

# 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: 300-6494-1  
TestAmerica Sample Delivery Group: WC2563  
Client Project/Site: I18-003

For:  
CH2M Hill Plateau Remediation Company  
825 Jadwin Avenue  
Richland, Washington 99352

Attn: CPP Sample Management

*Kristine D. Allen*

Authorized for release by:  
12/19/2017 5:06:28 PM  
Kristine Allen, Manager of Project Management  
(253)248-4970  
[kristine.allen@testamericainc.com](mailto:kristine.allen@testamericainc.com)

Designee for  
Ashley Worthy, Project Manager I  
(509)375-3131  
[ashley.worthy@testamericainc.com](mailto:ashley.worthy@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.*



### LINKS

Review your project results through  
**TotalAccess**

Have a Question?



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

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Client: CH2M Hill Plateau Remediation Company  
 Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
 SDG: WC2563

**Qualifiers**

**HPLC/IC**

| Qualifier | Qualifier Description                                 |
|-----------|---|
| D         | The reported value is from a dilution.                |
| y         | Duplicate analysis not within control limits.         |
| N         | MS, MSD: Spike recovery is outside acceptance limits. |
| U         | Analyzed for but not detected.                        |

**Glossary**

| Abbreviation   | These commonly used abbreviations may or may not be present in this report.                                 |
|----------------|---|
| α              | 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             | Detection Limit (DoD/DOE)   |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC            | Decision Level Concentration (Radiochemistry)   |
| EDL            | Estimated Detection Limit (Dioxin)  |
| LOD            | Limit of Detection (DoD/DOE)  |
| LOQ            | Limit of Quantitation (DoD/DOE)   |
| MDA            | Minimum Detectable Activity (Radiochemistry)  |
| MDC            | Minimum Detectable Concentration (Radiochemistry)   |
| 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 (Radiochemistry)   |
| 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)   |



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TestAmerica Job ID: 300-6494-1  
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**Job ID: 300-6494-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-6494-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 12/1/2017 1:10 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 14.6° C.

**HPLC/IC**

Method(s) 300.0: The sample duplicate precision for the following sample associated with analytical batch 300-9844 was outside control limits: (300-6493-A-3). The sample may not be homogeneous.

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



**CH2MHill Plateau  
Remediation Company**

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

C.O.C.#  
**118-003-205**  
Page 1 of 1

**Collector:** Chris Fulton  
CHPRC

**SAF No.:** I18-003

**Project Title:** AEA, DECEMBER 2017

**Shipped To (Lab):** TestAmerica Incorporated, Rich

**Protocol:** SURV

**Contact/Requester:** Karen Waters-Husted

**Sampling Origin:** Hanford Site

**Logbook No.:** HNF-N-506 - 95 / 67

**Method of Shipment:** GOVERNMENT VEHICLE

**Priority:** 15 Days

**Telephone No.:** 509-376-4650

**Purchase Order/Charge Code:** 300071

**Ice Chest No.:** N/A

**Bill of Lading/Air Bill No.:** N/A

**Offsite Property No.:** N/A

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

**SPECIAL INSTRUCTIONS**  
 N/A

| Sample No. | Filter | Date        | Time | No/Type Container | Sample Analysis          | Holding Time | Preservative |
|------------|--------|-------------|------|-------------------|--------------------------|--------------|--------------|
| B3FF70     | N      | DEC 11 2017 | 1243 | 1x125-ml P        | 300.0_ANTIONS_IC: COMMON | 48 Hours     | Cool <=6C    |

LOHAN  
W22543

300-6494 COC



|  |                    |           |                                 |                    |           |   |
|--|--------------------|-----------|---------------------------------|--------------------|-----------|---|
| Relinquished By: Chris Fulton<br>CHPRC | <i>[Signature]</i> | 1310      | Received By: <i>[Signature]</i> | <i>[Signature]</i> | 1310      | <b>Matrix *</b><br>S = Soil DS = Drum Solids<br>SE = Sediment DL = Drum Liquid<br>SO = Solid T = Tissue<br>SL = Sludge WI = Wipe<br>W = Water L = Liquid<br>O = Oil V = Vegetation<br>A = Air X = Other |
| Print First and Last Name              | Signature          | Date/Time | Print First and Last Name       | Signature          | Date/Time |   |
| Relinquished By:                       | Signature          | Date/Time | Received By:                    | Signature          | Date/Time |   |
| Print First and Last Name              | Signature          | Date/Time | Print First and Last Name       | Signature          | Date/Time |   |
| Relinquished By:                       | Signature          | Date/Time | Received By:                    | Signature          | Date/Time |   |
| Print First and Last Name              | Signature          | Date/Time | Print First and Last Name       | Signature          | Date/Time |   |

**FINAL SAMPLE DISPOSITION** Disposal Method (e.g., Return to customer, per lab procedure, used in process):

Disposed By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

December 19, 2017

REVISION 0

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
 SDG: WC2563

**Client Sample ID: B3FF70**

**Lab Sample ID: 300-6494-1**

| Analyte      | Result | Qualifier | RL    | MDL   | Unit | Dil Fac | D | Method | Prep Type |
|--------------|--------|-----------|-------|-------|------|---------|---|--------|-----------|
| Chloride     | 33     | D         | 0.40  | 0.20  | mg/L | 2       |   | 300.0  | Total/NA  |
| Nitrate as N | 7.2    | D         | 0.056 | 0.028 | mg/L | 2       |   | 300.0  | Total/NA  |
| Fluoride     | 0.27   | D         | 0.10  | 0.050 | mg/L | 2       |   | 300.0  | Total/NA  |
| Sulfate      | 46     | D         | 0.50  | 0.25  | mg/L | 2       |   | 300.0  | Total/NA  |

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This Detection Summary does not include radiochemical test results.

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
 SDG: WC2563

**Client Sample ID: B3FF70**

**Lab Sample ID: 300-6494-1**

**Date Collected: 12/01/17 13:10**

**Matrix: Water**

**Date Received: 12/01/17 13:10**

**Method: 300.0 - Anions, Ion Chromatography**

| Analyte      | Result | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|--------------|--------|-----------|-------|-------|------|---|----------|----------------|---------|
| Chloride     | 33     | D         | 0.40  | 0.20  | mg/L |   |          | 12/01/17 18:51 | 2       |
| Nitrate as N | 7.2    | D         | 0.056 | 0.028 | mg/L |   |          | 12/01/17 18:51 | 2       |
| Fluoride     | 0.27   | D         | 0.10  | 0.050 | mg/L |   |          | 12/01/17 18:51 | 2       |
| Nitrite as N | 0.038  | U D N     | 0.076 | 0.038 | mg/L |   |          | 12/01/17 18:51 | 2       |
| Sulfate      | 46     | D         | 0.50  | 0.25  | mg/L |   |          | 12/01/17 18:51 | 2       |

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Client: CH2M Hill Plateau Remediation Company  
Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
SDG: WC2563

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-9843/13  
Matrix: Water  
Analysis Batch: 9843

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

| Analyte      | MB Result | MB Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|--------------|-----------|--------------|-------|-------|------|---|----------|----------------|---------|
| Nitrate as N | 0.014     | U            | 0.028 | 0.014 | mg/L |   |          | 12/01/17 15:31 | 1       |
| Nitrite as N | 0.019     | U            | 0.038 | 0.019 | mg/L |   |          | 12/01/17 15:31 | 1       |

Lab Sample ID: LCS 300-9843/14  
Matrix: Water  
Analysis Batch: 9843

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

| Analyte      | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|--------------|-------------|------------|---------------|------|---|------|--------------|
| Nitrate as N | 2.26        | 2.23       |               | mg/L |   | 99   | 80 - 120     |
| Nitrite as N | 3.04        | 3.15       |               | mg/L |   | 104  | 80 - 120     |

Lab Sample ID: MB 300-9844/13  
Matrix: Water  
Analysis Batch: 9844

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

| Analyte  | MB Result | MB Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|-----------|--------------|-------|-------|------|---|----------|----------------|---------|
| Chloride | 0.10      | U            | 0.20  | 0.10  | mg/L |   |          | 12/01/17 15:31 | 1       |
| Fluoride | 0.025     | U            | 0.050 | 0.025 | mg/L |   |          | 12/01/17 15:31 | 1       |
| Sulfate  | 0.13      | U            | 0.25  | 0.13  | mg/L |   |          | 12/01/17 15:31 | 1       |

Lab Sample ID: LCS 300-9844/14  
Matrix: Water  
Analysis Batch: 9844

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

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Chloride | 16.0        | 16.1       |               | mg/L |   | 100  | 80 - 120     |
| Fluoride | 4.00        | 4.08       |               | mg/L |   | 102  | 80 - 120     |
| Sulfate  | 20.0        | 20.3       |               | mg/L |   | 101  | 80 - 120     |

Lab Sample ID: 300-6493-A-3 MS  
Matrix: Water  
Analysis Batch: 9844

Client Sample ID: Matrix Spike  
Prep Type: Total/NA

| Analyte  | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Chloride | 14            | D                | 3.20        | 16.2      | D            | mg/L |   | 83   | 75 - 125     |
| Fluoride | 0.18          | D y              | 0.800       | 0.783     | D            | mg/L |   | 75   | 75 - 125     |
| Sulfate  | 31            | D                | 4.00        | 34.8      | D            | mg/L |   | 91   | 75 - 125     |

Lab Sample ID: 300-6493-A-3 DU  
Matrix: Water  
Analysis Batch: 9844

Client Sample ID: Duplicate  
Prep Type: Total/NA

| Analyte  | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|----------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| Chloride | 14            | D                | 13.5      | D            | mg/L |   | 0.8 | 20        |
| Fluoride | 0.18          | D y              | 0.119     | D y          | mg/L |   | 41  | 20        |
| Sulfate  | 31            | D                | 30.6      | D            | mg/L |   | 2   | 20        |

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
 SDG: WC2563

HPLC/IC

Analysis Batch: 9843

| Lab Sample ID   | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-----------------|--------------------|-----------|--------|--------|------------|
| 300-6494-1      | B3FF70             | Total/NA  | Water  | 300.0  |            |
| MB 300-9843/13  | Method Blank       | Total/NA  | Water  | 300.0  |            |
| LCS 300-9843/14 | Lab Control Sample | Total/NA  | Water  | 300.0  |            |

Analysis Batch: 9844

| Lab Sample ID   | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-----------------|--------------------|-----------|--------|--------|------------|
| 300-6494-1      | B3FF70             | Total/NA  | Water  | 300.0  |            |
| MB 300-9844/13  | Method Blank       | Total/NA  | Water  | 300.0  |            |
| LCS 300-9844/14 | Lab Control Sample | Total/NA  | Water  | 300.0  |            |
| 300-6493-A-3 MS | Matrix Spike       | Total/NA  | Water  | 300.0  |            |
| 300-6493-A-3 DU | Duplicate          | Total/NA  | Water  | 300.0  |            |

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Client: CH2M Hill Plateau Remediation Company  
Project/Site: I18-003

TestAmerica Job ID: 300-6494-1  
SDG: WC2563

**Client Sample ID: B3FF70**

**Lab Sample ID: 300-6494-1**

Date Collected: 12/01/17 13:10

Matrix: Water

Date Received: 12/01/17 13:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 2          |                |              | 9843         | 12/01/17 18:51       | RTQ     | TAL RCH |
| Total/NA  | Analysis   | 300.0        |     | 2          |                |              | 9844         | 12/01/17 18:51       | RTQ     | TAL RCH |

**Client Sample ID: Method Blank**

**Lab Sample ID: MB 300-9843/13**

Date Collected: N/A

Matrix: Water

Date Received: N/A

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 1          |                |              | 9843         | 12/01/17 15:31       | RTQ     | TAL RCH |

**Client Sample ID: Method Blank**

**Lab Sample ID: MB 300-9844/13**

Date Collected: N/A

Matrix: Water

Date Received: N/A

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 1          |                |              | 9844         | 12/01/17 15:31       | RTQ     | TAL RCH |

**Client Sample ID: Lab Control Sample**

**Lab Sample ID: LCS 300-9843/14**

Date Collected: N/A

Matrix: Water

Date Received: N/A

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 1          |                |              | 9843         | 12/01/17 15:46       | RTQ     | TAL RCH |

**Client Sample ID: Lab Control Sample**

**Lab Sample ID: LCS 300-9844/14**

Date Collected: N/A

Matrix: Water

Date Received: N/A

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 1          |                |              | 9844         | 12/01/17 15:46       | RTQ     | TAL RCH |

**Client Sample ID: Matrix Spike**

**Lab Sample ID: 300-6493-A-3 MS**

Date Collected: 12/01/17 11:07

Matrix: Water

Date Received: 12/01/17 12:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA  | Analysis   | 300.0        |     | 2          |                |              | 9844         | 12/01/17 16:21       | RTQ     | 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: I18-003

TestAmerica Job ID: 300-6494-1  
SDG: WC2563

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| Method | Method Description         | Protocol | Laboratory |
|--------|----------------------------|----------|------------|
| 300.0  | Anions, Ion Chromatography | MCAWW    | TAL RCH    |

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**Protocol References:**

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

**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: I18-003

TestAmerica Job ID: 300-6494-1  
SDG: WC2563

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| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       |
|---------------|------------------|--------|----------------|----------------|
| 300-6494-1    | B3FF70           | Water  | 12/01/17 13:10 | 12/01/17 13:10 |

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-6494-1

SDG Number: WC2563

Login Number: 6494

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    |         |

