



Tennessee Valley Authority
Bull Run Fossil Plant
Dry Fly Ash Landfill Facility (IDL 01-103-0080)

**GROUNDWATER ASSESSMENT MONITORING REPORT
AUGUST 2015**

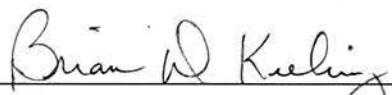
Prepared by

Jeffrey Norman

Nashville, Tennessee
October 13, 2015

DOCUMENT CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.



Brian D. Keeling, Bull Run Fossil Plant Manager
October 13, 2015

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INTRODUCTION

This report contains semiannual assessment monitoring results for groundwater samples collected August 10, 11 and 12, 2015 from the designated monitoring wells around the Dry Fly Ash Landfill Facility at Bull Run Fossil Plant. This data represent the latest set of semi-annual assessment monitoring results for the facility. This facility has been in Phase II groundwater assessment since January 2010. Groundwater samples collected during this sampling event were analyzed by Test America in Nashville, TN (TAN), an EPA-certified laboratory. Sample collection, laboratory analysis, and statistical evaluation of the analytical data were performed in accordance with TDEC Rule 0400-11-01-.04 and the facility groundwater monitoring plan approved by TDEC on October 22, 2012.

GROUNDWATER SAMPLING

Groundwater sampling was conducted by William Nichols (TVA) at facility down gradient compliance wells F45R, G, and J, and upgradient well I. All wells were found in acceptable condition upon inspection. A portable bladder pump was used for purging and sampling all wells. Quality Control (QC) equipment blank was collected following collection of all samples at the Dry Fly Ash Facility. Field parameters (i.e., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were measured using a flow-through cell and calibrated instruments. Each well was purged utilizing US EPA Low Stress (low-flow) purging procedures¹ in an attempt to reduce the impact of elevated turbidity conditions. Mr. David Fugate (TDEC) authorized the use of low stress purging and sampling procedures during a phone conversation with Mr. Mike Tritapoe (TVA) November 12, 2009. Field data sheets are included in Appendix A.

Immediately following collection, samples were transferred to new sample bottles with appropriate preservatives, where applicable. Samples were then sealed, labeled, recorded on a custody form, and placed in an iced cooler for shipment to TAN. The samples were received by TAN on August 14, 2015. Copies of the sample custody records are given in Appendix B.

¹US EPA Region 1, *Low Stress (Low Flow) Purg ing and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells*, Revision 2. July 1996.

ANALYTICAL RESULTS

In accordance with TDEC Rule 0400-11-01-.04(7)(6) and an April 26, 2010, letter from TDEC, all groundwater samples were analyzed for all 17 required Appendix II inorganic constituents. Final laboratory results for the assessment samples were issued by TAN on September 1, 2015. Constituent concentrations reported for all samples were below TDEC maximum contaminant levels (MCL). All Method 6010B results for the required inorganic constituents were non-detectable (below the reporting limit) in the equipment blank. However, Method 6020 results for Vanadium was 7.82ppb for the equipment blank. The complete laboratory report presented in Appendix C includes analytical result methods and detection limits for each constituent, along with sample data QC qualifiers (where applicable). All analytical testing was conducted within recommended sample holding times.

DATA EVALUATION AND STATISTICAL ANALYSIS

Table 1 presents Groundwater Protection Standards (GWPS) for facility constituents falling under Appendix II of Rule 0400-11-01-.04. GWPS are as defined in Section IV(1)(d) of *TDEC Ground Water Monitoring Guidance for Solid Waste Landfill Units Policy*. Per Policy, GWPS are the constituent MCL listed in Appendix III of Rule 0400-11-01-.04. For constituents having no TDEC MCL (i.e. cobalt, tin, vanadium, and zinc) have GWPS designated not-available (N/A). Each constituent GWPS shown in Table 1 is equivalent to the MCL. The GWPS were established in May 2012.

Assessment monitoring data were further evaluated by performing a comparison between the downgradient well (F45R, G, and J) data and the computed background upper prediction limits (UPL). Background constituent concentration limits were estimated from monitoring data collected from the upgradient well between June 15, 2000, and August 12, 2015 (Appendix D).

TABLE 1. Bull Run Dry Fly Ash Landfill Facility UPL, MCL, and Groundwater Protection Standards developed for interwell comparison, based on Well I as background

| Parameter | Units | Background UPL ^a | MCL | GWPS ^b |
|-----------|-------|-----------------------------|-------|-------------------|
| Antimony | µg/L | 2 | 6 | 6 |
| Arsenic | µg/L | 2.47 | 10 | 10 |
| Barium | µg/L | 72.92 | 2,000 | 2,000 |
| Beryllium | µg/L | 2 | 4 | 4 |
| Cadmium | µg/L | 1 | 5 | 5 |
| Chromium | µg/L | 5 | 100 | 100 |
| Cobalt | µg/L | 10 | N/A | N/A |
| Copper | µg/L | 10 | N/A | N/A |
| Lead | µg/L | 2 | 15 | 15 |
| Mercury | µg/L | 0.2 | 2 | 2 |
| Nickel | µg/L | 10 | 100 | 100 |
| Selenium | µg/L | 10 | 50 | 50 |
| Silver | µg/L | 10 | 100 | 100 |
| Thallium | µg/L | 2 | 2 | 2 |
| Tin | µg/L | 50 | N/A | N/A |
| Vanadium | µg/L | 20 | N/A | N/A |
| Zinc | µg/L | 50 | N/A | N/A |

a - UPL computed September 2015 based on well I upgradient historical data set from 06/15/2000 to 08/12/2015.

b - GWPS computed September 2015.

N/A - MCL not available for cobalt, copper, tin, vanadium, and zinc.

TDEC - Maximum contaminant limit (MCL) from Rule 0400-11-01-.04, Appendix III (March 2013).

One-sided, upper prediction limits (UPL) were estimated from background data for each constituent using MANAGES 3.0² data management and statistical processing software. This software applies a suitable form of the prediction interval method (i.e., either parametric or nonparametric) based on the normality of constituent background data for well I. For normally distributed data, the parametric method assumes an individual Type I error rate of 0.01 based on six downgradient monitoring wells, 17 constituents, and no verification resample. The Type I error rate of non-normally distributed data are computed for each individual constituent at each well based on the number of background data with no verification resample. Estimated background UPL values for each constituent are given in Table 1. Detailed statistical output associated with UPL estimates is included in Appendix E.

²EPRI, 2006, "MANAGES: Groundwater Data Management and Evaluation Software", Product #1012581, Palo Alto, CA.

Laboratory results for constituents sampled from all facility wells during this sampling event are summarized in Table 2. Our samplers pull duplicate samples as a routine part of the sampling process, and in this instance pulled a duplicate from downgradient well J. Comparisons of the groundwater monitoring results for the August 2015 sampling event to GWPS presented in Table 2 indicate all constituent concentrations are below respective site GWPS or are non-detectable. All constituents were below applicable TDEC MCLs in all wells. Comparisons of the August 2015 groundwater monitoring results to UPL values presented in Table 3 indicate an exception for arsenic at wells F45R, G and J. Included at the bottom of each table are field turbidity and laboratory total suspended solids (TSS) measurements which serve as qualitative indications of possible sampling bias associated with analyses of total (non-filtered) samples.

Time series graphs for constituents sampled at the facility are presented in Appendix F. While all 3 downgradient well analytical results show detectable levels of arsenic (i.e., all have exceeded the arsenic UPL), it should be noted that no MCL exceedances have been observed, and no discernable upward trends are seen for any facility constituent. As shown on Figure 1, arsenic concentrations at well F45R have fluctuated since the well was installed in 2008. Laboratory detections of arsenic are likely due to the influence of colloidal soil particulate which is entrained in the sample during collection. Well F45R routinely displays the highest turbidity and total suspended solids levels than the other wells at this facility as shown on the time series graphs in Appendix F. The laboratory results noted for the dissolved vs. total arsenic samples corresponds well with the levels of turbidity and TSS noted at well F45R and supports the premise that detections of naturally occurring elements in the laboratory are the result of the entrainment of soil particulate matter in the collected samples.

Table 2. August 10-12, 2015 Groundwater Monitoring Results (Inter-well)

| Parameter | Units | I | F45R | G | J | J - DUP | Groundwater Protection Standards ^b | Comparison to GWPS ^a | | | |
|--------------|-------|------------|--------------|--------------|--------------|--------------|---|---------------------------------|-----------|-----------|-----------|
| | | upgradient | downgradient | downgradient | downgradient | downgradient | | F45R | G | J | J - DUP |
| Date Sampled | | 8/12/2015 | 8/11/2015 | 8/11/2015 | 8/10/2015 | 8/10/2015 | | 8/11/2015 | 8/11/2015 | 8/10/2015 | 8/10/2015 |
| Antimony | µg/L | <2 | <2 | <2 | <2 | <2 | 6 | L | L | L | L |
| Arsenic | µg/L | 2.47 | 4.45 | 2.85 | 3.91 | 3.9 | 10 | L | L | L | L |
| Barium | µg/L | 70.8 | 35.2 | 36.1 | 48.7 | 47.9 | 2,000 | L | L | L | L |
| Beryllium | µg/L | <2 | <40 | <2 | <2 | <2 | 4 | L | L | L | L |
| Cadmium | µg/L | <1 | <5 | <1 | <5 | <5 | 5 | L | L | L | L |
| Chromium | µg/L | <5 | <5 | <5 | <5 | <5 | 100 | L | L | L | L |
| Cobalt | µg/L | <2 | <2 | <2 | <2 | <2 | N/A | N/A | N/A | N/A | N/A |
| Copper | µg/L | <10 | <10 | <10 | <10 | <10 | N/A | N/A | N/A | N/A | N/A |
| Lead | µg/L | <2 | <2 | <2 | <2 | <2 | 15 | L | L | L | L |
| Mercury | µg/L | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 2 | L | L | L | L |
| Nickel | µg/L | <10 | <10 | <10 | <10 | <10 | 100 | L | L | L | L |
| Selenium | µg/L | <10 | <10 | <10 | <10 | <10 | 50 | L | L | L | L |
| Silver | µg/L | <5 | <5 | <5 | <5 | <5 | 100 | L | L | L | L |
| Thallium | µg/L | <2 | <2 | <2 | <2 | <2 | 2 | L | L | L | L |
| Vanadium | µg/L | 8.54 | <2 | 7.98 | 7.81 | 8.5 | N/A | N/A | N/A | N/A | N/A |
| Zinc | µg/L | <25 | <25 | <25 | <25 | <25 | N/A | N/A | N/A | N/A | N/A |
| Turbidity | NTU | 1.3 | 22 | 1.2 | 2.3 | -- | | | | | |

a "L" = less than or equal to GWPS, "G" = greater than GWPS, "N/A" = Not Applicable

b - Established September 2015

Table 3. August 10-12, 2015 Groundwater Monitoring Results (Inter-well)

| Analytical Results for Appendix II Inorganic Constituents | | | | | | | | | | | |
|---|-------|------------|--------------|--------------|-----------|--------------|-------------------------------------|--------------------------------|-----------|-----------|-----------|
| Parameter | Units | I | F45R | G | J | J - DUP | Upper Prediction Limit ^b | Comparison to UPL ^a | | | |
| | | upgradient | downgradient | downgradient | | downgradient | | F45R | G | J | J - DUP |
| Date Sampled | | 8/12/2015 | 8/11/2015 | 8/11/2015 | 8/10/2015 | 8/10/2015 | | 8/11/2015 | 8/11/2015 | 8/10/2015 | 8/10/2015 |
| Antimony | µg/L | <2 | <2 | <2 | <2 | <2 | 2 | L | L | L | L |
| Arsenic | µg/L | 2.47 | 4.45 | 2.85 | 3.91 | 3.9 | 2.47 | G | G | G | G |
| Barium | µg/L | 70.8 | 35.2 | 36.1 | 48.7 | 47.9 | 72.92 | L | L | L | L |
| Beryllium | µg/L | <2 | <40 | <2 | <2 | <2 | 2 | L | L | L | L |
| Cadmium | µg/L | <1 | <5 | <1 | <5 | <5 | 1 | L | L | L | L |
| Chromium | µg/L | <5 | <5 | <5 | <5 | <5 | 5 | L | L | L | L |
| Cobalt | µg/L | <2 | <2 | <2 | <2 | <2 | 10 | L | L | L | L |
| Copper | µg/L | <10 | <10 | <10 | <10 | <10 | 10 | L | L | L | L |
| Lead | µg/L | <2 | <2 | <2 | <2 | <2 | 2 | L | L | L | L |
| Mercury | µg/L | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.2 | L | L | L | L |
| Nickel | µg/L | <10 | <10 | <10 | <10 | <10 | 10 | L | L | L | L |
| Selenium | µg/L | <10 | <10 | <10 | <10 | <10 | 10 | L | L | L | L |
| Silver | µg/L | <5 | <5 | <5 | <5 | <5 | 10 | L | L | L | L |
| Thallium | µg/L | <2 | <2 | <2 | <2 | <2 | 2 | L | L | L | L |
| Vanadium | µg/L | 8.54 | <2 | 7.98 | 7.81 | 8.5 | 20 | L | L | L | L |
| Zinc | µg/L | <25 | <25 | <25 | <25 | <25 | 50 | L | L | L | L |
| Turbidity | NTU | 1.3 | 22 | 1.2 | 2.3 | -- | | | | | |

a. "L" = less than or equal to UPL; "G" = greater than UPL

b - Established September 2015

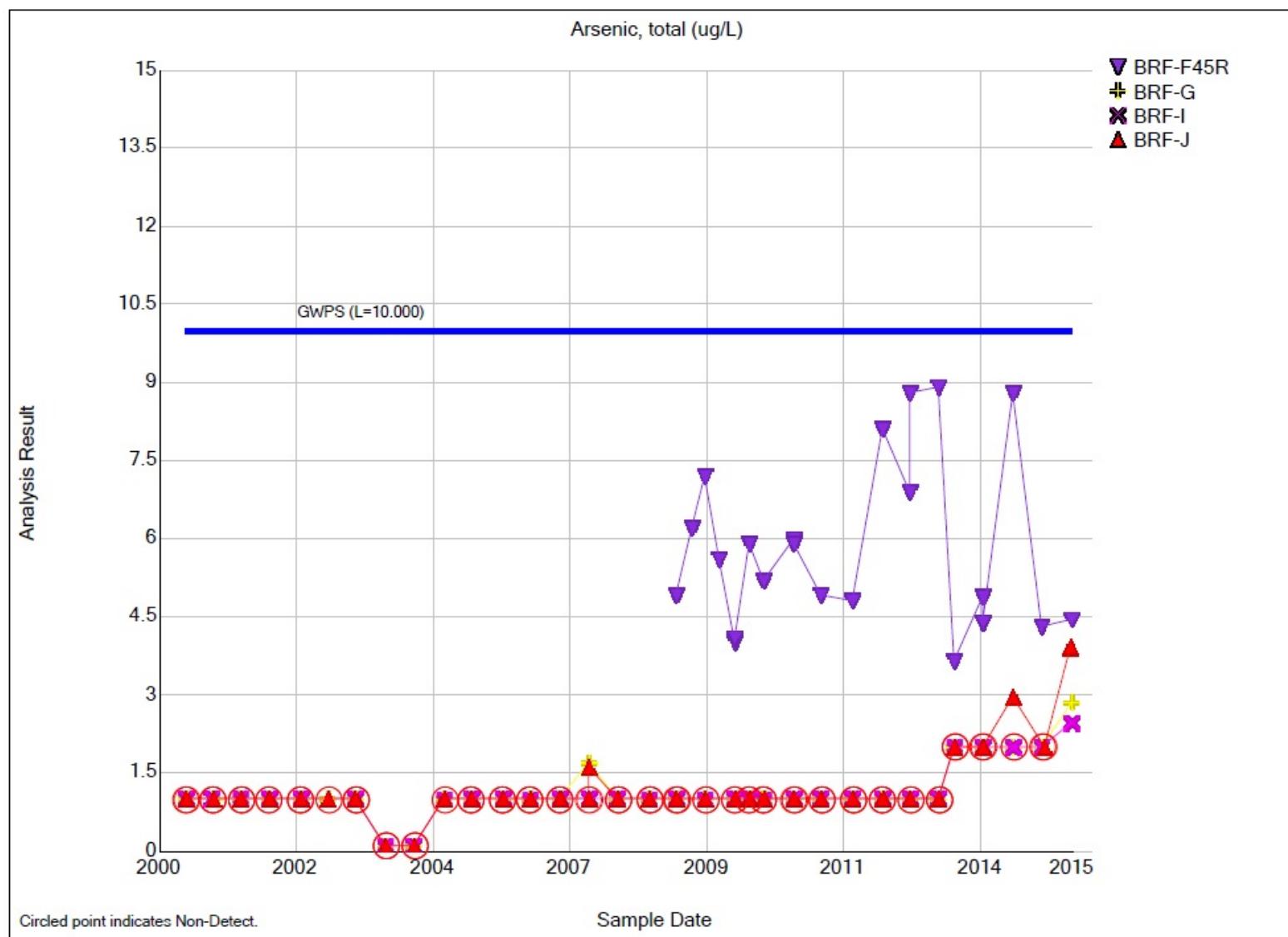


FIGURE 1. Arsenic Results (2000-2015)

HYDROGEOLOGIC CONDITIONS

Groundwater levels measured in site monitoring wells prior to sample collection are given in Table 4. The groundwater potentiometric surface derived from these measurements is presented on Figure 2. Groundwater levels suggest groundwater flows generally southeastward across the dry ash disposal area indicating that well I is upgradient and wells F45R, G, and J are downgradient of the disposal area.

TABLE 2. August 10 - 12, 2015 Groundwater Level Measurements

| Well No. | Top of Casing Elevation (ft) | Depth to Water (ft) | Water Level Elevation (ft) | Well Depth (ft) |
|-----------|------------------------------|---------------------|----------------------------|-----------------|
| Well F45R | 834.32 | 14.07 | 820.25 | 31.92 |
| Well G | 837.69 | 17.13 | 820.56 | 54.66 |
| Well I | 875.26 | 4.20 | 871.06 | 46.10 |
| Well J | 824.74 | 18.77 | 805.97 | 54.46 |

An average hydraulic gradient of approximately 0.0344 feet/feet was estimated between the northern and southern boundaries of the disposal area. The gradient was computed by dividing the hydraulic head difference between well I and F45R (i.e., 50.81 ft.) by the distance between these wells (1476 ft). The shallow bedrock aquifer underlying the disposal area exhibits a mean horizontal hydraulic conductivity of 0.66 ft./d. Conservatively assuming a low effective porosity of 0.10, the local groundwater seepage velocity is estimated to be approximately 0.4141 ft./d. Down gradient flow of this shallow aquifer is under the TVA Bull Run Fossil Plant Reservation with ultimate discharge to Worthington Branch and ultimately the Clinch River. The aquifer is not utilized as a source for drinking water and does not flow beneath privately owned property.

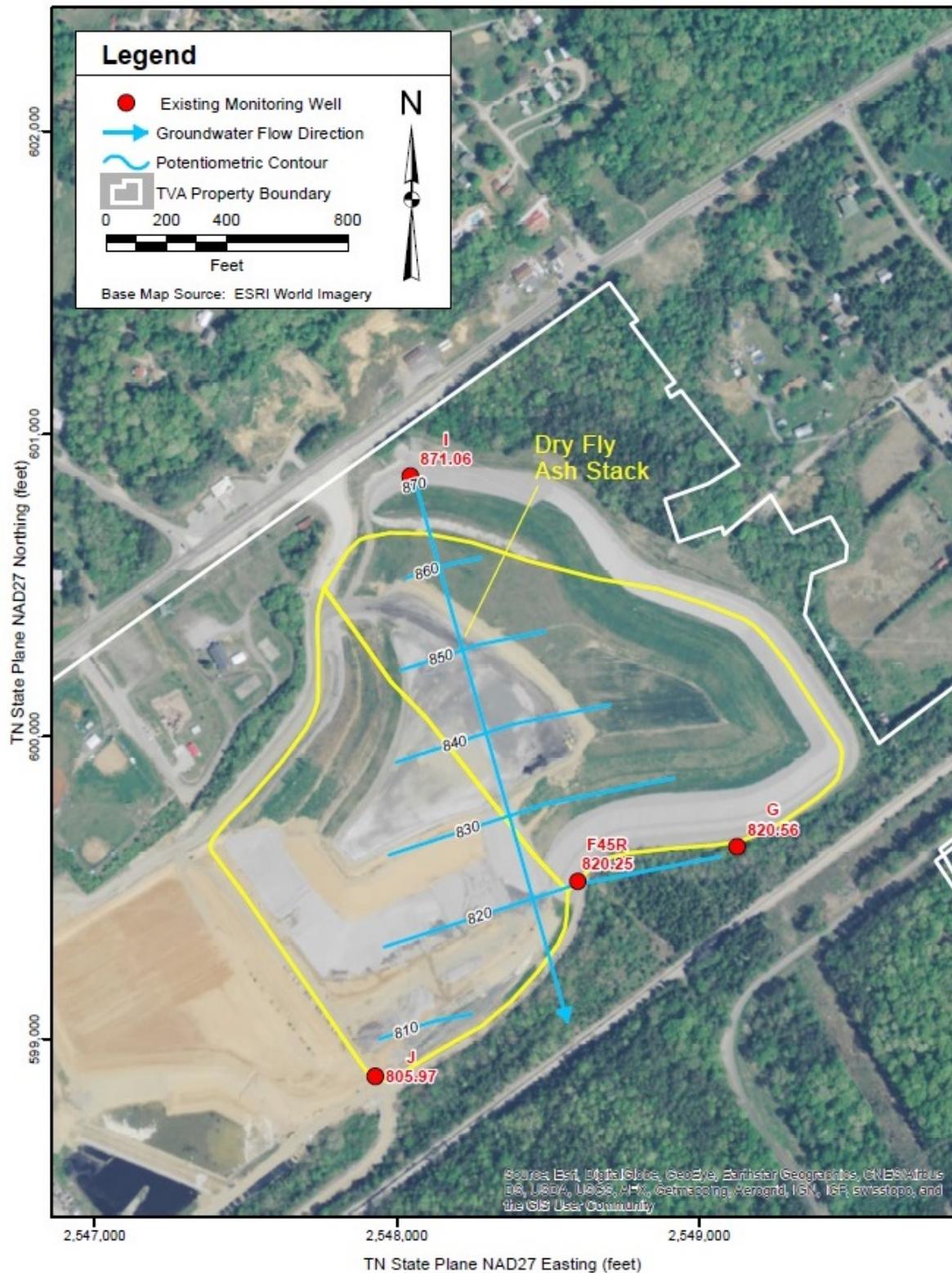


FIGURE 2. Groundwater Potentiometric Surface on August 10-12, 2015

CONCLUSIONS

Groundwater analytical data for the August 2015, sampling event show no evidence of groundwater contamination from the Dry Fly Ash Landfill. Concentrations of the detected constituents were all below GWPS and applicable promulgated MCLs or were non-detectable.

Results of the statistical analysis indicated constituent concentrations reported for all samples were below the applicable site UPLs, with the exception of arsenic at downgradient wells (F45R, G and J). Examination of time series graphs generated from historic data at this site indicates no discernable upward trends for any constituents. Arsenic, which is a prominent naturally occurring element in the native soil in this area, has demonstrated to be detected at trace levels in groundwater samples collected from this site in the past. Well F45R has consistently demonstrated to have the highest levels of turbidity and total dissolved solids of the compliance monitoring wells at this facility. The detections of arsenic noted during this sampling event are likely the result of the entrainment of soil colloidal particles in the groundwater sample and not indicative of a release from the landfill.

The next assessment monitoring event for the Landfill is currently scheduled to occur in February 2016.

APPENDIX A

FIELD DATA SHEETS

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

of

1

Project/Site Bull Run Ground Water - Dry Fly Ash Stack **Well Number** MW-3H **Purge Date** 15/08/12 **Year** 15 **Month** 08 **Day** 12

| | | | | |
|---|---|--------------------------|----------------------|------------------------|
| Depth to Water (m) <u>2.68</u> | Bottom of Well (m) 4195 | Well Diameter (mm) 51 | Survey Leader WFN | Field Crew <u> </u> |
| <input checked="" type="checkbox"/> Depth of Screen | <input type="checkbox"/> Open Bore Hole | | | |

| <input checked="" type="checkbox"/> Depth of Screen | <input type="checkbox"/> Open Bore Hole | | | |
|---|---|-------------|--------------------------------|---|
| (m) 12.21 | To 4191 | (m) 9.21 | Sample Label BRF-MW-3H-0815 | <input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both Filter Type and Size: |

[Bottom of Well] - Depth to Water] x Volume Factor = Well Volume Target Purge Volume Actual Purge Volume
 [(12.21)m - (2.68)m] x (2.027)L/m = 19.3 (L) N/A (L) 5.3 (L)
4186

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____
Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

Remarks: _____

Reviewed By: Wesley Vail 8/13/15 Project Leader: Dr. Farhey 8/13/15
Survey Leader Date Project Leader Date

Survey Leader _____ **Date** _____ **Project Leader** _____ **Date** _____

| Additional Sample Data | | | | | | | |
|------------------------|--|-----------|------------------------------------|----------------------------------|--|--|---|
| Analyst: | WPN | | 295 | | 25 | Well Diameter (mm) | Vol. Factor (L/m) |
| Date Analyzed | | | 415 | 431 | 436 | 437 | 12.7 (0.5 in) 0.127 |
| Year 15 | Month 8 | Day 12 | Phenol Alkalinity mg/L (EPA 310.1) | Total Alk. mg/L (EPA 310.1) | Mineral Acidity mg/L (EPA 305.1) | CO ₂ Acidity mg/L (EPA 305.1) | 51 (2 in) 2.027 |
| Turbidity 1350 | <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Slightly Turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Highly Turbid | | Time: 1537 | Time: 1542 | Initial: n/a | Initial: n/a | 76 (3 in) 4.560 |
| Color: none | Initial: | | Bottles Required | <input type="checkbox"/> Ferrous | <input type="checkbox"/> Mineral | <input type="checkbox"/> Phenol | Others (list): _____ |
| Odor: sulfur | | | <input type="checkbox"/> BOD | <input type="checkbox"/> TOC | <input checked="" type="checkbox"/> Metals | <input type="checkbox"/> Dis. Mineral | <input type="checkbox"/> Filt TIC |
| | | | <input type="checkbox"/> COD | <input type="checkbox"/> TIC | <input type="checkbox"/> Dis. Metals | <input type="checkbox"/> Nutrient | <input checked="" type="checkbox"/> TSS/TDS |

Preliminary Groundwater Data Field Worksheet

Sheet 1 of /
Purge Date Year Month Day
15 8 11

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

Remarks:

Reviewed By:

8/13/15

John Lukay
Project Leader

8/13/15

| | | | |
|----------------------|------------|-----------|-----------------------|
| Sample | WFN | | |
| Collector: | | | |
| Sample Date | | | |
| Year 15 | Month 8 | Day 11 | Time 1020 ET CT |
| Pump Duration: 40 | | | min 72004 |
| "999" = 2 days | | | |

| Header | | Date | Project Leader | | Date | |
|------------------------|----------------------------|-------------------|----------------|------------------|------------------|------------------------------|
| | | Sample Readings | | | | |
| 1020 | 200 | 7.0 | 18.8 | 6.8 | 0.1 | 3362 |
| | 4193 | 4192 | 10 | 400 | 300 | 94 |
| Analysis Time EPTCT | Pump Rate (L/min) M1 | Pump Depth (m) | Temp °C EPA | pH (s.u.) EPA | DO (mg/L) EPA | COND (umhos/cm) EPA 120.1 |
| | | | 170.1 | 150.1 | 360.1 | (+/-) ORP (mv) SM 2580B |
| | | | | | | Turbidity (NTU) EPA 180.1 |

| Additional Sample Data | | | | | | | |
|------------------------|--|-----------|------------------------------------|---|----------------------------------|--|-------------------|
| Analyst: | WFN | | 326 | / | 94 | Well Diameter (mm) | Vol. Factor (L/m) |
| Date Analyzed | | | 415 | 431 | 436 | 437 | |
| Year 15 | Month 8 | Day 11 | Phenol Alkalinity mg/L (EPA 310.1) | Total Alk. mg/L (EPA 310.1) | Mineral Acidity mg/L (EPA 305.1) | CO ₂ Acidity mg/L (EPA 305.1) | |
| Turbidity 1350 | <input type="checkbox"/> Clear <input checked="" type="checkbox"/> Slightly Turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Highly Turbid | | Time: 1515 | Time: / | Time: / | Time: 1451 | |
| Color: Ean | Initial: <i>nh</i> | | Initial: <i>nh</i> | Initial: <i>nh</i> | Initial: <i>nh</i> | Initial: <i>nh</i> | |
| Odor: none | Bottles Required | | | <input type="checkbox"/> Ferrous <input checked="" type="checkbox"/> Minerals <input type="checkbox"/> Dis. Mineral <input type="checkbox"/> Phenol <input type="checkbox"/> Metals <input type="checkbox"/> Filt TIC <input type="checkbox"/> COD <input checked="" type="checkbox"/> TIC <input type="checkbox"/> Dis. Metals <input checked="" type="checkbox"/> Nutrient <input type="checkbox"/> TSS/TDS | | | |
| | Others (list): _____ | | | | | | |

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1
Purge Date Year Month Day

| | | | | | |
|---|------------------|-------|----|---|----|
| Project/Site Bull Run Ground Water - Dry Fly Ash Stack | Well Number G | 84068 | 15 | 8 | 11 |
|---|------------------|-------|----|---|----|

| | | | | |
|---|----------------------------|---|--------------------------------|---|
| Depth to Water (m) 5.07 | Bottom of Well (m) 4195 | Well Diameter (mm) 153 | Survey Leader WFN | Field Crew _____ |
| <input checked="" type="checkbox"/> Depth of Screen | | <input type="checkbox"/> Open Bore Hole | | |
| (m) 4.05 | To 4191 | (m) 15.63 | Sample Label BRF-G-0815 | <input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both Filter Type and Size: |
| [Bottom of Well - Depth to Water] x Volume Factor = | | Well Volume 211.3 (L) | Target Purge Volume N/A (L) | Actual Purge Volume 22.0 (L) 4186 |
| [(16.66 - 5.07) m] x (18.228) L/m = | | | | |

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____
 Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

| Notes and WQ Observations | Time <i>ET</i> CT | Pump Rate m³/min | Depth to Water (m) | Pump Depth (m) | Temp °C | pH (s.u.) | DO (mg/L) | COND (umhos/cm) | (+/-) ORP (mV) | Turbidity (NTU) |
|---------------------------|----------------------|---------------------|--------------------|----------------|---------|-----------|-----------|-----------------|----------------|-----------------|
| Begin Purge → | 1105 | 400 | 5.07 | 11.5 | 19.5 | 7.3 | 1.6 | 514 | 329 | 4.6 |
| 102 | 1110 | 400 | 5.22 | 17.4 | 7.6 | 0.1 | 505 | 305 | 3.7 | |
| | 1115 | 400 | 5.32 | 17.2 | 7.6 | 0.1 | 505 | 297 | 3.3 | |
| | 1120 | 400 | 5.42 | 17.0 | 7.6 | 0.1 | 505 | 289 | 2.5 | |
| | 1125 | 400 | 5.50 | 17.2 | 7.6 | 0.1 | 504 | 283 | 3.8 | |
| | 1130 | 400 | 5.57 | 17.4 | 7.6 | 0.1 | 505 | 273 | 2.2 | |
| | 1135 | 400 | 5.70 | 17.4 | 7.7 | 0.1 | 504 | 253 | 1.9 | |
| | 1140 | 400 | 5.75 | 17.5 | 7.7 | 0.1 | 504 | 231 | 1.8 | |
| | 1145 | 400 | 5.82 | 17.6 | 7.7 | 0.1 | 503 | 218 | 1.8 | |
| | 1150 | 400 | 5.86 | 17.7 | 7.7 | 0.1 | 503 | 207 | 1.6 | |
| | 1155 | 400 | 5.91 | 17.6 | 7.7 | 0.1 | 505 | 198 | 1.3 | |
| | 1200 | 400 | 5.96 | 17.7 | 7.7 | 0.1 | 505 | 195 | 1.3 | |
| | | | | 17.7 | 7.7 | 0.1 | 505 | 192 | 1.2 | |

Remarks: _____

Reviewed By: William Niel 8/13/15 Project Leader Jim Lukay 8/13/15
Survey Leader Date

| Sample Collector: <u>WFN</u> | | Sample Readings | | | | | | | | |
|------------------------------|--------|-----------------|----------------|---------------|-----------|---------|-----------|-----------|-----------------|----------------|
| Sample Date | Time | 1205 | 400 | 11.5 | 17.7 | 7.7 | 0.1 | 505 | 192 | 1.2 |
| Year | Month | Day | 1205 | 4193 | 4192 | 10 | 400 | 300 | 94 | 90 |
| Pump Duration: | 55 min | 11 | ET CT | Analysis Time | Pump Rate | Temp °C | pH (s.u.) | DO (mg/L) | COND (umhos/cm) | (+/-) ORP (mV) |
| | | | "999" = 2 days | | EPA | EPA | EPA | EPA | EPA 120.1 | SM 2580B |
| | | | | | | | | | | |

| Additional Sample Data | | | | | | | | | | |
|------------------------|---|-----|------------------|----------------------------------|---|--|--|-----------------------------------|--------------------|-------------------|
| Analyst: <u>WFN</u> | | | 204 | | | 17 | | | Well Diameter (mm) | Vol. Factor (L/m) |
| Date Analyzed | 415 | / | 431 | / | 436 | / | 437 | / | 12.7 (0.5 in) | 0.127 |
| Year | Month | Day | 11 | | | | | | 51 (2 in) | 2.027 |
| 15 | 8 | | | | | | | | 76 (3 in) | 4.560 |
| Turbidity 1350 | <input checked="" type="checkbox"/> Clear | | | | | | | | 102 (4 in) | 8.107 |
| | <input type="checkbox"/> Slightly Turbid | | | | | | | | 127 (5 in) | 12.668 |
| | <input type="checkbox"/> Turbid | | | | | | | | 153 (6 in) | 18.228 |
| | <input type="checkbox"/> Highly Turbid | | | | | | | | | |
| Color: <u>none</u> | | | Bottles Required | <input type="checkbox"/> Ferrous | <input checked="" type="checkbox"/> Mineral | <input type="checkbox"/> Phenol | Others (list): | | | |
| Odor: <u>none</u> | | | | <input type="checkbox"/> BOD | <input type="checkbox"/> TOC | <input checked="" type="checkbox"/> Metals | <input type="checkbox"/> Dis. Mineral | <input type="checkbox"/> Filt TIC | | |
| | | | | <input type="checkbox"/> COD | <input checked="" type="checkbox"/> TIC | <input type="checkbox"/> Dis. Metals | <input checked="" type="checkbox"/> Nutrient | <input type="checkbox"/> TSS/TDS | | |

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

| Project/Site | Well Number | Purge Date | Year | Month | Day |
|---|-------------|------------|------|-------|-----|
| Bull Run Ground Water - Dry Fly Ash Stack | 84068 | 15 | 8 | 12 | |

| | | | | |
|--|---|--------------------------------------|-----------------------------|------------------------|
| Depth to Water (m) 1.19 | Bottom of Well (m) 4195 | Well Diameter (mm) 153 | Survey Leader WFN | Field Crew |
| <input checked="" type="checkbox"/> Depth to Surface | <input type="checkbox"/> Bottom of Hole | <input type="checkbox"/> Pump Height | | |

Depth of Screen Open Bore Hole

| | | | | |
|------|------|-------|--------------|--|
| (m) | To | (m) | Sample Label | <input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both |
| 5.49 | 4191 | 13.19 | 4190 | BRF-I-0815 |

[Bottom of Well] - Depth to Water] x Volume Factor = Well Volume Target Purge Volume Actual Purge Volume
 [(14.05)m - (1.19)m] x (18.228)L/m = 234.4 (L) N/A (L) 15.8 (L)
4186

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): _____

Remarks:

Reviewed By: Ralph Neal 8/13/15 Project Leader Dick Lohr 8/13/15
Survey Leader Date Project Leader Date

| Additional Sample Data | | | | | | | | |
|------------------------|--|------------------|--|--|---|--|---|----------------------|
| Analyst: | <i>WPN</i> | | <i>235</i> | <i>22</i> | Well Diameter (mm) | Vol. Factor (L/m) | | |
| Date Analyzed | | | 415 | 431 | 436 | 437 | 12.7 (0.5 in) 0.127 | |
| Year <i>15</i> | Month <i>8</i> | Day <i>72</i> | Phenol Alkalinity mg/L (EPA 310.1) | Total Alk. mg/L (EPA 310.1) | Mineral Acidity mg/L (EPA 305.1) | CO ₂ Acidity mg/L (EPA 305.1) | 51 (2 in) 2.027 | |
| Turbidity 1350 | <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Slightly Turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Highly Turbid | | Time/ Initial: | Time: <i>1520</i> Initial: <i>un</i> | Time: Initial: | Time: <i>1530</i> Initial: <i>un</i> | 76 (3 in) 4.560 | |
| Color: <i>none</i> | Bottles Required | | <input type="checkbox"/> BOD | <input type="checkbox"/> TOC | <input checked="" type="checkbox"/> Ferrous <input checked="" type="checkbox"/> Metals | <input checked="" type="checkbox"/> Mineral <input type="checkbox"/> Dis. Mineral <input checked="" type="checkbox"/> Nutrient | <input type="checkbox"/> Phenol <input type="checkbox"/> Filt TIC <input checked="" type="checkbox"/> TSS/TDS | Others (list): _____ |
| Odor: <i>none</i> | | | <input type="checkbox"/> COD | <input checked="" type="checkbox"/> TIG <input checked="" type="checkbox"/> Dis. Metals | | | | _____ |

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

| Project/Site | Well Number | Purge Date | Year | Month | Day |
|---|-------------|------------|------|-------|-----|
| Bull Run Ground Water - Dry Fly Ash Stack | J 84068 | /15 | 8 | 10 | |

Remarks: Duplicates collected at Well J.

Reviewed By: Willie Thiel

8/13/15


Dr. Pukus
Project Leader

8/13/15
Date

| | | | |
|----------------------|--------------|-----------|---------------|
| Sample Collector: | WFA | | |
| Sample Date | | Time | |
| Year 15 | Month 8 | Day 10 | 1150 ET CT |
| Pump Duration: 35 | min 72004 | | |
| "999" = 2 days | | | |

| Sample Readings | | | | | | |
|----------------------------------|--------------------------------------|----------------------|--------------------------|----------------------------|----------------------------|--|
| 1150 | 400 | 13.2 | 18.8 | 6.9 | 0.1 | 1062 |
| | 4193 | 4192 | 10 | 400 | 300 | 94 |
| Analysis Time <u>ET CT</u> | Pump Rate (L/min) <u>m1</u> | Pump Depth (m) | Temp °C <u>EPA</u> | pH (s.u.) <u>EPA</u> | DO (mg/L) <u>EPA</u> | COND (umhos/cm) <u>EPA 120.1</u> |
| | | | 170.1 | 150.1 | 360.1 | (+/-) ORP (mv) <u>SM 2580B</u> |
| | | | | | | Turbidity (NTU) <u>EPA 180.1</u> |

| Additional Sample Data | | | | | | | | |
|------------------------|--|---------------|--|---|---|--|---------------|-------------------------|
| Analyst: | <i>WFW</i> | | <i>✓</i> | <i>230</i> | <i>231</i> | <i>✓</i> | <i>30</i> | <i>30</i> |
| Date Analyzed | | | <i>415</i> | <i>431</i> | <i>436</i> | <i>✓</i> | <i>437</i> | Well Diameter (mm) |
| Year <i>15</i> | Month <i>8</i> | Day <i>10</i> | Phenol Alkalinity mg/L (EPA 310.1) | Total Alk. mg/L (EPA 310.1) | Mineral Acidity mg/L (EPA 305.1) | CO ₂ Acidity mg/L (EPA 305.1) | 12.7 (0.5 in) | Vol. Factor (L/m) 0.127 |
| Turbidity 1350 | <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Slightly Turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Highly Turbid | | Time: <i>4580/1505</i> | Time: <i>4580/1505</i> | Time: <i>✓</i> | Time: <i>4580/1515</i> | 51 (2 in) | 2.027 |
| Initial: | | | Initial: <i>✓</i> | Initial: <i>✓</i> | Initial: <i>✓</i> | Initial: <i>✓</i> | 76 (3 in) | 4.560 |
| Bottles Required | <input type="checkbox"/> BOD <input type="checkbox"/> TOC <input type="checkbox"/> COD <input checked="" type="checkbox"/> TIC | | <input type="checkbox"/> Ferrous <input checked="" type="checkbox"/> Metals <input type="checkbox"/> Dis. Metals | <input checked="" type="checkbox"/> Mineral <input type="checkbox"/> Dis. Mineral <input type="checkbox"/> Nutrient | <input type="checkbox"/> Phenol <input type="checkbox"/> Filt TIC <input checked="" type="checkbox"/> TSS/TDS | Others (list): _____ | | |
| Color: <i>none</i> | Odor: <i>none</i> | | | | | | | |

APPENDIX B

SAMPLE CUSTODY RECORD

TestAmerica Nashville

2960 Foster Creighton Drive
Nashville, TN 37204
Phone (615) 726-0177 Fax (615) 726-3404

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

9/1/2015

| | | | | | | | | | | |
|---|--|-----------------------------------|--------------------------------------|---------------------------------------|--|--|-------------------------|----------------------------|--|--|
| Client Information | | Sampler: <i>William Nichols</i> | Lab PM: Lage, Gail | Carrier Tracking No(s): | COC No: 490-41808-8055.1 | | | | | |
| Client Contact: Amos Smith | | Phone: 865-673-2307 | E-Mail: gail.lage@testamericainc.com | | Page: Page 1 of 1 | | | | | |
| Company: Tennessee Valley Authority | | | | | Job #: | | | | | |
| Address: <i>1101 Market St.</i> | | Due Date Requested: | Analysis Requested | | | | | | | |
| City: <i>Chattanooga</i> | | TAT Requested (days): | | | | | | | | |
| State, Zip: <i>TN 31402</i> | | | Loc: 490 | 85264 | | | | | | |
| Phone: | | PO #: | | | | | | | | |
| Email: alsmith3@tva.gov | | WO #: | | | | | | | | |
| Project Name: BRF Dry Stack | | Project #: 49002462 | | | | | | | | |
| Site: Tennessee | | SSOW#: | | | | | | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MSD (Yes or No) | Total Number of containers | Special Instructions/Note: | |
| | | | | | | | | | | |
| BRF-F45R-0815 | | 08/11/15 | 1020 | G | Water | X X X | X | 1 | 6010-Ba, Be, Cd, Cr, Co, Cu, Ni, Se, Ag, V, Zn | |
| BRF-G-0815 | | 08/11/15 | 1205 | G | Water | X X X | | 2 | 6020 - Sb, As, Be, Co, Pb, Tl, V, Zn | |
| BRF-I-0815 | | 08/12/15 | 1020 | G | Water | X X X | | 3 | | |
| BRF-J-0815 | | 08/10/15 | 1150 | G | Water | X X X | | 4 | | |
| BRF-MW-3H-0815 | | 08/12/15 | 1140 | G | Water | X X X | | 5 | | |
| BRF-DFAEQ Blank-0815 | | 08/10/15 | 1050 | G | Water | X X X | | 6 | | |
| BRF-J-0815 DUP | | 08/10/15 | 1150 | G | Water | X X X | | 7 | | |
| Possible Hazard Identification | | | | | | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | | | |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological | | | | | | <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months | | | | |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | | Special Instructions/QC Requirements: | | | | |
| Empty Kit Relinquished by: | | Date: | Time: | Method of Shipment: | | | | | | |
| <i>Willie Mail</i> | | 08/13/15/1000 | | Received by: <i>Lori Tan 2-8/12-0</i> | Date/Time: <i>08/14/15 0955</i> | Company: <i>TVA</i> | | | | |
| Relinquished by: | | Date/Time: | Company: | Received by: | Date/Time: | Company: | | | | |
| Relinquished by: | | Date/Time: | Company: | Received by: | Date/Time: | Company: | | | | |
| Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: <i>2.8/12.0</i> | | | | Cooler Temperature(s) °C and Other Remarks: | | | | |

TestAmerica Nashville

2960 Foster Creighton Drive
Nashville, TN 37204
Phone (615) 726-0177 Fax (615) 726-3404

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

9/1/2015

| | | | | | | | | |
|---|--|---------------------------------|---------------------|--|---|---|--|--|
| Client Information | | Sampler: <i>William Nichols</i> | | Lab PM: Lage, Gail | | Carrier Tracking No(s): | | COC No: 490-41808-8055.1 |
| Client Contact: Amos Smith | | Phone: <i>865-673-2307</i> | | E-Mail: <i>gail.lage@testamericaninc.com</i> | | | | Page: Page 1 of 1 |
| Company: Tennessee Valley Authority | | | | | | | | Job #: |
| Address: <i>1101 Market st.</i> | | Due Date Requested: | | | | | | Preservation Codes: |
| City: <i>Chattanooga</i> | | TAT Requested (days): | | | | | | A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) |
| State, Zip: <i>TN 37402</i> | | | | | | | | Other: |
| Phone: | | PO #: | | | | | | |
| Email: <i>alsmith3@tva.gov</i> | | WO #: | | | | | | |
| Project Name: BRF Dry Stack | | Project #: 49002462 | | | | | | |
| Site: Tennessee | | SSOW#: | | | | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) <small>B=TIssue, A=Air</small> | Matrix (W=water, S=solid, O=wastecoll, A=air) | Field Filtered Sample (Yes or No) | Perform MSM/MSD (Yes or No) | Total Number of containers |
| | | | | | | | | |
| BRF-F45R-0815 | | <i>08/11/15</i> | <i>1020</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | D N Z | <i>21</i> |
| BRF-G-0815 | | <i>08/11/15</i> | <i>1205</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>2</i> |
| BRF-I-0815 | | <i>08/12/15</i> | <i>1020</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>3</i> |
| BRF-J-0815 | | <i>08/10/15</i> | <i>1150</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>4</i> |
| BRF-MW-3H-0815 | | <i>08/12/15</i> | <i>1140</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>5</i> |
| BRF-DFAEQ Blank-0815 | | <i>08/10/15</i> | <i>1050</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>6</i> |
| <i>BRF-J-0815-DUP</i> | | <i>08/10/15</i> | <i>1150</i> | <i>G</i> | Water | <input checked="" type="checkbox"/> | <i>X X X</i> | <i>1</i> |
| Possible Hazard Identification | | | | | | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological | | | | | | <input type="checkbox"/> Return To Client | <input type="checkbox"/> Disposal By Lab | <input type="checkbox"/> Archive For Months |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | | Special Instructions/QC Requirements: | | |
| Empty Kit Relinquished by: | | Date: | Time: | | Method of Shipment: | | | |
| Relinquished by: <i>William Nichols</i> | | Date/Time: <i>08/13/15/1000</i> | Company: <i>TVA</i> | | Received by: <i>WT Fan</i> | Date/Time: <i>2.8/2.0</i> | Company: <i>08/14/15 0955</i> | Company: <i>TVA</i> |
| Relinquished by: | | Date/Time: | Company | | Received by: | Date/Time: | Company | |
| Relinquished by: | | Date/Time: | Company | | Received by: | Date/Time: | Company | |
| Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: | | Cooler Temperature(s) °C and Other Remarks: | | | | |

APPENDIX C

LABORATORY DATA SHEETS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Nashville

2960 Foster Creighton Drive

Nashville, TN 37204

Tel: (615)726-0177

TestAmerica Job ID: 490-85264-1

Client Project/Site: BRF Dry Stack

For:

Tennessee Valley Authority

PO BOX 15500

Knoxville, Tennessee 37901

Attn: Amos Smith

Gail Lage

Authorized for release by:

9/1/2015 4:12:03 PM

Gail Lage, Senior Project Manager

(615)301-5741

gail.lage@testamericainc.com

LINKS

Review your project
results through

Total Access

Have a Question?

Ask
The
Expert

Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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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Sample Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|----------------------|--------|----------------|----------------|
| 490-85264-1 | BRF-F45R-0815 | Water | 08/11/15 10:20 | 08/14/15 09:55 |
| 490-85264-2 | BRF-G-0815 | Water | 08/11/15 12:05 | 08/14/15 09:55 |
| 490-85264-3 | BRF-I-0815 | Water | 08/12/15 10:20 | 08/14/15 09:55 |
| 490-85264-4 | BRF-J-0815 | Water | 08/10/15 11:50 | 08/14/15 09:55 |
| 490-85264-5 | BRF-MW-3H-0815 | Water | 08/12/15 11:40 | 08/14/15 09:55 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Water | 08/10/15 10:50 | 08/14/15 09:55 |
| 490-85264-7 | BRF-J-0815-DUP | Water | 08/10/15 11:50 | 08/14/15 09:55 |

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TestAmerica Nashville

Case Narrative

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Job ID: 490-85264-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative 490-85264-1

Comments

No additional comments.

Receipt

The samples were received on 8/14/2015 9:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.0° C and 2.8° C.

HPLC/IC

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

Metals

Method(s) 6020: The method blank for 490-274351 contained Vanadium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

General Chemistry

Method(s) SM 2540D: The following samples was analyzed outside of analytical holding time: BRF-J-0815 (490-85264-4), BRF-DFAEQ Blank-0815 (490-85264-6) and BRF-J-0815-DUP (490-85264-7).

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

Definitions/Glossary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Qualifiers

Metals

| Qualifier | Qualifier Description |
|-----------|---|
| B | Compound was found in the blank and sample. |

General Chemistry

| Qualifier | Qualifier Description |
|-----------|--|
| H | Sample was prepped or analyzed beyond the specified holding time |

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) |

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Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-F45R-0815

Date Collected: 08/11/15 10:20

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-1

Matrix: Water

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | 0.126 | | 0.100 | | mg/L | | | 08/25/15 20:37 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0352 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Cadmium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/20/15 16:08 | 5 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:11 | 1 |

Method: 6010B - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0369 | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/25/15 23:29 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/21/15 08:11 | 08/21/15 18:51 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Arsenic | 0.00445 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Beryllium | ND | | 0.0400 | | mg/L | | 08/18/15 09:34 | 08/25/15 18:39 | 20 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Vanadium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 15:40 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:14 | 1 |

Method: 6020 - Metals (ICP/MS) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Arsenic | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |
| Vanadium | 0.00368 | B | 0.00200 | | mg/L | | 08/19/15 08:43 | 08/21/15 14:09 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-F45R-0815

Lab Sample ID: 490-85264-1

Date Collected: 08/11/15 10:20

Matrix: Water

Date Received: 08/14/15 09:55

Method: 6020 - Metals (ICP/MS) - Dissolved (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|--------|-----|------|---|----------------|----------------|---------|
| Zinc | 0.0253 | | 0.0250 | | mg/L | D | 08/19/15 08:43 | 08/21/15 14:09 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | D | 08/20/15 21:51 | 08/21/15 13:42 | 1 |

Method: 7470A - Mercury (Dissolved) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | D | 08/20/15 21:51 | 08/21/15 14:27 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | 29.2 | | 2.00 | | mg/L | D | | 08/18/15 16:00 | 1 |

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-G-0815

Lab Sample ID: 490-85264-2

Matrix: Water

Date Collected: 08/11/15 12:05

Date Received: 08/14/15 09:55

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/25/15 21:25 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0361 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:16 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |
| Arsenic | 0.00285 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 22:55 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 22:55 | 1 |
| Vanadium | 0.00798 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:19 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 13:45 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | ND | | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-I-0815

Date Collected: 08/12/15 10:20

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-3

Matrix: Water

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/25/15 22:38 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0708 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:20 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |
| Arsenic | 0.00247 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:01 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:01 | 1 |
| Vanadium | 0.00854 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:25 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 13:52 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | ND | | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-J-0815

Date Collected: 08/10/15 11:50

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-4

Matrix: Water

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/25/15 23:02 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0487 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Cadmium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/20/15 16:12 | 5 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:24 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |
| Arsenic | 0.00391 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:07 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:07 | 1 |
| Vanadium | 0.00781 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:30 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 13:55 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | 1.40 | H | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-MW-3H-0815

Lab Sample ID: 490-85264-5

Date Collected: 08/12/15 11:40

Matrix: Water

Date Received: 08/14/15 09:55

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | 0.529 | | 0.100 | | mg/L | | | 08/25/15 23:26 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.195 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:29 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |
| Arsenic | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:13 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:13 | 1 |
| Vanadium | 0.00810 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:35 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 13:57 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | 1.00 | | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-DFAEQ Blank-0815

Lab Sample ID: 490-85264-6

Matrix: Water

Date Collected: 08/10/15 10:50

Date Received: 08/14/15 09:55

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/25/15 23:50 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:43 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|----------------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |
| Arsenic | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:18 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:18 | 1 |
| Vanadium | 0.00782 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:51 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 14:00 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | ND | H | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

TestAmerica Nashville

Client Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-J-0815-DUP

Date Collected: 08/10/15 11:50

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-7

Matrix: Water

Method: 9056 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/26/15 00:39 | 1 |

Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Barium | 0.0479 | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Cadmium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/20/15 16:17 | 5 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 23:47 | 1 |

Method: 6020 - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|---------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |
| Arsenic | 0.00390 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:24 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 23:24 | 1 |
| Vanadium | 0.00850 | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 18:56 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 14:02 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | ND | H | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

QC Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: MB 490-276216/6

Matrix: Water

Analysis Batch: 276216

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

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|-----------|--------------|-------|-----|------|---|----------|----------------|---------|
| Fluoride | ND | | 0.100 | | mg/L | | | 08/25/15 14:59 | 1 |

Lab Sample ID: LCS 490-276216/7

Matrix: Water

Analysis Batch: 276216

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | Limits |
|----------|-------------|------------|---------------|------|---|-------|----------|
| Fluoride | 10.0 | 9.266 | | mg/L | | 93 | 80 - 120 |

Lab Sample ID: LCSD 490-276216/8

Matrix: Water

Analysis Batch: 276216

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec. | Limits | RPD | RPD Limit |
|----------|-------------|-------------|----------------|------|---|-------|----------|-----|-----------|
| Fluoride | 10.0 | 9.204 | | mg/L | | 92 | 80 - 120 | 1 | 20 |

Lab Sample ID: 490-85264-2 MS

Matrix: Water

Analysis Batch: 276216

Client Sample ID: BRF-G-0815
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec. | Limits |
|----------|---------------|------------------|-------------|-----------|--------------|------|---|-------|----------|
| Fluoride | ND | | 10.0 | 9.555 | | mg/L | | 95 | 80 - 120 |

Lab Sample ID: 490-85264-2 MSD

Matrix: Water

Analysis Batch: 276216

Client Sample ID: BRF-G-0815
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec. | RPD | RPD Limit |
|----------|---------------|------------------|-------------|------------|---------------|------|---|-------|----------|-----------|
| Fluoride | ND | | 10.0 | 9.512 | | mg/L | | 94 | 80 - 120 | 0 20 |

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 490-274399/1-A

Matrix: Water

Analysis Batch: 274738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 274399

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|-----------|--------------|---------|-----|------|---|----------------|----------------|---------|
| Barium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Beryllium | ND | | 0.00400 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Chromium | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Copper | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Nickel | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Selenium | ND | | 0.0100 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Silver | ND | | 0.00500 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |
| Zinc | ND | | 0.0500 | | mg/L | | 08/19/15 10:05 | 08/19/15 21:34 | 1 |

TestAmerica Nashville

QC Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 490-274399/2-A

Matrix: Water

Analysis Batch: 274738

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 274399

%Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|-----------|-------------|------------|---------------|------|-----|----------|--------|
| Barium | 2.00 | 2.191 | | mg/L | 110 | 80 - 120 | |
| Beryllium | 0.0500 | 0.05380 | | mg/L | 108 | 80 - 120 | |
| Cadmium | 0.0500 | 0.05120 | | mg/L | 102 | 80 - 120 | |
| Chromium | 0.200 | 0.2137 | | mg/L | 107 | 80 - 120 | |
| Cobalt | 0.500 | 0.5383 | | mg/L | 108 | 80 - 120 | |
| Copper | 0.250 | 0.2591 | | mg/L | 104 | 80 - 120 | |
| Nickel | 0.500 | 0.5356 | | mg/L | 107 | 80 - 120 | |
| Selenium | 0.0500 | 0.04880 | | mg/L | 98 | 80 - 120 | |
| Silver | 0.0500 | 0.04660 | | mg/L | 93 | 80 - 120 | |
| Vanadium | 0.500 | 0.5002 | | mg/L | 100 | 80 - 120 | |
| Zinc | 0.500 | 0.5035 | | mg/L | 101 | 80 - 120 | |

Lab Sample ID: LCSD 490-274399/3-A

Matrix: Water

Analysis Batch: 274738

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 274399

%Rec.

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
|-----------|-------------|-------------|----------------|------|-----|----------|--------|-----|-------|
| Barium | 2.00 | 2.204 | | mg/L | 110 | 80 - 120 | | 1 | 20 |
| Beryllium | 0.0500 | 0.05410 | | mg/L | 108 | 80 - 120 | | 1 | 20 |
| Cadmium | 0.0500 | 0.05170 | | mg/L | 103 | 80 - 120 | | 1 | 20 |
| Chromium | 0.200 | 0.2151 | | mg/L | 108 | 80 - 120 | | 1 | 20 |
| Cobalt | 0.500 | 0.5450 | | mg/L | 109 | 80 - 120 | | 1 | 20 |
| Copper | 0.250 | 0.2629 | | mg/L | 105 | 80 - 120 | | 1 | 20 |
| Nickel | 0.500 | 0.5420 | | mg/L | 108 | 80 - 120 | | 1 | 20 |
| Selenium | 0.0500 | 0.05220 | | mg/L | 104 | 80 - 120 | | 7 | 20 |
| Silver | 0.0500 | 0.04740 | | mg/L | 95 | 80 - 120 | | 2 | 20 |
| Vanadium | 0.500 | 0.5052 | | mg/L | 101 | 80 - 120 | | 1 | 20 |
| Zinc | 0.500 | 0.5048 | | mg/L | 101 | 80 - 120 | | 0 | 20 |

Lab Sample ID: MB 490-275082/1-A

Matrix: Water

Analysis Batch: 275602

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 275082

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|-----------|--------------|---------|-----|------|----------------|----------------|----------|---------|
| Beryllium | ND | | 0.00400 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Cadmium | ND | | 0.00100 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Chromium | ND | | 0.00500 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Cobalt | ND | | 0.0100 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Copper | ND | | 0.0100 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Nickel | ND | | 0.0100 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Selenium | ND | | 0.0100 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Silver | ND | | 0.00500 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Vanadium | ND | | 0.0200 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |
| Zinc | ND | | 0.0500 | | mg/L | 08/21/15 08:11 | 08/21/15 16:26 | | 1 |

TestAmerica Nashville

QC Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 490-275082/1-A

Matrix: Water

Analysis Batch: 276205

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 275082

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------------|-----------------|--------|-----|------|---|----------------|----------------|---------|
| Barium | ND | | 0.0100 | | mg/L | | 08/21/15 08:11 | 08/25/15 21:55 | 1 |

Lab Sample ID: LCS 490-275082/2-A

Matrix: Water

Analysis Batch: 275602

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 275082

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|-----------|----------------|---------------|------------------|------|---|------|----------|
| Beryllium | 0.0500 | 0.05240 | | mg/L | | 105 | 80 - 120 |
| Cadmium | 0.0500 | 0.05420 | | mg/L | | 108 | 80 - 120 |
| Chromium | 0.200 | 0.2053 | | mg/L | | 103 | 80 - 120 |
| Cobalt | 0.500 | 0.5525 | | mg/L | | 111 | 80 - 120 |
| Copper | 0.250 | 0.2668 | | mg/L | | 107 | 80 - 120 |
| Nickel | 0.500 | 0.5606 | | mg/L | | 112 | 80 - 120 |
| Selenium | 0.0500 | 0.05280 | | mg/L | | 106 | 80 - 120 |
| Silver | 0.0500 | 0.04320 | | mg/L | | 86 | 80 - 120 |
| Vanadium | 0.500 | 0.5112 | | mg/L | | 102 | 80 - 120 |
| Zinc | 0.500 | 0.5382 | | mg/L | | 108 | 80 - 120 |

Lab Sample ID: LCS 490-275082/2-A

Matrix: Water

Analysis Batch: 276205

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 275082

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|----------------|---------------|------------------|------|---|------|----------|
| Barium | 2.00 | 2.301 | | mg/L | | 115 | 80 - 120 |

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 490-273945/1-A

Matrix: Water

Analysis Batch: 274758

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 273945

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|--------------|-----------------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Arsenic | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |
| Vanadium | ND | | 0.00200 | | mg/L | | 08/18/15 09:34 | 08/19/15 13:39 | 1 |

Lab Sample ID: MB 490-273945/1-A

Matrix: Water

Analysis Batch: 275984

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 273945

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------------|-----------------|--------|-----|------|---|----------------|----------------|---------|
| Zinc | ND | | 0.0250 | | mg/L | | 08/18/15 09:34 | 08/24/15 16:46 | 1 |

TestAmerica Nashville

QC Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 490-273945/2-A

Matrix: Water

Analysis Batch: 274758

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 273945

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|-----------|-------------|------------|---------------|------|---|------|----------|
| Antimony | 0.100 | 0.09503 | | mg/L | | 95 | 80 - 120 |
| Arsenic | 0.100 | 0.08179 | | mg/L | | 82 | 80 - 120 |
| Beryllium | 0.100 | 0.09630 | | mg/L | | 96 | 80 - 120 |
| Cobalt | 0.100 | 0.1016 | | mg/L | | 102 | 80 - 120 |
| Lead | 0.100 | 0.09689 | | mg/L | | 97 | 80 - 120 |
| Thallium | 0.100 | 0.09451 | | mg/L | | 95 | 80 - 120 |
| Vanadium | 0.100 | 0.1010 | | mg/L | | 101 | 80 - 120 |

Lab Sample ID: LCS 490-273945/2-A

Matrix: Water

Analysis Batch: 275984

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 273945

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Zinc | 0.100 | 0.09217 | | mg/L | | 92 | 80 - 120 |

Lab Sample ID: MB 490-274351/1-B

Matrix: Water

Analysis Batch: 274758

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 274354

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|-----------|--------------|---------|-----|------|---|----------------|----------------|---------|
| Vanadium | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/19/15 23:47 | 1 |

Lab Sample ID: MB 490-274351/1-B

Matrix: Water

Analysis Batch: 275699

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 274354

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------|-----------|--------------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Arsenic | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Beryllium | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Cobalt | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Lead | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Thallium | ND | | 0.00200 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |
| Zinc | ND | | 0.0250 | | mg/L | | 08/19/15 08:39 | 08/21/15 11:38 | 1 |

Lab Sample ID: LCS 490-274351/2-B

Matrix: Water

Analysis Batch: 275699

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 274354

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|-----------|-------------|------------|---------------|------|---|------|----------|
| Antimony | 0.100 | 0.1059 | | mg/L | | 106 | 80 - 120 |
| Arsenic | 0.100 | 0.1006 | | mg/L | | 101 | 80 - 120 |
| Beryllium | 0.100 | 0.1018 | | mg/L | | 102 | 80 - 120 |
| Cobalt | 0.100 | 0.1074 | | mg/L | | 107 | 80 - 120 |
| Lead | 0.100 | 0.1022 | | mg/L | | 102 | 80 - 120 |
| Thallium | 0.100 | 0.09325 | | mg/L | | 93 | 80 - 120 |
| Vanadium | 0.100 | 0.1036 | | mg/L | | 104 | 80 - 120 |
| Zinc | 0.100 | 0.09645 | | mg/L | | 96 | 80 - 120 |

TestAmerica Nashville

QC Sample Results

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 490-275072/1-A

Matrix: Water

Analysis Batch: 275326

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 275072

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------------|-----------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.000200 | | mg/L | | 08/20/15 21:51 | 08/21/15 13:22 | 1 |

Lab Sample ID: LCS 490-275072/2-A

Matrix: Water

Analysis Batch: 275326

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 275072

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | Limits |
|---------|----------------|---------------|------------------|------|---|-------|----------|
| Mercury | 0.00100 | 0.0008536 | | mg/L | | 85 | 80 - 120 |

Lab Sample ID: LCSD 490-275072/3-A

Matrix: Water

Analysis Batch: 275326

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 275072

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec. | RPD | Limit |
|---------|----------------|----------------|-------------------|------|---|-------|----------|-------|
| Mercury | 0.00100 | 0.0008615 | | mg/L | | 86 | 80 - 120 | 1 20 |

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 490-274148/1

Matrix: Water

Analysis Batch: 274148

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------------|-----------------|------|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | ND | | 1.00 | | mg/L | | | 08/18/15 16:00 | 1 |

Lab Sample ID: LCS 490-274148/2

Matrix: Water

Analysis Batch: 274148

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | Limits |
|------------------------|----------------|---------------|------------------|------|---|-------|----------|
| Total Suspended Solids | 100 | 99.50 | | mg/L | | 100 | 90 - 110 |

Lab Sample ID: 490-85264-2 DU

Matrix: Water

Analysis Batch: 274148

Client Sample ID: BRF-G-0815

Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|------------------------|------------------|---------------------|--------------|-----------------|------|---|-----|-------|
| Total Suspended Solids | ND | | ND | | mg/L | | NC | 20 |

TestAmerica Nashville

QC Association Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

HPLC/IC

Analysis Batch: 276216

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 9056 | |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 9056 | |
| 490-85264-2 MS | BRF-G-0815 | Total/NA | Water | 9056 | |
| 490-85264-2 MSD | BRF-G-0815 | Total/NA | Water | 9056 | |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 9056 | |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 9056 | |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 9056 | |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 9056 | |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 9056 | |
| LCS 490-276216/7 | Lab Control Sample | Total/NA | Water | 9056 | |
| LCSD 490-276216/8 | Lab Control Sample Dup | Total/NA | Water | 9056 | |
| MB 490-276216/6 | Method Blank | Total/NA | Water | 9056 | |

Metals

Prep Batch: 273945

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|----------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 3010A | |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 3010A | |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 3010A | |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 3010A | |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 3010A | |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 3010A | |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 3010A | |
| LCS 490-273945/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| MB 490-273945/1-A | Method Blank | Total/NA | Water | 3010A | |

Filtration Batch: 274351

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|------------|------------|
| LCS 490-274351/2-B | Lab Control Sample | Dissolved | Water | Filtration | |
| MB 490-274351/1-B | Method Blank | Dissolved | Water | Filtration | |

Prep Batch: 274354

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 3005A | |
| LCS 490-274351/2-B | Lab Control Sample | Dissolved | Water | 3005A | 274351 |
| MB 490-274351/1-B | Method Blank | Dissolved | Water | 3005A | 274351 |

Prep Batch: 274399

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 3010A | |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 3010A | |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 3010A | |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 3010A | |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 3010A | |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 3010A | |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 3010A | |
| LCS 490-274399/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| LCSD 490-274399/3-A | Lab Control Sample Dup | Total/NA | Water | 3010A | |
| MB 490-274399/1-A | Method Blank | Total/NA | Water | 3010A | |

TestAmerica Nashville

QC Association Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Metals (Continued)

Analysis Batch: 274738

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 6010B | 274399 |
| LCS 490-274399/2-A | Lab Control Sample | Total/NA | Water | 6010B | 274399 |
| LCSD 490-274399/3-A | Lab Control Sample Dup | Total/NA | Water | 6010B | 274399 |
| MB 490-274399/1-A | Method Blank | Total/NA | Water | 6010B | 274399 |

Analysis Batch: 274758

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|----------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 6020 | 273945 |
| LCS 490-273945/2-A | Lab Control Sample | Total/NA | Water | 6020 | 273945 |
| MB 490-273945/1-A | Method Blank | Total/NA | Water | 6020 | 273945 |
| MB 490-274351/1-B | Method Blank | Dissolved | Water | 6020 | 274354 |

Prep Batch: 275072

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 7470A | |
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 7470A | |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 7470A | |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 7470A | |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 7470A | |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 7470A | |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 7470A | |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 7470A | |
| LCS 490-275072/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 490-275072/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| MB 490-275072/1-A | Method Blank | Total/NA | Water | 7470A | |

Prep Batch: 275082

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-------------------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 3005A | |
| LCS 490-275082/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 490-275082/1-A | Method Blank | Total Recoverable | Water | 3005A | |

Analysis Batch: 275096

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 6010B | 274399 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 6010B | 274399 |

TestAmerica Nashville

QC Association Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Metals (Continued)

Analysis Batch: 275326

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 7470A | 275072 |
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 7470A | 275072 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 7470A | 275072 |
| LCS 490-275072/2-A | Lab Control Sample | Total/NA | Water | 7470A | 275072 |
| LCSD 490-275072/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 275072 |
| MB 490-275072/1-A | Method Blank | Total/NA | Water | 7470A | 275072 |

Analysis Batch: 275602

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-------------------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 6010B | 275082 |
| LCS 490-275082/2-A | Lab Control Sample | Total Recoverable | Water | 6010B | 275082 |
| MB 490-275082/1-A | Method Blank | Total Recoverable | Water | 6010B | 275082 |

Analysis Batch: 275699

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 6020 | 274354 |
| LCS 490-274351/2-B | Lab Control Sample | Dissolved | Water | 6020 | 274354 |
| MB 490-274351/1-B | Method Blank | Dissolved | Water | 6020 | 274354 |

Analysis Batch: 275984

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|----------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | 6020 | 273945 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | 6020 | 273945 |
| LCS 490-273945/2-A | Lab Control Sample | Total/NA | Water | 6020 | 273945 |
| MB 490-273945/1-A | Method Blank | Total/NA | Water | 6020 | 273945 |

Analysis Batch: 276205

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-------------------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Dissolved | Water | 6010B | 275082 |
| LCS 490-275082/2-A | Lab Control Sample | Total Recoverable | Water | 6010B | 275082 |
| MB 490-275082/1-A | Method Blank | Total Recoverable | Water | 6010B | 275082 |

Analysis Batch: 276307

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | 6020 | 273945 |

TestAmerica Nashville

QC Association Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

General Chemistry

Analysis Batch: 274148

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|----------------------|-----------|--------|----------|------------|
| 490-85264-1 | BRF-F45R-0815 | Total/NA | Water | SM 2540D | 1 |
| 490-85264-2 | BRF-G-0815 | Total/NA | Water | SM 2540D | 2 |
| 490-85264-2 DU | BRF-G-0815 | Total/NA | Water | SM 2540D | 3 |
| 490-85264-3 | BRF-I-0815 | Total/NA | Water | SM 2540D | 4 |
| 490-85264-4 | BRF-J-0815 | Total/NA | Water | SM 2540D | 5 |
| 490-85264-5 | BRF-MW-3H-0815 | Total/NA | Water | SM 2540D | 6 |
| 490-85264-6 | BRF-DFAEQ Blank-0815 | Total/NA | Water | SM 2540D | 7 |
| 490-85264-7 | BRF-J-0815-DUP | Total/NA | Water | SM 2540D | 8 |
| LCS 490-274148/2 | Lab Control Sample | Total/NA | Water | SM 2540D | 9 |
| MB 490-274148/1 | Method Blank | Total/NA | Water | SM 2540D | 10 |

Lab Chronicle

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-F45R-0815

Date Collected: 08/11/15 10:20

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-1

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 | 9056 | | 1 | 10 mL | | 276216 | 08/25/15 20:37 | JHS | TAL NSH |
| Dissolved | Prep | 3005A | | | 50 mL | 50 mL | 275082 | 08/21/15 08:11 | ZLN | TAL NSH |
| Dissolved | Analysis | 6010B | | 1 | 50 mL | 50 mL | 275602 | 08/21/15 18:51 | NJB | TAL NSH |
| Dissolved | Prep | 3005A | | | 50 mL | 50 mL | 275082 | 08/21/15 08:11 | ZLN | TAL NSH |
| Dissolved | Analysis | 6010B | | 1 | 50 mL | 50 mL | 276205 | 08/25/15 23:29 | NJB | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:11 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 5 | 50 mL | 50 mL | 275096 | 08/20/15 16:08 | TSC | TAL NSH |
| Dissolved | Prep | 3005A | | | 50 mL | 50 mL | 274354 | 08/19/15 08:43 | ZLN | TAL NSH |
| Dissolved | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275699 | 08/21/15 14:09 | CME | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 15:40 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:14 | LEG | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 20 | 50 mL | 50 mL | 276307 | 08/25/15 18:39 | LEG | TAL NSH |
| Dissolved | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Dissolved | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 14:27 | BLG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 13:42 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 500 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Client Sample ID: BRF-G-0815

Date Collected: 08/11/15 12:05

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-2

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 | 9056 | | 1 | 10 mL | | 276216 | 08/25/15 21:25 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:16 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 22:55 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:19 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 13:45 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

TestAmerica Nashville

Lab Chronicle

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-I-0815

Date Collected: 08/12/15 10:20
Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-3

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 | 9056 | | 1 | 10 mL | | 276216 | 08/25/15 22:38 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:20 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 23:01 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:25 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 13:52 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Client Sample ID: BRF-J-0815

Date Collected: 08/10/15 11:50
Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-4

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 | 9056 | | 1 | 10 mL | | 276216 | 08/25/15 23:02 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:24 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 5 | 50 mL | 50 mL | 275096 | 08/20/15 16:12 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 23:07 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:30 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 13:55 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Client Sample ID: BRF-MW-3H-0815

Date Collected: 08/12/15 11:40
Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-5

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 | 9056 | | 1 | 10 mL | | 276216 | 08/25/15 23:26 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:29 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 23:13 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:35 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 13:57 | BLG | TAL NSH |

TestAmerica Nashville

Lab Chronicle

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Client Sample ID: BRF-MW-3H-0815

Date Collected: 08/12/15 11:40

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-5

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 | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Client Sample ID: BRF-DFAEQ Blank-0815

Date Collected: 08/10/15 10:50

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-6

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 | 9056 | | 1 | 10 mL | 10 mL | 276216 | 08/25/15 23:50 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:43 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 23:18 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:51 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 14:00 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Client Sample ID: BRF-J-0815-DUP

Date Collected: 08/10/15 11:50

Date Received: 08/14/15 09:55

Lab Sample ID: 490-85264-7

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 | 9056 | | 1 | 10 mL | 10 mL | 276216 | 08/26/15 00:39 | JHS | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 1 | 50 mL | 50 mL | 274738 | 08/19/15 23:47 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 274399 | 08/19/15 10:05 | ZLN | TAL NSH |
| Total/NA | Analysis | 6010B | | 5 | 50 mL | 50 mL | 275096 | 08/20/15 16:17 | TSC | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 274758 | 08/19/15 23:24 | KKK | TAL NSH |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 273945 | 08/18/15 09:34 | ZLN | TAL NSH |
| Total/NA | Analysis | 6020 | | 1 | 50 mL | 50 mL | 275984 | 08/24/15 18:56 | LEG | TAL NSH |
| Total/NA | Prep | 7470A | | | 30 mL | 30 mL | 275072 | 08/20/15 21:51 | RDF | TAL NSH |
| Total/NA | Analysis | 7470A | | 1 | 30 mL | 30 mL | 275326 | 08/21/15 14:02 | BLG | TAL NSH |
| Total/NA | Analysis | SM 2540D | | 1 | 1000 mL | 1000 mL | 274148 | 08/18/15 16:00 | SMB | TAL NSH |

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TestAmerica Nashville

Method Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

| Method | Method Description | Protocol | Laboratory |
|----------|-------------------------------|----------|------------|
| 9056 | Anions, Ion Chromatography | SW846 | TAL NSH |
| 6010B | Metals (ICP) | SW846 | TAL NSH |
| 6020 | Metals (ICP/MS) | SW846 | TAL NSH |
| 7470A | Mercury (CVAA) | SW846 | TAL NSH |
| 7470A | Mercury (Dissolved) | SW846 | TAL NSH |
| SM 2540D | Solids, Total Suspended (TSS) | SM | TAL NSH |

Protocol References:

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.

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Certification Summary

Client: Tennessee Valley Authority
Project/Site: BRF Dry Stack

TestAmerica Job ID: 490-85264-1

Laboratory: TestAmerica Nashville

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|----------------------------------|---------------|------------|------------------|-----------------|
| A2LA | A2LA | | NA: NELAP & A2LA | 12-31-15 |
| A2LA | ISO/IEC 17025 | | 0453.07 | 12-31-15 |
| Alaska (UST) | State Program | 10 | UST-087 | 07-24-16 |
| Arizona | State Program | 9 | AZ0473 | 05-05-16 |
| Arkansas DEQ | State Program | 6 | 88-0737 | 04-25-16 |
| California | State Program | 9 | 2938 | 10-31-16 |
| Connecticut | State Program | 1 | PH-0220 | 12-31-15 |
| Florida | NELAP | 4 | E87358 | 06-30-16 |
| Georgia | State Program | 4 | N/A | 06-30-16 |
| Illinois | NELAP | 5 | 200010 | 12-09-15 |
| Iowa | State Program | 7 | 131 | 04-01-16 |
| Kansas | NELAP | 7 | E-10229 | 10-31-15 |
| Kentucky (UST) | State Program | 4 | 19 | 06-30-16 |
| Kentucky (WW) | State Program | 4 | 90038 | 12-31-15 |
| Louisiana | NELAP | 6 | 30613 | 06-30-16 |
| Maryland | State Program | 3 | 316 | 03-31-16 |
| Massachusetts | State Program | 1 | M-TN032 | 06-30-16 |
| Minnesota | NELAP | 5 | 047-999-345 | 12-31-15 |
| Mississippi | State Program | 4 | N/A | 06-30-16 |
| Montana (UST) | State Program | 8 | NA | 02-24-20 |
| Nevada | State Program | 9 | TN00032 | 07-31-16 |
| New Hampshire | NELAP | 1 | 2963 | 10-09-15 |
| New Jersey | NELAP | 2 | TN965 | 09-30-15 |
| New York | NELAP | 2 | 11342 | 03-31-16 |
| North Carolina (WW/SW) | State Program | 4 | 387 | 12-31-15 |
| North Dakota | State Program | 8 | R-146 | 06-30-15 * |
| Ohio VAP | State Program | 5 | CL0033 | 07-10-17 |
| Oklahoma | State Program | 6 | 9412 | 08-31-15 * |
| Oregon | NELAP | 10 | TN200001 | 04-27-16 |
| Pennsylvania | NELAP | 3 | 68-00585 | 06-30-16 |
| Rhode Island | State Program | 1 | LAO00268 | 12-30-15 |
| South Carolina | State Program | 4 | 84009 (001) | 02-28-16 |
| South Carolina (Do Not Use - DW) | State Program | 4 | 84009 (002) | 12-16-17 |
| Tennessee | State Program | 4 | 2008 | 02-23-17 |
| Texas | NELAP | 6 | T104704077 | 08-31-16 |
| USDA | Federal | | S-48469 | 10-30-16 |
| Utah | NELAP | 8 | TN00032 | 07-31-16 |
| Virginia | NELAP | 3 | 460152 | 06-14-16 |
| Washington | State Program | 10 | C789 | 07-19-16 |
| West Virginia DEP | State Program | 3 | 219 | 02-28-16 |
| Wisconsin | State Program | 5 | 998020430 | 08-31-16 |
| Wyoming (UST) | A2LA | 8 | 453.07 | 12-31-15 |

* Certification renewal pending - certification considered valid.

TestAmerica Nashville



490-85264 Chain of Custody

COOLER RECEIPT FORM

Cooler Received/Opened On 8/14/2015 @ 09551. Tracking # 5376 (last 4 digits, FedEx)Courier: FedEx IR Gun ID 120801422. Temperature of rep. sample or temp blank when opened: 2.8 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES...NO...NA

4. Were custody seals on outside of cooler?

If yes, how many and where: Two front

YES...NO...NA

5. Were the seals intact, signed, and dated correctly?

YES...NO...NA

6. Were custody papers inside cooler?

YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) DA7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received?

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # I certify that I unloaded the cooler and answered questions 7-14 (initial)

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES..NO..NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial)

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) I certify that I attached a label with the unique LIMS number to each container (initial) 21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#

COOLER RECEIPT FORM

Cooler Received/Opened On: 8/14/2015 @0955

1. Tracking # 5398 (last 4 digits, FedEx)Courier: Fed-Ex IR Gun ID: 147404562. Temperature of rep. sample or temp blank when opened: 20 Degrees Celsius3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO

4. Were custody seals on outside of cooler?

 YES NO...NAIf yes, how many and where: 2 Front5. Were the seals intact, signed, and dated correctly? YES NO...NA6. Were custody papers inside cooler? YES NO...NAI certify that I opened the cooler and answered questions 1-6 (initial)7. Were custody seals on containers: YES NO and Intact

YES...NO...NA

Were these signed and dated correctly? YES NO...NA8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None10. Did all containers arrive in good condition (unbroken)? YES NO...NA11. Were all container labels complete (#, date, signed, pres., etc)? YES NO...NA12. Did all container labels and tags agree with custody papers? YES NO...NA13a. Were VOA vials received? YES NO...NAb. Was there any observable headspace present in any VOA vial? YES NO...NA14. Was there a Trip Blank in this cooler? YES...NO If multiple coolers, sequence # 12I certify that I unloaded the cooler and answered questions 7-14 (initial) 1215a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO NAb. Did the bottle labels indicate that the correct preservatives were used YES NO...NA16. Was residual chlorine present? YES NO...NAI certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) 1217. Were custody papers properly filled out (ink, signed, etc)? YES NO...NA18. Did you sign the custody papers in the appropriate place? YES NO...NA19. Were correct containers used for the analysis requested? YES NO...NA20. Was sufficient amount of sample sent in each container? YES NO...NAI certify that I entered this project into LIMS and answered questions 17-20 (initial) 12I certify that I attached a label with the unique LIMS number to each container (initial) 1221. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO #

TestAmerica Nashville

2960 Foster Creighton Drive
Nashville, TN 37204
Phone (615) 726-0177 Fax (615) 726-3404

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

9/1/2015

| | | | | | | | | | | |
|---|--|---------------------------------|--------------------------------------|---------------------------------------|--|--|-------------------------|----------------------------|--|--|
| Client Information | | Sampler: <i>William Nichols</i> | Lab PM: Lage, Gail | Carrier Tracking No(s): | COC No: 490-41808-8055.1 | | | | | |
| Client Contact: Amos Smith | | Phone: 865-673-2307 | E-Mail: gail.lage@testamericainc.com | | Page: Page 1 of 1 | | | | | |
| Company: Tennessee Valley Authority | | | | | Job #: | | | | | |
| Address: <i>1101 Market St.</i> | | Due Date Requested: | Analysis Requested | | | | | | | |
| City: <i>Chattanooga</i> | | TAT Requested (days): | | | | | | | | |
| State, Zip: <i>TN 31402</i> | | | Loc: 490 85264 | | | | | | | |
| Phone: | | PO #: | | | | | | | | |
| Email: alsmith3@tva.gov | | WO #: | | | | | | | | |
| Project Name: BRF Dry Stack | | Project #: 49002462 | | | | | | | | |
| Site: Tennessee | | SSOW#: | | | | | | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MSD (Yes or No) | Total Number of containers | Special Instructions/Note: | |
| | | | | | | | | | | |
| BRF-F45R-0815 | | 08/11/15 | 1020 | G | Water | X X X | X | 1 | 6010-Ba, Be, Cd, Cr, Co, Cu, Ni, Se, Ag, V, Zn | |
| BRF-G-0815 | | 08/11/15 | 1205 | G | Water | X X X | | 2 | 6020 - Sb, As, Be, Co, Pb, Tl, V, Zn | |
| BRF-I-0815 | | 08/12/15 | 1020 | G | Water | X X X | | 3 | | |
| BRF-J-0815 | | 08/10/15 | 1150 | G | Water | X X X | | 4 | | |
| BRF-MW-3H-0815 | | 08/12/15 | 1140 | G | Water | X X X | | 5 | | |
| BRF-DFAEQ Blank-0815 | | 08/10/15 | 1050 | G | Water | X X X | | 6 | | |
| BRF-J-0815 DUP | | 08/10/15 | 1150 | G | Water | X X X | | 7 | | |
| Possible Hazard Identification | | | | | | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | | | |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological | | | | | | <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months | | | | |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | | Special Instructions/QC Requirements: | | | | |
| Empty Kit Relinquished by: | | Date: | Time: | | Method of Shipment: | | | | | |
| Relinquished by: <i>Willie Nall</i> | | Date/Time: 08/13/15/1000 | Company: TVA | Received by: <i>Lori Tan</i> 2-8/12/0 | | Date/Time: 08/14/15 0955 | Company: TAN | | | |
| Relinquished by: | | Date/Time: | Company: | Received by: | | Date/Time: | Company: | | | |
| Relinquished by: | | Date/Time: | Company: | Received by: | | Date/Time: | Company: | | | |
| Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: | | | | Cooler Temperature(s) °C and Other Remarks: 2.8 / 2.0 | | | | |

TestAmerica Nashville

2960 Foster Creighton Drive
Nashville, TN 37204
Phone (615) 726-0177 Fax (615) 726-3404

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

9/1/2015

| | | | | | |
|---|--|---------------------------------|---|---|--|
| Client Information | | Sampler: <i>William Nichols</i> | Lab PM: Lage, Gail | Carrier Tracking No(s): | COC No: 490-41808-8055.1 |
| Client Contact: Amos Smith | | Phone: <i>865-673-2307</i> | E-Mail: <i>gail.lage@testamericainc.com</i> | | Page: Page 1 of 1 |
| Company: Tennessee Valley Authority | | | | | Job #: |
| Address: <i>1101 Market st.</i> | | Due Date Requested: | | Analysis Requested | |
| City: <i>Chattanooga</i> | | TAT Requested (days): | | | |
| State, Zip: <i>TN 37402</i> | | | | | |
| Phone: | | PO #: | | | |
| Email: <i>alsmith3@tva.gov</i> | | WO #: | | | |
| Project Name: BRF Dry Stack | | Project #: <i>49002462</i> | | | |
| Site: Tennessee | | SSOW#: | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=wastecoll, BT=tissue, A=Air) |
| | | | | Field Filtered Sample (Yes or No) | Perform MSM/MSD (Yes or No) |
| | | | | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> 6010B, 6020, 7470A |
| | | | | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> 2640D - Total Suspended Solids |
| | | | | <input checked="" type="checkbox"/> Z | <input checked="" type="checkbox"/> 9066_OROFM_28D - Fluoride |
| | | | | | dissolved metals - if needed |
| | | | | | Total Number of containers |
| Special Instructions/Note: | | | | | |
| 6010-Ba, Be, Cd, Cr, Co, Cu, Ni, Se, Ag, V, Zn 6020 - Sb, As, Be, Co, Pb, Tl, V, Zn | | | | | |
| BRF-F45R-0815 | | <i>08/11/15</i> | <i>1020</i> | <i>G</i> | Water |
| BRF-G-0815 | | <i>08/11/15</i> | <i>1205</i> | <i>G</i> | Water |
| BRF-I-0815 | | <i>08/12/15</i> | <i>1020</i> | <i>G</i> | Water |
| BRF-J-0815 | | <i>08/10/15</i> | <i>1150</i> | <i>G</i> | Water |
| BRF-MW-3H-0815 | | <i>08/12/15</i> | <i>1140</i> | <i>G</i> | Water |
| BRF-DFAEQ Blank-0815 | | <i>08/10/15</i> | <i>1050</i> | <i>G</i> | Water |
| <i>BRF-J-0815- DUP</i> | | <i>08/10/15</i> | <i>1150</i> | <i>G</i> | Water |
| Possible Hazard Identification | | | | | |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological | | | | | |
| Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | | | | |
| <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months | | | | | |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | | | |
| Special Instructions/QC Requirements: | | | | | |
| Empty Kit Relinquished by: | | Date: | Time: | Method of Shipment: | |
| <i>William Nichols</i> | | <i>08/13/15/1000</i> | <i>TVA</i> | <i>10 AM 2.8/2.0</i> | <i>08/14/15 0955</i> |
| Relinquished by: | | Date/Time: | Company | Received by: | Date/Time: |
| Relinquished by: | | Date/Time: | Company | Received by: | Date/Time: |
| Relinquished by: | | Date/Time: | Company | Received by: | Date/Time: |
| Custody Seals Intact: △ Yes △ No | | Custody Seal No.: | | Cooler Temperature(s) °C and Other Remarks: | |

Login Sample Receipt Checklist

Client: Tennessee Valley Authority

Job Number: 490-85264-1

Login Number: 85264

List Source: TestAmerica Nashville

List Number: 1

Creator: Gambill, Shane

| 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. | True | |
| 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 | 2.8 / 2.0 |
| 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. | 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. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | True | |

APPENDIX D

BACKGROUND GROUNDWATER DATA FOR MONITORING WELL I

Appendix C - Background Groundwater Data for Monitoring Well I

| Parameter Name | Unit | 06/15/2000 | 11/27/2000 | 05/23/2001 | 11/15/2001 | 05/30/2002 | 11/19/2002 | 05/12/2003 | 11/17/2003 | 05/13/2004 | 11/15/2004 |
|------------------|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Antimony, total | ug/L | < 1 | 3.9 | < 1 | < 1 | < 1 | < 1 | < 1 | < 0.6 | < 0.6 | < 3 |
| Arsenic, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | 2 | < 1 | < 0.1 | < 0.1 | 1 |
| Barium, total | ug/L | 61 | 59 | 56 | 71 | 61 | 70 | 70 | 60 | 60 | 70 |
| Beryllium, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Cadmium, total | ug/L | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.05 | < 0.05 | < 0.1 |
| Chromium, total | ug/L | 1.3 | < 1 | < 1 | < 1 | < 1 | 5 | < 1 | < 0.1 | 1.6 | 2 |
| Cobalt, total | ug/L | < 1 | < 1 | < 1 | 1.2 | < 1 | < 1 | < 1 | 0.2 | 0.3 | < 1 |
| Copper, total | ug/L | < 10 | < 10 | 10 | < 10 | < 10 | 10 | < 10 | < 10 | < 10 | < 10 |
| Lead, total | ug/L | < 1 | < 1 | < 1 | < 1 | 2 | < 1 | < 1 | < 0.1 | 0.3 | < 1 |
| Mercury, total | ug/L | < 0.2 | < 0.2 | < 0.2 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | 2.3 | < 1 | 2.2 | 2.2 | < 1 |
| Selenium, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | 0.2 | 0.1 | < 1 |
| Silver, total | ug/L | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Thallium, total | ug/L | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 | < 0.1 | < 0.1 | < 2 |
| Tin, total | ug/L | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | 610 | < 50 | -- | < 50 |
| Vanadium, total | ug/L | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Zinc, total | ug/L | 16 | < 10 | 10 | 65 | 14 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Turbidity, field | NTU | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Parameter Name | Unit | 05/02/2005 | 11/15/2005 | 05/03/2006 | 11/07/2006 | 05/11/2007 | 11/06/2007 | 05/20/2008 | 11/05/2008 | 05/05/2009 | 11/03/2009 |
|------------------|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Antimony, total | ug/L | < 3 | < 3 | < 3 | < 3 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Arsenic, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Barium, total | ug/L | 60 | 60 | 70 | 70 | 60 | 65 | 64 | 64 | 66 | 69 |
| Beryllium, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 2 | < 1 | < 1 | < 2 | < 1 |
| Cadmium, total | ug/L | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Chromium, total | ug/L | < 1 | < 1 | 1 | < 1 | < 1 | 1.4 | 1 | 1.4 | < 1 | 2 |
| Cobalt, total | ug/L | 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Copper, total | ug/L | < 10 | < 10 | < 10 | < 10 | < 1 | 1.3 | 1.7 | 1.2 | < 1 | < 2 |
| Lead, total | ug/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Mercury, total | ug/L | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Nickel, total | ug/L | < 1 | 5 | < 1 | < 1 | 2.2 | 1.8 | 2.4 | 2.5 | 2.1 | 1.7 |
| Selenium, total | ug/L | < 1 | < 1 | < 1 | < 1 | 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Silver, total | ug/L | < 10 | < 10 | < 10 | < 10 | 0.51 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 1 |
| Thallium, total | ug/L | < 2 | < 2 | < 2 | < 2 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Tin, total | ug/L | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Vanadium, total | ug/L | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 2.9 |
| Zinc, total | ug/L | < 10 | < 10 | < 10 | < 10 | 10 | < 10 | < 10 | 10 | < 10 | 49 |
| Turbidity, field | NTU | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Appendix D - Background Groundwater Data for Monitoring Well I

| Parameter Name | Unit | 02/03/2010 | 05/04/2010 | 11/08/2010 | 5/2/2011 | 11/14/2011 | 5/15/2012 | 11/5/2012 | 5/6/2013 | 8/14/2013 | 2/3/2014 |
|------------------|------|------------|------------|------------|----------|------------|-----------|-----------|----------|-----------|----------|
| Antimony, total | ug/L | | < 1 | < 1 | < 1 | <1 | <1 | <1 | <1 | <2 | <2 |
| Arsenic, total | ug/L | | < 1 | < 1 | < 1 | <1 | <1 | <1 | <1 | <2 | <2 |
| Barium, total | ug/L | 63 | 67 | 59 | 61 | 65 | 66 | 67 | 67 | 69.35 | 70.3 |
| Beryllium, total | ug/L | < 1 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <2 | <2 |
| Cadmium, total | ug/L | < 0.5 | < 0.5 | < 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | <1 |
| Chromium, total | ug/L | < 10 | < 2 | < 2 | <2 | <2 | <2 | <2 | <2 | <2 | <5 |
| Cobalt, total | ug/L | < 10 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <2 | <10 |
| Copper, total | ug/L | < 2 | < 2 | < 2 | <2 | <2 | <2 | <2 | <2 | <2 | <10 |
| Lead, total | ug/L | < 5 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <2 | <2 |
| Mercury, total | ug/L | < 0.2 | < 0.2 | < 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Nickel, total | ug/L | 1.2 | 1.4 | 1.8 | 1.2 | 1.1 | 2 | 2.4 | 2.5 | <2 | <10 |
| Selenium, total | ug/L | < 1 | < 1 | 1.2 | <1 | <1 | <1 | <1 | <1 | <2 | <10 |
| Silver, total | ug/L | < 10 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <2 | <5 |
| Thallium, total | ug/L | < 1 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <2 | <2 |
| Tin, total | ug/L | < 1 | < 1 | < 1 | <1 | <1 | <1 | <1 | <1 | <50 | <50 |
| Vanadium, total | ug/L | < 10 | < 2 | < 2 | <2 | <2 | <2 | <2 | <2 | <2 | <20 |
| Zinc, total | ug/L | < 10 | < 10 | < 10 | <10 | <10 | <10 | <10 | <10 | <25 | <50 |
| Turbidity, field | NTU | -- | -- | -- | -- | 2.1 | 8.1 | 1.8 | 3 | 2.3 | 1.7 |

| Parameter Name | Unit | 8/13/2014 | 2/10/2015 | 8/11/2015 |
|------------------|------|-----------|-----------|-----------|
| Antimony, total | ug/L | <2 | <2 | <2 |
| Arsenic, total | ug/L | <2 | <2 | 2.47 |
| Barium, total | ug/L | 70.9 | 66.2 | 70.8 |
| Beryllium, total | ug/L | <2 | <2 | <2 |
| Cadmium, total | ug/L | <1 | <1 | <1 |
| Chromium, total | ug/L | <5 | <5 | <5 |
| Cobalt, total | ug/L | <10 | <10 | <2 |
| Copper, total | ug/L | <10 | <10 | <10 |
| Lead, total | ug/L | <2 | <2 | <2 |
| Mercury, total | ug/L | <0.2 | <0.2 | <0.2 |
| Nickel, total | ug/L | <10 | <10 | <10 |
| Selenium, total | ug/L | <10 | <10 | <10 |
| Silver, total | ug/L | <5 | <5 | <5 |
| Thallium, total | ug/L | <2 | <2 | <2 |
| Tin, total | ug/L | <50 | <50 | -- |
| Vanadium, total | ug/L | <20 | <20 | 8.54 |
| Zinc, total | ug/L | <50 | <50 | <25 |
| Turbidity, field | NTU | 0.3 | 0.4 | 1.3 |

APPENDIX E

STATISTICAL ANALYSIS PROCEDURE OUTPUT SUMMARY

Statistical Analysis Procedure

Background Date Range: 06/15/2000 to 08/19/2015

Number of Future Observations: 51.00

Background Locations: BRF-I

Compliance Date Range: 08/10/2015 to 08/12/2015

Compliance Locations: BRF-F45R, BRF-G, BRF-J

Comparison Method if all Background Results are Non-Detect:

STmdl = Last MDL

Statistical Test for Parametric Background Data Distributions:

STpar = Parametric Prediction Interval on Background

Statistical Test for Cases with High Percentage of Non-Detect Background Data:

STlow1 = Non-Parametric Prediction Interval on Background (ND Frequency > 55%)

Statistical Test for Cases with High Percentage of Non-Detect Background Data:

STlow2 = Poisson Prediction Interval on Background (ND Frequency > 90%)

Statistical Test for Non-Parametric Background Data Distributions:

STnon = Non-Parametric Prediction Interval on Background

Background Comparison:

Interwell

Number of Verification Samples:

0

Default Type 1 Individual Comparison Error Level

0.01

(False Positive Rate) for tests other than Prediction Interval

Type 1 Individual Comparison Error Level

Calculate prediction interval using an error-level of 0.05, based on the approach of USEPA (1992)

(False Positive Rate) for Prediction Interval

Non-Detect Processing (Parametric Tests):

<=55% using MDL * 1.0

>55% using MDL * 1.0

Non-Detect Processing (All Other):

<=55% using MDL * 1.0

>55% using MDL * 1.0

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|------------------------|-----------|-------------|----------------------------|------------------------------|-----------------------|------|---------------------|-------------|-------------|-----------------|------------|-------|
|------------------------|-----------|-------------|----------------------------|------------------------------|-----------------------|------|---------------------|-------------|-------------|-----------------|------------|-------|

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|------------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-F45R | Antimony, total, ug/L | 08/11/2015 | 32 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| BRF-F45R | Arsenic, total, ug/L | 08/11/2015 | 32 | 96.88 | No/No | STlow1 | 91.43 | 2.470 | | 4.450 | Yes | |
| BRF-F45R | Barium, total, ug/L | 08/11/2015 | 33 | 0.00 | Yes/Yes | STpar | 95.00 | 72.915 | | 35.200 | No | |
| BRF-F45R | Beryllium, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <40.000 | No | |
| BRF-F45R | Cadmium, total, ug/L | 08/11/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 1.000 | | <5.000 | No | |
| BRF-F45R | Chromium, total, ug/L | 08/11/2015 | 32 | 75.00 | No/No | STlow1 | 91.43 | 5.000 | | <5.000 | No | |
| BRF-F45R | Cobalt, total, ug/L | 08/11/2015 | 32 | 87.50 | No/No | STlow1 | 91.43 | 10.000 | | <2.000 | No | |
| BRF-F45R | Copper, total, ug/L | 08/11/2015 | 33 | 90.91 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| BRF-F45R | Lead, total, ug/L | 08/11/2015 | 32 | 93.75 | No/No | STlow1 | 91.43 | 2.000 | | <2.000 | No | |
| BRF-F45R | Mercury, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 0.200 | | <0.200 | No | |
| BRF-F45R | Nickel, total, ug/L | 08/11/2015 | 33 | 45.45 | No/No | STnon | 91.67 | 10.000 | | <10.000 | No | |

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|-----------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-F45R | Selenium, total, ug/L | 08/11/2015 | 33 | 87.88 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| BRF-F45R | Silver, total, ug/L | 08/11/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 10.000 | | <5.000 | No | |
| BRF-F45R | Thallium, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| BRF-F45R | Vanadium, total, ug/L | 08/11/2015 | 33 | 93.94 | No/No | STlow1 | 91.67 | 20.000 | | <2.000 | No | |
| BRF-F45R | Zinc, total, ug/L | 08/11/2015 | 32 | 81.25 | No/No | STlow1 | 91.43 | 50.000 | | <25.000 | No | |

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|------------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-G | Antimony, total, ug/L | 08/11/2015 | 32 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| BRF-G | Arsenic, total, ug/L | 08/11/2015 | 32 | 96.88 | No/No | STlow1 | 91.43 | 2.470 | | 2.850 | Yes | |
| BRF-G | Barium, total, ug/L | 08/11/2015 | 33 | 0.00 | Yes/Yes | STpar | 95.00 | 72.915 | | 36.100 | No | |
| BRF-G | Beryllium, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| BRF-G | Cadmium, total, ug/L | 08/11/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 1.000 | | <1.000 | No | |
| BRF-G | Chromium, total, ug/L | 08/11/2015 | 32 | 75.00 | No/No | STlow1 | 91.43 | 5.000 | | <5.000 | No | |
| BRF-G | Cobalt, total, ug/L | 08/11/2015 | 32 | 87.50 | No/No | STlow1 | 91.43 | 10.000 | | <2.000 | No | |
| BRF-G | Copper, total, ug/L | 08/11/2015 | 33 | 90.91 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| BRF-G | Lead, total, ug/L | 08/11/2015 | 32 | 93.75 | No/No | STlow1 | 91.43 | 2.000 | | <2.000 | No | |
| BRF-G | Mercury, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 0.200 | | <0.200 | No | |
| BRF-G | Nickel, total, ug/L | 08/11/2015 | 33 | 45.45 | No/No | STnon | 91.67 | 10.000 | | <10.000 | No | |

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|-----------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-G | Selenium, total, ug/L | 08/11/2015 | 33 | 87.88 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| BRF-G | Silver, total, ug/L | 08/11/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 10.000 | | <5.000 | No | |
| BRF-G | Thallium, total, ug/L | 08/11/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| BRF-G | Vanadium, total, ug/L | 08/11/2015 | 33 | 93.94 | No/No | STlow1 | 91.67 | 20.000 | | 7.980 | No | |
| BRF-G | Zinc, total, ug/L | 08/11/2015 | 32 | 81.25 | No/No | STlow1 | 91.43 | 50.000 | | <25.000 | No | |

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|------------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-J | Antimony, total, ug/L | 08/10/2015 | 32 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| | | 08/10/2015 | 32 | 100.00 | No/No | | N/A | 2.000 | | <2.000 | No | |
| BRF-J | Arsenic, total, ug/L | 08/10/2015 | 32 | 96.88 | No/No | STlow1 | 91.43 | 2.470 | | 3.900 | Yes | |
| | | 08/10/2015 | 32 | 96.88 | No/No | | 91.43 | 2.470 | | 3.910 | Yes | |
| BRF-J | Barium, total, ug/L | 08/10/2015 | 33 | 0.00 | Yes/Yes | STpar | 95.00 | 72.915 | | 47.900 | No | |
| | | 08/10/2015 | 33 | 0.00 | Yes/Yes | | 95.00 | 72.915 | | 48.700 | No | |
| BRF-J | Beryllium, total, ug/L | 08/10/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| | | 08/10/2015 | 33 | 100.00 | No/No | | N/A | 2.000 | | <2.000 | No | |
| BRF-J | Cadmium, total, ug/L | 08/10/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 1.000 | | <5.000 | No | |
| | | 08/10/2015 | 33 | 96.97 | No/No | | 91.67 | 1.000 | | <5.000 | No | |
| BRF-J | Chromium, total, ug/L | 08/10/2015 | 32 | 75.00 | No/No | STlow1 | 91.43 | 5.000 | | <5.000 | No | |
| | | 08/10/2015 | 32 | 75.00 | No/No | | 91.43 | 5.000 | | <5.000 | No | |
| BRF-J | Cobalt, total, ug/L | 08/10/2015 | 32 | 87.50 | No/No | STlow1 | 91.43 | 10.000 | | <2.000 | No | |
| | | 08/10/2015 | 32 | 87.50 | No/No | | 91.43 | 10.000 | | <2.000 | No | |
| BRF-J | Copper, total, ug/L | 08/10/2015 | 33 | 90.91 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| | | 08/10/2015 | 33 | 90.91 | No/No | | 91.67 | 10.000 | | <10.000 | No | |

| Compliance Location | Parameter | Sample Date | Count Of Bkg Results | Percent of Non detects | Normal / Lognormal | Test | Confidence Level | Upper Limit | Lower Limit | Analysis Result | Exceedance | Trend |
|---------------------|-----------------------|-------------|----------------------|------------------------|--------------------|--------|------------------|-------------|-------------|-----------------|------------|-------|
| BRF-J | Lead, total, ug/L | 08/10/2015 | 32 | 93.75 | No/No | STlow1 | 91.43 | 2.000 | | <2.000 | No | |
| | | 08/10/2015 | 32 | 93.75 | No/No | | 91.43 | 2.000 | | <2.000 | No | |
| BRF-J | Mercury, total, ug/L | 08/10/2015 | 33 | 100.00 | No/No | STmdl | N/A | 0.200 | | <0.200 | No | |
| | | 08/10/2015 | 33 | 100.00 | No/No | | N/A | 0.200 | | <0.200 | No | |
| BRF-J | Nickel, total, ug/L | 08/10/2015 | 33 | 45.45 | No/No | STnon | 91.67 | 10.000 | | <10.000 | No | |
| | | 08/10/2015 | 33 | 45.45 | No/No | | 91.67 | 10.000 | | <10.000 | No | |
| BRF-J | Selenium, total, ug/L | 08/10/2015 | 33 | 87.88 | No/No | STlow1 | 91.67 | 10.000 | | <10.000 | No | |
| | | 08/10/2015 | 33 | 87.88 | No/No | | 91.67 | 10.000 | | <10.000 | No | |
| BRF-J | Silver, total, ug/L | 08/10/2015 | 33 | 96.97 | No/No | STlow1 | 91.67 | 10.000 | | <5.000 | No | |
| | | 08/10/2015 | 33 | 96.97 | No/No | | 91.67 | 10.000 | | <5.000 | No | |
| BRF-J | Thallium, total, ug/L | 08/10/2015 | 33 | 100.00 | No/No | STmdl | N/A | 2.000 | | <2.000 | No | |
| | | 08/10/2015 | 33 | 100.00 | No/No | | N/A | 2.000 | | <2.000 | No | |
| BRF-J | Vanadium, total, ug/L | 08/10/2015 | 33 | 93.94 | No/No | STlow1 | 91.67 | 20.000 | | 7.810 | No | |
| | | 08/10/2015 | 33 | 93.94 | No/No | | 91.67 | 20.000 | | 8.500 | No | |
| BRF-J | Zinc, total, ug/L | 08/10/2015 | 32 | 81.25 | No/No | STlow1 | 91.43 | 50.000 | | <25.000 | No | |
| | | 08/10/2015 | 32 | 81.25 | No/No | | 91.43 | 50.000 | | <25.000 | No | |

APPENDIX F

TIME-SERIES GRAPHS OF SAMPLE CONSTITUENT DATA

