94 | 68 - 116 | 6 | 22 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Terphenyl-d14 (SUR) | 96 | 94 | 70 - 115 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-334137**

**Method: 8310**
**Preparation: 3510C**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-85505-1 | Units: | ug/L | MSD Lab Sample ID: | 280-85505-1 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/27/2016 1728 | | | Analysis Date: | 07/27/2016 1759 |
| Prep Date: | 07/19/2016 0930 | | | Prep Date: | 07/19/2016 0930 |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Acenaphthene | 0.043 | U | 20.6 | 19.6 | 17.3 | 16.2 |
| Acenaphthylene | 0.043 | U | 20.6 | 19.6 | 16.6 | 15.7 |
| Anthracene | 0.061 | U | 20.6 | 19.6 | 18.0 | 16.9 |
| Benzo[a]anthracene | 0.032 | U | 20.6 | 19.6 | 18.5 | 17.3 |
| Benzo[a]pyrene | 0.053 | U | 20.6 | 19.6 | 19.5 | 18.1 |
| Benzo[b]fluoranthene | 0.052 | U | 20.6 | 19.6 | 19.1 | 17.7 |
| Benzo[g,h,i]perylene | 0.020 | U | 20.6 | 19.6 | 19.7 | 18.3 |
| Benzo[k]fluoranthene | 0.023 | U | 20.6 | 19.6 | 18.9 | 17.6 |
| Chrysene | 0.028 | U | 20.6 | 19.6 | 18.5 | 17.2 |
| Dibenzo(a,h)anthracene | 0.054 | U | 20.6 | 19.6 | 18.3 | 17.0 |
| Fluoranthene | 0.081 | U | 20.6 | 19.6 | 18.4 | 17.3 |
| Fluorene | 0.099 | U | 20.6 | 19.6 | 17.8 | 16.6 |
| Indeno[1,2,3-cd]pyrene | 0.047 | U | 20.6 | 19.6 | 20.2 | 18.7 |
| Naphthalene | 0.055 | U | 20.6 | 19.6 | 15.1 | 14.4 |
| Phenanthrene | 0.095 | U | 20.6 | 19.6 | 17.9 | 16.7 |
| Pyrene | 0.043 | U | 20.6 | 19.6 | 19.5 | 18.4 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334813/1-A | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 2302 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Aluminum | 0.018 | U | 0.018 | 0.050 |
| Antimony | 0.0031 | U | 0.0031 | 0.0060 |
| Arsenic | 0.0044 | U | 0.0044 | 0.010 |
| Barium | 0.00058 | U | 0.00058 | 0.0050 |
| Beryllium | 0.00047 | U | 0.00047 | 0.0010 |
| Bismuth | 0.0067 | U | 0.0067 | 0.10 |
| Boron | 0.0044 | U | 0.0044 | 0.020 |
| Cadmium | 0.00045 | U | 0.00045 | 0.0020 |
| Calcium | 0.035 | U | 0.035 | 0.20 |
| Chromium | 0.00066 | U | 0.00066 | 0.0020 |
| Cobalt | 0.0012 | U | 0.0012 | 0.010 |
| Copper | 0.0042 | U | 0.0042 | 0.010 |
| Iron | 0.022 | U | 0.022 | 0.050 |
| Lead | 0.0026 | U | 0.0026 | 0.0050 |
| Lithium | 0.0091 | U | 0.0091 | 0.020 |
| Magnesium | 0.011 | U | 0.011 | 0.20 |
| Manganese | 0.00025 | U | 0.00025 | 0.0050 |
| Molybdenum | 0.0031 | U | 0.0031 | 0.020 |
| Nickel | 0.0013 | U | 0.0013 | 0.040 |
| Phosphorus | 0.014 | U | 0.014 | 3.0 |
| Potassium | 0.24 | U | 0.24 | 3.0 |
| Selenium | 0.0049 | U | 0.0049 | 0.010 |
| Silicon | 0.035 | U | 0.035 | 0.50 |
| Silver | 0.00093 | U | 0.00093 | 0.0020 |
| Sodium | 0.092 | U | 0.092 | 0.50 |
| Strontium | 0.00030 | U | 0.00030 | 0.010 |
| Tin | 0.0058 | U | 0.0058 | 0.10 |
| Vanadium | 0.0011 | U | 0.0011 | 0.010 |
| Zinc | 0.0045 | U | 0.0045 | 0.010 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334813/2-A | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 2305 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Aluminum | 2.00 | 2.03 | 101 | 87 - 111 | |
| Antimony | 0.500 | 0.533 | 107 | 88 - 110 | |
| Arsenic | 1.00 | 1.04 | 104 | 88 - 110 | |
| Barium | 2.00 | 2.08 | 104 | 90 - 112 | |
| Beryllium | 0.0500 | 0.0514 | 103 | 89 - 113 | |
| Bismuth | 2.00 | 2.15 | 108 | 80 - 120 | |
| Boron | 1.00 | 1.03 | 103 | 86 - 110 | |
| Cadmium | 0.100 | 0.0967 | 97 | 88 - 111 | |
| Calcium | 50.0 | 52.74 | 105 | 90 - 111 | |
| Chromium | 0.200 | 0.207 | 103 | 90 - 113 | |
| Cobalt | 0.500 | 0.518 | 104 | 89 - 111 | |
| Copper | 0.250 | 0.257 | 103 | 86 - 112 | |
| Iron | 1.00 | 1.09 | 109 | 89 - 115 | |
| Lead | 0.500 | 0.513 | 103 | 89 - 110 | |
| Lithium | 1.00 | 1.01 | 101 | 90 - 112 | |
| Magnesium | 50.0 | 52.67 | 105 | 90 - 113 | |
| Manganese | 0.500 | 0.522 | 104 | 90 - 110 | |
| Molybdenum | 1.00 | 1.05 | 105 | 90 - 110 | |
| Nickel | 0.500 | 0.514 | 103 | 89 - 111 | |
| Phosphorus | 10.0 | 10.38 | 104 | 86 - 115 | |
| Potassium | 50.0 | 51.24 | 102 | 89 - 114 | |
| Selenium | 2.00 | 2.06 | 103 | 85 - 112 | |
| Silicon | 10.0 | 10.42 | 104 | 90 - 110 | |
| Silver | 0.0500 | 0.0500 | 100 | 86 - 115 | |
| Sodium | 50.0 | 52.13 | 104 | 90 - 115 | |
| Strontium | 1.00 | 1.02 | 102 | 90 - 111 | |
| Tin | 2.00 | 2.07 | 103 | 85 - 113 | |
| Vanadium | 0.500 | 0.520 | 104 | 90 - 111 | |
| Zinc | 0.500 | 0.533 | 107 | 85 - 111 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 0020 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Aluminum | 0.046 | B | 2.00 | 2.04 | 100 | 83 - 119 | |
| Antimony | 0.0031 | U | 0.500 | 0.555 | 111 | 81 - 124 | |
| Arsenic | 0.0044 | U | 1.00 | 1.13 | 113 | 84 - 124 | |
| Barium | 0.071 | | 2.00 | 2.21 | 107 | 85 - 120 | |
| Bismuth | 0.0067 | U | 2.00 | 2.18 | 109 | 80 - 120 | |
| Boron | 0.36 | | 1.00 | 1.43 | 107 | 87 - 113 | |
| Cadmium | 0.00049 | B | 0.100 | 0.0998 | 99 | 82 - 119 | |
| Chromium | 0.15 | | 0.200 | 0.377 | 112 | 73 - 135 | |
| Cobalt | 0.0019 | B | 0.500 | 0.489 | 97 | 82 - 119 | |
| Lead | 0.0026 | U | 0.500 | 0.510 | 102 | 89 - 121 | |
| Lithium | 0.021 | | 1.00 | 1.10 | 108 | 89 - 114 | |
| Nickel | 0.0081 | B | 0.500 | 0.511 | 101 | 84 - 120 | |
| Phosphorus | 0.025 | B | 10.0 | 11.32 | 113 | 80 - 120 | |
| Potassium | 18.2 | | 50.0 | 77.08 | 118 | 76 - 132 | |
| Selenium | 0.0049 | U | 2.00 | 2.20 | 110 | 71 - 140 | |
| Strontium | 1.2 | | 1.00 | 2.36 | 111 | 81 - 125 | |
| Tin | 0.0058 | U | 2.00 | 2.06 | 103 | 77 - 126 | |

**Matrix Spike - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1406 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Beryllium | 0.00047 | U | 0.0500 | 0.0496 | 99 | 79 - 121 | |
| Calcium | 236 | | 50.0 | 292.6 | 113 | 48 - 153 | 4 |
| Copper | 0.0060 | B | 0.250 | 0.275 | 108 | 82 - 129 | |
| Iron | 0.11 | | 1.00 | 1.10 | 99 | 52 - 155 | |
| Magnesium | 71.5 | | 50.0 | 124.1 | 105 | 62 - 146 | |
| Manganese | 0.0028 | B | 0.500 | 0.501 | 100 | 79 - 121 | |
| Molybdenum | 0.0080 | B | 1.00 | 1.05 | 104 | 83 - 109 | |
| Silicon | 18.9 | | 10.0 | 28.94 | 100 | 79 - 140 | |
| Silver | 0.00093 | U | 0.0500 | 0.0567 | 113 | 75 - 141 | |
| Sodium | 182 | | 50.0 | 237.5 | 110 | 70 - 203 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1406 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Vanadium | 0.015 | | 0.500 | 0.524 | 102 | 85 - 120 | |
| Zinc | 0.0045 | U | 0.500 | 0.481 | 96 | 60 - 137 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335322 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072616c.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 0023 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Aluminum | 0.046 | B | 0.0407 | 11 | 25 | B |
| Antimony | 0.0031 | U | 0.0031 | NC | 25 | U |
| Arsenic | 0.0044 | U | 0.0107 | NC | 25 | |
| Barium | 0.071 | | 0.0784 | 11 | 25 | |
| Bismuth | 0.0067 | U | 0.0067 | NC | 25 | U |
| Boron | 0.36 | | 0.365 | 2 | 25 | |
| Cadmium | 0.00049 | B | 0.00045 | NC | 25 | U |
| Chromium | 0.15 | | 0.162 | 6 | 25 | |
| Cobalt | 0.0019 | B | 0.00228 | 19 | 25 | B |
| Lead | 0.0026 | U | 0.0026 | NC | 25 | U |
| Lithium | 0.021 | | 0.0228 | 9 | 25 | |
| Nickel | 0.0081 | B | 0.00768 | 6 | 25 | B |
| Phosphorus | 0.025 | B | 0.0264 | 7 | 25 | B |
| Potassium | 18.2 | | 19.99 | 9 | 25 | |
| Selenium | 0.0049 | U | 0.0049 | NC | 25 | U |
| Strontium | 1.2 | | 1.32 | 6 | 25 | |
| Tin | 0.0058 | U | 0.0058 | NC | 25 | U |

**Duplicate - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1409 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Beryllium | 0.00047 | U | 0.00047 | NC | 25 | U |
| Calcium | 236 | | 239.1 | 1 | 25 | |
| Copper | 0.0060 | B | 0.00575 | 5 | 25 | B |
| Iron | 0.11 | | 0.109 | 2 | 25 | |
| Magnesium | 71.5 | | 72.53 | 1 | 25 | |
| Manganese | 0.0028 | B | 0.00295 | 5 | 25 | B |
| Molybdenum | 0.0080 | B | 0.00906 | 13 | 25 | B |
| Silicon | 18.9 | | 19.12 | 1 | 25 | |
| Silver | 0.00093 | U | 0.00093 | NC | 25 | U |
| Sodium | 182 | | 184.2 | 1 | 40 | |
| Vanadium | 0.015 | | 0.0160 | 4 | 25 | |
| Zinc | 0.0045 | U | 0.0045 | NC | 25 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334813**

**Method: 6010B**
**Preparation: 3010A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335424 | Instrument ID: | MT_026 |
| Client Matrix: | Water | Prep Batch: | 280-334813 | Lab File ID: | 26a072716aa.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1409 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334811**

**Method: 6020**
**Preparation: 3020A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334811/1-A | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-334811 | Lab File ID: | 094_BLK.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1745 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Thallium | 0.0000510 | B | 0.000050 | 0.0010 |
| Tungsten | 0.00020 | U | 0.00020 | 0.0050 |
| Uranium | 0.000050 | U | 0.000050 | 0.0010 |

**Lab Control Sample - Batch: 280-334811**

**Method: 6020**
**Preparation: 3020A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334811/2-A | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-334811 | Lab File ID: | 095_LCS.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1749 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Thallium | 0.0400 | 0.0424 | 106 | 85 - 118 | |
| Tungsten | 0.0200 | 0.0191 | 95 | 80 - 120 | |
| Uranium | 0.0400 | 0.0413 | 103 | 85 - 119 | |

**Matrix Spike - Batch: 280-334811**

**Method: 6020**
**Preparation: 3020A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-334811 | Lab File ID: | 098SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1800 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Thallium | 0.00012 | B | 0.0400 | 0.0386 | 96 | 85 - 118 | |
| Tungsten | 0.00020 | U | 0.0200 | 0.0181 | 90 | 80 - 120 | |
| Uranium | 0.60 | | 0.0400 | 0.627 | 64 | 85 - 119 | 4 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334811**

**Method: 6020**
**Preparation: 3020A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335326 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-334811 | Lab File ID: | 099SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/26/2016 1804 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 0810 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Thallium | 0.00012 | B | 0.0000610 | 63 | 20 | B C M |
| Tungsten | 0.00020 | U | 0.00020 | NC | 20 | U |
| Uranium | 0.60 | | 0.624 | 4 | 20 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335019**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335019/1-A | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Client Matrix: | Water | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1919 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | 0.000027 | U | 0.000027 | 0.00020 |

**Lab Control Sample - Batch: 280-335019**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-335019/2-A | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Client Matrix: | Water | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1922 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00493 | 99 | 84 - 120 | |

**Matrix Spike - Batch: 280-335019**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Client Matrix: | Water | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1934 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Mercury | 0.000027 | U | 0.00500 | 0.00435 | 87 | 75 - 125 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-335019**

**Method: 7470A**
**Preparation: 7470A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335325 | Instrument ID: | MT_034 |
| Client Matrix: | Water | Prep Batch: | 280-335019 | Lab File ID: | 160726bc.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30 mL |
| Analysis Date: | 07/26/2016 1931 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/26/2016 1215 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Mercury | 0.000027 | U | 0.000027 | NC | 20 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335898**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335898/1-A | Analysis Batch: | 280-336002 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-335898 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 08/01/2016 1301 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 08/01/2016 0704 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| HEM (Oil & Grease) | 1.6 | U | 1.6 | 5.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-335898**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335898/2-A | Analysis Batch: | 280-336002 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-335898 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 08/01/2016 1301 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 08/01/2016 0704 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-335898/3-A | Analysis Batch: | 280-336002 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-335898 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 08/01/2016 1301 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 08/01/2016 0704 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| HEM (Oil & Grease) | 89 | 87 | 78 - 114 | 3 | 18 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-335898**

**Method: 1664A**
**Preparation: 1664A**

| | | | |
|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335898/2-A | Units: | mg/L |
| Client Matrix: | Water | | |
| Dilution: | 1.0 | | |
| Analysis Date: | 08/01/2016 1301 | | |
| Prep Date: | 08/01/2016 0704 | | |
| Leach Date: | N/A | | |

| | |
|---|---|
| LCSD Lab Sample ID: | LCSD 280-335898/3-A |
| Client Matrix: | Water |
| Dilution: | 1.0 |
| Analysis Date: | 08/01/2016 1301 |
| Prep Date: | 08/01/2016 0704 |
| Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| HEM (Oil & Grease) | 40.0 | 40.0 | 35.70 | 34.60 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-335898**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336002 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-335898 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1029 mL |
| Analysis Date: | 08/01/2016 1301 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 08/01/2016 0704 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 1.6 | U | 38.9 | 32.75 | 84 | 78 - 114 | |

**Duplicate - Batch: 280-335898**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336002 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-335898 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1030 mL |
| Analysis Date: | 08/01/2016 1301 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 08/01/2016 0704 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 1.6 | U | 1.5 | NC | 20 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333474/45 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 45.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0347 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate as N | 0.042 | U | 0.042 | 0.25 |
| Nitrite as N | 0.049 | U | 0.049 | 0.25 |

**Method Reporting Limit Check - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-333474/3 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 03.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/13/2016 1023 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N | 0.200 | 0.210 | 105 | 50 - 150 | B |
| Nitrite as N | 0.200 | 0.186 | 93 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-333474/44 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 44.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0329 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N | 5.00 | 5.10 | 102 | 90 - 110 | |
| Nitrite as N | 5.00 | 5.35 | 107 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 48.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0441 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Nitrite as N | 0.049 | U | 5.00 | 5.26 | 105 | 80 - 120 | |

**Matrix Spike - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 54.0000.d |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0627 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate as N | 44.7 | 50.0 | 94.83 | 100 | 80 - 120 | D |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 47.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0423 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrite as N | 0.049 | U | 0.049 | NC | 15 | U |

**Duplicate - Batch: 280-333474**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333474 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 53.0000.d |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0610 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate as N | 44.7 | 43.54 | 3 | 15 | D |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333475/45 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 45.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0347 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Bromide | 0.11 | U | 0.11 | 0.20 |
| Chloride | 0.25 | U | 0.25 | 3.0 |
| Fluoride | 0.060 | U | 0.060 | 0.50 |
| Sulfate | 0.23 | U | 0.23 | 5.0 |

**Method Reporting Limit Check - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-333475/3 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 03.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/13/2016 1023 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Bromide | 0.200 | 0.209 | 104 | 50 - 150 | |
| Chloride | 2.50 | 2.53 | 101 | 50 - 150 | B |
| Fluoride | 0.200 | 0.185 | 93 | 50 - 150 | B |
| Sulfate | 2.50 | 2.54 | 101 | 50 - 150 | B |

**Lab Control Sample - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-333475/44 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 44.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0329 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Bromide | 5.00 | 5.12 | 102 | 90 - 110 | |
| Chloride | 100 | 102.1 | 102 | 90 - 110 | |
| Fluoride | 5.00 | 5.20 | 104 | 90 - 110 | |
| Sulfate | 100 | 101.5 | 101 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 48.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0441 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Bromide | 0.11 | U | 5.00 | 6.01 | 120 | 80 - 120 | |
| Fluoride | 0.23 | B | 5.00 | 4.86 | 93 | 80 - 120 | |

**Matrix Spike - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 54.0000.d |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0627 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Chloride | 254 | 250 | 512.0 | 103 | 80 - 120 | D |
| Sulfate | 590 | 250 | 837.3 | 99 | 80 - 120 | D |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 47.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0423 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Bromide | 0.11 | U | 0.11 | NC | 15 | U |
| Fluoride | 0.23 | B | 0.224 | 2 | 15 | B |

**Duplicate - Batch: 280-333475**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333475 | Instrument ID: | WC_IonChrom7 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 53.0000.d |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 0610 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 25 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Chloride | 254 | 249.2 | 2 | 15 | D |
| Sulfate | 590 | 579.7 | 2 | 15 | D |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333661**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333661/15 | Analysis Batch: | 280-333661 | Instrument ID: | WC_IonChrom11 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0015.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 1505 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Orthophosphate as P | 0.19 | U | 0.19 | 0.50 |

**Method Reporting Limit Check - Batch: 280-333661**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-333661/10 | Analysis Batch: | 280-333661 | Instrument ID: | WC_IonChrom11 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0010.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 1314 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Orthophosphate as P | 0.200 | 0.19 | 80 | 50 - 150 | U |

**Lab Control Sample - Batch: 280-333661**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-333661/14 | Analysis Batch: | 280-333661 | Instrument ID: | WC_IonChrom11 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0014.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 1446 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Orthophosphate as P | 5.00 | 4.90 | 98 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-333661**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333661 | Instrument ID: | WC_IonChrom11 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0018.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 1605 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Orthophosphate as P | 0.19 | U | 5.00 | 1.55 | 31 | 80 - 120 | N |

**Duplicate - Batch: 280-333661**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333661 | Instrument ID: | WC_IonChrom11 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 0017.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 07/14/2016 1545 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Orthophosphate as P | 0.19 | U | 0.19 | NC | 15 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334602**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334602/141 | Analysis Batch: | 280-334602 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\072116.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/21/2016 1938 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ammonia as N | 0.022 | U | 0.022 | 0.10 |

**Lab Control Sample - Batch: 280-334602**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334602/140 | Analysis Batch: | 280-334602 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\072116.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/21/2016 1936 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ammonia as N | 2.50 | 2.57 | 103 | 90 - 110 | |

**Matrix Spike - Batch: 280-334602**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334602 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\072116.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 07/21/2016 1944 | Units: | mg/L | Final Weight/Volume: | 10 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.022 | U | 1.00 | 1.04 | 104 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334602**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334602 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\072116.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/21/2016 1942 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Ammonia as N | 0.022 | U | 0.022 | NC | 10 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-336720/24 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 08/04/2016 1242 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrate Nitrite as N | 0.019 | U | 0.019 | 0.075 |

**Method Reporting Limit Check - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-336720/21 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 08/04/2016 1236 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N | 0.100 | 0.0869 | 87 | 50 - 150 | B |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-336720/22 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 08/04/2016 1238 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-336720/23 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 08/04/2016 1240 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Nitrate Nitrite as N | 98 | 98 | 90 - 110 | 0 | 10 | | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-336720/22 | Units: mg/L | LCSD Lab Sample ID: | LCSD 280-336720/23 |
| Client Matrix: | Water | | Client Matrix: | Water |
| Dilution: | 1.0 | | Dilution: | 1.0 |
| Analysis Date: | 08/04/2016 1238 | | Analysis Date: | 08/04/2016 1240 |
| Prep Date: | N/A | | Prep Date: | N/A |
| Leach Date: | N/A | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Nitrate Nitrite as N | 5.00 | 5.00 | 4.92 | 4.91 |

**Matrix Spike - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 08/04/2016 1248 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Nitrate Nitrite as N | 43.9 | 40.0 | 79.59 | 89 | 90 - 110 | N D |

**Duplicate - Batch: 280-336720**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336720 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\080416.RS |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 08/04/2016 1246 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate Nitrite as N | 43.9 | 43.67 | 0.5 | 20 | D |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334027**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334027/4 | Analysis Batch: | 280-334027 | Instrument ID: | WC_Genesys20 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 2 mL |
| Analysis Date: | 07/18/2016 1010 | Units: | mg/L | Final Weight/Volume: | 2 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Chemical Oxygen Demand | 4.1 | U | 4.1 | 20.0 |

**Lab Control Sample - Batch: 280-334027**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334027/3 | Analysis Batch: | 280-334027 | Instrument ID: | WC_Genesys20 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/18/2016 1010 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Chemical Oxygen Demand | 100 | 102.2 | 102 | 90 - 110 | |

**Matrix Spike - Batch: 280-334027**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334027 | Instrument ID: | WC_Genesys20 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/18/2016 1010 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | 24.6 | 50.0 | 73.87 | 99 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334027**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334027 | Instrument ID: | WC_Genesys20 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 2 mL |
| Analysis Date: | 07/18/2016 1010 | Units: | mg/L | Final Weight/Volume: | 2 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Chemical Oxygen Demand | 24.6 | 21.08 | 15 | 20 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335552**

**Method: 420.4**
**Preparation: Distill/Phenol**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335552/3-A | Analysis Batch: | 280-336746 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-335552 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 08/05/2016 1102 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/28/2016 1331 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Phenolics, Total Recoverable | 0.00717 | B | 0.0068 | 0.010 |

**Lab Control Sample - Batch: 280-335552**

**Method: 420.4**
**Preparation: Distill/Phenol**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-335552/1-A | Analysis Batch: | 280-336746 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-335552 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 08/05/2016 1102 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/28/2016 1331 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Phenolics, Total Recoverable | 0.200 | 0.191 | 96 | 90 - 110 | |

**Matrix Spike - Batch: 280-335552**

**Method: 420.4**
**Preparation: Distill/Phenol**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336746 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-335552 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 08/05/2016 1102 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/28/2016 1331 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | 0.0068 | U | 0.200 | 0.195 | 97 | 72 - 118 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-335552**

**Method: 420.4**
**Preparation: Distill/Phenol**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336746 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-335552 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 08/05/2016 1102 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/28/2016 1331 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Phenolics, Total Recoverable | 0.0068 | U | 0.0068 | NC | 20 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334663/4-A | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1034 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Cyanide | 0.00225 | B | 0.0020 | 0.010 |

**High Level Control Sample - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | HLCS 280-334663/1-A | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 2.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1030 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 0.400 | 0.400 | 100 | 90 - 110 | |

**Low Level Control Sample - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LLCS 280-334663/2-A | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1031 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 0.100 | 0.103 | 103 | 44 - 167 | |

**Lab Control Sample - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-334663/3-A | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1033 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Cyanide | 0.100 | 0.103 | 103 | 90 - 110 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Matrix Spike - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1037 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Total Cyanide | 0.0059 | B | 0.100 | 0.103 | 97 | 90 - 110 | |

**Duplicate - Batch: 280-334663**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334810 | Instrument ID: | WC_Alp 1 |
| Client Matrix: | Water | Prep Batch: | 280-334663 | Lab File ID: | C:\FLOW_4\C072316.R |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/23/2016 1039 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 07/22/2016 1045 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Total Cyanide | 0.0059 | B | 0.00588 | 0 | 20 | B C |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-336034**

**Method: 9020B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-336034/2 | Analysis Batch: | 280-336034 | Instrument ID: | WC_Thermo3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/27/2016 1321 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Organic Halogens - Dup | 0.0077 | U | 0.0077 | 0.020 |

**Lab Control Sample - Batch: 280-336034**

**Method: 9020B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-336034/4 | Analysis Batch: | 280-336034 | Instrument ID: | WC_Thermo3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/27/2016 1321 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Halogens - Dup | 0.100 | 0.0925 | 93 | 78 - 114 | |

**Matrix Spike - Batch: 280-336034**

**Method: 9020B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336034 | Instrument ID: | WC_Thermo3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1321 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Total Organic Halogens - Dup | 0.051 | 0.100 | 0.131 | 80 | 78 - 114 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-336034**

**Method: 9020B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-336034 | Instrument ID: | WC_Thermo3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/27/2016 1321 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Halogens - Dup | 0.051 | 0.0450 | 13 | 23 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333805**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333805/2-A | Analysis Batch: | 280-333826 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-333805 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/15/2016 1356 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | 07/15/2016 1134 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Sulfide | 0.79 | U | 0.79 | 4.0 |

**Lab Control Sample - Batch: 280-333805**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-333805/1-A | Analysis Batch: | 280-333826 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-333805 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/15/2016 1356 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | 07/15/2016 1134 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 16.6 | 13.12 | 79 | 50 - 106 | |

**Matrix Spike - Batch: 280-333805**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333826 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-333805 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/15/2016 1356 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | 07/15/2016 1134 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|---|
| Sulfide | 0.79 | U | 16.6 | 17.44 | 105 | 50 - 106 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-333805**

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

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333826 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-333805 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/15/2016 1356 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | 07/15/2016 1134 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|---|
| Sulfide | 0.79 | U | 0.79 | NC | 20 | U |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-335415**

**Method: 9040B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335415/4 | Analysis Batch: | 280-335415 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072716 ph.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/27/2016 1049 | Units: | SU | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-335415/5 | Analysis Batch: | 280-335415 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072716 ph.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/27/2016 1052 | Units: | SU | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | % Rec. LCS | % Rec. LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
|---|---|---|---|---|---|---|---|
| pH | 100 | 100 | 99 - 101 | 0 | 5 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-335415**

**Method: 9040B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-335415/4 | Units: | SU | LCSD Lab Sample ID: | LCSD 280-335415/5 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/27/2016 1049 | | | Analysis Date: | 07/27/2016 1052 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| pH | 7.00 | 7.00 | 6.980 | 6.980 |

**Duplicate - Batch: 280-335415**

**Method: 9040B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335415 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072716 ph.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/27/2016 1103 | Units: | SU | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| pH | 7.94 | 8.000 | 0.8 | 5 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333864**

**Method: 9050A**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333864/5 | Analysis Batch: | 280-333864 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/15/2016 2116 | Units: | umho/cm | Final Weight/Volume: | 25 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Specific Conductance | 1.00 | U | 1.00 | 1.00 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-333864**

**Method: 9050A**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-333864/3 | Analysis Batch: | 280-333864 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/15/2016 2116 | Units: | umho/cm | Final Weight/Volume: | 25 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-333864/4 | Analysis Batch: | 280-333864 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/15/2016 2116 | Units: | umho/cm | Final Weight/Volume: | 25 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Specific Conductance | 99 | 99 | 90 - 110 | 1 | 10 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-333864**

**Method: 9050A**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-333864/3 | Units: | umho/cm | LCSD Lab Sample ID: | LCSD 280-333864/4 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/15/2016 2116 | | | Analysis Date: | 07/15/2016 2116 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Specific Conductance | 1410 | 1410 | 1394 | 1401 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-333864**

**Method: 9050A**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-AA-1 DU | Analysis Batch: | 280-333864 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/15/2016 2117 | Units: | umho/cm | Final Weight/Volume: | 25 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Specific Conductance | 34400 | 35800 | 4 | 10 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-333888**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-333888/6 | Analysis Batch: | 280-333888 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 071616 alk a.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/16/2016 0914 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Alkalinity | 1.36 | B | 1.1 | 5.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-333888**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-333888/4 | Analysis Batch: | 280-333888 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 071616 alk a.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/16/2016 0905 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-333888/5 | Analysis Batch: | 280-333888 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 071616 alk a.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/16/2016 0910 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Alkalinity | 100 | 98 | 90 - 110 | 1 | 10 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-333888**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-333888/4 | Units: | mg/L | LCSD Lab Sample ID: | LCSD 280-333888/5 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/16/2016 0905 | | | Analysis Date: | 07/16/2016 0910 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Alkalinity | 200 | 200 | 199.4 | 196.7 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-333888**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-333888 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 071616 alk a.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1 mL |
| Analysis Date: | 07/16/2016 0924 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Alkalinity | 217 | 220.2 | 1 | 10 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334218**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334218/1 | Analysis Batch: | 280-334218 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/19/2016 1331 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Dissolved Solids | 4.7 | U | 4.7 | 10.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-334218**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334218/2 | Analysis Batch: | 280-334218 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 07/19/2016 1331 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-334218/3 | Analysis Batch: | 280-334218 | Instrument ID: | MT_025 | | |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A | | |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL | | |
| Analysis Date: | 07/19/2016 1331 | Units: | mg/L | Final Weight/Volume: | 100 mL | | |
| Prep Date: | N/A | | | | | | |
| Leach Date: | N/A | | | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Dissolved Solids | 98 | 98 | 86 - 110 | 0 | 20 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-334218**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334218/2 | Units: | mg/L | LCSD Lab Sample ID: | LCSD 280-334218/3 |
| Client Matrix: | Water | | | Client Matrix: | Water |
| Dilution: | 1.0 | | | Dilution: | 1.0 |
| Analysis Date: | 07/19/2016 1331 | | | Analysis Date: | 07/19/2016 1331 |
| Prep Date: | N/A | | | Prep Date: | N/A |
| Leach Date: | N/A | | | Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Total Dissolved Solids | 501 | 501 | 490.0 | 489.0 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334218**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334218 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 07/19/2016 1331 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Dissolved Solids | 1710 | 1724 | 1 | 10 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-334068**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-334068/3 | Analysis Batch: | 280-334068 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/18/2016 1422 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Suspended Solids | 1.1 | U | 1.1 | 4.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-334068**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334068/1 | Analysis Batch: | 280-334068 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/18/2016 1422 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-334068/2 | Analysis Batch: | 280-334068 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/18/2016 1422 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Suspended Solids | 96 | 92 | 86 - 114 | 4 | 20 | | |

**Laboratory Control/**
**Laboratory Duplicate Data Report - Batch: 280-334068**

**Method: SM 2540D**
**Preparation: N/A**

| | | | |
|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-334068/1 | Units: | mg/L |
| Client Matrix: | Water | | |
| Dilution: | 1.0 | | |
| Analysis Date: | 07/18/2016 1422 | | |
| Prep Date: | N/A | | |
| Leach Date: | N/A | | |

| | |
|---|---|
| LCSD Lab Sample ID: | LCSD 280-334068/2 |
| Client Matrix: | Water |
| Dilution: | 1.0 |
| Analysis Date: | 07/18/2016 1422 |
| Prep Date: | N/A |
| Leach Date: | N/A |

| Analyte | LCS Spike Amount | LCSD Spike Amount | LCS Result/Qual | LCSD Result/Qual |
|---|---|---|---|---|
| Total Suspended Solids | 100 | 100 | 96.00 | 92.40 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-334068**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-334068 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 07/18/2016 1422 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Suspended Solids | 32.0 | 30.80 | 4 | 10 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Method Blank - Batch: 280-335176**

**Method: SM 5310B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-335176/4 | Analysis Batch: | 280-335176 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072516.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/25/2016 1520 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Organic Carbon - Quad | 0.16 | U | 0.16 | 1.0 |

**Lab Control Sample - Batch: 280-335176**

**Method: SM 5310B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-335176/3 | Analysis Batch: | 280-335176 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072516.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/25/2016 1505 | Units: | mg/L | Final Weight/Volume: | 200 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon - Quad | 25.0 | 25.37 | 101 | 88 - 112 | |

**Matrix Spike - Batch: 280-335176**

**Method: SM 5310B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335176 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072516.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/25/2016 1623 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|---|
| Total Organic Carbon - Quad | 7.8 | 25.0 | 33.12 | 101 | 88 - 112 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

**Duplicate - Batch: 280-335176**

**Method: SM 5310B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-85505-1 | Analysis Batch: | 280-335176 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 072516.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 07/25/2016 1608 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon - Quad | 7.8 | 7.79 | 0.2 | 15 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:280-334916** | | | | | |
| LCS 280-334916/4 | Lab Control Sample | T | Water | 8260B | |
| MB 280-334916/6 | Method Blank | T | Water | 8260B | |
| 280-85505-1 | J1V931 | T | Water | 8260B | |
| 280-85505-1MS | Matrix Spike | T | Water | 8260B | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8260B | |
| **Analysis Batch:280-335637** | | | | | |
| LCS 280-335637/4 | Lab Control Sample | T | Water | 8260B | |
| LCSD 280-335637/5 | Lab Control Sample Duplicate | T | Water | 8260B | |
| MB 280-335637/6 | Method Blank | T | Water | 8260B | |
| 280-85505-2 | J1V932 | T | Water | 8260B | |
| 280-85505-3 | J1V933 | T | Water | 8260B | |

**Report Basis**
T = Total

| | | | | | |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 280-334208** | | | | | |
| LCS 280-334208/2-A | Lab Control Sample | T | Water | 3520C | |
| MB 280-334208/1-A | Method Blank | T | Water | 3520C | |
| 280-85505-1 | J1V931 | T | Water | 3520C | |
| 280-85505-1MS | Matrix Spike | T | Water | 3520C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 3520C | |
| 280-85505-2 | J1V932 | T | Water | 3520C | |
| **Analysis Batch:280-335194** | | | | | |
| LCS 280-334208/2-A | Lab Control Sample | T | Water | 8270C | 280-334208 |
| MB 280-334208/1-A | Method Blank | T | Water | 8270C | 280-334208 |
| 280-85505-1 | J1V931 | T | Water | 8270C | 280-334208 |
| 280-85505-1MS | Matrix Spike | T | Water | 8270C | 280-334208 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8270C | 280-334208 |
| 280-85505-2 | J1V932 | T | Water | 8270C | 280-334208 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC VOA** | | | | | |
| **Analysis Batch:280-334425** | | | | | |
| LCS 280-334425/6 | Lab Control Sample | T | Water | 8015C | |
| LCSD 280-334425/7 | Lab Control Sample Duplicate | T | Water | 8015C | |
| MB 280-334425/5 | Method Blank | T | Water | 8015C | |
| 280-85505-1 | J1V931 | T | Water | 8015C | |
| 280-85505-1MS | Matrix Spike | T | Water | 8015C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8015C | |
| 280-85505-2 | J1V932 | T | Water | 8015C | |
| **Analysis Batch:280-334991** | | | | | |
| LCS 280-334991/23 | Lab Control Sample | T | Water | NWTPH-Gx | |
| LCSD 280-334991/24 | Lab Control Sample Duplicate | T | Water | NWTPH-Gx | |
| MB 280-334991/22 | Method Blank | T | Water | NWTPH-Gx | |
| 280-85505-1 | J1V931 | T | Water | NWTPH-Gx | |
| 280-85505-1MS | Matrix Spike | T | Water | NWTPH-Gx | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | NWTPH-Gx | |
| 280-85505-2 | J1V932 | T | Water | NWTPH-Gx | |
| **Analysis Batch:280-335251** | | | | | |
| LCS 280-335251/29 | Lab Control Sample | T | Water | 8015C | |
| MB 280-335251/26 | Method Blank | T | Water | 8015C | |
| 280-85505-1 | J1V931 | T | Water | 8015C | |
| 280-85505-1MS | Matrix Spike | T | Water | 8015C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8015C | |
| 280-85505-2 | J1V932 | T | Water | 8015C | |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 280-334134** | | | | | |
| LCS 280-334134/2-A | Lab Control Sample | T | Water | 3510C | |
| LCS 280-334134/3-A | Lab Control Sample | T | Water | 3510C | |
| MB 280-334134/1-A | Method Blank | T | Water | 3510C | |
| 280-85505-1 | J1V931 | T | Water | 3510C | |
| 280-85505-1MS | Matrix Spike | T | Water | 3510C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 3510C | |
| 280-85505-2 | J1V932 | T | Water | 3510C | |
| **Prep Batch: 280-334141** | | | | | |
| LCS 280-334141/2-A | Lab Control Sample | T | Water | 3510C | |
| MB 280-334141/1-A | Method Blank | T | Water | 3510C | |
| 280-85505-1 | J1V931 | T | Water | 3510C | |
| 280-85505-1MS | Matrix Spike | T | Water | 3510C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 3510C | |
| 280-85505-2 | J1V932 | T | Water | 3510C | |
| **Prep Batch: 280-334158** | | | | | |
| LCS 280-334158/2-A | Lab Control Sample | T | Water | 8151A | |
| MB 280-334158/1-A | Method Blank | T | Water | 8151A | |
| 280-85505-1 | J1V931 | T | Water | 8151A | |
| 280-85505-1MS | Matrix Spike | T | Water | 8151A | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8151A | |
| 280-85505-2 | J1V932 | T | Water | 8151A | |
| **Analysis Batch:280-335331** | | | | | |
| LCS 280-334141/2-A | Lab Control Sample | T | Water | NWTPH-Dx | 280-334141 |
| MB 280-334141/1-A | Method Blank | T | Water | NWTPH-Dx | 280-334141 |
| 280-85505-1 | J1V931 | T | Water | NWTPH-Dx | 280-334141 |
| 280-85505-1MS | Matrix Spike | T | Water | NWTPH-Dx | 280-334141 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | NWTPH-Dx | 280-334141 |
| 280-85505-2 | J1V932 | T | Water | NWTPH-Dx | 280-334141 |
| **Analysis Batch:280-335351** | | | | | |
| LCS 280-334158/2-A | Lab Control Sample | T | Water | 8151A | 280-334158 |
| MB 280-334158/1-A | Method Blank | T | Water | 8151A | 280-334158 |
| 280-85505-1 | J1V931 | T | Water | 8151A | 280-334158 |
| 280-85505-1MS | Matrix Spike | T | Water | 8151A | 280-334158 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8151A | 280-334158 |
| 280-85505-2 | J1V932 | T | Water | 8151A | 280-334158 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Analysis Batch:280-335548** | | | | | |
| LCS 280-334134/2-A | Lab Control Sample | T | Water | 8081A | 280-334134 |
| MB 280-334134/1-A | Method Blank | T | Water | 8081A | 280-334134 |
| 280-85505-1 | J1V931 | T | Water | 8081A | 280-334134 |
| 280-85505-1MS | Matrix Spike | T | Water | 8081A | 280-334134 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8081A | 280-334134 |
| 280-85505-2 | J1V932 | T | Water | 8081A | 280-334134 |
| **Analysis Batch:280-335704** | | | | | |
| LCS 280-334134/3-A | Lab Control Sample | T | Water | 8082 | 280-334134 |
| MB 280-334134/1-A | Method Blank | T | Water | 8082 | 280-334134 |
| 280-85505-1 | J1V931 | T | Water | 8082 | 280-334134 |
| 280-85505-1MS | Matrix Spike | T | Water | 8082 | 280-334134 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8082 | 280-334134 |
| 280-85505-2 | J1V932 | T | Water | 8082 | 280-334134 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 280-334811** | | | | | |
| LCS 280-334811/2-A | Lab Control Sample | T | Water | 3020A | |
| MB 280-334811/1-A | Method Blank | T | Water | 3020A | |
| 280-85505-1 | J1V931 | T | Water | 3020A | |
| 280-85505-1DU | Duplicate | T | Water | 3020A | |
| 280-85505-1MS | Matrix Spike | T | Water | 3020A | |
| 280-85505-2 | J1V932 | T | Water | 3020A | |
| **Prep Batch: 280-334813** | | | | | |
| LCS 280-334813/2-A | Lab Control Sample | T | Water | 3010A | |
| MB 280-334813/1-A | Method Blank | T | Water | 3010A | |
| 280-85505-1 | J1V931 | T | Water | 3010A | |
| 280-85505-1DU | Duplicate | T | Water | 3010A | |
| 280-85505-1MS | Matrix Spike | T | Water | 3010A | |
| 280-85505-2 | J1V932 | T | Water | 3010A | |
| **Prep Batch: 280-335019** | | | | | |
| LCS 280-335019/2-A | Lab Control Sample | T | Water | 7470A | |
| MB 280-335019/1-A | Method Blank | T | Water | 7470A | |
| 280-85505-1 | J1V931 | T | Water | 7470A | |
| 280-85505-1DU | Duplicate | T | Water | 7470A | |
| 280-85505-1MS | Matrix Spike | T | Water | 7470A | |
| 280-85505-2 | J1V932 | T | Water | 7470A | |
| **Analysis Batch:280-335322** | | | | | |
| LCS 280-334813/2-A | Lab Control Sample | T | Water | 6010B | 280-334813 |
| MB 280-334813/1-A | Method Blank | T | Water | 6010B | 280-334813 |
| 280-85505-1 | J1V931 | T | Water | 6010B | 280-334813 |
| 280-85505-1DU | Duplicate | T | Water | 6010B | 280-334813 |
| 280-85505-1MS | Matrix Spike | T | Water | 6010B | 280-334813 |
| 280-85505-2 | J1V932 | T | Water | 6010B | 280-334813 |
| **Analysis Batch:280-335325** | | | | | |
| LCS 280-335019/2-A | Lab Control Sample | T | Water | 7470A | 280-335019 |
| MB 280-335019/1-A | Method Blank | T | Water | 7470A | 280-335019 |
| 280-85505-1 | J1V931 | T | Water | 7470A | 280-335019 |
| 280-85505-1DU | Duplicate | T | Water | 7470A | 280-335019 |
| 280-85505-1MS | Matrix Spike | T | Water | 7470A | 280-335019 |
| 280-85505-2 | J1V932 | T | Water | 7470A | 280-335019 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Analysis Batch:280-335326** | | | | | |
| LCS 280-334811/2-A | Lab Control Sample | T | Water | 6020 | 280-334811 |
| MB 280-334811/1-A | Method Blank | T | Water | 6020 | 280-334811 |
| 280-85505-1 | J1V931 | T | Water | 6020 | 280-334811 |
| 280-85505-1DU | Duplicate | T | Water | 6020 | 280-334811 |
| 280-85505-1MS | Matrix Spike | T | Water | 6020 | 280-334811 |
| 280-85505-2 | J1V932 | T | Water | 6020 | 280-334811 |
| **Analysis Batch:280-335424** | | | | | |
| 280-85505-1 | J1V931 | T | Water | 6010B | 280-334813 |
| 280-85505-1DU | Duplicate | T | Water | 6010B | 280-334813 |
| 280-85505-1MS | Matrix Spike | T | Water | 6010B | 280-334813 |
| 280-85505-2 | J1V932 | T | Water | 6010B | 280-334813 |

**Report Basis**
T = Total

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-333474** | | | | | |
| LCS 280-333474/44 | Lab Control Sample | T | Water | 300.0 | |
| MB 280-333474/45 | Method Blank | T | Water | 300.0 | |
| 280-85505-1 | J1V931 | T | Water | 300.0 | |
| 280-85505-1DU | Duplicate | T | Water | 300.0 | |
| 280-85505-1MS | Matrix Spike | T | Water | 300.0 | |
| 280-85505-2 | J1V932 | T | Water | 300.0 | |
| **Analysis Batch:280-333475** | | | | | |
| LCS 280-333475/44 | Lab Control Sample | T | Water | 300.0 | |
| MB 280-333475/45 | Method Blank | T | Water | 300.0 | |
| 280-85505-1 | J1V931 | T | Water | 300.0 | |
| 280-85505-1DU | Duplicate | T | Water | 300.0 | |
| 280-85505-1MS | Matrix Spike | T | Water | 300.0 | |
| 280-85505-2 | J1V932 | T | Water | 300.0 | |
| **Analysis Batch:280-333661** | | | | | |
| LCS 280-333661/11 | Lab Control Sample | T | Water | 300.0 | |
| LCS 280-333661/14 | Lab Control Sample | T | Water | 300.0 | |
| LCSD 280-333661/12 | Lab Control Sample Duplicate | T | Water | 300.0 | |
| MB 280-333661/13 | Method Blank | T | Water | 300.0 | |
| MB 280-333661/15 | Method Blank | T | Water | 300.0 | |
| 280-85505-1 | J1V931 | T | Water | 300.0 | |
| 280-85505-1DU | Duplicate | T | Water | 300.0 | |
| 280-85505-1MS | Matrix Spike | T | Water | 300.0 | |
| 280-85505-2 | J1V932 | T | Water | 300.0 | |
| **Prep Batch: 280-333805** | | | | | |
| LCS 280-333805/1-A | Lab Control Sample | T | Water | 9030B | |
| MB 280-333805/2-A | Method Blank | T | Water | 9030B | |
| 280-85505-1 | J1V931 | T | Water | 9030B | |
| 280-85505-1DU | Duplicate | T | Water | 9030B | |
| 280-85505-1MS | Matrix Spike | T | Water | 9030B | |
| 280-85505-2 | J1V932 | T | Water | 9030B | |
| **Analysis Batch:280-333826** | | | | | |
| LCS 280-333805/1-A | Lab Control Sample | T | Water | 9034 | 280-333805 |
| MB 280-333805/2-A | Method Blank | T | Water | 9034 | 280-333805 |
| 280-85505-1 | J1V931 | T | Water | 9034 | 280-333805 |
| 280-85505-1DU | Duplicate | T | Water | 9034 | 280-333805 |
| 280-85505-1MS | Matrix Spike | T | Water | 9034 | 280-333805 |
| 280-85505-2 | J1V932 | T | Water | 9034 | 280-333805 |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-333864** | | | | | |
| LCS 280-333864/3 | Lab Control Sample | T | Water | 9050A | |
| LCSD 280-333864/4 | Lab Control Sample Duplicate | T | Water | 9050A | |
| MB 280-333864/5 | Method Blank | T | Water | 9050A | |
| 280-85505-AA-1 DUDU | Duplicate | T | Water | 9050A | |
| 280-85505-2 | J1V932 | T | Water | 9050A | |
| **Analysis Batch:280-333888** | | | | | |
| LCS 280-333888/4 | Lab Control Sample | T | Water | SM 2320B | |
| LCSD 280-333888/5 | Lab Control Sample Duplicate | T | Water | SM 2320B | |
| MB 280-333888/6 | Method Blank | T | Water | SM 2320B | |
| 280-85505-1 | J1V931 | T | Water | SM 2320B | |
| 280-85505-1DU | Duplicate | T | Water | SM 2320B | |
| 280-85505-2 | J1V932 | T | Water | SM 2320B | |
| **Analysis Batch:280-334027** | | | | | |
| LCS 280-334027/3 | Lab Control Sample | T | Water | 410.4 | |
| MB 280-334027/4 | Method Blank | T | Water | 410.4 | |
| 280-85505-1 | J1V931 | T | Water | 410.4 | |
| 280-85505-1DU | Duplicate | T | Water | 410.4 | |
| 280-85505-1MS | Matrix Spike | T | Water | 410.4 | |
| 280-85505-2 | J1V932 | T | Water | 410.4 | |
| **Analysis Batch:280-334068** | | | | | |
| LCS 280-334068/1 | Lab Control Sample | T | Water | SM 2540D | |
| LCSD 280-334068/2 | Lab Control Sample Duplicate | T | Water | SM 2540D | |
| MB 280-334068/3 | Method Blank | T | Water | SM 2540D | |
| 280-85505-1 | J1V931 | T | Water | SM 2540D | |
| 280-85505-1DU | Duplicate | T | Water | SM 2540D | |
| 280-85505-2 | J1V932 | T | Water | SM 2540D | |
| **Analysis Batch:280-334218** | | | | | |
| LCS 280-334218/2 | Lab Control Sample | T | Water | SM 2540C | |
| LCSD 280-334218/3 | Lab Control Sample Duplicate | T | Water | SM 2540C | |
| MB 280-334218/1 | Method Blank | T | Water | SM 2540C | |
| 280-85505-1 | J1V931 | T | Water | SM 2540C | |
| 280-85505-1DU | Duplicate | T | Water | SM 2540C | |
| 280-85505-2 | J1V932 | T | Water | SM 2540C | |
| **Analysis Batch:280-334602** | | | | | |
| LCS 280-334602/140 | Lab Control Sample | T | Water | 350.1 | |
| MB 280-334602/141 | Method Blank | T | Water | 350.1 | |
| 280-85505-1 | J1V931 | T | Water | 350.1 | |
| 280-85505-1DU | Duplicate | T | Water | 350.1 | |
| 280-85505-1MS | Matrix Spike | T | Water | 350.1 | |
| 280-85505-2 | J1V932 | T | Water | 350.1 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 280-334663** | | | | | |
| HLCS 280-334663/1-A | High Level Control Sample | T | Water | 9012A | |
| LCS 280-334663/3-A | Lab Control Sample | T | Water | 9012A | |
| LLCS 280-334663/2-A | Low Level Control Sample | T | Water | 9012A | |
| MB 280-334663/4-A | Method Blank | T | Water | 9012A | |
| 280-85505-1 | J1V931 | T | Water | 9012A | |
| 280-85505-1DU | Duplicate | T | Water | 9012A | |
| 280-85505-1MS | Matrix Spike | T | Water | 9012A | |
| 280-85505-2 | J1V932 | T | Water | 9012A | |
| **Analysis Batch:280-334701** | | | | | |
| LCS 280-334701/21 | Lab Control Sample | T | Water | SM 5310B | |
| LCS 280-334701/3 | Lab Control Sample | T | Water | SM 5310B | |
| MB 280-334701/22 | Method Blank | T | Water | SM 5310B | |
| MB 280-334701/4 | Method Blank | T | Water | SM 5310B | |
| 280-85505-1 | J1V931 | T | Water | SM 5310B | |
| 280-85505-1DU | Duplicate | T | Water | SM 5310B | |
| 280-85505-1MS | Matrix Spike | T | Water | SM 5310B | |
| 280-85505-2 | J1V932 | T | Water | SM 5310B | |
| **Analysis Batch:280-334810** | | | | | |
| HLCS 280-334663/1-A | High Level Control Sample | T | Water | 9012A | 280-334663 |
| LCS 280-334663/3-A | Lab Control Sample | T | Water | 9012A | 280-334663 |
| LLCS 280-334663/2-A | Low Level Control Sample | T | Water | 9012A | 280-334663 |
| MB 280-334663/4-A | Method Blank | T | Water | 9012A | 280-334663 |
| 280-85505-1 | J1V931 | T | Water | 9012A | 280-334663 |
| 280-85505-1DU | Duplicate | T | Water | 9012A | 280-334663 |
| 280-85505-1MS | Matrix Spike | T | Water | 9012A | 280-334663 |
| 280-85505-2 | J1V932 | T | Water | 9012A | 280-334663 |
| **Analysis Batch:280-335176** | | | | | |
| LCS 280-335176/3 | Lab Control Sample | T | Water | SM 5310B | |
| MB 280-335176/4 | Method Blank | T | Water | SM 5310B | |
| 280-85505-1 | J1V931 | T | Water | SM 5310B | |
| 280-85505-1DU | Duplicate | T | Water | SM 5310B | |
| 280-85505-1MS | Matrix Spike | T | Water | SM 5310B | |
| 280-85505-2 | J1V932 | T | Water | SM 5310B | |
| **Analysis Batch:280-335415** | | | | | |
| LCS 280-335415/4 | Lab Control Sample | T | Water | 9040B | |
| LCSD 280-335415/5 | Lab Control Sample Duplicate | T | Water | 9040B | |
| 280-85505-1 | J1V931 | T | Water | 9040B | |
| 280-85505-1DU | Duplicate | T | Water | 9040B | |
| 280-85505-2 | J1V932 | T | Water | 9040B | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 280-335552** | | | | | |
| LCS 280-335552/1-A | Lab Control Sample | T | Water | Distill/Phenol | |
| MB 280-335552/3-A | Method Blank | T | Water | Distill/Phenol | |
| 280-85505-1 | J1V931 | T | Water | Distill/Phenol | |
| 280-85505-1DU | Duplicate | T | Water | Distill/Phenol | |
| 280-85505-1MS | Matrix Spike | T | Water | Distill/Phenol | |
| 280-85505-2 | J1V932 | T | Water | Distill/Phenol | |
| **Prep Batch: 280-335898** | | | | | |
| LCS 280-335898/2-A | Lab Control Sample | T | Water | 1664A | |
| LCSD 280-335898/3-A | Lab Control Sample Duplicate | T | Water | 1664A | |
| MB 280-335898/1-A | Method Blank | T | Water | 1664A | |
| 280-85505-1 | J1V931 | T | Water | 1664A | |
| 280-85505-1DU | Duplicate | T | Water | 1664A | |
| 280-85505-1MS | Matrix Spike | T | Water | 1664A | |
| 280-85505-2 | J1V932 | T | Water | 1664A | |
| **Analysis Batch:280-336002** | | | | | |
| LCS 280-335898/2-A | Lab Control Sample | T | Water | 1664A | 280-335898 |
| LCSD 280-335898/3-A | Lab Control Sample Duplicate | T | Water | 1664A | 280-335898 |
| MB 280-335898/1-A | Method Blank | T | Water | 1664A | 280-335898 |
| 280-85505-1 | J1V931 | T | Water | 1664A | 280-335898 |
| 280-85505-1DU | Duplicate | T | Water | 1664A | 280-335898 |
| 280-85505-1MS | Matrix Spike | T | Water | 1664A | 280-335898 |
| 280-85505-2 | J1V932 | T | Water | 1664A | 280-335898 |
| **Analysis Batch:280-336034** | | | | | |
| LCS 280-336034/4 | Lab Control Sample | T | Water | 9020B | |
| MB 280-336034/2 | Method Blank | T | Water | 9020B | |
| 280-85505-1 | J1V931 | T | Water | 9020B | |
| 280-85505-1DU | Duplicate | T | Water | 9020B | |
| 280-85505-1MS | Matrix Spike | T | Water | 9020B | |
| 280-85505-2 | J1V932 | T | Water | 9020B | |
| **Analysis Batch:280-336720** | | | | | |
| LCS 280-336720/22 | Lab Control Sample | T | Water | 353.2 | |
| LCSD 280-336720/23 | Lab Control Sample Duplicate | T | Water | 353.2 | |
| MB 280-336720/24 | Method Blank | T | Water | 353.2 | |
| 280-85505-1 | J1V931 | T | Water | 353.2 | |
| 280-85505-1DU | Duplicate | T | Water | 353.2 | |
| 280-85505-1MS | Matrix Spike | T | Water | 353.2 | |
| 280-85505-2 | J1V932 | T | Water | 353.2 | |

Client: Washington Closure Hanford

Job Number: 280-85505-1
Sdg Number: J02198

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-336746** | | | | | |
| LCS 280-335552/1-A | Lab Control Sample | T | Water | 420.4 | 280-335552 |
| MB 280-335552/3-A | Method Blank | T | Water | 420.4 | 280-335552 |
| 280-85505-1 | J1V931 | T | Water | 420.4 | 280-335552 |
| 280-85505-1DU | Duplicate | T | Water | 420.4 | 280-335552 |
| 280-85505-1MS | Matrix Spike | T | Water | 420.4 | 280-335552 |
| 280-85505-2 | J1V932 | T | Water | 420.4 | 280-335552 |

**Report Basis**
T = Total

| | | | | | |
|---|---|---|---|---|---|
| **HPLC/IC** | | | | | |
| **Prep Batch: 280-334137** | | | | | |
| LCS 280-334137/2-A | Lab Control Sample | T | Water | 3510C | |
| MB 280-334137/1-A | Method Blank | T | Water | 3510C | |
| 280-85505-1 | J1V931 | T | Water | 3510C | |
| 280-85505-1MS | Matrix Spike | T | Water | 3510C | |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 3510C | |
| 280-85505-2 | J1V932 | T | Water | 3510C | |
| **Analysis Batch:280-335329** | | | | | |
| LCS 280-334137/2-A | Lab Control Sample | T | Water | 8310 | 280-334137 |
| MB 280-334137/1-A | Method Blank | T | Water | 8310 | 280-334137 |
| 280-85505-1 | J1V931 | T | Water | 8310 | 280-334137 |
| 280-85505-1MS | Matrix Spike | T | Water | 8310 | 280-334137 |
| 280-85505-1MSD | Matrix Spike Duplicate | T | Water | 8310 | 280-334137 |
| 280-85505-2 | J1V932 | T | Water | 8310 | 280-334137 |

**Report Basis**
T = Total

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-022



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-404 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Commercial Carrier |
| Shipped To: TestAmerica Denver | Offsite Property No.: A131487 | | Bill of Lading/Air Bill No.: SEE OSPC |

Other Labs Shipped To: TestAmerica Richland

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| Preservation | HNO3 to pH <2 | Cool <=6C | ZnAc+NaOH to pH >9 | NaOH to pH >= 12 | H2SO4 to pH <2 | Cool <=6C | Cool <=6C | H2SO4 to pH <2 | Cool <=6C | HCl to pH <2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Type of Container | G/P | G/P | G/P | G/P | G/P | aGs* | aGs* | G | aG | aGs* |
| No. of Container(s) | 2 | 2 | 3 | 2 | 2 | 4 | 4 | 4 | 4 | 6 |
| Volume | 500mL | 1000mL | 250mL | 250mL | 250mL | 40mL | 40mL | 1000mL | 1000mL | 40mL |
| Sample Analysis | See item (1) in Special Instructions | See item (2) in Special Instructions | Sulfides - 9034 | Total Cyanide - 9012 | Ammonia - 350.1; NO2/NO3 - 353.2; COD -- 410.4 | Glycols - 8015 {1,2-Propanediol (Propylene glycol), Ethylene glycol} | Alcohols - 8015 {Methanol} | Oil & Grease - 1664 | See item (3) in Special Instructions | TPH-Gasoline Range - WTPH-G |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J102931 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
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280-85505 Chain of Custody

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M Downing | 7-12-16 0945 | T.R. Edmundson / J.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / J.R. Edmundson (WCH) | 7-12-16 1500 | Fed Ex | 7-12-16 — |
| | | 0930 13Jul16 | |
| | | | |
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**FINAL SAMPLE DISPOSITION**: Disposal Method | Disposed By | Date/Time

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Tungsten, Uranium, Vanadium, Zinc}; Mercury - 7470 - (CV)
(2) Alkalinity - 2320; IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate}; TDS - 2540C; TSS - 2540D
(3) TPH-Diesel Range - WTPH-D + {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - diesel range extended to C36}

SDG # J02198 D.B. 7-15-16

4,9,1-7,2-9 IRS-0-0 13Jul16
Transfer

3,4 IRS-0-0
13Jul16

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-022



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-404 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Commercial Carrier |
| Shipped To: TestAmerica Denver | Offsite Property No.: A131487 | | Bill of Lading/Air Bill No.: SEE OSPC |

Other Labs Shipped To: TestAmerica Richland

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| Preservation | H2SO4 to pH <2 | H2SO4 to pH <2 | None | HCl or H2SO4 to pH <2 | Cool <=6C | Cool <=6C | Cool <=6C | Cool <=6C | Cool <=6C | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type of Container | aG | aGs* | G/P | aGs* | aG | aG | aG | aG | aG | |
| No. of Container(s) | 3 | 2 | 2 | 6 | 4 | 4 | 4 | 4 | 4 | |
| Volume | 250mL | 250mL | 250mL | 40mL | 1000mL | 1000mL | 1000mL | 1000mL | 1000mL | |
| Sample Analysis | See item (4) in Special Instructions | TOX - 9020 | Conductivity - 9050; pH (Water) - 9040 | See item (5) in Special Instructions | See item (6) in Special Instructions | PAHs - 8310 | Pesticides - 8081 | PCBs - 8082 | Chloro-Herbicides - EPA8151 | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J17931 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
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**CHAIN OF POSSESSION** — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| N Downing/N Downing WCH | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1500 | Fed Ex | 7-12-16 — |
| | | [illegible] | 0930 7/12/16 |
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**FINAL SAMPLE DISPOSITION**: Disposal Method | Disposed By | Date/Time

**SPECIAL INSTRUCTIONS**

(4) Phenolics Total Recoverable - 420.4; Total Organic Carbon (TOC) - 5310B
(5) VOA - 8260 (App IX); VOA - 8260 (Client List) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1-Butanol, 2-Chloroethyl vinyl ether, 2-Nitropropane, Acetic acid, methyl ester, Diethyl ether, Ethyl acetate, Ethyl cyanide, Isopropylbenzene, Tetrahydrofuran, cis-1,2-Dichloroethylene}
(6) Semi-VOA - 8270 (App IX); Semi-VOA – 8270 (Client List) {1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 3+4 Methylphenol (cresol, m+p), Benzaldehyde, Benzoic acid, Dimethoate, Diphenylamine, Disulfoton, Parathion, Phorate, Tris(2,3-dibromopropyl) phosphate}

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-023



| | | | |
|---|---|---|---|
| **Collector** DOWNING, MK | **Company Contact** Joan Kessner | **Telephone No.** 375-4688 | **Project Coordinator** KESSNER, JH |
| **Price Code** 7D | **Data Turnaround** 21 Days | | |
| **Project Designation** ERDF Leachate Tank | **Sampling Location** ERDF Leachate tank 4, Summer 2016 | | **SAF No.** RC-009 |
| **Ice Chest No.** ERC-02-404 | **Field Logbook No.** EL-1626-03 | **COA** RERDF22560 | **Method of Shipment** Commercial Carrier |
| **Shipped To** TestAmerica Denver | **Offsite Property No:** A131487 | | **Bill of Lading/Air Bill No.** SEE OSPC |

**Other Labs Shipped To**
TestAmerica Richland

**POSSIBLE SAMPLE HAZARDS/REMARKS**
*Potentially radioactive, less than DOT limits*

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Preservation** | HNO3 to pH <2 | Cool <=6C | ZnAc+NaOH to pH >9 | NaOH to pH >= 12 | H2SO4 to pH <2 | Cool <=6C | Cool <=6C | H2SO4 to pH <2 | Cool <=6C | HCl to pH <2 |
| **Type of Container** | G/P | G/P | G/P | G/P | G/P | aGs* | aGs* | G | aG | aGs* |
| **No. of Container(s)** | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 |
| **Volume** | 500mL | 1000mL | 250mL | 250mL | 250mL | 40mL | 40mL | 1000mL | 1000mL | 40mL |
| **Sample Analysis** | See item (1) in Special Instructions | See item (2) in Special Instructions | Sulfides - 9034 | Total Cyanide - 9012 | Ammonia - 350.1; NO2/NO3 - 353.2; COD – 410.4 | Glycols - 8015 {1,2-Propanediol (Propylene glycol), Ethylene glycol} | Alcohols - 8015 {Methanol} | Oil & Grease - 1664 | See item (3) in Special Instructions | TPH-Gasoline Range - WTPH-G |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J17932 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
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**CHAIN OF POSSESSION** — **Sign/Print Names**

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing / M. Downing WAI | 7-12-16/0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1500 | Fed Ex | 7-12-16 — |
| | | [illegible] | 0930 13 Jul 16 |
| | | | |
| | | | |
| | | | |
| | | | |

**FINAL SAMPLE DISPOSITION** — Disposal Method — Disposed By — Date/Time

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Tungsten, Uranium, Vanadium, Zinc}; Mercury - 7470 - (CV)
(2) Alkalinity - 2320; IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate}; TDS - 2540C; TSS - 2540D
(3) TPH-Diesel Range - WTPH-D + {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - diesel range extended to C36}

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

# Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-009-023



| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-404 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Commercial Carrier |
| Shipped To: TestAmerica Denver | Offsite Property No.: A131487 | | Bill of Lading/Air Bill No.: SEE OSPC |

Other Labs Shipped To: TestAmerica Richland

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*Potentially radioactive, less than DOT limits*

**Special Handling and/or Storage**

*Cool 4 Deg C*

| Preservation | H2SO4 to pH <2 | H2SO4 to pH <2 | None | HCl or H2SO4 to pH <2 | Cool <=6C | Cool <=6C | Cool <=6C | Cool <=6C | Cool <=6C | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type of Container | aG | aGs* | G/P | aGs* | aG | aG | aG | aG | aG | |
| No. of Container(s) | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | |
| Volume | 250mL | 250mL | 250mL | 40mL | 1000mL | 1000mL | 1000mL | 1000mL | 1000mL | |
| Sample Analysis | See item (4) in Special Instructions | TOX - 9020 | Conductivity - 9050; pH (Water) - 9040 | See item (5) in Special Instructions | See item (6) in Special Instructions | PAHs - 8310 | Pesticides - 8081 | PCBs - 8082 | Chloro-Herbicides - EPA8151 | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J14932 | WATER | 7-12-16 | 0720 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | | | | | | | | | | | | | |
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**CHAIN OF POSSESSION** — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| M. Downing / M. Downing WOAC | 7-12-16 0945 | T.R. Edmundson / T.R. Edmundson | 7-12-16 0945 |
| T.R. Edmundson / T.R. Edmundson WCH | 7-12-16 1500 | Fed Ex | 7-12-16 |
| | | [illegible] | 0930 B Walk |
| | | | |
| | | | |
| | | | |
| | | | |

| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

**SPECIAL INSTRUCTIONS**

(4) Phenolics Total Recoverable - 420.4; Total Organic Carbon (TOC) - 5310B
(5) VOA - 8260 (App IX); VOA - 8260 (Client List) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1-Butanol, 2-Chloroethyl vinyl ether, 2-Nitropropane, Acetic acid, methyl ester, Diethyl ether, Ethyl acetate, Ethyl cyanide, Isopropylbenzene, Tetrahydrofuran, cis-1,2-Dichloroethylene}
(6) Semi-VOA - 8270 (App IX); Semi-VOA -- 8270 (Client List) {1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 3+4 Methylphenol (cresol, m+p), Benzaldehyde, Benzoic acid, Dimethoate, Diphenylamine, Disulfoton, Parathion, Phorate, Tris(2,3-dibromopropyl) phosphate}

REVIEWED BY KW
DATE 7/12/16

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-009-024 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: DOWNING, MK | Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH |
| Price Code: 7D | Data Turnaround: 21 Days | | |
| Project Designation: ERDF Leachate Tank | Sampling Location: ERDF Leachate tank 4, Summer 2016 | | SAF No.: RC-009 |
| Ice Chest No.: ERC-02-404 | Field Logbook No.: EL-1626-03 | COA: RERDF22560 | Method of Shipment: Commercial Carrier |
| Shipped To: TestAmerica Denver | Offsite Property No.: A131487 | | Bill of Lading/Air Bill No.: SEE OSPC |

Other Labs Shipped To: N/A

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*None*

**Special Handling and/or Storage**

*None*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | HCl or H2SO4 to pH <2 | | | | | | | | | | | |
| Type of Container | aGs* | | | | | | | | | | | |
| No. of Container(s) | 2 | | | | | | | | | | | |
| Volume | 40mL | | | | | | | | | | | |
| Sample Analysis | See item (1) in Special Instructions | | | | | | | | | | | |

| Sample No. | Matrix | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1V933 | WATER | 7-12-16 | 0600 | ✓ | | | | | | | | | |
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| CHAIN OF POSSESSION | | Sign/Print Names | |
|---|---|---|---|
| Relinquished By/Removed From: WAI N. Downing N. Downing | Date/Time: 7-12-16 0945 | Received By/Stored In: T.R. Edmundson T.R. Edmundson | Date/Time: 7-12-16 0945 |
| Relinquished By/Removed From: WCH T.R. Edmundson T.R. Edmundson | Date/Time: 7-12-16 1500 | Received By/Stored In: Fed Ex | Date/Time: 7-12-16 — |
| Relinquished By/Removed From | Date/Time | Received By/Stored In: [signature] | Date/Time: 0930 B. Walk |
| 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 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

**SPECIAL INSTRUCTIONS**

(1) VOA - 8260 (App IX); VOA - 8260 (Client List) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1-Butanol, 2-Chloroethyl vinyl ether, 2-Nitropropane, Acetic acid, methyl ester, Diethyl ether, Ethyl acetate, Ethyl cyanide, Isopropylbenzene, Tetrahydrofuran, cis-1,2-Dichloroethylene}

REVIEWED BY KW DATE 7/12/16

WCH-EE-011

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

☆90 w/permission

Project 28002142
Report Due: 8/4/2016
TALs TAT: 15-Day - Rush

# Sample Check-in List

Date/Time Received: 0930 13 Jul 16 (0925 14 Jul 16) GM Screen Result 13 (14 Jul 16) microR/hr

Client: Washington Closure Hanford SDG #: J02198 NA[ ] SAF #: RC-009 NA [ ]

Job Number: 85505 Chain of Custody # RC-009-022, RC-009-023, RC-009-024

Shipping Container ID: SRC-960-004, TAN 052, SRC-02-404, WCH-009-100 Air Bill # 7767 7969 4930, 7767 7969 5031, 7767 7969 5053

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? NA [ ] Yes [X] No [ ]
4. Cooler Temperature °C: 4.9, 1.7, 2.9 (3, 4 (14 Jul 16)) NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [X] Dry [ ]
6. Number of samples in shipping container: 1, 3, 2
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
8. Samples have:
   X Tape — X Hazard Labels
   X Custody Seals — N Appropriate Sample Labels
9. Samples are:
   X In Good Condition — ____ Leaking
   ____ Broken — ____ Have Air Bubbles (Only for samples requiring no head space.)
10. Sample pH taken? NA [ ] pH<2 [ ] pH>2 [ ] pH>9 [ ] **Amount $HNO_3$ Added** ____
11. Sample Location, Sample Collector Listed? *Y
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [X] No [ ]
13. Description of anomalies (include sample numbers): 1 set of VOAs with no label — These were in a bubble bag as part of VOA vials for sample J1V931.

Sample Custodian: [signature] Date: 13 Jul 16

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

Client Informed on ____ by ____ Person Contacted ____

[ ] No action necessary; process as is.

Project Manager Darlene Bandy Date 7-15-16

ORIGIN ID:PSCA (509) 376-7492
1162 SHIPPING
US DOE CO WCH
2355 STEVENS DR
RICHLAND, WA 99354
UNITED STATES US

SHIP DATE: 12JUL16
ACTWGT: 81.00 LB
CAD: 105286502/INET3730

BILL THIRD PARTY

TO KAE YODER
TESTAMERICA
4955 YARROW ST.
ARVADA CO 80002
(303) 736-0190
INV: A131497
PO:
REF: RERDF22560
DEPT:

540J1/5CBD/727F

FedEx Express

J101016026501uv

1 of 4

WED - 13 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7767 2969 4930

## MASTER ##

XH WHHA

80002
CO-US DEN

**After printing this label:**
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning**: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:PSCA (509) 376-7492
1162 SHIPPING
US DOE CO WCH
2355 STEVENS DR
RICHLAND, WA 99354
UNITED STATES US

SHIP DATE: 12JUL16
ACTWGT: 82.00 LB
CAD: 105266502/NET3730

BILL THIRD PARTY

TO KAE YODER
TESTAMERICA
4955 YARROW ST.
ARVADA CO 80002
(303) 736-0190
INV: A131497
PO:
REF: RERDF22560
DEPT:

FedEx Express

J161016020501uw

540J1/5CBD/727F

WED - 13 JUL 10:30A
PRIORITY OVERNIGHT

2 of 4

MPS# 0263 7767 2969 5031 0201
Mstr# 7767 2969 4930

XH WHHA

80002
CO-US DEN

**After printing this label:**
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
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**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:PSCA (509) 376-7492
1162 SHIPPING
US DOE CO WCH
2355 STEVENS DR
RICHLAND WA 99354
UNITED STATES US

SHIP DATE: 12JUL16
ACTWGT: 87.00 LB
CAD: 1652665/INET3730

BILL THIRD PARTY

TO KAE YODER
TESTAMERICA
4955 YARROW ST.
ARVADA CO 80002
(303) 736-0190
INV: A131487
PO:
REF: RERDF2260
DEPT:

FedEx Express

J1810160205 1uxz

540J1/5CBD/727F

3 of 4

MPS# 0263 7767 2969 4815

Mstr# 7767 2969 4930

0201

XH WHHA

WED - 13 JUL 10:30A
PRIORITY OVERNIGHT

80002
CO-US DEN

**After printing this label:**
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:PSCA (509) 376-7492
1162 SHIPPING
US DOE CO WCH
2355 STEVENS DR
RICHLAND, WA 99354
UNITED STATES US

SHIP DATE: 12JUL16
ACTWGT: 88.00 LB
CAD: 105266502/INET3730

BILL THIRD PARTY

TO KAE YODER
TESTAMERICA
4955 YARROW ST.
ARVADA CO 80002
(303) 736-0190
INV: A131467
PO:
REF: RERDF22560
DEPT:

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FedEx Express

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MPS# 0263 7767 2969 5053 0201
Mstr# 7767 2969 4930

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After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning**: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
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