

April 4, 2016

# 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: 300-2725-1  
TestAmerica Sample Delivery Group: WC0951  
Client Project/Site: F16-025

For:  
CH2M Hill Plateau Remediation Company  
PO BOX 1600  
Mail Stop R3-50  
Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:  
4/4/2016 4:46:56 PM

Whitney Ritari, Project Manager I  
(509)375-3131 ext164  
[whitney.ritari@testamericainc.com](mailto:whitney.ritari@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this package. 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 attached signature.*

*The laboratory is accredited to EPA 7196A in Solid and Chemical Materials, per Washington State Department of Ecology this is approved for non-discharge water samples. The sample/ sample duplicate RPD agreement is not applicable if one or both results are elss than five times the MDL.*

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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)   |

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

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**Job ID: 300-2725-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-2725-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 4/1/2016 8:10 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0° C.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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|   |   |  |   |                           |  |
|---|---|--|---|---------------------------|--|
| <b>COLLECTOR</b><br>M.A. White/CHPRC                    | <b>COMPANY CONTACT</b><br>TODAK, D  | <b>TELEPHONE NO.</b><br>376-6427             | <b>PROJECT COORDINATOR</b><br>TODAK, D          | <b>PRICE CODE</b><br>1A   | <b>DATA TURNAROUND</b><br>24 Hours / 15 Days   |
| <b>SAMPLING LOCATION</b><br>C9416, I-005                | <b>PROJECT DESIGNATION</b><br>FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water | <b>FIELD LOGBOOK NO.</b><br>HVF-N-6453 Pg 59 | <b>ACTUAL SAMPLE DEPTH</b><br>414.5             | <b>SAF NO.</b><br>F16-025 | <b>AIR QUALITY</b><br><input type="checkbox"/> |
| <b>ICE CHEST NO.</b><br>N/A                             | <b>OFFSITE PROPERTY NO.</b><br>N/A  | <b>COA</b><br>303979                         | <b>METHOD OF SHIPMENT</b><br>GOVERNMENT VEHICLE | <b>ORIGINAL</b>           |  |
| <b>SHIPPED TO</b><br>TestAmerica Incorporated, Richland |   |  | <b>BILL OF LADING/AIR BILL NO.</b><br>N/A       |                           |  |

|   |   |  |   |
|---|---|--|---|
| <b>MATRIX*</b><br>A=Air<br>DL=Drum<br>Liquids<br>DS=Drum<br>Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SF=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | <b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b><br>*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1, NA | <b>PRESERVATION</b><br>Cool <=6C       | <b>HOLDING TIME</b><br>24 Hours           |
|   |   | <b>NO. OF CONTAINER(S)</b><br>1        | <b>TYPE OF CONTAINER</b><br>ag            |
|   |   | <b>VOLUME</b><br>60ml                  | <b>SAMPLE ANALYSIS</b><br>7196 CR6 COMMON |
|   |   | <b>SPECIAL HANDLING AND/OR STORAGE</b> |   |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME |
|------------|---------|-------------|-------------|
| B34TJ4     | WATER   | MAR 31 2016 | 1455        |

April 4 2016  
**FILTER**  
300-2725 CO



# 2725  
SDG # WFC0951

| CHAIN OF POSSESSION                               |                               | SIGN/ PRINT NAMES                          |                               | SPECIAL INSTRUCTIONS |  |
|---|-------------------------------|--|-------------------------------|----------------------|--|
| RELINQUISHED BY/REMOVED FROM<br><i>M.A. White</i> | DATE/TIME<br>MAR 31 2016 1455 | RECEIVED BY/STORED IN<br>SSU-1             | DATE/TIME<br>MAR 31 2016 1450 | FILTER               |  |
| RELINQUISHED BY/REMOVED FROM<br><i>M.A. White</i> | DATE/TIME<br>APR 01 2016 0705 | RECEIVED BY/STORED IN<br><i>M.A. White</i> | DATE/TIME<br>APR 01 2016 0705 |                      |  |
| RELINQUISHED BY/REMOVED FROM<br><i>M.A. White</i> | DATE/TIME<br>APR 01 2016 0810 | RECEIVED BY/STORED IN<br><i>M.A. White</i> | DATE/TIME<br>APR 01 2016 0810 |                      |  |
| 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                     |                      |  |
| <b>LABORATORY SECTION</b>                         | <b>RECEIVED BY</b>            | <b>TITLE</b>                               | <b>DATE/TIME</b>              |                      |  |
| <b>FINAL SAMPLE DISPOSITION</b>                   | <b>DISPOSAL METHOD</b>        | <b>DISPOSED BY</b>                         | <b>DATE/TIME</b>              |                      |  |

April 4, 2016  
**Detection Summary**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

**Client Sample ID: B34TJ4**

**Lab Sample ID: 300-2725-1**

| Analyte | Result | Qualifier | RL     | MDL    | Unit | Dil Fac | D | Method | Prep Type |
|---------|--------|-----------|--------|--------|------|---------|---|--------|-----------|
| Cr (VI) | 0.020  |           | 0.0040 | 0.0015 | mg/L | 1       |   | 7196A  | Total/NA  |

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This Detection Summary does not include radiochemical test results.

TestAmerica Richland

April 4, 2016  
**Client Sample Results**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

**Client Sample ID: B34TJ4**

**Lab Sample ID: 300-2725-1**

**Date Collected: 03/31/16 14:55**

**Matrix: Water**

**Date Received: 04/01/16 08:10**

**General Chemistry**

| Analyte | Result | Qualifier | RL     | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|---------|--------|-----------|--------|--------|------|---|----------|----------------|---------|
| Cr (VI) | 0.020  |           | 0.0040 | 0.0015 | mg/L |   |          | 04/01/16 13:27 | 1       |

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**QC Sample Results**

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
 SDG: WC0951

**Method: 7196A - Chromium, Hexavalent**

**Lab Sample ID: MB 300-3637/3**  
**Matrix: Water**  
**Analysis Batch: 3637**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL     | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|---------|-----------|--------------|--------|--------|------|---|----------|----------------|---------|
| Cr (VI) | 0.0015    | U            | 0.0040 | 0.0015 | mg/L |   |          | 04/01/16 13:24 | 1       |

**Lab Sample ID: LCS 300-3637/4**  
**Matrix: Water**  
**Analysis Batch: 3637**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|------|---|------|--------------|
| Cr (VI) | 0.250       | 0.254      |               | mg/L |   | 102  | 80 - 120     |

**Lab Sample ID: 300-2725-1 MS**  
**Matrix: Water**  
**Analysis Batch: 3637**

**Client Sample ID: B34TJ4**  
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Cr (VI) | 0.020         |                  | 0.0499      | 0.0708    |              | mg/L |   | 102  | 75 - 125     |

**Lab Sample ID: 300-2725-1 DU**  
**Matrix: Water**  
**Analysis Batch: 3637**

**Client Sample ID: B34TJ4**  
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| Cr (VI) | 0.020         |                  | 0.0199    |              | mg/L |   | 1   | 20        |

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April 4, 2016  
**QC Association Summary**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

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**General Chemistry**

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**Analysis Batch: 3637**

| Lab Sample ID  | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|----------------|--------------------|-----------|--------|--------|------------|
| 300-2725-1     | B34TJ4             | Total/NA  | Water  | 7196A  |            |
| 300-2725-1 DU  | B34TJ4             | Total/NA  | Water  | 7196A  |            |
| 300-2725-1 MS  | B34TJ4             | Total/NA  | Water  | 7196A  |            |
| LCS 300-3637/4 | Lab Control Sample | Total/NA  | Water  | 7196A  |            |
| MB 300-3637/3  | Method Blank       | Total/NA  | Water  | 7196A  |            |

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Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

**Client Sample ID: B34TJ4**  
Date Collected: 03/31/16 14:55  
Date Received: 04/01/16 08:10

**Lab Sample ID: 300-2725-1**  
Matrix: Water

| 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          |                |              | 3637         | 04/01/16 13:27       | RLC     | TAL RCH |

**Client Sample ID: B34TJ4**  
Date Collected: 03/31/16 14:55  
Date Received: 04/01/16 08:10

**Lab Sample ID: 300-2725-1 DU**  
Matrix: Water

| 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          |                |              | 3637         | 04/01/16 13:27       | RLC     | TAL RCH |

**Client Sample ID: Lab Control Sample**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: LCS 300-3637/4**  
Matrix: Water

| 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          |                |              | 3637         | 04/01/16 13:24       | RLC     | TAL RCH |

**Client Sample ID: Method Blank**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: MB 300-3637/3**  
Matrix: Water

| 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          |                |              | 3637         | 04/01/16 13:24       | RLC     | TAL RCH |

**Client Sample ID: B34TJ4**  
Date Collected: 03/31/16 14:55  
Date Received: 04/01/16 08:10

**Lab Sample ID: 300-2725-1 MS**  
Matrix: Water

| 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          |                | 3.0 mL       | 3637         | 04/01/16 13:24       | RLC     | TAL RCH |

**Laboratory References:**

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

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

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

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**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



April 4, 2016  
Sample Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-025

TestAmerica Job ID: 300-2725-1  
SDG: WC0951

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| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       |
|---------------|------------------|--------|----------------|----------------|
| 300-2725-1    | B34TJ4           | Water  | 03/31/16 14:55 | 04/01/16 08:10 |

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### Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-2725-1

SDG Number: WC0951

**Login Number: 2725**

**List Number: 1**

**Creator: Anderson, Lori F**

**List Source: TestAmerica Richland**

| Question   | Answer | Comment |
|--|--------|---------|
| Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4"). | N/A    |         |
| Multiphasic samples are not present.   | N/A    |         |
| Samples do not require splitting or compositing.   | N/A    |         |
| Residual Chlorine Checked.   | N/A    |         |