

April 11, 2016

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

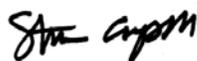
ANALYTICAL REPORT

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

TestAmerica Job ID: 300-2791-1
TestAmerica Sample Delivery Group: WC0965
Client Project/Site: F15-011

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

Attn: CPP Sample Management



Authorized for release by:
4/11/2016 2:39:07 PM
Steven Campbell, Quality Assurance Assistant
steven.campbell@testamericainc.com

Designee for
Whitney Ritari, Project Manager I
(509)375-3131 ext164
whitney.ritari@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 less than five times the MDL.



LINKS

Review your project results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
 SDG: WC0965

Qualifiers

General Chemistry

| Qualifier | Qualifier Description |
|-----------|--|
| U | Analyzed for but not detected. |
| D | The reported value is from a dilution. |
| B | Estimated result. Result is less than the RL, but greater than MDL |

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) |



Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Job ID: 300-2791-1

Laboratory: TestAmerica Richland

Narrative

Job Narrative
300-2791-1

Comments

This job is associated with SDG # W07443. No additional comments.

Receipt

The sample was received on 4/7/2016 3:00 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 8.9° C.

General Chemistry

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



1 2 3 4 5 6 7 8 9 10 11 12 13

| | | | | | |
|---|---|---|---|--|---|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | F15-011-543 | PAGE 1 OF 1 |
| COLLECTOR Curt Hoffman CHPRC | COMPANY CONTACT TODAK, D | TELEPHONE NO. 376-6427 | PROJECT COORDINATOR TODAK, D | PRICE CODE 8C | DATA TURNAROUND 15 Days / 15 Days |
| SAMPLING LOCATION C9514, I-003 | PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites - Soil | FIELD LOGBOOK NO. HNF-N-645 3-62 | SAF NO. F15-011 | AIR QUALITY <input type="checkbox"/> | ORIGINAL |
| ICE CHEST NO. N/A | ACTUAL SAMPLE DEPTH 131' → 15.6' | COA 302632 | METHOD OF SHIPMENT GOVERNMENT VEHICLE | | |
| SHIPPED TO TestAmerica Incorporated, Richland | OFFSITE PROPERTY NO. N/A | BILL OF LADING/AIR BILL NO. N/A | | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/REMARKS | PRESERVATION | | HOLDING TIME | TYPE OF CONTAINER | NO. OF CONTAINER(S) | VOLUME | SAMPLE ANALYSIS | SPECIAL HANDLING AND/OR STORAGE |
|---|--|--------------|------|--------------|-------------------|---------------------|--------|------------------|---|
| | | Cool <= 6C | None | | | | | | |
| A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tituse V=Vegetation W=Water WI=Wipe X=Other | *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 | | | 30 Days | G/P | 1 | 60ml | | REMOVED FROM STORAGE Soil 58 1/2 x 1 1/2 |
| B33XR0 | | | | | | | | APR 07 2016 0935 | |

300-2791 CO



#2791
WCOVES
Due 4.22.16

CHAIN OF POSSESSION **SIGN/ PRINT NAMES** **SPECIAL INSTRUCTIONS**

| | | | | | |
|--|---|--|--|--|--|
| RELINQUISHED BY/REMOVED FROM Curt Hoffman APR 07 2016 1030 | RECEIVED BY/STORED IN L.D. Wall APR 07 2016 1030 | | | | |
| RELINQUISHED BY/REMOVED FROM L.D. Wall APR 07 2016 1500 | RECEIVED BY/STORED IN Book, TARL APR 07 2016 1500 | | | | |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | | | | |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | | | | |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | | | | |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | | | | |

TRVL-16-029
(1) GAMMA_GS: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON;
PUISO_PLATE_AEA: COMMON {Plutonium-238, Plutonium-239/240};
UISO_PLATE_AEA: COMMON {Uranium-233/234, Uranium-235, Uranium-238};
C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON;
NP237_LLE_PLATE_AEA: COMMON;
SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium};
TC99_ETVDSK_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;

| | | |
|---------------------------------|------------------------|------------------|
| LABORATORY SECTION | RECEIVED BY | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DATE/TIME |

PRINTED ON 11/24/2015 FSR ID = FSR10643 TRVL NUM = TRVL-16-029 A-6003-618 (REV 2)

April 11, 2016

Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Client Sample ID: B33XR0

Lab Sample ID: 300-2791-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---------|--------|-----------|-----|------|-------|---------|---|--------|-----------|
| Cr (VI) | 0.24 | B | 2.0 | 0.15 | mg/Kg | 1 | | 7196A | Total/NA |

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This Detection Summary does not include radiochemical test results.

TestAmerica Richland

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Client Sample ID: B33XR0

Lab Sample ID: 300-2791-1

Date Collected: 04/07/16 09:35

Matrix: Solid

Date Received: 04/07/16 15:00

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|-----|------|-------|---|----------------|----------------|---------|
| Cr (VI) | 0.24 | B | 2.0 | 0.15 | mg/Kg | | 04/08/16 11:17 | 04/08/16 14:33 | 1 |

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QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 300-3737/1-A
Matrix: Solid
Analysis Batch: 3744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3737

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|-----|------|-------|---|----------------|----------------|---------|
| Cr (VI) | 0.15 | U | 2.0 | 0.15 | mg/Kg | | 04/08/16 11:17 | 04/08/16 12:16 | 1 |

Lab Sample ID: LCS 300-3737/2-A
Matrix: Solid
Analysis Batch: 3744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3737

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|-------|---|------|--------------|
| Cr (VI) | 20.0 | 18.53 | | mg/Kg | | 93 | 85 - 115 |

Lab Sample ID: 300-2648-A-1-B MS
Matrix: Solid
Analysis Batch: 3744

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 3737

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|---------------|------------------|-------------|-----------|--------------|-------|---|------|--------------|
| Cr (VI) | 0.15 | U | 29.9 | 26.73 | | mg/Kg | | 89 | 75 - 125 |

Lab Sample ID: 300-2648-A-1-D MSI
Matrix: Solid
Analysis Batch: 3744

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 3737

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSI Result | MSI Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|---------------|------------------|-------------|------------|---------------|-------|---|------|--------------|
| Cr (VI) | 0.15 | U | 699 | 732.1 | D | mg/Kg | | 105 | |

Lab Sample ID: 300-2648-A-1-C DU
Matrix: Solid
Analysis Batch: 3744

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 3737

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|-------|---|-----|-----------|
| Cr (VI) | 0.15 | U | 0.15 | U | mg/Kg | | NC | 35 |

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
 SDG: WC0965

General Chemistry

Prep Batch: 3737

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 300-2648-A-1-B MS | Matrix Spike | Total/NA | Solid | 3060A | |
| 300-2648-A-1-C DU | Duplicate | Total/NA | Solid | 3060A | |
| 300-2648-A-1-D MSI | Matrix Spike | Total/NA | Solid | 3060A | |
| 300-2791-1 | B33XR0 | Total/NA | Solid | 3060A | |
| LCS 300-3737/2-A | Lab Control Sample | Total/NA | Solid | 3060A | |
| MB 300-3737/1-A | Method Blank | Total/NA | Solid | 3060A | |

Analysis Batch: 3744

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 300-2648-A-1-B MS | Matrix Spike | Total/NA | Solid | 7196A | 3737 |
| 300-2648-A-1-C DU | Duplicate | Total/NA | Solid | 7196A | 3737 |
| 300-2648-A-1-D MSI | Matrix Spike | Total/NA | Solid | 7196A | 3737 |
| 300-2791-1 | B33XR0 | Total/NA | Solid | 7196A | 3737 |
| LCS 300-3737/2-A | Lab Control Sample | Total/NA | Solid | 7196A | 3737 |
| MB 300-3737/1-A | Method Blank | Total/NA | Solid | 7196A | 3737 |

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Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Client Sample ID: B33XR0

Lab Sample ID: 300-2791-1

Date Collected: 04/07/16 09:35

Matrix: Solid

Date Received: 04/07/16 15:00

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3060A | | | 2.5182 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 1 | 2.5182 g | 100 mL | 3744 | 04/08/16 14:33 | HR | TAL RCH |

Client Sample ID: Duplicate

Lab Sample ID: 300-2648-A-1-C DU

Date Collected: 03/18/16 09:00

Matrix: Solid

Date Received: 03/21/16 15:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3060A | | | 2.5041 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 1 | 2.5041 g | 100 mL | 3744 | 04/08/16 13:25 | HR | TAL RCH |

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 300-3737/2-A

Date Collected: N/A

Matrix: Solid

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 | Prep | 3060A | | | 2.5 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 1 | 2.5 g | 100 mL | 3744 | 04/08/16 12:33 | HR | TAL RCH |

Client Sample ID: Method Blank

Lab Sample ID: MB 300-3737/1-A

Date Collected: N/A

Matrix: Solid

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 | Prep | 3060A | | | 2.5 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 1 | 2.5 g | 100 mL | 3744 | 04/08/16 12:16 | HR | TAL RCH |

Client Sample ID: Matrix Spike

Lab Sample ID: 300-2648-A-1-B MS

Date Collected: 03/18/16 09:00

Matrix: Solid

Date Received: 03/21/16 15:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3060A | | | 2.5044 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 1 | 2.5044 g | 100 mL | 3744 | 04/08/16 13:08 | HR | TAL RCH |

Client Sample ID: Matrix Spike

Lab Sample ID: 300-2648-A-1-D MSI

Date Collected: 03/18/16 09:00

Matrix: Solid

Date Received: 03/21/16 15:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3060A | | | 2.5087 g | 100 mL | 3737 | 04/08/16 11:17 | HR | TAL RCH |
| Total/NA | Analysis | 7196A | | 20 | 2.5087 g | 100 mL | 3744 | 04/08/16 13:42 | HR | TAL RCH |

April 11, 2016

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

Laboratory References:

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

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Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

| 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: CH2M Hill Plateau Remediation Company
Project/Site: F15-011

TestAmerica Job ID: 300-2791-1
SDG: WC0965

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 300-2791-1 | B33XR0 | Solid | 04/07/16 09:35 | 04/07/16 15:00 |

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-2791-1

SDG Number: WC0965

Login Number: 2791

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. | N/A | |
| 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 | |

