

**APPENDIX F –
BACKGROUND SOIL
INVESTIGATION**

APPENDIX F.1
BACKGROUND SOIL INVESTIGATION SAMPLING AND
ANALYSIS REPORT



**Watts Bar Fossil Plant
Background Soil Investigation
Sampling and Analysis Report**

TDEC Commissioner's Order
Environmental Investigation Plan
Watts Bar Fossil Plant
Spring City, Tennessee

November 9, 2020

Prepared for:

Tennessee Valley Authority
Chattanooga, Tennessee



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**WATTS BAR FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS
REPORT**

Revision Record

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Sign-off Sheet

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Abbreviations

ASTM	American Society for Testing and Materials
BGS	Background Soil
CCR	Coal Combustion Residuals
CCR Parameters	Constituents listed in Appendix III and IV of 40 CFR 257 and five inorganic constituents included in Appendix I of Tennessee Rule 0400-11-01-04
CEC	Civil & Environmental Engineering Consultants, Inc.
CFR	Code of Federal Regulations
COC	Chain-of-Custody
DPT	Direct Push Technology
EAR	Environmental Assessment Report
EIP	Environmental Investigation Plan
ENV	Environmental
EnvStd	Environmental Standards, Inc.
FedEx	Federal Express
FSP	Field Sampling Personnel
ft bgs	feet below ground surface
GPS	Global Positioning System
HSA	Hollow Stem Auger
ID	Identification
IDW	Investigation derived waste
PG	Professional Geologist
PLM	Polarized Light Microscopy
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QC	Quality Control
RJ Lee	RJ Lee Group, Inc.
SAP	Sampling and Analysis Plan
SAR	Sampling and Analysis Report
Stantec	Stantec Consulting Services Inc.
TDEC	Tennessee Department of Environment and Conservation
TDEC Order	Commissioner's Order No. OGC15-0177
TestAmerica	TestAmerica Laboratories, Inc.
TI	Technical Instruction
TVA	Tennessee Valley Authority
WBF Plant	Watts Bar Fossil Plant



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Introduction
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1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this sampling and analysis report (SAR) on behalf of the Tennessee Valley Authority (TVA) to document activities related to a Background Soil (BGS) investigation at TVA's Watts Bar Fossil (WBF) Plant located in Spring City, Tennessee, as shown on Exhibit A.1 (Appendix A).

The purpose of the BGS investigation was to collect soil samples to evaluate the background soil conditions at the WBF Plant in support of fulfilling the requirements for the Tennessee Department of Environment and Conservation (TDEC) issued Commissioner's Order No. OGC15-0177 (TDEC Order) to TVA (TDEC 2015). The TDEC Order sets forth a "process for the investigation, assessment, and remediation of unacceptable risks" at TVA's coal ash disposal sites in Tennessee.

The purpose of this SAR is to document the work completed during the BGS investigation and to present the information and data collected during the execution of the Background Soil Sampling and Analysis Plan (SAP) (Stantec 2018a). This SAR is not intended to provide conclusions or evaluations of results. The scope of the BGS investigation represented herein was conducted pursuant to the SAP and is part of a larger environmental investigation at the WBF Plant. The evaluation of the results will consider other aspects of the environmental investigation, as well as data collected under other State and/or coal combustion residuals (CCR) programs and will be presented in the Environmental Assessment Report (EAR).

The BGS investigation activities were performed in general accordance with the following documents developed by TVA to support fulfilling the requirements of the TDEC Order at the WBF Plant.

- *Background Soil SAP* (Stantec 2018a)
- *Environmental Investigation Plan (EIP)* (Stantec 2018b)
- *Hydrogeological Investigation SAP* (Stantec 2018c)
- *Quality Assurance Project Plan (QAPP)* (Environmental Standards, Inc. 2018).

The BGS and hydrogeological investigations were implemented in accordance with TVA- and TDEC-approved Programmatic- and Project-specific changes. Minor variations in scope and procedures from those outlined in the Background Soil SAP and Hydrogeological Investigation SAP occurring during field activities due to field conditions and programmatic updates are referenced in Section 3.7.

The BGS sampling activities were completed September 4 through 17, 2019. Additional BGS samples were collected on June 6, 2019 and July 8, 2019 as part of the hydrogeological investigation during background monitoring well installation as described in the Hydrogeological Investigation SAP. A rock outcrop survey was conducted from January 21 through 23, 2020.



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Laboratory analysis of constituents was performed by TestAmerica Laboratories, Inc (TestAmerica) in Pittsburgh, Pennsylvania and St. Louis, Missouri (radium samples only), and by RJ Lee Group, Inc. (RJ Lee) in Monroeville, Pennsylvania (percent ash). Additional quality assurance oversight on data acquisition protocols, sampling practices, and data validation or verification was performed by Environmental Standards, Inc. (EnvStds) under direct contract to TVA.



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Objective and Scope
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2.0 OBJECTIVE AND SCOPE

The primary objective of the BGS investigation conducted pursuant to the Background Soil SAP was to collect soil samples for characterization of the background soils on TVA property within the vicinity of the WBF Plant in response to the TDEC Order. The approach for the investigation was to:

- Identify locations where naturally occurring, in-situ, native soils unaffected by CCR material are present
- Mobilize a track mounted direct push technology (DPT) rig to staked boring locations approved by TDEC and considered suitable for the DPT rig to safely drill into the native underlying soils
- Advance the DPT rig and collect background soil samples for analyses
- Collect background soil samples from the well screen intervals of the two background monitoring wells using a sonic drilling rig, as part of the hydrogeological investigation scope of work.

The scope of work for the BGS Investigation consisted of the following tasks:

- Verifying and documenting proposed sampling locations using global positioning system (GPS) survey
- Collecting field measurements of soil pH
- Collecting soil samples for laboratory analysis of CCR-related constituents as described in the SAPs.

These activities were carried out concurrently with advancement of the soil borings. Drilling and background well installation and development activities were performed in accordance with the Hydrogeological Investigation SAP and reported in the WBF Plant Hydrogeological Investigation SAR.

In addition to the collection of soil samples, a rock outcrop survey was conducted. The scope of work of the survey consisted of the following tasks:

- Visually inspecting accessible rock and residuum outcrops in the vicinity of the WBF Plant to determine if naturally occurring sources of metallic ore minerals are present in the area
- Collecting rock samples with hand tools for further visual assessment where potential naturally occurring sources of metallic ore minerals were identified
- Recording sample collection locations using field GPS equipment.



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Field Activities
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3.0 FIELD ACTIVITIES

BGS investigation field activities were conducted between September 4 and 17, 2019. Additionally, under the hydrogeological investigation scope of work, two background monitoring well borings were drilled between June 6, 2019 and July 8, 2019. A rock outcrop survey was conducted between January 21 and 23, 2020. Soil samples that were collected from the 10 BGS borings and two background monitoring well borings are included with the BGS investigation. Prior to initiating field activities, TVA conducted environmental reviews, obtained permits, and performed utility clearances as necessary to complete the field work.

Stantec performed soil sample collection and rock outcrop survey activities based on guidance and specifications listed in TVA's Environmental (ENV) Technical Instructions (TIs), the SAPs, and the QAPP, except as noted in the Variations section of this report. As part of TVA's commitment to generate representative and reliable data, data validation and/or verification of laboratory analytical results were performed by EnvStd's under direct contract with TVA. In addition, on behalf of TDEC, Civil and Environmental Consultants, Inc. (CEC), collected split soil samples at one boring location (WBF-BG07). Additional details of the CEC sample collection are provided in Section 3.3.1.

During the BGS investigation, Stantec conducted the following field activities:

- Verified boring locations in the SAP using the GPS
- Collected GPS measurements at the boring locations
- Collected soil samples from 10 BGS boring locations and two background monitoring well locations (hydrogeological investigation scope of work)
- Recorded field measurements of soil pH at the 12 sampled boring/well locations
- Collected quality control (QC) samples, including six matrix spike/matrix spike duplicate, five field duplicates, 11 field blanks, two liner blanks, and five equipment blanks
- Conveyed collected samples via Federal Express (FedEx) or a FedEx authorized shipment center to TestAmerica and RJ Lee for analysis
- Visually inspected seven potential rock outcrop areas
- Collected six rock outcrop samples for further visual assessment.

Details on each activity are presented in the sections below.



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3.1 WORK LOCATIONS

The BGS investigation field activities were conducted at 11 boring locations and seven rock outcrop areas near the WBF Plant under the BGS investigation scope of work. Two background monitoring well locations were sampled for BGS under the hydrogeological investigation scope of work. The BGS investigation boring locations and rock outcrop survey areas are shown on Exhibits A.2 and A.3 (Appendix A), respectively. A list of the BGS investigation borings and associated soil samples are included in Table B.1, and sample results are provided in Tables B.2 through Table B.4 (Appendix B).

3.1.1 Soil Horizons

Surficial soil samples were collected at depths ranging from 0.0 to 0.5 feet below ground surface (ft bgs) using a hand auger. Along with surficial samples, the Field Sampling Personnel (FSP) collected approximately two feet of soil from each five-foot soil run (one foot in both directions from the midpoint of the five-foot interval) for the total depth of the boring. In cases where swelling soils occurred within the sample liners in excess of the planned five-foot run, a 2.5-foot run was used instead. When this occurred, the two-foot sample interval was collected proportionally from the bottom of the first 2.5-foot run and the top of the second 2.5-foot run representing the originally planned five-foot run interval. Samples were collected from multiple depths to provide data for vertical characterization of background soils.

3.1.2 Rock Outcrops

The rock outcrops were visually inspected for the presence of naturally occurring ore-related minerals. Visual inspections included removing weathered surficial rock or residuum, (if necessary, to identify ore-related minerals that might be present) and photographing the outcrops. Representative samples were generally collected directly from the outcrops using hand tools and retained for further visual assessment to inform a written description of the sample. In areas where the outcrop consisted primarily of residuum and/or where outcrops had been anticipated to exist but were not found during the outcrop survey field work, grab samples were collected from float (i.e., pieces of rock that have been separated from nearby bedrock outcrops) present in those areas for further description. Outcrop strike and dip measurements were taken using a Brunton® Pocket Transit. The sample collection locations were recorded using field GPS equipment (Trimble® R1 unit).

3.2 DOCUMENTATION

Stantec planned the BGS investigation activities per ENV-TI-05.08.01, *Planning Sampling Events* and maintained field documentation in general accordance with ENV-TI-05.80.03, *Field Record Keeping* and the QAPP. Field activities and data were primarily recorded on program-specific field forms. Health and safety forms were completed in accordance with TVA and Stantec health and safety requirements. Additional information regarding field documentation is provided below.



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3.2.1 Field Forms

Stantec used program-specific field forms to record field observations and data for specific activities. Field forms used during the BGS investigation included:

- *Daily Field Activity Log*
- *Subsurface Log*
- *Soil pH Calibration and Inspection Log*
- *Soil pH Data Form*
- *Chain-of-Custody (COC)*.

3.2.1.1 Daily Field Activity Log

Stantec FSP recorded daily field activities, observations, and data on a *Daily Field Activity Log* to chronologically document the field program. Deviations from the SAPs or QAPP were also documented on the *Daily Field Activity Log*.

3.2.1.2 Subsurface Log

A Professional Geologist (PG) licensed in the State of Tennessee prepared a *Subsurface Log* for each boring. The log documented time, boring location, drilling personnel, tooling/equipment used, depth to water, sample number, sample recovery, Standard Penetration Test blow counts (not recorded when DPT rig was used), subsurface lithology and other relevant observations. Soil color was logged per the appropriate Munsell soil color chart (Munsell Color 2009). The *Subsurface Logs* are provided in Appendix C.

3.2.1.3 Soil pH Calibration and Inspection Log

Stantec FSP recorded daily pH meter calibrations and inspections on a *Soil pH Calibration and Inspection Log* for each day that soil pH measurements were taken. The log documented temperature, temperature verification, temperature-adjusted calibration values, post calibration pH values, and calibration solution details. Additional information on equipment calibration is provided in Section 3.2.2.

3.2.1.4 Soil pH Data Form

Stantec FSP prepared a *Soil pH Data Form* for each day that soil pH measurements were taken. The form documented the sample identification (ID), boring ID, the depth range, pH measurement date and time, and the field pH value.



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3.2.1.5 Chain-of-Custody

Stantec FSP completed a COC documentation for each soil and outcrop sample collected for laboratory analysis during the BGS investigation. The sample ID, sample location, sample depth (if applicable), type of sample, sampling date, time, analyses requested, and sample custody record were recorded on the COCs. The Field Team Leader reviewed the COCs for completeness, and the FSP conducted a QC check of samples in each cooler compared to sample IDs on the corresponding COC prior to submittal to the laboratory. COCs were completed in general accordance with *ENV-TI-05.80.02: Sample Labeling and Custody*.

3.2.2 Equipment Calibration

Field instruments used to collect, generate, or measure environmental data were calibrated each day prior to sampling as specified by the SAPs, QAPP, and Stantec Standard Operating Procedure – REV 1 for the ExTech ExStik 110 meter (Stantec 2018d). Temperature was recorded using a calibrated National Institute of Standards and Technology traceable thermometer. Additional details regarding equipment calibration were recorded on the *Soil pH Calibration and Inspection Logs*.

3.2.3 Photographs

Photographs of the soil cores from boring activities and the rock outcrop survey areas were taken during the BGS investigation. Photographic logs of subsurface soil cores from the BGS borings, the screened interval of the background well borings, and the rock outcrop areas are provided in Attachments D.1, D.2, and D.3, respectively, in Appendix D.

3.3 SOIL BORINGS AND SAMPLING

3.3.1 Soil Borings

The BGS investigation borings were advanced by Hawkston Drilling, LLC, under Stantec oversight, using a DPT rig equipped with the DT37 dual tube tooling system. The background monitoring well WBF-103, completed under the hydrogeological investigation, was advanced by Stantec with a hollow stem auger (HSA) drill with a three-inch split-spoon per American Standard Test Method (ASTM) *D6151-08: Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling*. The background monitoring well WBF-102 (boring name WBF-102ALT2(Sonic)) completed under the hydrogeological investigation was completed by M&W Drilling, LLC, under Stantec oversight, using a sonic rig with a 6-inch core barrel.

A list of BGS investigation borings and associated soil samples is included in Table B.1 (Appendix B); the locations of the BGS investigation borings are shown on Exhibit A.2 (Appendix A). Background soil boring WBF-BG02 could not be drilled due to its location within an environmentally sensitive area. BGS investigation borings were advanced in the following chronological sequence:



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- WBF-103 – On June 6, 2019, the HSA rig mobilized to location WBF-103. The HSA rig advanced one soil boring at this location to a depth of 18.5 ft bgs. The boring was logged and sampled as WBF-103 and background monitoring well WBF-103 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.
- WBF-102 – On June 18, 2019, the HSA rig mobilized to location WBF-102. The HSA rig advanced four borings at this location. Refusal was encountered at 21.0 ft bgs with no water production (first boring). On June 19, 2019, the HSA rig mobilized to location WBF-102ALT where construction debris was encountered from 4.5 to 6.0 ft bgs (second boring) and resulted in termination of the boring at 6.0 ft bgs. On June 20, 2019 the HSA rig mobilized to location WBF-102ALT1 where the boring was terminated at 21.0 ft bgs (third boring). CCR material was present in the upper six feet of this boring. On June 21, 2019 the HSA rig was mobilized to location WBF-102ALT2(Sonic) where the boring was advanced to 10.0 ft bgs (fourth boring) and a 10-inch polyvinyl chloride (PVC) casing was installed to isolate the observed CCR material in shallow soils. The PVC casing was grouted to seal off observed CCR material from deeper drilling. On July 8, 2019 a sonic drill rig was used to further advance the boring at WBF-102ALT2(Sonic) until the boring was terminated at 21.0 ft bgs. The boring was logged as WBF-102ALT2(Sonic) and sampled as WBF-102 and background monitoring well WBF-102 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.
- WBF-BG03 – On September 4, 2019, the DPT rig mobilized to location WBF-BG03. The DPT rig advanced one soil boring at this location at a depth of 35.0 ft bgs. The boring was logged and sampled as WBF-BG03.
- WBF-BG07 – On September 5, 2019, the DPT rig mobilized to location WBF-BG07. The DPT rig advanced three soil borings at this location, the initial boring to 32.5 ft bgs (first boring) and two offset borings for split sample collection. A portion of soil from the 11.5 to 13.5 ft bgs interval of the first boring fell and contacted the ground during transfer of the core to the sample station and was therefore discarded. As a result, the sample interval had to be collected from two offset borings so that there was sufficient volume for split samples with CEC. The two offset borings were advanced adjacent to WBF-BG07 (within 1.5 feet) to a depth of 15.0 ft bgs. The original boring was logged and sampled as WBF-BG07.

CEC collected split samples from 11.5 to 13.5 ft bgs, 21.5 to 23.5 ft bgs, and 26.5 to 28.5 ft bgs at WBF-BG07.
- WBF-BG04 – On September 6, 2019, the DPT rig mobilized to location WBF-BG04. DPT rig advanced one soil boring at this location to a depth of 37.0 ft bgs. The boring was logged and sampled as WBF-BG04.
- WBF-BG05 – On September 9, 2019, the DPT rig mobilized to location WBF-BG05. The DPT rig advanced one soil boring at this location to a depth of 20.0 ft bgs. The boring was logged and sampled as WBF-BG05.



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- WBF-BG06 – On September 10, 2019, the DPT rig mobilized to location WBF-BG06. The DPT rig advanced one soil boring at this location to a depth of 36.2 ft bgs. The boring was logged and sampled as WBF-BG06.
- WBF-BG01 – On September 11, 2019, the DPT rig mobilized to location WBF-BG01. The DPT rig advanced one soil boring at this location to a depth of 44.4 ft bgs. The boring was logged and sampled as WBF-BG01.
- WBF-BG08 – On September 12, 2019, the DPT rig mobilized to location WBF-BG08. The DPT rig advanced one soil boring at this location to a depth of 32.5 ft bgs. The boring was logged and sampled as WBF-BG08.
- WBF-BG09 – On September 13, 2019, the DPT rig mobilized to location WBF-BG09. The DPT rig advanced two soil borings at this location. CCR material was encountered in both borings. The first boring was drilled to a depth of 5.0 ft bgs and the second boring was drilled to a depth of 10.0 ft bgs and they were logged as WBF-BG09 and WBF-BG09A, respectively. No samples were collected at this location due to presence of CCR material.
- WBF-BG10 – On September 16, 2019, the DPT rig mobilized to location WBF-BG10. The DPT rig advanced two soil borings at this location, the first to a depth of 8.5 ft bgs (WBF-BG10) and the second to a depth of 12.5 ft bgs (WBF-BG10A). The second, deeper boring was drilled because the first boring encountered refusal at 8.5 ft bgs. It was photographed as WBF-10A and logged and sampled as WBF-BG10.
- WBF-BG11 – On September 17, 2019, the DPT rig mobilized to location WBF-BG11. The DPT rig advanced one soil boring at this location to a depth of 20.0 ft bgs. The boring was logged and sampled as WBF-BG11.
- WBF-BG12 – The original boring location for WBF-BG12 was moved with TDEC approval because it was within a utility corridor. On September 17, 2019, the DPT rig mobilized to this alternate location for WBF-BG12. The DPT rig advanced one soil boring at this location to a depth of 25.0 ft bgs. The boring was logged and sampled as WBF-BG12.

Following sample collection, described in Section 3.3.2, the borings were backfilled using a 30 percent solids bentonite grout placed by the tremie method to within approximately six inches of the surface. The top six inches were restored to match the surrounding existing conditions.

3.3.2 Soil Sampling

During advancement of each boring, a Tennessee-licensed PG prepared field subsurface logs using a mobile data collection platform. Inputs include a description of subsurface lithology, sample recovery, color using the Munsell color chart, and other relevant parameters as required by the SAPs and TIs. As part of the logging process, soil cores were photographed by FSP with interval data presented on a white board. Analytical and duplicate samples were collected from the BGS investigation borings and documented in the *Daily Field Activity Log* and COC as shown on Table B.1 (Appendix B).



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The sampling team typically collected approximately two-foot grab samples from the mid-point of each five-foot soil run based on recovery. Due to soil swelling, some five-foot runs were completed with two 2.5-foot pushes, as detailed in Section 3.7. The collected soil was placed in clean, resealable plastic bags and homogenized using gloved hands and when necessary clean, unused, disposable, or decontaminated sampling tools. Decontamination of sampling equipment was conducted in accordance with TVA, ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination*. Once the sample was sufficiently homogenized, an aliquot of the homogenized sample and deionized water was used to create a soil paste for measurement of the soil pH with the ExTech ExStik 110 pH meter according to Stantec Standard Operating Procedure – REV 1. The measurements were recorded on the *Soil pH Data Form* within 15 minutes after creating the soil paste.

Afterwards, the soil sample was placed in an appropriate laboratory-supplied sample jar. Soil samples were collected in accordance with ENV-TI-05.80.50, *Soil and Sediment Sampling* and ENV-TI-05.80.04, *Field Sampling Quality Control*. Sample containers were labeled and handled in accordance with ENV-TI-05.80.02, *Sample Labeling and Custody*. FSP secured caps on each bottle and attached a custody seal across the cap before placing the sample container in a cooler with ice (within 15 minutes of sample collection) for shipment to the laboratory.

The samples were analyzed for CCR-related constituents listed in Appendices III and IV of Title 40 of the Code of Federal Regulations (CFR) Part 257 (40 CFR 257). In addition, five inorganic constituents listed in Appendix I of Tennessee Rule 0400-11-01-.04 and not included in the 40 CFR 257 Appendices III and IV were analyzed to maintain continuity with the TDEC environmental programs. These additional TDEC Appendix I constituents included copper, nickel, silver, vanadium, and zinc. The combined federal CCR Appendices III and IV constituents and TDEC Appendix I inorganic constituents are hereafter referred to as “CCR Parameters.” In addition, surficial soil samples from each BGS investigation boring location were analyzed for the presence of ash (percent ash) by polarized light microscopy (PLM).

3.4 ROCK OUTCROP SURVEY

The rock outcrop survey was conducted on January 21 through 23, 2020. The survey areas are shown on Exhibit A.3. As part of the survey process, rock outcrops were photographed by the FSP with area name, strike and dip documented on a white board. Additional photographs of individual rock specimens were taken using both 0X and 15X magnification to record visible information about the mineralogy. A photographic log for the rock outcrop survey is provided in Attachment D.3.

The survey was completed in the following chronological sequence:

- Area 02 – On January 21, 2020, the survey team mobilized to location Area 02. One rock sample was collected from the outcrops (WBF-ROC-AREA02-01).
- Area 05 – On January 21, 2020, the survey team mobilized to location Area 05. No accessible rock outcrops were located.



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- Area 07 – On January 21, 2020, the survey team mobilized to location Area 07. One rock sample was collected from the outcrops (WBF-ROC-AREA07-01).
- Area 03 – On January 22, 2020, the survey team mobilized to location Area 03. Two rock samples were collected from the outcrops (WBF-ROC-AREA03-01 and WBF-ROC-AREA03-03).
- Area 01 – On January 22, 2020, the survey team mobilized to location Area 01. No rock samples were collected from the outcrops because mineralization was not observed.
- Area 06 – On January 23, 2020, the survey team mobilized to location Area 06. One rock sample was collected from the outcrops (WBF-ROC-AREA06-01).
- Area 04 – On January 23, 2020, the survey team mobilized to location Area 04. One rock sample was collected from the outcrops (WBF-ROC-AREA04-01).

3.5 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) generated during the BGS investigation included:

- Used calibration solutions
- Soil cuttings
- Personal protective equipment
- Decontamination fluids
- General trash.

Soil cuttings and decontamination water produced during the BGS investigation were dispersed to the ground surface as authorized by TVA WBF Plant personnel and in accordance with ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination* and the Background Soil SAP. Where CCR materials were encountered during the advancement of the background soil borings, soil cuttings and decontamination water, along with other IDW, were handled in accordance with WBF Plant-specific waste management plan, and local, state, and federal regulations. Transportation and disposal of IDW was coordinated with TVA WBF Plant personnel.

3.6 SAMPLE SHIPMENT

Soil samples were packed, transported, and shipped under COC procedures as required by ENV-TI-05.80.06, *Handling and Shipping of Samples* and ENV-TI-05.80.02, *Sample Labeling and Custody*. The soil samples were shipped to TestAmerica in St. Louis, Missouri (radium analysis only) and to TestAmerica in Pittsburgh, Pennsylvania (all other analyses). The samples to be analyzed for percent ash by PLM were shipped to RJ Lee located in Monroeville, Pennsylvania. TestAmerica submitted sample receipt forms to EnvStds to document the condition in which the samples were received. Rock samples



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collected were transported by Stantec FSP to the Lexington, Kentucky, Stantec office for additional visual inspection and photo documentation.

3.7 VARIATIONS

The proposed scope and procedures for the BGS investigation was outlined in the SAPs, QAPP, and applicable TVA TIs and ASTM standards, as detailed in the sections above. Variations in scope or procedures discussed with TDEC and/or TVA, changes based on field conditions, or additional field sampling performed to complete the scope of work in the SAP are described in the following sections. As discussed below, these variations do not impact the overall usability and representativeness of the data provided in this SAR for the BGS investigation at the WBF Plant.

3.7.1 Variations in Scope

Variations in scope are provided below.

- As approved by TDEC, boring location WBF-BG02 was not completed per the SAP because it was located in an environmentally sensitive area.
- At boring location WBF-BG07, two offset borings were advanced to 15.0 ft bgs to recollect soil for the 11.5 to 13.5 ft bgs interval on September 5, 2019 because a portion of soil from the original sample fell and contacted the ground during transfer from the boring to the sample station table which resulted in an insufficient volume of soil to split samples with CEC.
- Background soil samples were not collected from borings WBF-BG09 and WBF-BG09A due to CCR material encountered during drilling. As approved by TDEC, alternate boring locations were not drilled.
- The original boring location for WBF-BG12 was identified as having utility impacts. As approved by TDEC, an alternate boring location was identified approximately 160 feet to the southeast.

3.7.2 Variations in Procedures

Variations in procedures occurring in the field are provided below.

- Soil cores were collected in 2.5-foot intervals instead of 5.0-foot intervals as specified in the SAP during boring advancement at borings WBF-BG01 (25.0 to 40.0 ft bgs), WBF-BG04 (10.0 to 30.0 ft bgs), WBF-BG06 (10.0 to 30.0 ft bgs), WBF-BG07 (15.0 to 32.5 ft bgs), WBF-BG08 (15.0 to 32.5 ft bgs), and WBF-BG10 (5.0 to 12.5 ft bgs) due to swelling soils. The soil cores were collected continuously; therefore, there were no gaps in record due to the change in core intervals.
- At background well boring location WBF-103, sample WBF-BS-WBF103-12.0/15.0-20190606 was submitted for the MS/MSD sample on the COC; however, the additional volume collected for the laboratory duplicate was not analyzed for radium as requested. TestAmerica in St. Louis,



WATTS BAR FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT

Field Activities
November 9, 2020

Missouri indicated that the box marked for MS/MSD was missed and inadvertently not performed.
This does not affect the number of QC samples required to be collected per the QAPP.



WATTS BAR FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT

Summary

November 9, 2020

4.0 SUMMARY

The data presented in this report are from the BGS investigation at the WBF Plant. The BGS investigation included collecting soil analytical samples to assess CCR Parameters and percent ash. A total of 74 samples, including five duplicate samples, were collected from the 10 sampled BGS borings (WBF-BG01, WBF-BG03 through WBF-BG08, WBF-BG10, WBF-BG11, and WBF-BG12) and two background well borings (WBF-102 and WBF-103) and analyzed for CCR Parameters. Surficial soil samples from each BGS investigation boring location were analyzed for the presence of ash (percent ash) by PLM. Soil samples were also tested for pH in the field.

A list of samples collected, along with duplicates, is presented in Table B.1. The soil analytical data are presented in Tables B.2 and B.3, and the field soil pH data are summarized in Table B.4. Analytical data were reported by TestAmerica and RJ Lee and validated by EnvStds.

Additionally, a rock outcrop survey was conducted near the WBF Plant to determine if naturally occurring sources of metallic ore minerals are present in the area. Seven rock outcrop areas were documented and six of these rock outcrop areas were sampled.

Stantec has completed the BGS investigation at the WBF Plant in Spring City, Tennessee in accordance with the Background Soil SAP as documented herein. The data collected during the BGS investigation are usable for reporting and evaluation in the EAR and meet the objectives of the TDEC Order EIP. The complete dataset from this investigation will be evaluated along with data collected under TDEC Order SAPs, as well as data collected under other State and CCR programs. This evaluation will be provided in the EAR.



WATTS BAR FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT

References

November 9, 2020

5.0 REFERENCES

American Standard Test Method D6151-08: *Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling*.

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TVA. ENV-TI-05.80.03, *Field Record Keeping*.

TVA. ENV-TI-05.80.04, *Field Sampling Quality Control*.

TVA. ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination*.

TVA. ENV-TI-05.80.06, *Handling and Shipping of Samples*.

TVA. ENV-TI-05.80.50, *Soil and Sediment Sampling*.



APPENDIX A - EXHIBITS

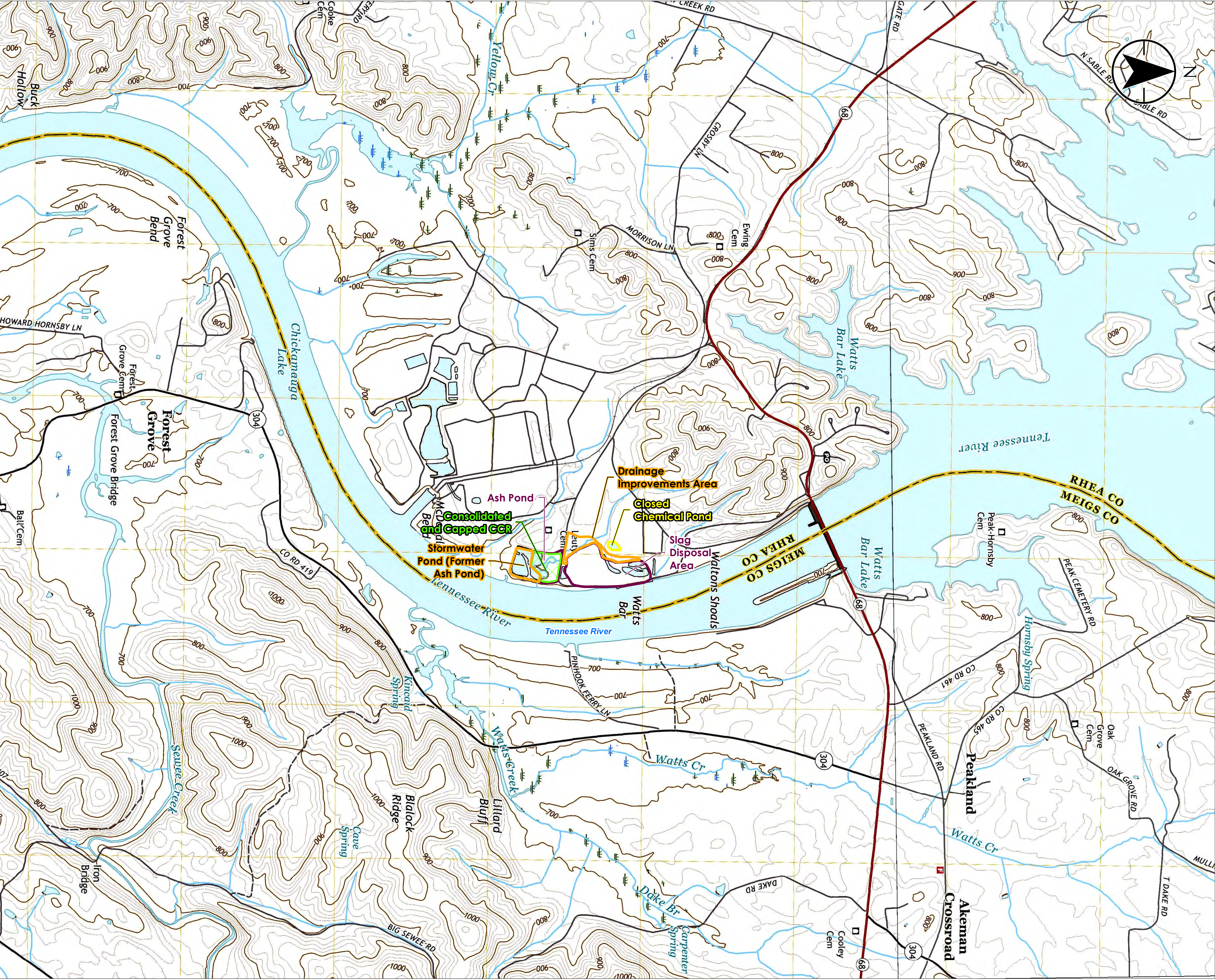


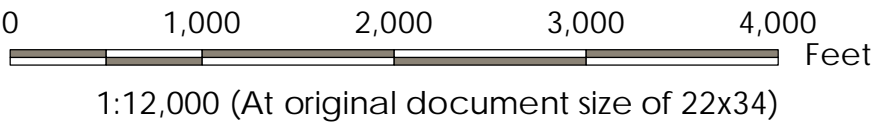
Exhibit No.
A.1

Title
Site Location Map

Client/Project
Tennessee Valley Authority
Watts Bar Fossil (WBF) Plant TDEC Order

Project Location
Spring City, Tennessee

175566336
Prepared by DMB on 2020-06-23
Technical Review by RN on 2020-06-23



Legend

CCR Unit Area (Approximate)

Closed Chemical Pond (Approximate)

Consolidated and Capped CCR Area

Drainage Improvements Area; Stormwater Pond (Former Ash Pond)

- Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

2. Topographic mapping corresponds to the Decatur Quadrangle (Edition of 2019, Scale 1:24,000) and the Spring City Quadrangle (Edition of 2019, Scale 1:24,000)



U:\TVA-EPV\75468050_WBF_WorkPlans\gla\mxd\BGS_5480_WBF_BGS_1M_EhrA2_BackgroundSoilBoringLocationMap.mxd Revised: 2020-07-28 By: mbough

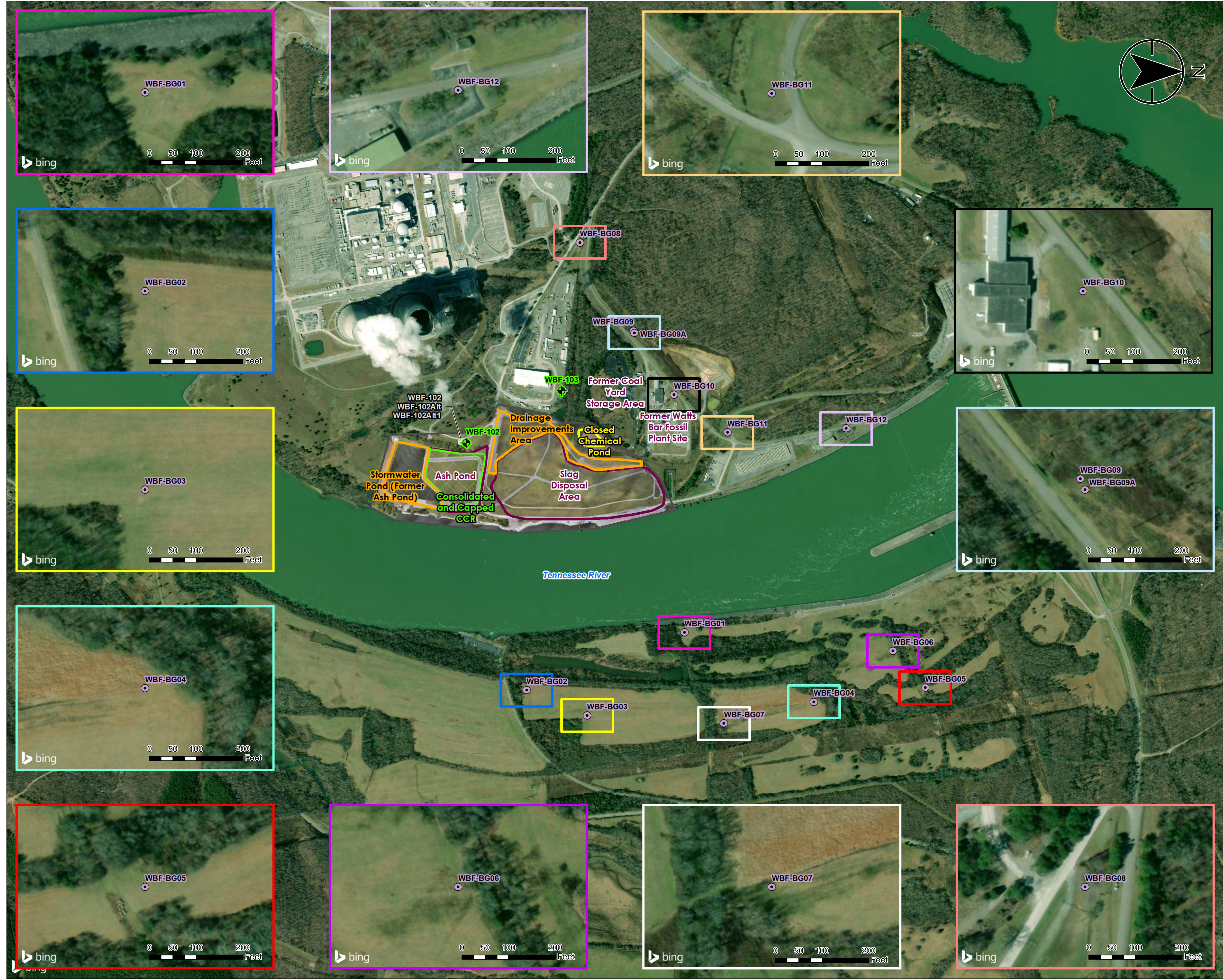


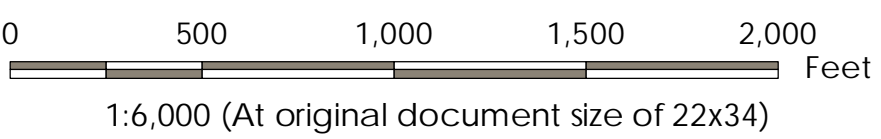
Exhibit No.
A.2

Title
Background Soil Boring Location Map

Client/Project
Tennessee Valley Authority
Watts Bar Fossil (WBF) Plant TDEC Order

Project Location
Spring City, Tennessee

175566336
Prepared by DMB on 2020-07-28
Technical Review by RN on 2020-07-28



Legend

●

 Background Soil Boring

⬮

 Background Monitoring Well

○

 Drilled and Abandoned Borehole

□

 2018 Imagery Boundary

□

 CCR Unit Area (Approximate)

□

 Closed Chemical Pond (Approximate)

□

 Consolidated and Capped CCR Area (Approximate)

□

 Drainage Improvements Area; Stormwater Pond (Former Ash Pond)

- Notes
1.

 Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2.

 Imagery Provided by TVA (2018-09-12) and Bing Imagery
3.

 WBF-BG02 was not drilled due to the presence of an archaeological site.
4.

 WBF-BG09 and WBF-BG09A were drilled, but no samples were collected due to presence of CCR.
5.

 Boring shown as WBF-BG10 was drilled as WBF-BG10A and logged as WBF-BG10.
6.

 Background monitoring well WBF-102 was logged and sampled at WBF-102Alt2(Sonic).
7.

 Background well borings WBF-102, WBF-102Alt, and WBF-102Alt1 were attempted, but were not the final location of the background well. As-drilled boring locations were not surveyed for these borings. Horizontal coordinates based on field measurements.



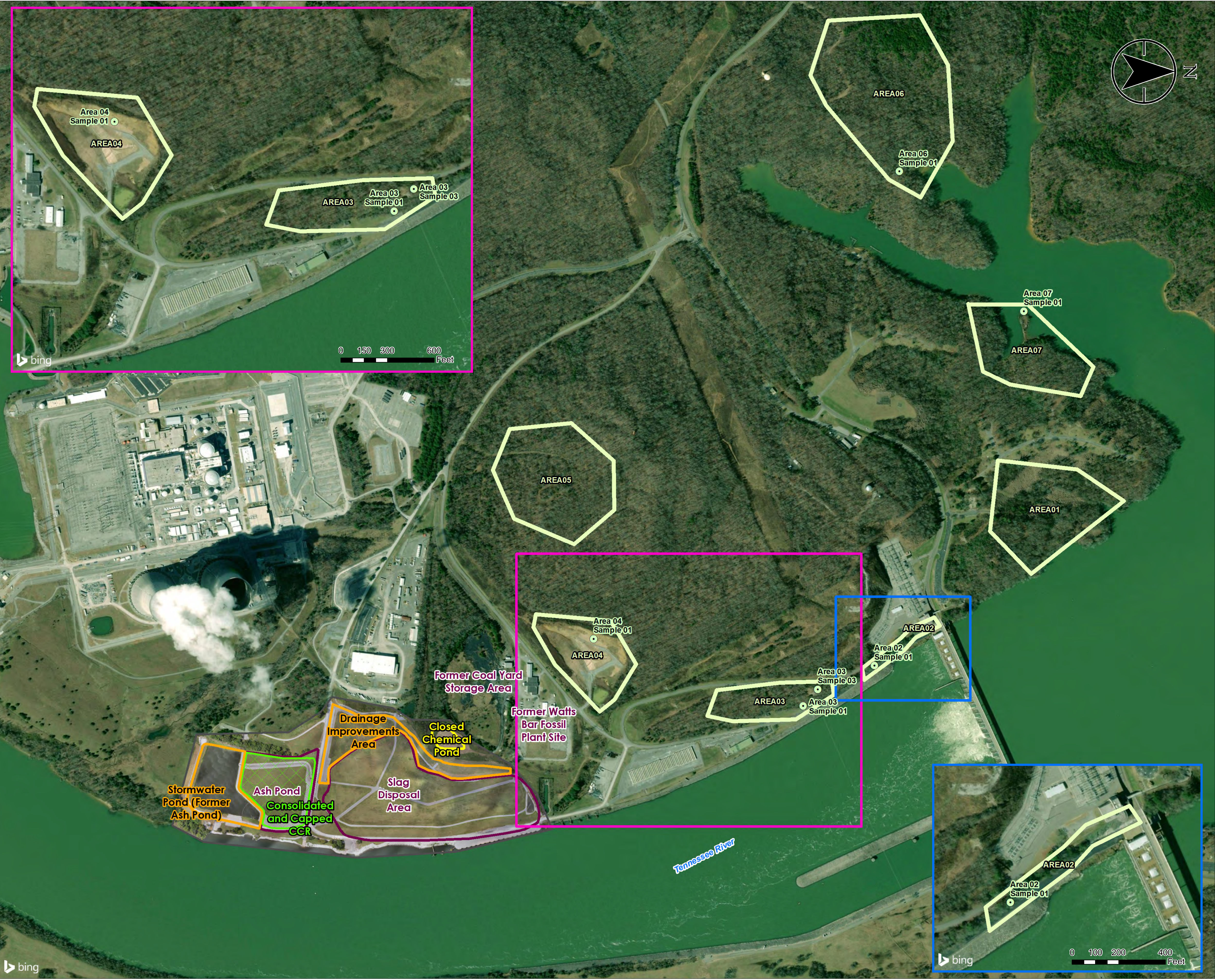


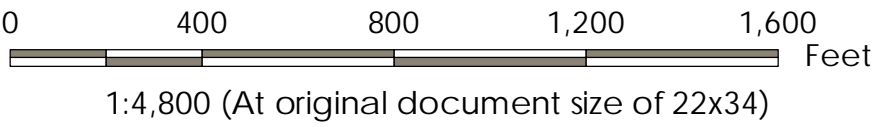
Exhibit No.
A.3

Title
Rock Outcrop Survey Area

Client/Project
Tennessee Valley Authority
Watts Bar Fossil (WBF) Plant TDEC Order

Project Location
Spring City, Tennessee

175566336
Prepared by DMB on 2020-09-15
Technical Review by RN on 2020-09-15



Legend

- Rock Sample
- Rock Outcrop Survey Area
- 2018 Imagery Boundary
- CCR Unit Area (Approximate)
- Closed Chemical Pond (Approximate)
- Consolidated and Capped CCR Area (Approximate)
- Drainage Improvements Area; Stormwater Pond (Former Ash Pond)

- Notes
- Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 - Imagery Provided by TVA (2018-09-12) and Bing Imagery



APPENDIX B - TABLES

TABLE B.1 – Summary of Background Soil Samples
Watts Bar Fossil Plant
June 2019 - September 2019

Analysis Type									
Location ID	Sample ID	Sample Type	% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
WBF-102	WBF-BS-WBF102-17.5/19.5-20190708	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-DUP01-20190708	Field Duplicate Sample		x	x	x	x		x
WBF-103	WBF-BS-WBF103-12.0/15.0-20190606	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG01	WBF-BS-BG01-0.0/0.5-20190911	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG01-1.5/3.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-6.5/8.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-11.5/13.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-16.5/18.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-21.5/23.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-26.5/28.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-31.5/33.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG01-36.5/38.5-20190911	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-0.0/0.5-20190904	Normal Environmental Sample	x	x	x	x	x	x	x
WBF-BG03	WBF-BS-DUP01-20190904	Field Duplicate Sample	x	x	x	x	x		x
	WBF-BS-BG03-1.5/3.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-6.5/8.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-11.5/13.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-16.5/18.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-21.5/23.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-26.5/28.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG03-31.5/33.5-20190904	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG04	WBF-BS-BG04-0.0/0.5-20190906	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG04-1.5/3.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG04-6.5/8.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG04-11.5/13.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG04-16.5/18.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG04-21.5/23.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG04-26.5/28.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG05	WBF-BS-BG04-31.5/33.5-20190906	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG05-0.0/0.5-20190909	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG05-1.5/3.5-20190909	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG05-6.5/8.5-20190909	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG05-11.5/13.5-20190909	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG05-16.5/18.5-20190909	Normal Environmental Sample		x	x	x	x	x	x

See notes on last page.

TABLE B.1 – Summary of Background Soil Samples
Watts Bar Fossil Plant
June 2019 - September 2019

Analysis Type									
Location ID	Sample ID	Sample Type	% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
WBF-BG06	WBF-BS-BG06-0.0/0.5-20190910	Normal Environmental Sample	x	x	x	x	x		x
	WBF-BS-DUP02-20190910	Field Duplicate Sample	x	x	x	x	x		x
	WBF-BS-BG06-1.5/3.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG06-6.5/8.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG06-11.5/13.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG06-16.5/18.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG06-21.5/23.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG06-26.5/28.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG07	WBF-BS-BG06-31.5/33.5-20190910	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-0.0/0.5-20190905	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG07-1.5/3.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-6.5/8.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-11.5/13.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-16.5/18.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-21.5/23.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG07-26.5/28.5-20190905	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG08	WBF-BS-BG08-0.0/0.5-20190912	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG08-1.5/3.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG08-6.5/8.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG08-11.5/13.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG08-16.5/18.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG08-21.5/23.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-DUP03-20190912	Field Duplicate Sample		x	x	x	x		x
	WBF-BS-BG08-26.5/28.5-20190912	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG10	WBF-BS-BG10-0.0/0.5-20190916	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG10-1.5/3.5-20190916	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG10-6.5/8.5-20190916	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG10-10.5/12.5-20190916	Normal Environmental Sample		x	x	x	x	x	x
WBF-BG11	WBF-BS-BG11-0.0/0.5-20190917	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-DUP03-20190917	Field Duplicate Sample	x	x	x	x	x		x
	WBF-BS-BG11-1.5/3.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG11-6.5/8.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG11-11.5/13.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG11-16.5/18.5-20190917	Normal Environmental Sample		x	x	x	x	x	x

See notes on last page.

TABLE B.1 – Summary of Background Soil Samples
Watts Bar Fossil Plant
June 2019 - September 2019

Analysis Type									
Location ID	Sample ID	Sample Type	% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
WBF-BG12	WBF-BS-BG12-0.0/0.5-20190917	Normal Environmental Sample	x	x	x	x	x	x	x
	WBF-BS-BG12-1.5/3.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG12-6.5/8.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG12-11.5/13.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG12-16.5/18.5-20190917	Normal Environmental Sample		x	x	x	x	x	x
	WBF-BS-BG12-21.5/23.5-20190917	Normal Environmental Sample		x	x	x	x	x	x

Notes:

% Ash	PLM
Total Metals	SW-846 6020A
Total Mercury	SW-846 7471B
Anions	SW-846 9056A
pH (laboratory)	SW-846 9045D
Radium-226, Radium-228, Radium-226+228	EPA 901.1
ID	identification

- 1. Field and laboratory quality control sample results except for field duplicates are not included in report tables but were used for data validation.
- 2. Boring WBF-102 and WBF-103 under hydrogeological investigation scope of work; sample collected within well screen interval.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-102		WBF-103	WBF-BG01					
Sample Date		8-Jul-19	8-Jul-19	6-Jun-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19
Sample ID		WBF-BS-WBF102-17.5/19.5-20190708	WBF-BS-DUP01-20190708	WBF-BS-WBF103-12.0/15.0-20190606	WBF-BS-BG01-0.0/0.5-20190911	WBF-BS-BG01-1.5/3.5-20190911	WBF-BS-BG01-6.5/8.5-20190911	WBF-BS-BG01-11.5/13.5-20190911	WBF-BS-BG01-16.5/18.5-20190911	WBF-BS-BG01-21.5/23.5-20190911
Sample Depth		17.5 - 19.5 ft	17.5 - 19.5 ft	12 - 15 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft
Sample Type		Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Validated	Validated	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units										
PLM										
% ASH	%	-	-	-	1	-	-	-	-	-
Total Metals										
Antimony	mg/kg	0.0706 UJ	0.127 J	<0.0872	0.108 J	0.0712 J	0.0766 J	0.121 J	0.111 J	0.0969 J
Arsenic	mg/kg	7.07	6.08	9.02	3.65	2.45	3.29	4.37	3.50	3.47
Barium	mg/kg	1,110 J	1,310 J	88.0	164	139	111	223	192	180
Beryllium	mg/kg	1.64	1.56	0.689	1.48	1.25	1.17	2.00	1.66	1.63
Boron	mg/kg	<1.54	<1.51	<1.90	2.85 J	2.48 J	2.14 J	3.17 J	2.37 J	2.29 J
Cadmium	mg/kg	0.397	0.480	0.0252 J	0.284	0.227	0.237	0.346	0.210	0.235
Calcium	mg/kg	387	448	358	2,390	1,960	1,270	3,320	2,220	2,100
Chromium	mg/kg	20.3	17.2	9.42	16.3	14.4	13.9	21.1	17.5	17.9
Cobalt	mg/kg	46.1	51.3	20.8	10.6	8.64	8.28	13.9	11.2	11.7
Copper	mg/kg	13.1	13.8	6.89	12.8	10.4	10.1	16.3	15.1	14.8
Lead	mg/kg	10.3	11.5	4.33	16.5	11.7	13.6	19.0	16.8	15.3
Lithium	mg/kg	10.1	12.1	6.93	20.2	16.7	14.0	26.6	23.6	22.7
Mercury	mg/kg	<0.0163	<0.0157	<0.0160	0.0265 J	0.0302 J	0.0327 J	0.0327 J	0.0328 J	0.0253 J
Molybdenum	mg/kg	0.779	0.962	0.639 J	0.652	0.423 J	0.542 J	0.782	0.771	0.689
Nickel	mg/kg	21.7	24.3	8.69	15.1	12.6	11.3	20.3	17.5	17.5
Selenium	mg/kg	2.52 J	3.80 J	1.01	0.616	0.511 J	0.523 J	0.880	0.483 J	0.616 J
Silver	mg/kg	<0.0308	<0.0301	<0.0380	0.0345 J	0.0307 J	<0.0321	0.0420 J	0.0373 J	0.0376 J
Thallium	mg/kg	0.566 J	0.814 J	0.220	0.294	0.257	0.243	0.365	0.331	0.346
Vanadium	mg/kg	9.86	9.38	11.9	21.3	18.2	18.8	27.1	25.8	26.3
Zinc	mg/kg	42.5	43.3	21.1	57.9	49.5	53.3	73.8	63.2	61.7
Anions										
Chloride	mg/kg	7.19 J	8.87 J	<5.11	<4.53	<4.38	<4.76	<5.12	<4.84	<4.91
Fluoride	mg/kg	1.15 J	1.17 J	<0.896	0.794 UR	0.768 UR	0.834 UR	1.12 J	1.04 J	1.57 J
Sulfate	mg/kg	82.8	93.6	77.9	10.1 J	12.4	19.8	15.1	18.1	30.2
General Chemistry										
pH (lab)	SU	7.3	7.3	6.3	6.2	6.6	6.2	6.7	7.0	7.1

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBFBG01				WBFBG03				
Sample Date		11-Sep-19	11-Sep-19	11-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19
Sample ID		WBFBG01-26.5/28.5-20190911	WBFBG01-31.5/33.5-20190911	WBFBG01-36.5/38.5-20190911	WBFBG03-0.0/0.5-20190904	WBFBG03-DUP01-20190904	WBFBG03-1.5/3.5-20190904	WBFBG03-6.5/8.5-20190904	WBFBG03-11.5/13.5-20190904	WBFBG03-16.5/18.5-20190904
Sample Depth		26.5 - 28.5 ft	31.5 - 33.5 ft	36.5 - 38.5 ft	0 - 0.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units										
PLM										
% ASH	%	-	-	-	1	<1	-	-	-	-
Total Metals										
Antimony	mg/kg	0.129 J	0.127 J	<0.0832	0.111 J	0.106 J	0.128 J	0.146 J	<0.0798	<0.0786
Arsenic	mg/kg	3.11	3.27	1.53	2.79	2.26	4.90	4.50	3.10	2.92
Barium	mg/kg	161	174	49.0	126	103	98.7	81.7	64.4	70.1
Beryllium	mg/kg	1.54	1.56	0.492	1.31	1.10	1.15	1.00	0.792	0.647
Boron	mg/kg	2.09 J	2.33 J	<1.81	2.78 J	2.74 J	2.81 J	3.00 J	<1.74	<1.71
Cadmium	mg/kg	0.230	0.143	0.0929 J	0.123 J	0.0987 J	0.0482 J	0.0384 J	0.0811 J	0.0796 J
Calcium	mg/kg	1,770	1,550	664	1,160	960	491	124	240	348
Chromium	mg/kg	17.4	19.2	10.9	13.5	11.2	20.3	18.7	19.2	17.3
Cobalt	mg/kg	10.7	12.4	4.12	11.1	9.79	15.1	12.8	10.3	9.20
Copper	mg/kg	14.5	15.4	4.54	9.76	8.38	15.1	16.0	11.0	10.5
Lead	mg/kg	13.7	16.2	4.32	14.5	11.1	16.4	14.3	9.35	8.86
Lithium	mg/kg	20.5	21.7	7.56	10.9	9.27	18.1	15.4	10.5	10.3
Mercury	mg/kg	0.0221 J	0.0411	<0.0179	0.0310 J	0.0251 J	0.0370	0.0452	0.0227 J	0.0216 J
Molybdenum	mg/kg	0.634	0.606 J	0.230 J	0.494 J	0.403 J	0.993	0.915	0.552 J	0.532 J
Nickel	mg/kg	16.5	17.7	6.60	11.8	10.0	15.3	15.4	12.1	11.4
Selenium	mg/kg	0.558 J	0.563 J	0.587 J	1.08	1.18	0.545 J	0.640	0.305 J	0.643
Silver	mg/kg	0.0436 J	0.0472 J	<0.0362	<0.0354	0.0430 J	<0.0308	<0.0325	<0.0348	<0.0342
Thallium	mg/kg	0.314	0.307	0.124 J	0.275	0.211	0.533	0.314	0.215	0.213
Vanadium	mg/kg	23.8	24.6	10.1	18.8	15.5	32.4	30.9	23.8	24.5
Zinc	mg/kg	60.1	65.7	25.9	44.6 J	43.7 J	55.0 J	46.8 J	39.3	37.7
Anions										
Chloride	mg/kg	<5.02	<5.12	<5.53	<4.80	<4.23	<4.47	<4.47	<4.91	<4.92
Fluoride	mg/kg	0.881 UR	1.39 J	0.969 UR	2.27 J	2.00 J	0.783 UR	0.783 UR	0.860 UR	1.05 J
Sulfate	mg/kg	23.0	21.6	14.5	<8.40	<7.39	25.3	<7.82	<8.59	<8.62
General Chemistry										
pH (lab)	SU	6.2	6.2	6.1	6.3	6.4	5.6	5.6	5.6	5.9

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG03			WBF-BG04					
Sample Date		4-Sep-19	4-Sep-19	4-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19
Sample ID		WBF-BS-BG03-21.5/23.5-20190904	WBF-BS-BG03-26.5/28.5-20190904	WBF-BS-BG03-31.5/33.5-20190904	WBF-BS-BG04-0.0/0.5-20190906	WBF-BS-BG04-0.0/0.5-20190906	WBF-BS-BG04-1.5/3.5-20190906	WBF-BS-BG04-6.5/8.5-20190906	WBF-BS-BG04-11.5/13.5-20190906	WBF-BS-BG04-16.5/18.5-20190906
Sample Depth		21.5 - 23.5 ft	26.5 - 28.5 ft	31.5 - 33.5 ft	0 - 0.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Validated	Validated	Validated	Validated	Validated
Units										
PLM										
% ASH	%	-	-	-	1	-	-	-	-	-
Total Metals										
Antimony	mg/kg	<0.0792	<0.0744	0.0671 UJ	-	0.187 J	8.89 J	0.166 J	0.138 J	0.124 J
Arsenic	mg/kg	1.97	2.20	3.21	-	4.07	12.7 J	5.85	5.30	4.63
Barium	mg/kg	27.2	36.5	78.7	-	119	119	121	124	115
Beryllium	mg/kg	0.264	0.422	0.356	-	1.27	4.50	1.23	1.21	1.18
Boron	mg/kg	<1.72	<1.62	<1.46	-	3.10 J	55.9	2.47 J	2.74 J	1.97 J
Cadmium	mg/kg	0.0396 J	0.0555 J	0.0711 J	-	0.119	3.29 J	0.0518 J	0.120 J	0.0976 J
Calcium	mg/kg	147	323	223	-	997	9,800	343	645	749
Chromium	mg/kg	7.84	10.9	7.90	-	18.4	26.3	23.2	22.1	23.8
Cobalt	mg/kg	4.98	5.87	5.34	-	13.2	12.4	28.2	13.4	13.0
Copper	mg/kg	3.93	5.93	4.43	-	11.8	21.3	19.5	19.3	18.6
Lead	mg/kg	4.38	5.39	7.40	-	18.2 J	19.8 J	19.2 J	15.8	14.1
Lithium	mg/kg	3.68	5.16	4.12	-	15.9	24.5	18.0	18.4	17.6
Mercury	mg/kg	<0.0161	<0.0173	<0.0156	-	0.0309 J	0.0214 J	0.0247 J	0.0337 J	0.0356
Molybdenum	mg/kg	0.314 J	0.392 J	0.612	-	0.659	4.41 J	0.930	0.855	0.854
Nickel	mg/kg	4.91	6.60	5.25	-	14.8	19.7	18.3	19.8	19.4
Selenium	mg/kg	<0.151	0.250 J	0.192 J	-	1.28	6.58 J	0.760 J	0.830	0.944
Silver	mg/kg	<0.0345	<0.0324	<0.0292	-	0.0362 J	8.68 J	<0.0329	<0.0335	<0.0335
Thallium	mg/kg	0.0905 J	0.107 J	0.190	-	0.444 J	6.91 J	0.390 J	0.355 U*	0.329 U*
Vanadium	mg/kg	9.83	14.7	7.91	-	25.6	42.2	35.5	37.0	38.0
Zinc	mg/kg	19.7	24.7	14.0 J	-	57.6 J	73.2 J	64.8 J	64.6 J	65.4 J
Anions										
Chloride	mg/kg	<4.85	<4.77	<4.36	-	<4.56	<4.83	<4.62	<4.87	<4.86
Fluoride	mg/kg	1.03 J	1.38 J	0.764 UR	-	0.799 UR	0.847 UR	0.810 UR	1.56 J	1.65 J
Sulfate	mg/kg	<8.48	11.9 J	<7.63	-	<7.98	21.8	9.75 J	9.97 J	11.7 J
General Chemistry										
pH (lab)	SU	6.4	6.5	7.1	-	6.1	5.6	5.9	6.2	6.4
See notes on last page.										

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location			WBF-BG04				WBF-BG05			WBF-BG06
Sample Date		6-Sep-19	6-Sep-19	6-Sep-19	9-Sep-19	9-Sep-19	9-Sep-19	9-Sep-19	9-Sep-19	10-Sep-19
Sample ID		WBF-BS-BG04-21.5/23.5-20190906	WBF-BS-BG04-26.5/28.5-20190906	WBF-BS-BG04-31.5/33.5-20190906	WBF-BS-BG05-0.0/0.5-20190909	WBF-BS-BG05-1.5/3.5-20190909	WBF-BS-BG05-6.5/8.5-20190909	WBF-BS-BG05-11.5/13.5-20190909	WBF-BS-BG05-16.5/18.5-20190909	WBF-BS-BG06-0.0/0.5-20190910
Sample Depth		21.5 - 23.5 ft	26.5 - 28.5 ft	31.5 - 33.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	0 - 0.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Validated	Validated	Validated	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units										
PLM										
% ASH	%	-	-	-	2	-	-	-	-	<1
Total Metals										
Antimony	mg/kg	0.0975 J	0.0839 UJ	0.0702 UJ	0.198 J	0.148 J	0.0743 J	<0.0826	<0.0820	0.155 J
Arsenic	mg/kg	3.53	2.66	4.68	4.71	4.12	2.45	5.26	1.27	5.41
Barium	mg/kg	98.8	83.9	38.1	55.2	34.9	35.9	39.2	141	131
Beryllium	mg/kg	0.893	0.910	0.296	0.483	0.658	0.569	1.01	0.906	1.05
Boron	mg/kg	<1.73	<1.83	<1.53	1.93 J	1.75 J	<1.46	<1.80	<1.78	3.38 J
Cadmium	mg/kg	0.0706 J	0.0598 J	0.0227 J	0.0444 J	0.0315 J	<0.0184	0.0560 J	0.182	0.248
Calcium	mg/kg	771	759	294	1,020	220	31.8 J	22.0 J	100	1,360
Chromium	mg/kg	21.6	21.2	14.3	15.0	16.7	9.96	18.8	14.1	17.4
Cobalt	mg/kg	10.2	9.37	4.06	7.16	6.93	5.43	10.4	16.4	10.9
Copper	mg/kg	15.2	13.5	4.09	7.82	10.9	7.26	4.66	11.4	13.9
Lead	mg/kg	11.5	9.14	4.12	15.5	13.3	8.63	7.62	12.8	22.3
Lithium	mg/kg	15.3	13.2	2.93	8.19	9.68	6.03	2.89	16.8	12.1
Mercury	mg/kg	0.0270 J	0.0224 J	<0.0146	0.0507	0.0799	0.0366	0.0207 J	0.0296 J	0.0766
Molybdenum	mg/kg	0.832	0.480 J	0.572	0.789	0.824	0.449 J	0.538 J	0.351 J	0.736
Nickel	mg/kg	15.1	14.4	5.84	7.14	7.92	6.87	5.44	14.6	13.9
Selenium	mg/kg	0.661	0.577 J	0.184 J	0.683	0.475 J	0.673	0.321 J	0.504 J	0.939
Silver	mg/kg	<0.0346	<0.0365	<0.0306	<0.0319	<0.0318	<0.0292	<0.0360	<0.0357	0.0409 J
Thallium	mg/kg	0.321 U*	0.279 U*	0.109 U*	0.254	0.318	0.168	0.156	0.328	0.301
Vanadium	mg/kg	30.6	30.5	7.76	24.3	29.2	21.1	16.7	26.1	23.4
Zinc	mg/kg	57.2 J	54.1 J	18.5 J	29.3	31.2	23.8	18.0	50.9	74.8
Anions										
Chloride	mg/kg	<5.04	<5.19	<4.42	<4.43	<4.38	<4.33	<4.82	<4.98	<4.86
Fluoride	mg/kg	2.19 J	2.35 J	0.775 UR	<0.777	<0.768	<0.759	<0.845	<0.873	0.905 J
Sulfate	mg/kg	<8.82	11.3 J	<7.74	10.6 J	9.19 J	<7.58	<8.44	<8.72	<8.51
General Chemistry										
pH (lab)	SU	6.8	7.0	7.0	6.2	5.8	5.4	5.3	5.4	6.2
See notes on last page.										

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBFBG06									WBFBG07
Sample Date		10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	5-Sep-19
Sample ID		WBFBSDUP0220190910	WBFBBSBG061.5/3.520190910	WBFBBSBG066.5/8.520190910	WBFBBSBG0611.5/13.520190910	WBFBBSBG0616.5/18.520190910	WBFBBSBG0621.5/23.520190910	WBFBBSBG0626.5/28.520190910	WBFBBSBG0631.5/33.520190910	WBFBBSBG070.0/0.520190905	
Sample Depth		0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	31.5 - 33.5 ft	0 - 0.5 ft	
Sample Type		Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
		Units									
PLM											
% ASH		%	3	-	-	-	-	-	-	-	<1
Total Metals											
Antimony		mg/kg	0.152 J	0.0997 J	0.110 J	0.107 J	0.0963 J	0.0878 J	<0.0848	<0.0721	0.159 J
Arsenic		mg/kg	4.58	3.55	3.97	3.79	3.32	2.90	4.94	3.48	3.41
Barium		mg/kg	124	99.6	755	95.0	102	85.2	212	57.7	126
Beryllium		mg/kg	1.05	1.14	1.34	1.18	0.861	0.815	0.691	0.442	1.26
Boron		mg/kg	2.94 J	2.38 J	3.32 J	2.35 J	<1.77	1.75 J	<1.85	<1.57	3.12 J
Cadmium		mg/kg	0.244	0.0458 J	0.0727 J	0.0822 J	0.0953 J	0.0703 J	0.0682 J	0.0207 J	0.141
Calcium		mg/kg	1,250	439	902	1,030	956	950	892	265	1,520
Chromium		mg/kg	16.5	17.9	16.5	16.1	15.5	15.2	14.7	13.4	17.7
Cobalt		mg/kg	10.9	12.5	9.28	7.48	9.31	6.67	9.22	3.34	7.78
Copper		mg/kg	13.6	13.6	14.6	16.1	14.3	11.7	11.2	5.30	9.57
Lead		mg/kg	21.5	14.3	14.1	13.1	12.3	9.79	9.41	4.47	15.4
Lithium		mg/kg	11.3	16.7	22.3	18.0	12.7	10.3	9.50	4.62	14.3
Mercury		mg/kg	0.0762	0.0450	0.0282 J	0.0503	0.0385 J	0.0390 J	0.0325 J	<0.0171	0.0340 J
Molybdenum		mg/kg	0.609	0.707	0.822	0.706	0.665	0.580 J	0.828	0.695	0.553 J
Nickel		mg/kg	12.9	12.4	14.5	15.0	13.6	11.2	10.7	6.03	12.9
Selenium		mg/kg	0.796	0.956	0.796	0.518 J	0.680	0.528 J	0.472 J	0.314 J	1.30
Silver		mg/kg	0.0369 J	<0.0312	<0.0332	<0.0333	<0.0354	<0.0344	<0.0369	<0.0314	0.0552 J
Thallium		mg/kg	0.253	0.269	0.325	0.298	0.297	0.237	0.217	0.108 J	0.245
Vanadium		mg/kg	22.1	25.9	23.8	23.4	23.8	21.7	20.2	8.66	24.4
Zinc		mg/kg	70.8	62.1	57.3	53.2	48.5	43.0	38.6	18.0	58.1 J
Anions											
Chloride		mg/kg	<4.38	<4.44	10.3 J	14.8	8.17 J	<4.87	<4.91	<4.64	<4.56
Fluoride		mg/kg	0.845 J	<0.778	14.6	10.3	8.42	4.52	3.39	<0.814	1.98 J
Sulfate		mg/kg	<7.67	130	87.6	98.5	47.2	18.3	16.3	<8.12	11.4 J
General Chemistry											
pH (lab)		SU	6.2	5.7	8.2	8.3	7.7	7.1	6.9	6.7	6.0
See notes on last page.											

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG07						WBF-BG08		
Sample Date		5-Sep-19	5-Sep-19	5-Sep-19	5-Sep-19	5-Sep-19	5-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19
Sample ID		WBF-BS-BG07-1.5/3.5-20190905	WBF-BS-BG07-6.5/8.5-20190905	WBF-BS-BG07-11.5/13.5-20190905	WBF-BS-BG07-16.5/18.5-20190905	WBF-BS-BG07-21.5/23.5-20190905	WBF-BS-BG07-26.5/28.5-20190905	WBF-BS-BG08-0.0/0.5-20190912	WBF-BS-BG08-1.5/3.5-20190912	WBF-BS-BG08-6.5/8.5-20190912
Sample Depth		1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
	Units									
PLM										
% ASH	%	-	-	-	-	-	-	<1	-	-
Total Metals										
Antimony	mg/kg	0.119 J	0.119 J	0.0875 J	0.123 J	0.0965 J	0.0833 UJ	0.120 J	0.0878 J	0.147 J
Arsenic	mg/kg	4.03	3.96	4.62	6.08	4.04	1.45	2.53	2.06	4.66
Barium	mg/kg	149	113	116	131	87.9	86.7	50.4	44.1	51.7
Beryllium	mg/kg	1.49	1.11	1.06	1.20	0.970	0.722	0.345	0.220	0.317
Boron	mg/kg	3.13 J	2.85 J	2.70 J	2.88 J	2.41 J	2.08 J	2.63 J	<1.52	<1.78
Cadmium	mg/kg	0.0876 J	0.0791 J	0.0607 J	0.0933 J	0.0614 J	0.0265 J	0.0353 J	<0.0192	<0.0224
Calcium	mg/kg	1,140	920	1,070	1,290	1,030	842	9,350	599	224
Chromium	mg/kg	20.6	21.7	21.9	20.9	19.2	19.1	10.2	10.3	23.1
Cobalt	mg/kg	8.95	13.1	10.3	14.4	9.44	8.11	3.76	1.38	2.89
Copper	mg/kg	10.1	15.2	17.8	19.7	14.1	12.0	4.17	2.45	3.68
Lead	mg/kg	15.6	14.9	13.6	16.9	12.2	9.40	9.35	6.41	11.2
Lithium	mg/kg	17.6	19.6	16.1	14.8	11.9	11.0	4.99	6.59	8.78
Mercury	mg/kg	0.0467	0.0361 J	0.0320 J	0.0378	0.0207 J	<0.0141	0.0215 J	0.0275 J	0.0240 J
Molybdenum	mg/kg	0.748	0.980	0.730	0.814	0.579 J	0.430 J	1.09	0.442 J	0.545 J
Nickel	mg/kg	14.3	18.6	17.8	17.6	13.5	11.8	4.41	2.95	3.59
Selenium	mg/kg	1.52	1.02	0.972	0.793	0.696	0.462 J	0.405 J	0.395 J	1.00
Silver	mg/kg	0.0722 J	<0.0330	0.0996 J	<0.0347	<0.0352	<0.0363	<0.0316	<0.0304	<0.0356
Thallium	mg/kg	0.509	0.450	0.372	0.361	0.280	0.206	0.139	0.153	0.224
Vanadium	mg/kg	29.8	30.8	30.2	33.9	26.8	23.8	14.7	16.6	32.5
Zinc	mg/kg	62.0 J	59.4 J	51.4 J	61.4 J	44.9 J	36.7 J	22.5	7.80	10.1
Anions										
Chloride	mg/kg	<4.58	6.73 J	19.8	10.4 J	<4.90	<5.12	<4.51	<4.45	<4.87
Fluoride	mg/kg	0.803 UR	8.31 J	12.7 J	15.4 J	10.2 J	1.59 J	1.50 J	0.781 UR	0.853 UR
Sulfate	mg/kg	24.8	127	138	93.1	23.9	22.0	15.1	32.8	44.7
General Chemistry										
pH (lab)	SU	5.9	7.4	7.9	8.1	7.4	6.9	7.8	5.8	4.9

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG08					WBF-BG10				
Sample Date		12-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19	16-Sep-19	16-Sep-19	16-Sep-19	16-Sep-19	
Sample ID		WBF-BS-BG08-11.5/13.5-20190912	WBF-BS-BG08-16.5/18.5-20190912	WBF-BS-BG08-21.5/23.5-20190912	WBF-BS-DUP03-20190912	WBF-BS-BG08-26.5/28.5-20190912	WBF-BS-BG10-0.0/0.5-20190916	WBF-BS-BG10-1.5/3.5-20190916	WBF-BS-BG10-6.5/8.5-20190916	WBF-BS-BG10-10.5/12.5-20190916	
Sample Depth		11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	10.5 - 12.5 ft	
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Units											
PLM											
% ASH	%	-	-	-	-	-	2	-	-	-	
Total Metals											
Antimony	mg/kg	0.185 J	0.0737 UJ	0.0904 J	0.113 J	0.127 J	0.139 J	<0.0713	<0.0694	<0.0700	
Arsenic	mg/kg	9.18	3.18	2.43 J	4.23 J	2.13	4.05	3.28	3.27	2.17	
Barium	mg/kg	68.6	109	118	115	112	61.7	146	355	285	
Beryllium	mg/kg	0.562	0.798	2.15	2.62	2.27	0.763	1.51	1.39	1.26	
Boron	mg/kg	<1.88	1.62 J	1.83 J	1.76 J	<1.85	2.55 J	2.33 J	2.11 J	2.72 J	
Cadmium	mg/kg	<0.0236	0.0214 J	<0.0225	<0.0214	0.215	0.0553 J	<0.0195	<0.0190	<0.0192	
Calcium	mg/kg	150	512	834	823	812	33,900	1,220	1,660	2,920	
Chromium	mg/kg	28.6	20.7	19.6	20.2	18.3	17.5	41.0	43.1	43.7	
Cobalt	mg/kg	4.80	3.72	3.93	4.90	15.8	7.06	14.3	39.1	19.8	
Copper	mg/kg	9.99	10.9	12.6	14.0	13.4	10.9	27.6	16.2	22.1	
Lead	mg/kg	12.2	4.55	10.9	11.6	9.88	11.9	5.13	3.79	3.43	
Lithium	mg/kg	10.5	9.52	8.97	8.45	13.2	9.89	27.9	23.5	27.7	
Mercury	mg/kg	0.302	<0.0161	0.0421	0.0362 J	<0.0197	0.0324 J	<0.0156	<0.0163	<0.0142	
Molybdenum	mg/kg	0.989	0.553 J	0.498 J	1.04	0.518 J	0.697	<0.187	<0.182	<0.184	
Nickel	mg/kg	6.87	11.1	12.9	15.3	25.7	11.5	42.4	49.4	49.8	
Selenium	mg/kg	0.916	0.219 J	0.517 J	0.489 J	0.867	0.485 J	0.411 J	0.487 J	<0.138	
Silver	mg/kg	<0.0375	<0.0321	<0.0358	<0.0339	<0.0370	<0.0329	<0.0310	<0.0302	<0.0305	
Thallium	mg/kg	0.271	0.250	0.188	0.217	0.223	0.208	0.199	0.223	0.227	
Vanadium	mg/kg	37.4	25.5	20.7	24.5	19.2	27.4	25.4	27.1	23.6	
Zinc	mg/kg	20.5	36.7	41.2	46.6	127	36.8	55.8	66.9	72.1	
Anions											
Chloride	mg/kg	<5.21	<4.78	<5.04	<4.89	<5.32	5.37 J	<4.17	5.56 J	4.51 J	
Fluoride	mg/kg	0.914 UR	0.838 UR	1.15 J	1.16 J	2.88 J	4.01 J	0.912 J	2.14 J	3.90 J	
Sulfate	mg/kg	10.8 J	15.9	20.9	23.1	22.8	16.8	33.3	12.9	21.2	
General Chemistry											
pH (lab)	SU	5.4	5.5	5.8	5.8 J	6.3	7.6	5.4	6.0	6.9	
See notes on last page.											

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG11									WBF-BG12	
Sample Date		17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19
Sample ID		WBF-BS-BG11-0.0/0.5-20190917	WBF-BS-DUP03-20190917	WBF-BS-BG11-1.5/3.5-20190917	WBF-BS-BG11-6.5/8.5-20190917	WBF-BS-BG11-11.5/13.5-20190917	WBF-BS-BG11-16.5/18.5-20190917	WBF-BS-BG12-0.0/0.5-20190917	WBF-BS-BG12-1.5/3.5-20190917	WBF-BS-BG12-6.5/8.5-20190917		
Sample Depth		0 - 0.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft		
Sample Type		Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample		
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified		
Units												
PLM												
% ASH	%	1	2	-	-	-	-	3	-	-		
Total Metals												
Antimony	mg/kg	0.179 J	0.169 J	0.0732 UJ	0.0779 UJ	0.229 J	0.0714 UJ	0.171 J	0.0726 UJ	0.0896 J		
Arsenic	mg/kg	5.63	5.34	2.66	3.92	6.80	3.80	3.71	3.80	3.71		
Barium	mg/kg	164	186	238	297	126	78.6	194	292	192		
Beryllium	mg/kg	1.28	1.26	0.683	1.26	1.32	1.31	1.34	1.90	1.29		
Boron	mg/kg	3.81 J	2.77 J	4.25 J	2.71 J	2.88 J	1.85 J	3.55 J	9.32 J	2.70 J		
Cadmium	mg/kg	0.262	0.321	0.106 J	0.0305 J	0.0239 J	0.0283 J	0.362	0.0749 J	0.164		
Calcium	mg/kg	1,940	2,260	14,200	1,280	586	597	3,200	14,700	1,540		
Chromium	mg/kg	16.2	18.1	18.9	27.5	31.4	23.6	18.9	22.5	19.7		
Cobalt	mg/kg	9.08	10.1	8.09	19.9	10.8	8.57	11.4	12.4	11.1		
Copper	mg/kg	23.2	25.1	13.7	19.4	17.9	27.0	16.3	23.4	15.5		
Lead	mg/kg	13.5	14.5	11.6	28.1	16.1	14.8	19.9	13.0	13.0		
Lithium	mg/kg	14.0	13.6	13.5	25.8	25.1	19.2	14.9	24.9	14.2		
Mercury	mg/kg	0.0361	0.0394	<0.0163	0.0675	0.0548	<0.0153	0.0410	<0.0146	0.0312 J		
Molybdenum	mg/kg	0.695	0.691	0.287 J	0.383 J	1.25	0.546 J	0.678	0.296 J	0.530 J		
Nickel	mg/kg	14.4	16.9	18.2	27.5	20.4	26.7	17.3	23.0	15.5		
Selenium	mg/kg	0.673	0.644	0.195 J	0.641	0.768	0.278 J	0.656	0.684	0.614		
Silver	mg/kg	<0.0330	0.0385 J	0.0526 J	<0.0339	<0.0362	<0.0311	0.0426 J	<0.0316	0.0403 J		
Thallium	mg/kg	0.527	0.297	0.120	0.208	0.320	0.0892 J	0.259	0.235	0.233		
Vanadium	mg/kg	20.4	22.2	16.4	23.8	43.7	16.6	23.8	20.7	23.3		
Zinc	mg/kg	54.8	61.8	72.4	43.6	59.8	43.7	71.4	46.9	57.9		
Anions												
Chloride	mg/kg	5.02 J	6.63 J	5.14 J	5.20 J	5.02 J	5.13 J	5.81 J	4.76 J	5.61 J		
Fluoride	mg/kg	2.07 J	2.45 J	2.75 J	0.829 UR	0.849 UR	0.768 UR	2.10 J	2.06 J	1.60 J		
Sulfate	mg/kg	10.9 J	16.1	67.2	269	74.1	64.8	13.6	53.7	24.5		
General Chemistry												
pH (lab)	SU	6.3	6.4	8.4	6.2	5.2	4.9	6.4	7.2	6.3		
See notes on last page.												

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG12		
Sample Date		17-Sep-19	17-Sep-19	17-Sep-19
Sample ID		WBF-BS-BG12-11.5/13.5-20190917	WBF-BS-BG12-16.5/18.5-20190917	WBF-BS-BG12-21.5/23.5-20190917
Sample Depth		11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified
Units				
PLM				
% ASH	%	-	-	-
Total Metals				
Antimony	mg/kg	0.103 J	0.0942 J	0.0732 UJ
Arsenic	mg/kg	4.11	3.60	5.02
Barium	mg/kg	211	96.4	381
Beryllium	mg/kg	1.54	1.16	1.05
Boron	mg/kg	2.81 J	1.78 J	1.92 J
Cadmium	mg/kg	0.122 J	0.151	0.164
Calcium	mg/kg	1,550	793	1,080
Chromium	mg/kg	20.5	15.8	21.4
Cobalt	mg/kg	13.1	11.4	13.9
Copper	mg/kg	13.6	10.9	14.5
Lead	mg/kg	15.3	11.0	7.96
Lithium	mg/kg	19.1	13.5	20.8
Mercury	mg/kg	0.0548	0.0351	0.0208 J
Molybdenum	mg/kg	0.788	0.578 J	0.422 J
Nickel	mg/kg	19.9	15.4	24.2
Selenium	mg/kg	0.494 J	0.314 J	0.383 J
Silver	mg/kg	<0.0342	<0.0316	<0.0319
Thallium	mg/kg	0.439	0.225	0.202
Vanadium	mg/kg	29.9	25.5	21.7
Zinc	mg/kg	66.9	47.9	49.4
Anions				
Chloride	mg/kg	5.08 J	4.83 J	4.75 J
Fluoride	mg/kg	1.82 J	0.794 UR	1.17 J
Sulfate	mg/kg	55.8	90.4	61.7
General Chemistry				
pH (lab)	SU	6.3	5.6	5.9

Notes:

<0.03	analyte was not detected at a concentration greater than the Method Detection Limit
-	parameter not analyzed / not available
%	percent
ft	feet below ground surface
ID	identification
J	quantitation is approximate due to limitations identified during data validation
mg/kg	milligrams per kilogram
PLM	Polarized Light Microscope - analysis for % ash
SU	Standard Unit
U*	this result should be considered "not detected" because it was detected in an associated field or laboratory blank at a similar level
UJ	this compound was not detected, but the reporting or detection limit should be considered estimated due to a bias identified during data validation
UR	unreliable reporting or detection limit; compound may or may not be present in sample.

1. Level of review is defined in the Quality Assurance Project Plan.
2. Non-detect (ND) results reported by RJ Lee Group for percent (%) ash expressed as <1 in table.
3. The 0-0.5 foot sample was collected using a hand auger when accessible during the drilling operations at that boring location; it may or may not have been the first sample obtained and thus could have a different sample date.
4. Level of review for % ash samples is Final-Verified.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-102		WBF-103			WBF-BG01				
Sample Date		8-Jul-19	8-Jul-19	6-Jun-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19	11-Sep-19
Sample ID		WBF-BS-WBF102-17.5/19.5-20190708	WBF-BS-DUP01-20190708	WBF-BS-WBF103-12.0/15.0-20190606	WBF-BS-BG01-0.0/0.5-20190911	WBF-BS-BG01-1.5/3.5-20190911	WBF-BS-BG01-6.5/8.5-20190911	WBF-BS-BG01-11.5/13.5-20190911	WBF-BS-BG01-16.5/18.5-20190911	WBF-BS-BG01-21.5/23.5-20190911	
Sample Depth		17.5 - 19.5 ft	17.5 - 19.5 ft	12 - 15 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	
Sample Type		Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Validated	Validated	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Radiological Parameters											
Radium-226	pCi/g	0.482 +/- (0.153)	0.475 +/- (0.146)	0.456 +/- (0.166)	1.18 +/- (0.289)	1.05 +/- (0.243)	1.09 +/- (0.292)	1.61 +/- (0.317)	1.46 +/- (0.345)	1.06 +/- (0.216)	
Radium-228	pCi/g	0.498 +/- (0.206)J	0.169 +/- (0.183)UJ	1.03 +/- (0.300)	1.47 +/- (0.362)	1.44 +/- (0.347)	1.24 +/- (0.495)	1.33 +/- (0.372)	2.09 +/- (0.368)	1.60 +/- (0.304)	
Radium-226+228	pCi/g	0.980 +/- (0.257)J	0.644 +/- (0.234)J	1.49 +/- (0.343)	2.65 +/- (0.463)	2.49 +/- (0.424)	2.33 +/- (0.575)	2.94 +/- (0.489)	3.55 +/- (0.504)	2.66 +/- (0.373)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG01						WBF-BG03		
Sample Date		11-Sep-19	11-Sep-19	11-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19	4-Sep-19
Sample ID		WBF-BS-BG01-26.5/28.5-20190911	WBF-BS-BG01-31.5/33.5-20190911	WBF-BS-BG01-36.5/38.5-20190911	WBF-BS-BG03-0.0/0.5-20190904	WBF-BS-DUP01-20190904	WBF-BS-BG03-1.5/3.5-20190904	WBF-BS-BG03-6.5/8.5-20190904	WBF-BS-BG03-11.5/13.5-20190904	WBF-BS-BG03-16.5/18.5-20190904
Sample Depth		26.5 - 28.5 ft	31.5 - 33.5 ft	36.5 - 38.5 ft	0 - 0.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Radiological Parameters										
Radium-226	pCi/g	1.43 +/- (0.329)	1.28 +/- (0.408)	0.695 +/- (0.213)	1.15 +/- (0.285)	1.29 +/- (0.306)	1.71 +/- (0.372)	1.25 +/- (0.264)	0.795 +/- (0.205)	0.895 +/- (0.221)
Radium-228	pCi/g	1.85 +/- (0.381)	1.63 +/- (0.478)	1.17 +/- (0.267)	1.33 +/- (0.368)	1.15 +/- (0.601)	1.78 +/- (0.434)	1.71 +/- (0.372)	0.617 +/- (0.259)	1.28 +/- (0.269)
Radium-226+228	pCi/g	3.28 +/- (0.503)	2.91 +/- (0.628)	1.87 +/- (0.342)	2.48 +/- (0.465)	2.44 +/- (0.674)	3.49 +/- (0.572)	2.96 +/- (0.456)	1.41 +/- (0.330)	2.18 +/- (0.348)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBFBG03			WBFBG04					
Sample Date		4-Sep-19	4-Sep-19	4-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19	6-Sep-19
Sample ID		WBFBG03-21.5/23.5-20190904	WBFBG03-26.5/28.5-20190904	WBFBG03-31.5/33.5-20190904	WBFBG04-0.0/0.5-20190906	WBFBG04-1.5/3.5-20190906	WBFBG04-6.5/8.5-20190906	WBFBG04-11.5/13.5-20190906	WBFBG04-16.5/18.5-20190906	WBFBG04-21.5/23.5-20190906
Sample Depth		21.5 - 23.5 ft	26.5 - 28.5 ft	31.5 - 33.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Validated	Validated	Validated	Validated	Validated	Validated
Units										
Radiological Parameters										
Radium-226	pCi/g	0.120 +/- (0.227)U	0.495 +/- (0.136)	0.392 +/- (0.116)	2.12 +/- (0.449)	1.41 +/- (0.319)	1.52 +/- (0.357)	1.82 +/- (0.396)	1.17 +/- (0.229)	1.47 +/- (0.348)
Radium-228	pCi/g	0.713 +/- (0.252)	1.03 +/- (0.280)	0.209 +/- (0.221)U	2.15 +/- (0.531)J	1.97 +/- (0.459)J	2.67 +/- (0.593)J	2.80 +/- (0.534)J	1.72 +/- (0.306)J	2.02 +/- (0.450)J
Radium-226+228	pCi/g	0.833 +/- (0.339)J	1.53 +/- (0.311)	0.601 +/- (0.250)J	4.27 +/- (0.695)J	3.38 +/- (0.559)J	4.19 +/- (0.692)J	4.62 +/- (0.665)J	2.89 +/- (0.382)J	3.49 +/- (0.569)J

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG04		9-Sep-19	9-Sep-19	WBF-BG05		9-Sep-19	9-Sep-19	WBF-BG06	
		6-Sep-19	6-Sep-19			9-Sep-19	9-Sep-19			10-Sep-19	10-Sep-19
		WBF-BS-BG04-26.5/28.5-20190906	WBF-BS-BG04-31.5/33.5-20190906			WBF-BS-BG05-0.0/0.5-20190909	WBF-BS-BG05-1.5/3.5-20190909			WBF-BS-BG06-0.0/0.5-20190910	WBF-BS-DUP02-20190910
		26.5 - 28.5 ft	31.5 - 33.5 ft			0 - 0.5 ft	1.5 - 3.5 ft			0 - 0.5 ft	0 - 0.5 ft
		Normal Environmental Sample	Normal Environmental Sample			Normal Environmental Sample	Normal Environmental Sample			Normal Environmental Sample	Field Duplicate Sample
Level of Review	Units	Validated	Validated	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Radiological Parameters											
Radium-226	pCi/g	0.980 +/- (0.228)	0.585 +/- (0.170)	1.68 +/- (0.345)	1.34 +/- (0.334)	0.789 +/- (0.208)	0.708 +/- (0.187)	1.30 +/- (0.321)	1.19 +/- (0.349)	1.17 +/- (0.277)	
Radium-228	pCi/g	1.63 +/- (0.336)J	0.815 +/- (0.190)J	1.44 +/- (0.334)	1.62 +/- (0.402)	0.893 +/- (0.250)	0.818 +/- (0.237)	1.63 +/- (0.386)	1.60 +/- (0.394)	1.50 +/- (0.319)	
Radium-226+228	pCi/g	2.61 +/- (0.406)J	1.40 +/- (0.255)J	3.12 +/- (0.480)	2.96 +/- (0.523)	1.68 +/- (0.325)	1.53 +/- (0.302)	2.93 +/- (0.502)	2.79 +/- (0.526)	2.67 +/- (0.422)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG06						WBF-BG07		
Sample Date		10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	10-Sep-19	5-Sep-19	5-Sep-19
Sample ID		WBF-BS-BG06-1.5/3.5-20190910	WBF-BS-BG06-6.5/8.5-20190910	WBF-BS-BG06-11.5/13.5-20190910	WBF-BS-BG06-16.5/18.5-20190910	WBF-BS-BG06-21.5/23.5-20190910	WBF-BS-BG06-26.5/28.5-20190910	WBF-BS-BG06-31.5/33.5-20190910	WBF-BS-BG07-0.0/0.5-20190905	WBF-BS-BG07-1.5/3.5-20190905
Sample Depth		1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	31.5 - 33.5 ft	0 - 0.5 ft	1.5 - 3.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
	Units									
Radiological Parameters										
Radium-226	pCi/g	1.27 +/- (0.268)	1.25 +/- (0.285)	1.32 +/- (0.344)	1.36 +/- (0.363)	1.30 +/- (0.264)	1.17 +/- (0.287)	0.789 +/- (0.183)	1.70 +/- (0.397)	0.994 +/- (0.389)U
Radium-228	pCi/g	1.78 +/- (0.326)	1.86 +/- (0.372)	1.45 +/- (0.411)	2.31 +/- (0.432)	1.60 +/- (0.317)	2.24 +/- (0.439)	1.07 +/- (0.220)	1.48 +/- (0.458)J	3.30 +/- (0.638)J
Radium-226+228	pCi/g	3.05 +/- (0.422)	3.11 +/- (0.469)	2.77 +/- (0.536)	3.67 +/- (0.564)	2.90 +/- (0.413)	3.41 +/- (0.524)	1.86 +/- (0.286)	3.18 +/- (0.606)J	4.29 +/- (0.747)J

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG07					WBF-BG08			
Sample Date		5-Sep-19	5-Sep-19	5-Sep-19	5-Sep-19	5-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19
Sample ID		WBF-BS-BG07-6.5/8.5-20190905	WBF-BS-BG07-11.5/13.5-20190905	WBF-BS-BG07-16.5/18.5-20190905	WBF-BS-BG07-21.5/23.5-20190905	WBF-BS-BG07-26.5/28.5-20190905	WBF-BS-BG08-0.0/0.5-20190912	WBF-BS-BG08-1.5/3.5-20190912	WBF-BS-BG08-6.5/8.5-20190912	WBF-BS-BG08-11.5/13.5-20190912
Sample Depth		6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Radiological Parameters										
Radium-226	pCi/g	1.20 +/- (0.243)	1.53 +/- (0.340)	1.68 +/- (0.377)	1.22 +/- (0.266)	1.61 +/- (0.322)	1.01 +/- (0.223)	1.46 +/- (0.342)	1.23 +/- (0.276)	1.34 +/- (0.319)
Radium-228	pCi/g	1.72 +/- (0.340)J	1.72 +/- (0.345)J	2.38 +/- (0.476)J	1.56 +/- (0.368)J	2.35 +/- (0.453)J	1.05 +/- (0.314)	1.49 +/- (0.382)	1.93 +/- (0.439)	2.17 +/- (0.412)
Radium-226+228	pCi/g	2.92 +/- (0.418)J	3.25 +/- (0.484)J	4.06 +/- (0.607)J	2.78 +/- (0.454)J	3.96 +/- (0.556)J	2.06 +/- (0.385)	2.95 +/- (0.513)	3.16 +/- (0.519)	3.51 +/- (0.521)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location Sample Date Sample ID Sample Depth Sample Type Level of Review	Units	WBF-BG08				WBF-BG10				WBF-BG11
		12-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19	16-Sep-19	16-Sep-19	16-Sep-19	16-Sep-19	17-Sep-19
		WBF-BS-BG08-16.5/18.5-20190912	WBF-BS-BG08-21.5/23.5-20190912	WBF-BS-DUP03-20190912	WBF-BS-BG08-26.5/28.5-20190912	WBF-BS-BG10-0.0/0.5-20190916	WBF-BS-BG10-1.5/3.5-20190916	WBF-BS-BG10-6.5/8.5-20190916	WBF-BS-BG10-10.5/12.5-20190916	WBF-BS-BG11-0.0/0.5-20190917
		16.5 - 18.5 ft	21.5 - 23.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	10.5 - 12.5 ft	0 - 0.5 ft
		Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified	Field Duplicate Sample Final-Verified	Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified	Normal Environmental Sample Final-Verified
		Radiological Parameters								
Radium-226	pCi/g	1.59 +/- (0.415)	1.20 +/- (0.301)	1.52 +/- (0.364)	0.928 +/- (0.264)	1.13 +/- (0.242)	0.944 +/- (0.254)	1.26 +/- (0.413)	0.369 +/- (0.178)U	1.24 +/- (0.241)
Radium-228	pCi/g	2.07 +/- (0.470)	1.55 +/- (0.480)	1.91 +/- (0.383)	1.45 +/- (0.347)	1.62 +/- (0.316)	2.02 +/- (0.374)	1.84 +/- (0.424)	1.76 +/- (0.433)	1.25 +/- (0.284)
Radium-226+228	pCi/g	3.66 +/- (0.627)	2.75 +/- (0.567)	3.43 +/- (0.528)	2.38 +/- (0.436)	2.75 +/- (0.398)	2.96 +/- (0.452)	3.10 +/- (0.592)	2.13 +/- (0.468)J	2.49 +/- (0.372)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG11					WBF-BG12				
Sample Date		17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	17-Sep-19	
Sample ID		WBF-BS-DUP03-20190917	WBF-BS-BG11-1.5/3.5-20190917	WBF-BS-BG11-6.5/8.5-20190917	WBF-BS-BG11-11.5/13.5-20190917	WBF-BS-BG11-16.5/18.5-20190917	WBF-BS-BG12-0.0/0.5-20190917	WBF-BS-BG12-1.5/3.5-20190917	WBF-BS-BG12-6.5/8.5-20190917	WBF-BS-BG12-11.5/13.5-20190917	
Sample Depth		0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	0 - 0.5 ft	1.5 - 3.5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	
Sample Type		Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Units											
Radiological Parameters											
		1.41 +/- (0.280)	0.988 +/- (0.235)	1.33 +/- (0.352)	1.26 +/- (0.309)	1.18 +/- (0.276)	0.528 +/- (0.227)U	1.38 +/- (0.326)	1.54 +/- (0.373)	1.39 +/- (0.277)	
		1.53 +/- (0.347)	1.26 +/- (0.394)	2.10 +/- (0.428)	1.65 +/- (0.415)	1.91 +/- (0.378)	1.52 +/- (0.345)	1.85 +/- (0.441)	1.90 +/- (0.537)	1.79 +/- (0.339)	
		2.94 +/- (0.446)	2.25 +/- (0.459)	3.43 +/- (0.554)	2.91 +/- (0.517)	3.09 +/- (0.468)	2.05 +/- (0.413)J	3.23 +/- (0.548)	3.44 +/- (0.654)	3.18 +/- (0.438)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location		WBF-BG12	
Sample Date		17-Sep-19	17-Sep-19
Sample ID		WBF-BS-BG12-16.5/18.5-20190917	WBF-BS-BG12-21.5/23.5-20190917
Sample Depth		16.5 - 18.5 ft	21.5 - 23.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified
Units			
Radiological Parameters			
Radium-226	pCi/g	1.33 +/- (0.291)	1.20 +/- (0.325)
Radium-228	pCi/g	1.67 +/- (0.382)	1.73 +/- (0.456)
Radium-226+228	pCi/g	3.00 +/- (0.480)	2.93 +/- (0.560)

Notes:

- ft

ID

J

pCi/g

U

UJ
- feet below ground surface

identification

quantitation is approximate due to limitations identified during data validation

picoCurie per gram

not detected

this compound was not detected, but the reporting or detection limit should be considered estimated due to a bias identified during data validation

1. Level of review is defined in the Quality Assurance Project Plan.

2. The 0-0.5 foot sample was collected using a hand auger when accessible during the drilling operations at that boring location; it may or may not have been the first sample obtained and thus could have a different sample date.

TABLE B.4 - Soil Field pH Results
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location	Sample ID	Sample Date	Sample Depth	pH (field)
				SU
WBF-102	WBF-BS-WBF102-17.5/19.5-20190708	8-Jul-19	17.5 - 19.5 ft	6.89
WBF-103	WBF-BS-WBF103-12.0/15.0-20190606	6-Jun-19	12 - 15 ft	5.57
WBF-BG01	WBF-BS-BG01-0.0/0.5-20190911	11-Sep-19	0 - 0.5 ft	5.98
	WBF-BS-BG01-1.5/3.5-20190911	11-Sep-19	1.5 - 3.5 ft	5.65
	WBF-BS-BG01-6.5/8.5-20190911	11-Sep-19	6.5 - 8.5 ft	5.14
	WBF-BS-BG01-11.5/13.5-20190911	11-Sep-19	11.5 - 13.5 ft	6.76
	WBF-BS-BG01-16.5/18.5-20190911	11-Sep-19	16.5 - 18.5 ft	6.84
	WBF-BS-BG01-21.5/23.5-20190911	11-Sep-19	21.5 - 23.5 ft	7.10
	WBF-BS-BG01-26.5/28.5-20190911	11-Sep-19	26.5 - 28.5 ft	5.79
	WBF-BS-BG01-31.5/33.5-20190911	11-Sep-19	31.5 - 33.5 ft	6.45
WBF-BG03	WBF-BS-BG03-36.5/38.5-20190911	11-Sep-19	36.5 - 38.5 ft	5.87
	WBF-BS-BG03-0.0/0.5-20190904	4-Sep-19	0 - 0.5 ft	6.41
	WBF-BS-BG03-1.5/3.5-20190904	4-Sep-19	1.5 - 3.5 ft	5.12
	WBF-BS-BG03-6.5/8.5-20190904	4-Sep-19	6.5 - 8.5 ft	5.62
	WBF-BS-BG03-11.5/13.5-20190904	4-Sep-19	11.5 - 13.5 ft	5.27
	WBF-BS-BG03-16.5/18.5-20190904	4-Sep-19	16.5 - 18.5 ft	7.02
	WBF-BS-BG03-21.5/23.5-20190904	4-Sep-19	21.5 - 23.5 ft	6.00
	WBF-BS-BG03-26.5/28.5-20190904	4-Sep-19	26.5 - 28.5 ft	7.80
WBF-BG04	WBF-BS-BG04-31.5/33.5-20190904	4-Sep-19	31.5 - 33.5 ft	7.99
	WBF-BS-BG04-0.0/0.5-20190906	6-Sep-19	0 - 0.5 ft	5.40
	WBF-BS-BG04-1.5/3.5-20190906	6-Sep-19	1.5 - 3.5 ft	4.77
	WBF-BS-BG04-6.5/8.5-20190906	6-Sep-19	6.5 - 8.5 ft	5.04
	WBF-BS-BG04-11.5/13.5-20190906	6-Sep-19	11.5 - 13.5 ft	5.91
	WBF-BS-BG04-16.5/18.5-20190906	6-Sep-19	16.5 - 18.5 ft	5.66
	WBF-BS-BG04-21.5/23.5-20190906	6-Sep-19	21.5 - 23.5 ft	5.90
	WBF-BS-BG04-26.5/28.5-20190906	6-Sep-19	26.5 - 28.5 ft	6.77
WBF-BG05	WBF-BS-BG05-31.5/33.5-20190906	6-Sep-19	31.5 - 33.5 ft	6.82
	WBF-BS-BG05-0.0/0.5-20190909	9-Sep-19	0 - 0.5 ft	5.82
	WBF-BS-BG05-1.5/3.5-20190909	9-Sep-19	1.5 - 3.5 ft	5.28
	WBF-BS-BG05-6.5/8.5-20190909	9-Sep-19	6.5 - 8.5 ft	5.66
	WBF-BS-BG05-11.5/13.5-20190909	9-Sep-19	11.5 - 13.5 ft	5.24
WBF-BG06	WBF-BS-BG05-16.5/18.5-20190909	9-Sep-19	16.5 - 18.5 ft	4.72
	WBF-BS-BG06-0.0/0.5-20190910	10-Sep-19	0 - 0.5 ft	5.22
	WBF-BS-BG06-1.5/3.5-20190910	10-Sep-19	1.5 - 3.5 ft	4.84
	WBF-BS-BG06-6.5/8.5-20190910	10-Sep-19	6.5 - 8.5 ft	7.37
	WBF-BS-BG06-11.5/13.5-20190910	10-Sep-19	11.5 - 13.5 ft	7.68
	WBF-BS-BG06-16.5/18.5-20190910	10-Sep-19	16.5 - 18.5 ft	6.96
	WBF-BS-BG06-21.5/23.5-20190910	10-Sep-19	21.5 - 23.5 ft	6.58
	WBF-BS-BG06-26.5/28.5-20190910	10-Sep-19	26.5 - 28.5 ft	6.66
WBF-BG07	WBF-BS-BG06-31.5/33.5-20190910	10-Sep-19	31.5 - 33.5 ft	6.10
	WBF-BS-BG07-0.0/0.5-20190905	5-Sep-19	0 - 0.5 ft	6.30
	WBF-BS-BG07-1.5/3.5-20190905	5-Sep-19	1.5 - 3.5 ft	6.02
	WBF-BS-BG07-6.5/8.5-20190905	5-Sep-19	6.5 - 8.5 ft	7.40
	WBF-BS-BG07-11.5/13.5-20190905	5-Sep-19	11.5 - 13.5 ft	7.66
	WBF-BS-BG07-16.5/18.5-20190905	5-Sep-19	16.5 - 18.5 ft	7.36
	WBF-BS-BG07-21.5/23.5-20190905	5-Sep-19	21.5 - 23.5 ft	6.64
	WBF-BS-BG07-26.5/28.5-20190905	5-Sep-19	26.5 - 28.5 ft	6.82
WBF-BG08	WBF-BS-BG08-0.0/0.5-20190912	12-Sep-19	0 - 0.5 ft	7.55
	WBF-BS-BG08-1.5/3.5-20190912	12-Sep-19	1.5 - 3.5 ft	5.90
	WBF-BS-BG08-6.5/8.5-20190912	12-Sep-19	6.5 - 8.5 ft	4.19
	WBF-BS-BG08-11.5/13.5-20190912	12-Sep-19	11.5 - 13.5 ft	4.35
	WBF-BS-BG08-16.5/18.5-20190912	12-Sep-19	16.5 - 18.5 ft	4.34
	WBF-BS-BG08-21.5/23.5-20190912	12-Sep-19	21.5 - 23.5 ft	5.27
	WBF-BS-BG08-26.5/28.5-20190912	12-Sep-19	26.5 - 28.5 ft	6.31

TABLE B.4 - Soil Field pH Results
Watts Bar Fossil Plant
June 2019 - September 2019

Sample Location	Sample ID	Sample Date	Sample Depth	pH (field)
				SU
WBF-BG10	WBF-BS-BG10-0.0/0.5-20190916	16-Sep-19	0 - 0.5 ft	7.06
	WBF-BS-BG10-1.5/3.5-20190916	16-Sep-19	1.5 - 3.5 ft	5.17
	WBF-BS-BG10-6.5/8.5-20190916	16-Sep-19	6.5 - 8.5 ft	5.57
	WBF-BS-BG10-10.5/12.5-20190916	16-Sep-19	10.5 - 12.5 ft	6.67
WBF-BG11	WBF-BS-BG11-0.0/0.5-20190917	17-Sep-19	0 - 0.5 ft	6.12
	WBF-BS-BG11-1.5/3.5-20190917	17-Sep-19	1.5 - 3.5 ft	8.41
	WBF-BS-BG11-6.5/8.5-20190917	17-Sep-19	6.5 - 8.5 ft	4.75
	WBF-BS-BG11-11.5/13.5-20190917	17-Sep-19	11.5 - 13.5 ft	5.29
	WBF-BS-BG11-16.5/18.5-20190917	17-Sep-19	16.5 - 18.5 ft	5.06
WBF-BG12	WBF-BS-BG12-0.0/0.5-20190917	17-Sep-19	0 - 0.5 ft	6.40
	WBF-BS-BG12-1.5/3.5-20190917	17-Sep-19	1.5 - 3.5 ft	7.16
	WBF-BS-BG12-6.5/8.5-20190917	17-Sep-19	6.5 - 8.5 ft	6.46
	WBF-BS-BG12-11.5/13.5-20190917	17-Sep-19	11.5 - 13.5 ft	6.21
	WBF-BS-BG12-16.5/18.5-20190917	17-Sep-19	16.5 - 18.5 ft	5.57
	WBF-BS-BG12-21.5/23.5-20190917	17-Sep-19	21.5 - 23.5 ft	5.38


































Notes:

ft feet below ground surface
ID identification
SU Standard Unit

APPENDIX C - SUBSURFACE LOGS









Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Lithology Graphics are based on TVA drafting standards.

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of- Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-102
Client <u>Tennessee Valley Authority</u>	Boring Location <u>443,718.93 N; 2,362,223.94 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>721.7 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>6/18/19</u> Completed <u>6/19/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>0.0 ft</u> Date/Time <u>6/18/19 12:53</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>0.0 ft</u> Date/Time <u>6/19/19 12:53</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>CME 850XR, #953</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>4-1/4" HSA, 3" SS w/o liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>8-1/4" HSA overdrill of boring</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>Automatic</u> Weight <u>140 lb</u> Drop <u>30"</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u> Borehole Inclination (from Vertical) <u>N/A</u>	
Reviewed By <u>C. Kocka</u> Approved By <u>L. Price</u>	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	721.7		Top of Hole					
0.4	721.3		Grass and topsoil		SS01aG	0.0 - 0.4		
1			Crushed stone, clay fill and limestone gravel fill, [FILL]		SS01bG	0.4 - 1.5	1.5	5-17-15
2			Trace CCR at 1.8'		SS02aG	1.5 - 2.5	1.3	11-12-11
3			LEAN CLAY, CL, 10YR 4/2 (dark grayish brown) and 10YR 4/3 (brown), low to medium plasticity, medium stiff to very stiff, dry to moist, with gray shale and limestone gravel, [FILL]		SS02bG	2.5 - 3.0		
4			Color change to 10YR 6/8 (brownish yellow) and 10YR 5/1 (gray) at 3.0'		SS03G	3.0 - 4.5	1.5	5-7-8
5	716.5		SANDY LEAN CLAY SOME GRAVEL, CL, 10YR 4/4 (dark yellowish brown), medium stiff, moist, with fragments of shale, chert, limestone, and alluvial fine gravel subrounded to rounded, [FILL]		SS04aG	4.5 - 5.2	1.5	5-6-9
6					SS04bG	5.2 - 6.0		
7					SS05G	6.0 - 7.5	1.2	6-7-9
8					SS06G	7.5 - 9.0	1.3	4-6-7
9			Color change to 10YR 4/3 (brown) and 10YR 5/1 (gray), low plasticity, very soft to soft, subrounded at 9.0'		SS07G	9.0 - 10.5	1.5	1-3-4
10			Color change to 10YR 4/2 (dark grayish brown), with organics and some fragments of siltstone at 10.5'		SS08G	10.5 - 12.0	1.5	2-5-6
11					SS09aG	12.0 - 12.4		
12					SS09bG	12.4 - 13.0	1.5	2-6-14
13	708.7		Color change to 7.5YR 6/8 (reddish yellow) and 7.5YR 6/1 (gray) at 12.4'		SS09cG	13.0 - 13.5		
14			POORLY GRADED SAND WITH CLAY, SP, 7.5YR 6/8 (reddish yellow) and 7.5YR 6/1 (gray), fine, medium dense, dry to moist		SS10G	13.5 - 15.0	1.5	8-18-19
15					SS11G	15.0 - 16.5	1.5	6-6-26
16	705.2		Sandstone in split spoon shoe from 16.3' to 16.5'		SS12G	16.5 - 18.0	1.5	22-19-14
17			POORLY GRADED SAND, SP, 7.5YR 6/8 (reddish yellow), fine to medium, medium dense, dry to moist					
18	703.7							

Client Borehole ID N/A

Stantec Boring No. **WBF-102**

Client Tennessee Valley Authority

Boring Location 443,718.93 N; 2,362,223.94 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 721.7 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			With fragments of sandstone and quartz from 16.5' to 16.8'					
19	18.9	702.8			SS13aG	18.0 - 18.9		
20			WELL GRADED SAND, SW, 7.5YR 6/8 (reddish yellow), very fine to coarse, loose, wet, with alluvial gravel, fine, subrounded		SS13bG	18.9 - 19.5	1.5	7-6-8
21	20.8	700.9			SS14G	19.5 - 21.0	1.5	7-28-50
21	21.0	700.7	LEAN CLAY, CL, 7.5YR 6/8 (reddish yellow) and 7.5YR 5/1 (gray), medium stiff to hard, moist to dry, iron oxide staining Color change to 10YR 5/2 (grayish brown) at 20.0' Clayey weathered siltstone					

Refusal /

Bottom of Hole at 21.0 Ft.

Top of Rock = 20.8 Ft.

Top of Rock Elevation = 700.9 Ft.

As-drilled boring location not surveyed. Horizontal coordinates based on field measurements. Vertical coordinates based on 2017 LIDAR surfaces.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)

G = Geotechnical Sample Custody

2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples

3: Depths are reported in feet below ground surface

Client Borehole ID N/A Stantec Boring No. **WBF-102Alt**
 Client Tennessee Valley Authority Boring Location 443,693.93 N; 2,362,223.95 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 723.4 ft Elevation Datum NGVD29
 Project Name WBF TDEC Order Date Started 6/19/19 Completed 6/20/19
 Project Location Rhea Co, Spring City, Tennessee Depth to Water N/A Date/Time N/A
 Inspector G. Budd Logger G. Budd Depth to Water N/A Date/Time N/A
 Drilling Contractor Stantec Consulting Services Inc. Drill Rig Type and ID CME 850XR, #953
 Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 3" SS w/o liners
 Rock Drilling and Sampling Tools (Type and Size) N/A
 Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A
 Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency N/A
 Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A
 Reviewed By C. Kocka Approved By L. Price

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	723.4	Top of Hole					
	0.5	722.9	Grass and topsoil					
1	1.5	721.9	Crushed stone, limestone gravel fill and clay		SS01G	0.0 - 1.5	1.1	5-5-9
2			LEAN CLAY WITH GRAVEL, CL, 10YR 3/2 (very dark grayish brown), very stiff, moist, hydrocarbon staining, Limestone gravel, fragments of siltstone and CCR, [FILL]		SS02G	1.5 - 3.0	1.4	14-10-7
3					SS03G	3.0 - 4.5	1.3	5-6-5
4					SS04G	4.5 - 6.0	1.0	2-17-16
5			Wood pieces from 4.5' to 6.0'					
6	6.0	717.4						

No Refusal /
Bottom of Hole at 6.0 Ft.

Boring abandoned at 6.0' bgs due to miscellaneous waste encountered (braided hose, chain-link fencing, hydraulic fittings)

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface

Client Borehole ID N/A Stantec Boring No. **WBF-102Alt1**
 Client Tennessee Valley Authority Boring Location 443,745.53 N; 2,362,234.49 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 719.5 ft Elevation Datum NGVD29
 Project Name WBF TDEC Order Date Started 6/20/19 Completed 6/20/19
 Project Location Rhea Co, Spring City, Tennessee Depth to Water 17.9 ft Date/Time 6/20/19 15:25
 Inspector G. Budd Logger G. Budd Depth to Water N/A Date/Time N/A
 Drilling Contractor Stantec Consulting Services Inc. Drill Rig Type and ID CME 850XR, #953
 Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 3" SS w/o liners
 Rock Drilling and Sampling Tools (Type and Size) N/A
 Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A
 Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency N/A
 Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A
 Reviewed By C. Kocka Approved By L. Price

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	719.5	Top of Hole					
	0.3	719.2	Grass and topsoil		SS01aG	0.0 - 0.6		
	0.6	718.9					1.3	5-9-8
1	1.5	718.0	Crushed stone, playland limestone gravel		SS01bG	0.6 - 1.5		
2			WELL GRADED SAND, SW, 10Y 2/1 (), very fine to coarse, loose, dry, [CCR]		SS02aG	1.5 - 2.2	1.5	8-7-6
					SS02bG	2.2 - 3.0		
3	3.0	716.5	SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10YR 5/1 (gray), medium stiff, moist, with fragments of limestone and siltstone, [FILL]		SS03G	3.0 - 4.5	1.5	6-9-9
4			Color change to 10YR 4/2 (dark grayish brown), with organics at 2.2'					
5			LEAN CLAY WITH SAND, CL, 10YR 6/6 (brownish yellow) and 10YR 4/2 (dark grayish brown), low to medium plasticity, medium stiff, moist, weak HCL reaction, with abundant fragments of calcareous shale, limestone fragments, [CCR]		SS04G	4.5 - 6.0	1.5	4-3-4
6	6.0	713.5	Trace CCR from 4.5' to 5.0'		SS05	6.0 - 7.5	1.5	4-6-6
7			SANDY LEAN CLAY, CL, 10YR 4/3 (brown), medium stiff, moist, with fragments of siltstone, chert, limestone, alluvial subrounded to rounded, medium to coarse, gravel, organics, [FILL]		SS06G	7.5 - 9.0	1.5	3-6-6
8								
9								
10	10.2	709.3	SANDY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) and 10YR 5/1 (gray), medium plasticity, soft to medium stiff, moist, with fragments of siltstone		SS07aG	9.0 - 10.2	1.5	2-5-6
11			Fine sand lens at 10.5'		SS07bG	10.2 - 10.5		
12			Color change to 5YR 5/8 (yellowish red) and 5YR 6/1 (gray), low plasticity, increasing sand with depth at 11.0'		SS08aG	10.5 - 11.0	0.9	3-3-6
13	13.5	706.0			SS08bG	11.0 - 12.0		
14			CLAYEY SAND, SC, 5YR 5/8 (yellowish red) and 5YR 6/1 (gray), fine, very loose to loose, moist		SS09G	12.0 - 13.5	1.5	3-4-6
15	15.0	704.5			SS10G	13.5 - 15.0	1.5	3-4-8
16			SANDY WELL GRADED GRAVEL, GW, 7.5YR 5/6 (strong brown) and 7.5YR 7/1 (light gray), very fine to coarse, medium dense to very dense, moist, iron oxide staining, alluvial fine to coarse, subrounded to rounded, gravel, with some cobbles and fragments of quartz		SS11G	15.0 - 16.5	1.3	27-38-50
17					SS12G	16.5 - 18.0	1.5	22-27-31

Client Borehole ID N/A

Stantec Boring No. **WBF-102Alt1**

Client Tennessee Valley Authority

Boring Location 443,745.53 N; 2,362,234.49 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 719.5 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			Color change to 7.5YR 3/1 (very dark gray) and 7.5YR 5/8 (strong brown), wet, with some cobbles at 16.5'					
19	19.5	700.0			SS13G	18.0 - 19.5	0.6	23-20-14
20	20.0	699.5	SANDY WELL GRADED GRAVEL WITH CLAY, GW-GC, 7.5YR 5/8 (strong brown), very fine to coarse, wet, alluvial fine to coarse, subrounded to rounded, gravel		SS14aG	19.5 - 20.0	1.5	5-17-21
21	21.0	698.5			SS14bG	20.0 - 21.0		

LEAN CLAY, CL, 7.5YR 6/8 (reddish yellow) and 7.5YR 5/1 (gray), medium stiff to hard, moist to dry, iron oxide staining, clayey weathered siltstone

No Refusal /
Bottom of Hole at 21.0 Ft.

As-drilled boring location not surveyed. Horizontal coordinates based on field measurements. Vertical coordinates based on 2017 LiDAR surfaces.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

Client Borehole ID N/A Stantec Boring No. **WBF-102Alt2 (Sonic)**

Client Tennessee Valley Authority Boring Location 443,745.53 N; 2,362,237.49 E NAD27 Plant Local

Project Number 175668050 Surface Elevation 719.2 ft Elevation Datum NGVD29

Project Name WBF TDEC Order Date Started 6/21/19 Completed 7/8/19

Project Location Rhea Co, Spring City, Tennessee Depth to Water N/A Date/Time N/A

Inspector E. Smith Logger E. Smith Depth to Water N/A Date/Time N/A

Drilling Contractor M&W Drilling (Subcontractor); Stantec Drill Rig Type and ID Geoprobe GV5 Sonic; CME 850XR, #953

Overburden Drilling and Sampling Tools (Type and Size) Sonic 6" Core Barrel, 8" Steel Casing; 8-1/4" HSA

Rock Drilling and Sampling Tools (Type and Size) N/A

Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A

Sampler Hammer Type N/A Weight N/A Drop N/A Efficiency N/A

Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A

Reviewed By B. Evans Approved By L. Price

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	719.2						
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11	11.0	708.2						
12	12.0	707.2						
13								
14	14.0	705.2						
15								
16	16.0	703.2						
17	17.0	702.2						
18								

Client Borehole ID N/A

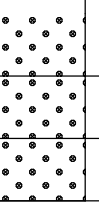
Stantec Boring No. **WBF-102Alt2 (Sonic)**

Client Tennessee Valley Authority

Boring Location 443,745.53 N; 2,362,237.49 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 719.2 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³		Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18					RS02E	16.0 - 21.0	16.0 - 21.0	5.0	N/A
19	19.0	700.2							
20	20.0	699.2							
21	21.0	698.2	SANDY POORLY GRADED GRAVEL, GP, 5YR 5/4 (reddish brown), fine to coarse, non to low plasticity, loose, moist, homogeneous, weak cementation SILTY POORLY GRADED GRAVEL, GP, 5YR 5/3 (reddish brown), fine to coarse, low plasticity, loose, wet, homogeneous, weak cementation						

No Refusal /
Bottom of Hole at 21.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-103
Client <u>Tennessee Valley Authority</u>	Boring Location <u>444,765.49 N; 2,361,678.22 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>721.1 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>6/6/19</u> Completed <u>6/11/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>10.0 ft</u> Date/Time <u>6/11/19 12:28</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>CME 850XR, #953</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>4-1/4" HSA, 3" SS w/o liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>8-1/4" HSA overdrill of boring</u> Overdrill Depth <u>18.5 ft</u>	
Sampler Hammer Type <u>Automatic</u> Weight <u>140 lb</u> Drop <u>30"</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>C. Kocka</u>	Approved By <u>L. Price</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	721.1	Top of Hole					
0	0.3	720.8	Topsoil, grass					
1			LEAN CLAY WITH GRAVEL, CL, 7.5YR 5/8 (strong brown), medium stiff, dry, limestone gravel and fragments of siltstone, [FILL]		SS01G	0.0 - 1.5	1.5	8-11-9
2	2.6	718.5			SS02aG	1.5 - 2.6	1.4	8-6-10
3	3.5	717.6	Limestone gravel, 7.5YR 5/1 (gray), [FILL]		SS02bG SS03aG	2.6 - 3.0 3.0 - 3.5	1.4	25-21-24
4	4.5	716.6	LEAN CLAY, CL, 7.5YR 5/8 (strong brown), very stiff, moist, with limestone and siltstone gravel, organics, manganese, [FILL]		SS03bG	3.5 - 4.5	1.4	25-21-24
5	5.6	715.5			SS04aG	4.5 - 5.6	1.5	10-14-15
6	6.0	715.1	LEAN CLAY SOME SAND, CL, 7.5YR 5/8 (strong brown) and 7.5YR 5/2 (brown), stiff, moist, with fine sand, siltstone gravel, manganese, and organics, [FILL]		SS04bG	5.6 - 6.0	1.5	4-7-8
7					SS05G	6.0 - 7.5	1.5	4-7-8
8			LEAN CLAY, CL, 7.5YR 3/2 (dark brown), moist, with abundant organics		SS06G	7.5 - 9.0	1.2	3-5-6
9			SANDY LEAN CLAY, CL, 10YR 5/4 (yellowish brown), low plasticity, soft to medium stiff, moist, very fine sand		SS07G	9.0 - 10.5	1.5	5-6-7
10			Color change to 10YR 6/8 (brownish yellow) and 10YR 6/1 (gray), low to medium plasticity, medium still to very stiff, with fragments of sandstone, angular to subangular, increasing with depth at 9.0'		SS08G	10.5 - 12.0	1.5	14-19-26
12	12.2	708.9						
13			POORLY GRADED SAND, SP, 10YR 6/8 (brownish yellow), fine to medium, medium dense, wet, trace fragments of weathered sandstone		SS09E	12.0 - 13.5	1.2	9-11-10
14			Color change to N 2.5/ (black) at 12.9'					
15	15.0	706.1	Color change to 10YR 5/6 (yellowish brown), loose to medium dense at 13.5', weathered sandstone fragments from 14.7' to 15.0'		SS10E	13.5 - 15.0	1.0	9-11-16
16	16.5	704.6			SS11G	15.0 - 16.5	1.5	21-36-32
17	17.0	704.1	LEAN CLAY, CL, 10YR 5/6 (yellowish brown), very stiff to hard, dry to moist, iron oxide staining, with highly weathered siltstone		SS12aG	16.5 - 17.0	1.5	14-32-48
18			CLAYEY SAND, SC, 10YR 5/6 (yellowish brown),		SS12bG	17.0 - 18.0	1.5	14-32-48

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-103
Client <u>Tennessee Valley Authority</u>	Boring Location <u>444,765.49 N; 2,361,678.22 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>721.1 ft</u> Elevation Datum <u>NGVD29</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18	18.5	702.6	///					









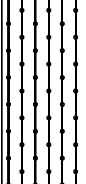

fine to medium, wet
LEAN CLAY, CL, 10YR 5/6 (yellowish brown), very
stiff to hard, dry to moist, iron oxide staining, with
highly weathered siltstone (Continued)

No Refusal /
Bottom of Hole at 18.5 Ft.

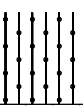



- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG01
Client <u>Tennessee Valley Authority</u>	Boring Location <u>446,082.60 N; 2,364,268.87 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>706.8 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/11/19</u> Completed <u>9/11/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" PVC liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>E. Smith</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	706.8	Top of Hole					
1	1.0	705.8	Topsoil, sandy	HA ¹	HA01	0.0 - 0.5	0.5	
2			SILTY SAND SOME CLAY, SM, 7.5YR 4/3 (brown), fine, very loose, dry, with fragments of sandstone	1.5/3.5-20190911	DP01	0.0 - 5.0	3.0	N/A
3								
4								
5	5.0	701.8	SANDY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) and 10YR 4/1 (dark gray), low plasticity, soft, moist Well graded sand with fine gravel lens from 5.2' to 5.6'	6.5/8.5-20190911	DP02	5.0 - 10.0	3.5	N/A
6								
7								
8			SANDY LEAN CLAY, CL, 10YR 4/1 (dark gray), low plasticity, soft to firm, moist	11.5/13.5-20190911	DP03	10.0 - 15.0	4.6	N/A
9								
10	9.8	697.0						
11			LEAN CLAY WITH SAND, CL, 10YR 4/4 (dark yellowish brown) and 10YR 4/1 (dark gray), low plasticity, firm, moist					
12								
13	13.3	693.5						
14								
15								
16								
17								

Client Borehole ID				N/A		Stantec Boring No.				WBF-BG01	
Client				Tennessee Valley Authority		Boring Location				446,082.60 N; 2,364,268.87 E NAD27 Plant Local	
Project Number				175668050		Surface Elevation				706.8 ft Elevation Datum NGVD29	
Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI			
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %			
17	20.0	686.8		LEAN CLAY WITH SAND, CL, 10YR 4/4 (dark yellowish brown) and 10YR 4/1 (dark gray), low plasticity, firm, moist (Continued)	16.5/18.5-20.190911	DP04	15.0 - 20.0		5.0	N/A	
18											
19											
20											
21	30.7	676.1		SANDY FAT CLAY, CH, 10YR 4/6 (dark yellowish brown), medium plasticity, firm to soft, moist	21.5/23.5-20.190911	DP05	20.0 - 25.0		5.0	N/A	
22											
23											
24											
25											
26											
27											
28											
29											
30											
31	34.8	672.0		SANDY LEAN CLAY, CL, 10YR 4/2 (dark grayish brown), low to medium plasticity, soft, moist to wet	31.5/33.5-20.190911	DP08	30.0 - 32.5		3.7	N/A	
32											
33											
34											
35	36.7	670.1		CLAYEY SAND, SC, 10YR 4/2 (dark grayish brown), fine, very loose, wet	36.5/38.5-20.190911	DP10	35.0 - 37.5		5.0	N/A	
36											
37											
38											
39				POORLY GRADED SAND, SP, 10YR 6/4 (light yellowish brown), very fine, very loose, wet		DP11	37.5 - 40.0		4.7	N/A	
			SILTY SAND, SM, 10YR 3/1 (very dark gray), very fine to fine, loose, wet, with organics, wood pieces 36.7' to 40.0'								

Client Borehole ID N/A Stantec Boring No. **WBF-BG01**
 Client Tennessee Valley Authority Boring Location 446,082.60 N; 2,364,268.87 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 706.8 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
40								
41	41.2	665.6						
42	42.1	664.7			DP12	40.0 - 44.4	4.4	N/A
43								
44	44.4	662.4						

Bedrock Refusal /
Bottom of Hole at 44.4 Ft.

Top of Rock = 42.1 Ft.
Top of Rock Elevation = 664.7 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface
 4: Grab sample (0.0/0.5-20190911) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG03
Client <u>Tennessee Valley Authority</u>	Boring Location <u>445,040.43 N; 2,365,157.94 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>704.0 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/4/19</u> Completed <u>9/4/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" PVC liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>E. Smith</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	704.0	Top of Hole					
1	1.0	703.0	Topsoil	HA ¹	HA01	0.0 - 0.5	0.5	
2			SANDY LEAN CLAY, CL, 7.5YR 5/6 (strong brown) and 7.5YR 6/1 (gray), firm, dry to moist, with some manganese	11/5/3 5-20/190904	DP01	0.0 - 5.0	4.7	N/A
3								
4								
5								
6								
7								
8				6/5/18 5-20/190904	DP02	5.0 - 10.0	5.0	N/A
9	9.0	695.0						
9.5	694.5		POORLY GRADED SAND WITH CLAY, SP-SC, 7.5YR 5/6 (strong brown), fine, very loose, moist					
10	10.0	694.0	POORLY GRADED SAND, SP, 7.5YR 5/6 (strong brown), fine, very loose, moist					
11								
12			POORLY GRADED SAND WITH CLAY, SP-SC, 7.5YR 5/6 (strong brown), fine, very loose, moist to dry	11/5/13 5-20/190904	DP03	10.0 - 15.0	4.3	N/A
13								
14								
15								
16								
17				16/5/18 5-20/190904	DP04	15.0 - 20.0	4.0	N/A
18								

TVA/EIP BORING LOG 175668050, WBF, TDEC, ORDER GP, TDEC SUBSURF DT 20190630, GDT 4/3/20

Client Borehole ID N/A Stantec Boring No. **WBF-BG03**
 Client Tennessee Valley Authority Boring Location 445,040.43 N; 2,365,157.94 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 704.0 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
19								
20	20.0	684.0						
21			WELL GRADED SAND WITH CLAY SOME GRAVEL, SW-SC, 10YR 4/4 (dark yellowish brown), very fine to coarse, very loose, wet, multicolored gravel, clay content decreases with depth	21.5/23.5-20190904	DP05	20.0 - 25.0	5.0	N/A
22								
23								
24	24.2	679.8						
25	25.0	679.0	SANDY LEAN CLAY, CL, 10YR 4/4 (dark yellowish brown), low plasticity, very soft, wet					
26			POORLY GRADED SAND WITH CLAY, SP-SC, 10YR 4/4 (dark yellowish brown), fine, loose, wet	26.5/28.5-20190904	DP06	25.0 - 30.0	5.0	N/A
27								
28	28.5	675.5						
29			WELL GRADED SAND WITH CLAY WITH GRAVEL, SW-SC, 10YR 4/4 (dark yellowish brown), fine to coarse, wet, fine to coarse, multicolored, gravel					
30	30.0	674.0						
31			WELL GRADED SAND WITH GRAVEL, SW, 10YR 4/4 (dark yellowish brown), very fine to coarse, loose, wet	31.5/33.5-20190904	DP07	30.0 - 35.0	5.0	N/A
32								
33								
34								
35	34.9	669.1						
35.0	669.0							

Shale, dark green gray, soft, weathered, wet, glauconitic

No Refusal /
Bottom of Hole at 35.0 Ft.

Top of Rock = 34.9 Ft.
Top of Rock Elevation = 669.1 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190904) sampled using hand auger

Client Borehole ID	N/A			Stantec Boring No.	WBF-BG04		
Client	Tennessee Valley Authority			Boring Location	447,467.30 N; 2,365,012.21 E NAD27 Plant Local		
Project Number	175668050			Surface Elevation	704.1 ft	Elevation Datum	NGVD29
Project Name	WBF TDEC Order			Date Started	9/6/19	Completed	9/6/19
Project Location	Rhea Co, Spring City, Tennessee			Depth to Water	N/A	Date/Time	N/A
Inspector	G. Budd	Logger	G. Budd	Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Hawkston (Subcontractor)			Drill Rig Type and ID	Geoprobe 3230DT		
Overburden Drilling and Sampling Tools (Type and Size)	DT37 Dual Tube Soil Sampling System w/ 60" liners						
Rock Drilling and Sampling Tools (Type and Size)	N/A						
Overdrill Tooling (Type and Size)	N/A			Overdrill Depth	N/A		
Sampler Hammer Type	GH70 Direct Push	Weight	N/A	Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A			Borehole Inclination (from Vertical)	N/A		
Reviewed By	S. Bolden			Approved By	C. Kocka		

Lithology				Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	704.1	Top of Hole					
1	1.5	702.6	Topsoil, sandy	HA ¹	HA01	0.0 - 0.5	0.5	
2			SANDY LEAN CLAY, CL, 7.5YR 5/6 (strong brown) and 7.5YR 6/1 (gray), firm, dry, with some manganese	1.5/3.5-20190906	DP01	0.0 - 5.0	3.7	N/A
3								
4								
5								
6			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), low plasticity, firm, moist, sand increasing with depth	6.5/8.5-20190906	DP02	5.0 - 10.0	5.0	N/A
7								
8								
9								
10	10.0	694.1	SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), low plasticity, firm, moist, sand increasing with depth	11.5/13.5-20190906	DP03	10.0 - 12.5	3.2	N/A
11								
12								
13								
14								
15								
16			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), low plasticity, firm, moist, sand increasing with depth	16.5/18.5-20190906	DP05	15.0 - 17.5	3.0	N/A
17								
18								
19								
			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), low plasticity, firm, moist, sand increasing with depth		DP06	17.5 - 20.0	3.2	N/A

Client Borehole ID N/A Stantec Boring No. **WBF-BG04**
 Client Tennessee Valley Authority Boring Location 447,467.30 N; 2,365,012.21 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 704.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
20			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), low plasticity, firm, moist, sand increasing with depth (Continued)	21.5/23.5-20190906	DP07	20.0 - 22.5	3.4	N/A
21								
22								
23			Wet at 23.0'	26.5/28.5-20190906	DP08	22.5 - 25.0	3.6	N/A
24	23.8	680.3						
25			CLAYEY SAND, SC, 10YR 5/6 (yellowish brown), fine, loose, wet					
26	25.0	679.1	CLAYEY SAND WITH CLAY, SC, 10YR 5/6 (yellowish brown), fine, loose, wet, alternating clayey sand and sandy lean clay layers	26.5/28.5-20190906	DP09	25.0 - 27.5	5.0	N/A
27								
28								
29				31.5/33.5-20190906	DP10	27.5 - 30.0	5.0	N/A
30								
31								
32	31.2	672.9	WELL GRADED SAND WITH GRAVEL, SW, 5YR 3/4 (dark reddish brown), very fine to coarse, loose to medium dense, wet, iron oxide staining, multicolored gravel	31.5/33.5-20190906	DP11	30.0 - 31.2	1.8	N/A
33								
34								
35	33.5	670.6	WELL GRADED SAND WITH GRAVEL, SW, 2.5YR 5/4 (reddish brown), very fine to coarse, loose, wet, multicolored gravel	31.5/33.5-20190906	DP12	31.2 - 35.0	3.0	N/A
36								
37								
38	35.0	669.1	POORLY GRADED SAND TRACE CLAY, SP, 10YR 4/1 (dark gray), fine, loose, wet, trace brown, sandy clay	31.5/33.5-20190906	DP13	35.0 - 37.0	2.0	N/A
39								
40								
41	36.3	667.8	Trace multicolored, subangular to subrounded gravel from 36.0' to 36.3'	31.5/33.5-20190906				
42								
43								
44	37.0	667.1	Shale, dark green gray, soft to moderately hard, weathered, glauconitic	31.5/33.5-20190906				
45								
46								
47			Bedrock Refusal / Bottom of Hole at 37.0 Ft.	31.5/33.5-20190906				
48								
49								
50			Top of Rock = 36.3 Ft. Top of Rock Elevation = 667.8 Ft.	31.5/33.5-20190906				
51								
52								

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface
 4: Grab sample (0.0/0.5-20190906) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG05
Client <u>Tennessee Valley Authority</u>	Boring Location <u>448,660.23 N; 2,364,859.47 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>712.1 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/9/19</u> Completed <u>9/9/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>18.8 ft</u> Date/Time <u>9/9/19 07:57</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u> Borehole Inclination (from Vertical) <u>N/A</u>	
Reviewed By <u>S. Bolden</u> Approved By <u>C. Kocka</u>	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	712.1	Top of Hole					
1	1.5	710.6	Topsoil	HA ¹	HA01	0.0 - 0.5	0.5	
2			SILTY SAND SOME CLAY, SP-SM, 7.5YR 5/6 (strong brown), fine, dry	1.5/5.5-20190909	DP01	0.0 - 5.0	4.7	N/A
6	6.0	706.1	POORLY GRADED SAND TRACE SILT, SP, 7.5YR 5/6 (strong brown), fine, moist, iron oxide staining, with trace weathered sandstone lenses	6.5/6.5-20190909	DP02	5.0 - 10.0	4.3	N/A
12			Iron staining from 11.5' to 12.5'	11.5/13.5-20190909	DP03	10.0 - 15.0	4.3	N/A
15	15.0	697.1	SILTY SAND, SP-SM, 10YR 6/6 (brownish yellow), very fine to fine, very loose, moist	16.5/18.5-20190909	DP04	15.0 - 20.0	5.0	N/A

TVA EIP BORING LOG 175668050 WBF TDEC ORDER GP1 TDEC SUBSURF DT 20190930 GDT 4/3/20

Client Borehole ID N/A

Stantec Boring No. **WBF-BG05**

Client Tennessee Valley Authority

Boring Location 448,660.23 N; 2,364,859.47 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 712.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18	18.2	693.9	CLAYEY SAND, SC, 10YR 5/6 (yellowish brown), fine, very loose, moist to wet (Continued)					
19			Shale, dark red brown, soft to moderately hard, highly weathered, moist to dry, Water at 18.8'					
20	20.0	692.1	Trace coarse gravel at 18.5'					

No Refusal /
Bottom of Hole at 20.0 Ft.



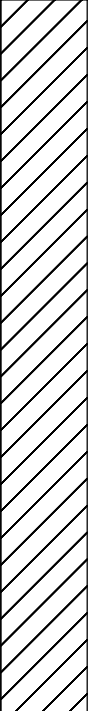
Top of Rock = 18.2 Ft.
Top of Rock Elevation = 693.9 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190909) sampled using hand auger



Page: 1 of 2

Client Borehole ID	N/A			Stantec Boring No.	WBF-BG06		
Client	Tennessee Valley Authority			Boring Location	448,314.22 N; 2,364,466.60 E NAD27 Plant Local		
Project Number	175668050			Surface Elevation	704.0 ft	Elevation Datum	NGVD29
Project Name	WBF TDEC Order			Date Started	9/10/19	Completed	9/10/19
Project Location	Rhea Co, Spring City, Tennessee			Depth to Water	N/A	Date/Time	N/A
Inspector	G. Budd	Logger	G. Budd	Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Hawkston (Subcontractor)			Drill Rig Type and ID	Geoprobe 3230DT		
Overburden Drilling and Sampling Tools (Type and Size)	DT37 Dual Tube Soil Sampling System w/ 60" liners						
Rock Drilling and Sampling Tools (Type and Size)	N/A						
Overdrill Tooling (Type and Size)	N/A			Overdrill Depth	N/A		
Sampler Hammer Type	GH70 Direct Push	Weight	N/A	Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A			Borehole Inclination (from Vertical)	N/A		
Reviewed By	S. Bolden			Approved By	C. Kocka		

Lithology				Description	Overburden:	Sample ^{1,2}	Depth Ft ³		Rec. Ft	Blows/PSI		
Depth Ft ³	Elevation	Graphic	Rock Core:		RQD %	Run Ft	Rec. Ft	Rec. %				
0	0.0	704.0		Top of Hole								
1				Topsoil, sandy	HA ⁴	HA01	0.0 - 0.5		0.5			
2	1.5	702.5		SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10YR 5/1 (gray), soft, dry, some manganese, trace organics	1.5/3.5-20190910	DP01	0.0 - 5.0	0.0 - 5.0	4.0	N/A		
3												
4												
5												
6	6.5	697.5										
7				SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown), low plasticity, moist With manganese from 6.5' to 15.0'	6.5/8.5-20190910	DP02	5.0 - 10.0	5.0 - 10.0	5.0	N/A		
8												
9												
10												
11												
12						11.5/13.5-20190910	DP03	10.0 - 12.5	10.0 - 12.5	3.4	N/A	
13												
14							DP04	12.5 - 15.0	12.5 - 15.0	3.1	N/A	
15												
16							DP05	15.0 - 17.5	15.0 - 17.5	3.3	N/A	
17					16.5/18.5-20190910							
18												
19	18.8	685.2				DP06	17.5 - 20.0	17.5 - 20.0	4.1	N/A		

Client Borehole ID N/A

Stantec Boring No. **WBF-BG06**

Client Tennessee Valley Authority

Boring Location 448,314.22 N; 2,364,466.60 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 704.0 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
19			CLAYEY SAND, SC, 10YR 5/6 (yellowish brown), fine, loose, moist to wet (Continued) Wet at 19.5'					
20	20.0	684.0						
21			POORLY GRADED SAND WITH CLAY, SP-SC, 10YR 5/6 (yellowish brown) and 10YR 5/1 (gray), fine, very loose, wet, with trace organics	21.5/23.5-20190910	DP07	20.0 - 22.5	3.4	N/A
22								
23								
24					DP08	22.5 - 25.0	4.0	N/A
25			Trace fine, subrounded to rounded, gravel from 28.5' to 29.5'					
26								
27					DP09	25.0 - 27.5	3.7	N/A
28								
29	29.0	675.0	POORLY GRADED SAND WITH SILT, SP-SM, 10YR 5/2 (grayish brown), very fine to fine, very loose, wet	28.5/28.5-20190910	DP10	27.5 - 30.0	4.4	N/A
30								
31	31.5	672.5	WELL GRADED SAND WITH GRAVEL, SP-SC, 10YR 4/6 (dark yellowish brown) and 10YR 4/1 (dark gray), fine to coarse, very loose, wet Gray, sandy clay lens with fine gravel from 32.1' to 32.5'					
32								
33				31.5/33.5-20190910	DP11	30.0 - 35.0	4.2	N/A
34								
35	35.2	668.8	Multicolored, fine to coarse gravel from 35.0' to 35.2'					
36	36.2	667.8			DP12	35.0 - 36.2	1.2	N/A

Bedrock Refusal /
Bottom of Hole at 36.2 Ft.

Top of Rock = 35.2 Ft.
Top of Rock Elevation = 668.8 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190910) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG07
Client <u>Tennessee Valley Authority</u>	Boring Location <u>446,505.33 N; 2,365,243.17 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>700.9 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/5/19</u> Completed <u>9/5/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>S. Bolden</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	700.9	Top of Hole					
1	1.0	699.9	Topsoil	HA ¹	HA01	0.0 - 0.5	0.5	
2			SANDY LEAN CLAY, CL, 7.5YR 5/6 (strong brown) and 7.5YR 6/1 (gray), firm, dry to moist, with organics, manganese	1.5/6.5-20190905	DP01	0.0 - 5.0	3.5	N/A
3								
4								
5								
6			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown) and 10YR 5/1 (gray), low plasticity, soft, moist to wet, increasing sand with depth	6.5/6.5-20190905	DP02	5.0 - 10.0	4.8	N/A
7								
8								
9								
10	10.0	690.9	SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown) and 10YR 5/1 (gray), low plasticity, soft, moist to wet, increasing sand with depth	11.5/13.5-20190905	DP03	10.0 - 15.0	5.0	N/A
11								
12								
13								
14				16.5/18.5-20190905	DP04	15.0 - 17.5	4.0	N/A
15								
16								
17								
18								

Client Borehole ID N/A

Stantec Boring No. **WBF-BG07**

Client Tennessee Valley Authority

Boring Location 446,505.33 N; 2,365,243.17 E NAD27 Plant Local

Project Number 175668050

Surface Elevation 700.9 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown) and 10YR 5/1 (gray), low plasticity, soft, moist to wet, increasing sand with depth <i>(Continued)</i>					
19					DP05	17.5 - 20.0	4.0	N/A
20								
21			CLAYEY SAND, SC, 10YR 5/6 (yellowish brown), fine, loose, wet Fine grained sand lens from 22.5' to 22.7'		DP06	20.0 - 22.5	4.4	N/A
22	22.5	678.4						
23					DP07	22.5 - 25.0	5.0	N/A
24			CLAYEY SAND, SC, 10YR 5/1 (gray) and 10YR 5/6 (yellowish brown), very fine to fine, very loose, wet					
25	25.5	675.4			DP08	25.0 - 27.5	5.0	N/A
26								
27			WELL GRADED GRAVEL WITH SAND, GW, fine to coarse, very loose, wet, multicolored gravel, grayish brown sand		DP09	27.5 - 30.0	4.0	N/A
28	29.0	671.9						
29								
30	30.0	670.9	POORLY GRADED SAND WITH GRAVEL, SP, 10YR 4/2 (dark grayish brown), fine, loose, wet, multicolored gravel		DP10	30.0 - 32.5	2.5	N/A
31								
32	32.0	668.9						
32.5	668.4							

Shale, dark green gray, moderately hard, weathered, moist, glauconitic


Bedrock Refusal /
Bottom of Hole at 32.5 Ft.

Top of Rock = 32.0 Ft.

Top of Rock Elevation = 668.9 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190905) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG08
Client <u>Tennessee Valley Authority</u>	Boring Location <u>444,961.97 N; 2,360,090.38 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>736.2 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/12/19</u> Completed <u>9/12/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>S. Bolden</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	736.2	Top of Hole					
0.5	735.7		Topsoil, trace limestone gravel	HA ¹	HA01	0.0 - 0.5	0.5	
1	1.5	734.7	SILTY SAND, SM, 10YR 6/6 (brownish yellow), very fine, very loose, dry, with organics	1.5/6.5-20190912				
2			SANDY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) and 10YR 6/1 (gray), firm, dry to moist		DP01	0.0 - 5.0	3.9	N/A
3								
4								
5								
6								
7								
8	8.5	727.7		6.5/6.5-20190912	DP02	5.0 - 10.0	5.0	N/A
9			SANDY LEAN CLAY, CL, 5YR 5/8 (yellowish red) and 10YR 6/8 (brownish yellow), low plasticity, firm to hard, moist, and 10YR 7/1 (light gray)					
10								
11								
12				11.5/13.5-20190912	DP03	10.0 - 15.0	5.0	N/A
13								
14								
15	15.0	721.2						
16			SANDY LEAN CLAY, CL, 7.5YR 6/8 (reddish yellow) and 7.5YR 7/1 (light gray), low to medium plasticity, hard, moist		DP04	15.0 - 17.5	3.0	N/A
17			Iron oxide staining from 15.0' to 20.0'	16.5/18.5-20190912				
18								

TVA/EIP BORING LOG 175668050, WBF, TDEC, ORDER GP, TDEC SUBSURF DT 20190930, GDT 4/6/20

Client Borehole ID N/A Stantec Boring No. **WBF-BG08**
 Client Tennessee Valley Authority Boring Location 444,961.97 N; 2,360,090.38 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 736.2 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			SANDY LEAN CLAY, CL, 7.5YR 6/8 (reddish yellow) and 7.5YR 7/1 (light gray), low to medium plasticity, hard, moist <i>(Continued)</i>	21.5/23.5-20190912	DP05	17.5 - 20.0	4.4	N/A
19								
20								
21			SANDY LEAN CLAY, CL, 10YR 5/1 (gray), low plasticity, soft, moist	26.5/28.5-20190912	DP06	20.0 - 22.5	4.5	N/A
22								
23	23.3	712.9						
24			CLAYEY SAND, SC, 10YR 5/1 (gray), fine, loose, moist to wet	26.5/28.5-20190912	DP07	22.5 - 25.0	5.0	N/A
25								
26	26.0	710.2						
27			Wet at 27.3'	26.5/28.5-20190912	DP08	25.0 - 27.5	4.2	N/A
28	28.3	707.9						
29								
30			POORLY GRADED SAND WITH CLAY, SP-SC, 10YR 5/1 (gray), fine, very loose, wet, with fragments of wood 29.6' to 30.0', some, multicolored, subangular to subrounded fine, gravel 31.0' to 31.7'	26.5/28.5-20190912	DP09	27.5 - 30.0	5.0	N/A
31	31.7	704.5						
32								
32	32.5	703.7	Shale, dark green gray to dark gray, soft, highly weathered, moist to dry					

No Refusal /
Bottom of Hole at 32.5 Ft.

Top of Rock = 31.7 Ft.
Top of Rock Elevation = 704.5 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190912) sampled using hand auger

Client Borehole ID N/A Stantec Boring No. **WBF-BG09**

Client Tennessee Valley Authority Boring Location 445,535.75 N; 2,361,033.94 E NAD27 Plant Local

Project Number 175668050 Surface Elevation 735.3 ft Elevation Datum NGVD29

Project Name WBF TDEC Order Date Started 9/13/19 Completed 9/13/19

Project Location Rhea Co, Spring City, Tennessee Depth to Water N/A Date/Time N/A

Inspector G. Budd Logger G. Budd Depth to Water N/A Date/Time N/A

Drilling Contractor Hawkston (Subcontractor) Drill Rig Type and ID Geoprobe 3230DT

Overburden Drilling and Sampling Tools (Type and Size) DT37 Dual Tube Soil Sampling System w/ 60" liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A

Sampler Hammer Type GH70 Direct Push Weight N/A Drop N/A Efficiency N/A

Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A

Reviewed By S. Bolden Approved By C. Kocka

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	735.3	Top of Hole					
1	1.0	734.3	Topsoil and limestone gravel fill, [FILL]					
2			SANDY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) and 10YR 2/1 (black), hard, dry, with fragments of coal and CCR, [CCR]		DP01	0.0 - 5.0	4.2	N/A
3								
4								
5	5.0	730.3						

No Refusal /
Bottom of Hole at 5.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface

Client Borehole ID N/A Stantec Boring No. **WBF-BG09A**
 Client Tennessee Valley Authority Boring Location 445,545.89 N; 2,361,056.97 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 736.5 ft Elevation Datum NGVD29
 Project Name WBF TDEC Order Date Started 9/13/19 Completed 9/13/19
 Project Location Rhea Co, Spring City, Tennessee Depth to Water N/A Date/Time N/A
 Inspector G. Budd Logger G. Budd Depth to Water N/A Date/Time N/A
 Drilling Contractor Hawkston (Subcontractor) Drill Rig Type and ID Geoprobe 3230DT
 Overburden Drilling and Sampling Tools (Type and Size) DT37 Dual Tube Soil Sampling System w/ 60" liners
 Rock Drilling and Sampling Tools (Type and Size) N/A
 Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A
 Sampler Hammer Type GH70 Direct Push Weight N/A Drop N/A Efficiency N/A
 Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A
 Reviewed By S. Bolden Approved By C. Kocka

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	736.5	Top of Hole					
	0.5	736.0	Topsoil, [FILL]					
1	1.5	735.0	SILTY SAND, SM, 10YR 6/8 (brownish yellow), very fine, loose, dry, [CCR]					
2			SANDY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) and 10YR 2/1 (black), firm, dry, with fragments of coal and CCR, [CCR]		DP01	0.0 - 5.0	4.7	N/A
3								
4								
5								
6	6.0	730.5	SANDY LEAN CLAY, CL, 5YR (brownish yellow) and 10YR 7/1 (light gray), soft to firm, moist		DP02	5.0 - 10.0	5.0	N/A
7			Some iron oxide staining from 6.0' to 7.0'					
8								
9								
10	10.0	726.5						

No Refusal /
 Bottom of Hole at 10.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG10
Client <u>Tennessee Valley Authority</u>	Boring Location <u>445,969.70 N; 2,361,722.26 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>729.6 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/16/19</u> Completed <u>9/16/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u> Borehole Inclination (from Vertical) <u>N/A</u>	
Reviewed By <u>C. Kocka</u> Approved By <u>L. Price</u>	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	729.6						
1	1.5	728.1			HA01	0.0 - 0.5	0.5	
2					DP01	0.0 - 5.0	5.0	N/A
3								
4								
5	5.0	724.6			DP02	5.0 - 7.5	2.5	N/A
6					DP03	7.5 - 10.0	3.0	N/A
7								
8								
9					DP04	10.0 - 12.5	3.0	N/A
10								
11								
12	12.5	717.1						

Bedrock Refusal /
Bottom of Hole at 12.5 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190916) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG11
Client <u>Tennessee Valley Authority</u>	Boring Location <u>446,543.41 N; 2,362,125.42 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>708.0 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/17/19</u> Completed <u>9/17/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>E. Smith</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	708.0	Top of Hole					
1	1.0	707.0	Topsoil, silty	HA ¹	HA01	0.0 - 0.5	0.5	
2			SANDY LEAN CLAY, CL, 7.5YR 5/6 (strong brown), soft, dry, with limestone gravel fill, [FILL]	1.5/6.5-20190917	DP01	0.0 - 5.0	3.5	N/A
5	5.0	703.0	LEAN CLAY SOME SAND, CL, 5YR 5/8 (yellowish red) and 5YR 7/1 (light gray), low plasticity, soft, moist, iron oxide staining, with fragments of siltstone and sandstone, increasing with depth	6.5/8.5-20190917	DP02	5.0 - 10.0	2.7	N/A
11	11.0	697.0	LEAN CLAY LITTLE SAND, CL, 10YR 4/2 (dark grayish brown) and 7.5YR 5/8 (strong brown), low plasticity, soft to firm, moist Dark grayish brown from 11.2' to 11.7' Grading to strong brown from 11.7' to 15.0'	11.5/13.5-20190917	DP03	10.0 - 15.0	3.7	N/A
16	16.0	692.0	SANDY LEAN CLAY, CL, 7.5YR 6/8 (reddish yellow) and 7.5YR 6/1 (gray), firm to hard, iron oxide staining, with fragments of sandstone and siltstone	16.5/18.5-20190917	DP04	15.0 - 20.0	5.0	N/A
18	18.0	690.0						

TVA/EIP BORING LOG: 175668050, WBF, TDEC, ORDER GP, TDEC SUBSURF DT 20190930, GDT 4/3/20



Stantec



SUBSURFACE LOG

Page: 2 of 2

Client Borehole ID N/A Stantec Boring No. **WBF-BG11**
 Client Tennessee Valley Authority Boring Location 446,543.41 N; 2,362,125.42 E NAD27 Plant Local
 Project Number 175668050 Surface Elevation 708.0 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18		x x x x x	Siltstone, red brown and gray, moderately hard, highly weathered, dry, iron oxide staining					
19		x x x x x						
20	20.0	688.0						

No Refusal /
Bottom of Hole at 20.0 Ft.

Top of Rock = 18.0 Ft.
Top of Rock Elevation = 690.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface
 4: Grab sample (0.0/0.5-20190917) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG12
Client <u>Tennessee Valley Authority</u>	Boring Location <u>447,812.24 N; 2,362,082.92 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>707.4 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>WBF TDEC Order</u>	Date Started <u>9/17/19</u> Completed <u>9/17/19</u>
Project Location <u>Rhea Co, Spring City, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>G. Budd</u> Logger <u>G. Budd</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Hawkston (Subcontractor)</u>	Drill Rig Type and ID <u>Geoprobe 3230DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>DT37 Dual Tube Soil Sampling System w/ 60" liners</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>	
Sampler Hammer Type <u>GH70 Direct Push</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>E. Smith</u>	Approved By <u>C. Kocka</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	707.4	Top of Hole					
1	1.5	705.9	Topsoil, silty, with gravel	HA ¹	HA01	0.0 - 0.5	0.5	
2			SANDY LEAN CLAY, CL, 7.5YR 5/6 (strong brown), soft, dry, with abundant fragments of sandstone and siltstone	1.5/5.5-20190817	DP01	0.0 - 5.0	3.1	N/A
3								
4								
5								
6								
7	7.0	700.4	SILTY LEAN CLAY, CL, 10YR 3/1 (very dark gray), low plasticity, very soft, moist, with organics	6.5/8.5-20190817	DP02	5.0 - 10.0	3.0	N/A
8								
9								
10	10.5	696.9	LEAN CLAY LITTLE SAND, CL, 10YR 4/3 (brown) and 10YR 4/1 (dark gray), low plasticity, moist	11.5/13.5-20190817	DP03	10.0 - 15.0	5.0	N/A
11								
12								
13								
14								
15								
16	16.5	690.9	SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10YR 5/1 (gray), low plasticity, firm, moist, with fragments of sandstone increasing with depth	16.5/18.5-20190817	DP04	15.0 - 20.0	5.0	N/A
17								
18								

TVA/EIP BORING LOG 175668050, WBF, TDEC, ORDER GP, TDEC SUBSURF DT 20190830, GDT 4/3/20

Client Borehole ID <u>N/A</u>	Stantec Boring No. WBF-BG12
Client <u>Tennessee Valley Authority</u>	Boring Location <u>447,812.24 N; 2,362,082.92 E NAD27 Plant Local</u>
Project Number <u>175668050</u>	Surface Elevation <u>707.4 ft</u> Elevation Datum <u>NGVD29</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10YR 5/1 (gray), low plasticity, firm, moist, with fragments of sandstone increasing with depth (Continued)					
19								
20								
21								
22								
23								
24	24.1	683.3			DP05	20.0 - 25.0	5.0	N/A
25	25.0	682.4	Sandstone, dark brown to tan, fine grained, moderately hard, highly weathered, dry					

No Refusal /
Bottom of Hole at 25.0 Ft.



Top of Rock = 24.1 Ft.
Top of Rock Elevation = 683.3 Ft.



- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190917) sampled using hand auger

APPENDIX D - PHOTOGRAPHIC LOGS


ATTACHMENT D.1



Photographic Log of Soil Cores



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 1			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (0.0-5.0 feet).			
Photograph ID: 2			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (5.0-10.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 3			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (10.0-15.0 feet).			
Photograph ID: 4			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (15.0-20.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 5			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (20.0-25.0 feet).			
Photograph ID: 6			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (25.0-27.5 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 7			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (27.5-30.0 feet).			
Photograph ID: 8			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (30.0-32.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 9			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (32.5-35.0 feet).			
Photograph ID: 10			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (35.0-37.5 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 11			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (37.5-40.0 feet).			
Photograph ID: 12			
Photo Location: WBF-BG01			
Photo Date: 9/11/2019			
Comments: Interval (40.0-44.4 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 13			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (0.0-5.0 feet).			
Photograph ID: 14			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (5.0-10.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 15			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (10.0-15.0 feet).			
Photograph ID: 16			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (15.0-20.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 17			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (20.0-25.0 feet).			
Photograph ID: 18			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (25.0-30.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 19			
Photo Location: WBF-BG03			
Photo Date: 9/4/2019			
Comments: Interval (30.0-35.0 feet).			
Photograph ID: 20			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (0.0-5.0 feet).			

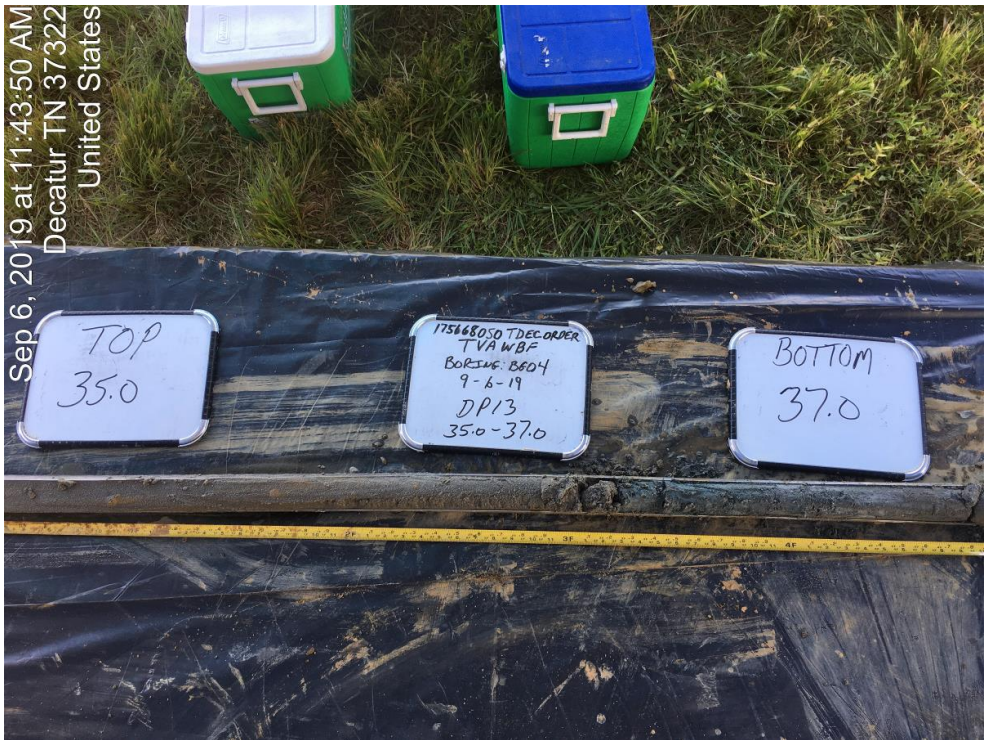

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 21			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (5.0-10.0 feet).			
Photograph ID: 22			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (10.0-12.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 23			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (12.5-15.0 feet).			
Photograph ID: 24			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (15.0-17.5 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 25			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (17.5-20.0 feet).			
Photograph ID: 26			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (20.0-22.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 27			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (22.5-25.0 feet).			
Photograph ID: 28			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (25.0-27.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 29			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (27.5-30.0 feet).			
Photograph ID: 30			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (30.0-35.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 31			
Photo Location: WBF-BG04			
Photo Date: 9/6/2019			
Comments: Interval (35.0-37.0 feet).			
Photograph ID: 32			
Photo Location: WBF-BG05			
Photo Date: 9/9/2019			
Comments: Interval (0.0-5.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 33			
Photo Location: WBF-BG05			
Photo Date: 9/9/2019			
Comments: Interval (5.0-10.0 feet).			
Photograph ID: 34			
Photo Location: WBF-BG05			
Photo Date: 9/9/2019			
Comments: Interval (10.0-15.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 35			
Photo Location: WBF-BG05			
Photo Date: 9/9/2019			
Comments: Interval (15.0-20.0 feet).			
Photograph ID: 36			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (0.0-5.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 37			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (5.0-10.0 feet).			
Photograph ID: 38			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (10.0-12.5 feet).			


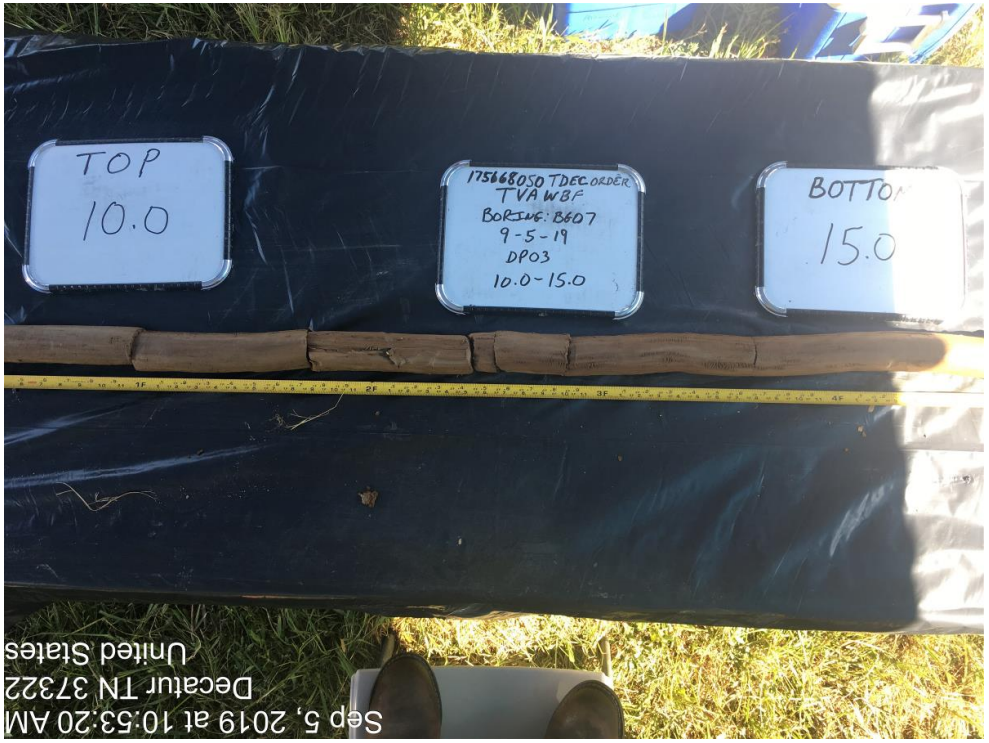
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 39	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;"> Sep 10, 2019 at 9:57:56 AM Decatur TN 37322 United States </div>  </div>		
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (12.5-15.0 feet).			
Photograph ID: 40	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;"> Sep 10, 2019 at 10:11:25 AM Decatur TN 37322 United States </div>  </div>		
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (15.0-17.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 41			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (17.5-20.0 feet).			
Photograph ID: 42			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (20.0-22.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 43			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (22.5-25.0 feet).			
Photograph ID: 44			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (25.0-27.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 45			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (27.5-30.0 feet).			
Photograph ID: 46			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Intervaln (30.0-35.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 47			
Photo Location: WBF-BG06			
Photo Date: 9/10/2019			
Comments: Interval (35.0-36.2 feet).			
Photograph ID: 48			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (0.0-5.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 49	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Sep 5, 2019 at 10:15:05 AM Decatur TN 37322 United States </div>  </div>		
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (5.0-10.0 feet).			
Photograph ID: 50	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Sep 5, 2019 at 10:53:20 AM Decatur TN 37322 United States </div>  </div>		
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (10.0-15.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 51			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (15.0-20.0 feet).			
Photograph ID: 52			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (20.0-25.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 53			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (25.0-27.5 feet).			
Photograph ID: 54			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (27.5-30.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 55			
Photo Location: WBF-BG07			
Photo Date: 9/5/2019			
Comments: First boring location interval (30.0-32.5 feet). Boring refusal at 32.5 feet.			
Photograph ID: 56			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (0.0-5.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 57			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (5.0-10.0 feet).			
Photograph ID: 58			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (10.0-15.0 feet).			


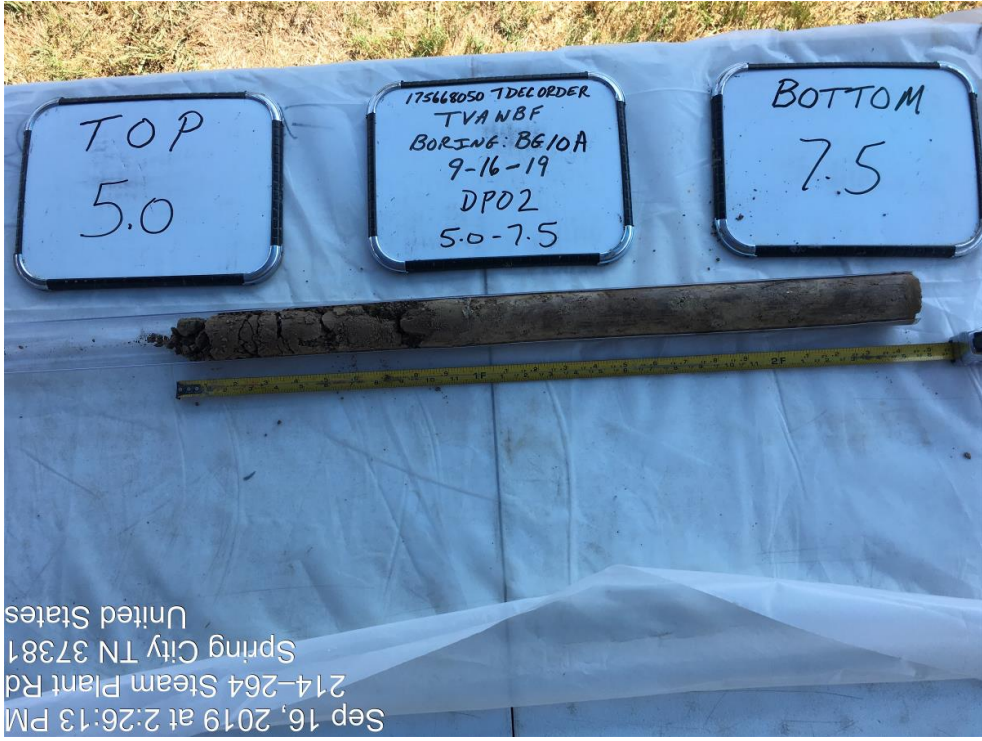
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 59			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (15.0-17.5 feet).			
Photograph ID: 60			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (17.5-20.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 61			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (20.0-22.5 feet).			
Photograph ID: 62			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (22.5-25.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 63			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (25.0-27.5 feet).			
Photograph ID: 64			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (27.5-30.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 65			
Photo Location: WBF-BG08			
Photo Date: 9/12/2019			
Comments: Interval (30.0-32.5 feet).			
Photograph ID: 66			
Photo Location: WBF-BG09			
Photo Date: 9/13/2019			
Comments: First boring location interval (0.0-5.0 feet). Terminated at 5.0 feet due to presence of CCR material.			


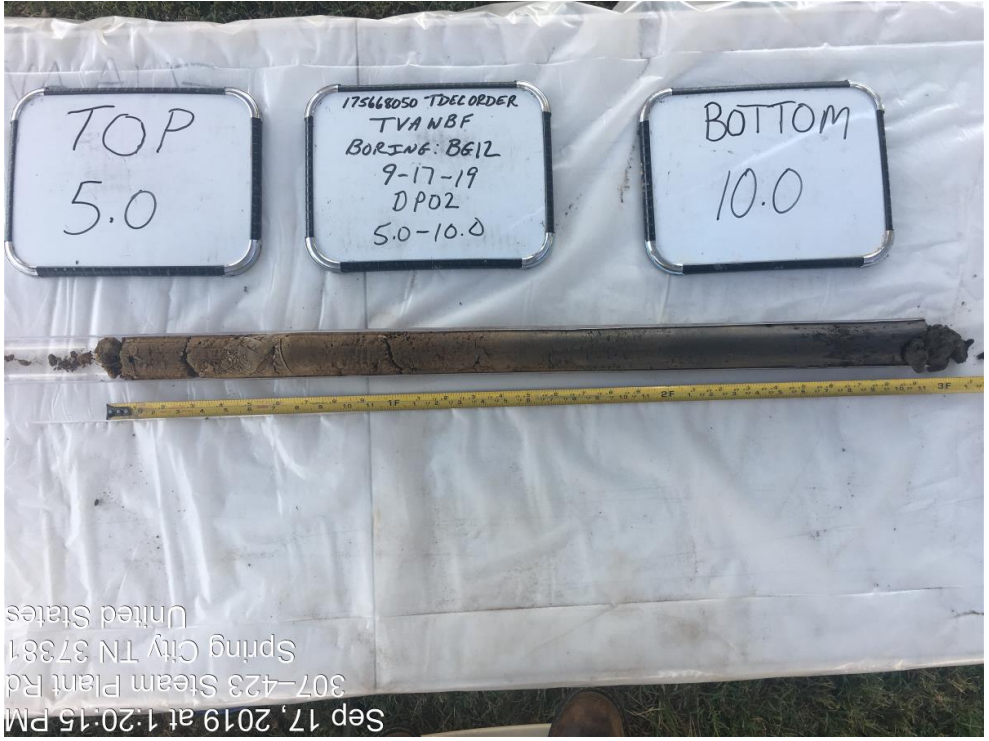
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 67			
Photo Location: WBF-BG09A			
Photo Date: 9/13/2019			
Comments: Second boring location interval (0.0-5.0 feet). Offset 25 feet east of the first boring location. Boring location shown in white board should be BG09A.			
Photograph ID: 68			
Photo Location: WBF-BG09A			
Photo Date: 9/13/2019			
Comments: Second boring location interval (5.0-10.0 feet). Terminated at 10.0 feet due to presence of CCR material. Boring location shown in white board should be BG09A.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 69			
Photo Location: WBF-BG10			
Photo Date: 9/16/2019			
Comments: Second boring location interval (0.0-5.0 feet). Offset 24 feet north of the first boring location. Boring location WBF-BG10A was renamed to WBF-BG10.			
Photograph ID: 70			
Photo Location: WBF-BG10			
Photo Date: 9/16/2019			
Comments: Second boring location interval (5.0-7.5 feet). Boring location WBF-BG10A was renamed to WBF-BG10.			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 71			
Photo Location: WBF-BG10			
Photo Date: 9/16/2019			
Comments: Second boring location interval (7.5-10.0 feet). Boring location WBF-BG10A was renamed to WBF-BG10.			
Photograph ID: 72			
Photo Location: WBF-BG10			
Photo Date: 9/16/2019			
Comments: Second boring location interval (10.0-12.5 feet). Boring location WBF-BG10A was renamed to WBF-BG10.			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 73	<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Sep 17, 2019 at 8:26:12 AM 267-305 Steam Plant Rd Spring City TN 37381 United States </div> 		
Photo Location: WBF-BG11			
Photo Date: 9/17/2019			
Comments: Interval (0.0-5.0 feet).			
Photograph ID: 74	<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Sep 17, 2019 at 8:35:44 AM 267-305 Steam Plant Rd Spring City TN 37381 United States </div> 		
Photo Location: WBF-BG11			
Photo Date: 9/17/2019			
Comments: Interval (5.0-10.0 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 75			
Photo Location: WBF-BG11			
Photo Date: 9/17/2019			
Comments: Interval (10.0-15.0 feet).			
Photograph ID: 76			
Photo Location: WBF-BG11			
Photo Date: 9/17/2019			
Comments: Interval (15.0-20.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 77			
Photo Location: WBF-BG12			
Photo Date: 9/17/2019			
Comments: Interval (0.0-5.0 feet).			
Photograph ID: 78			
Photo Location: WBF-BG12			
Photo Date: 9/17/2019			
Comments: Interval (5.0-10.0 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 79			
Photo Location: WBF-BG12			
Photo Date: 9/17/2019			
Comments: Interval (10.0-15.0 feet).			
Photograph ID: 80			
Photo Location: WBF-BG12			
Photo Date: 9/17/2019			
Comments: Interval (15.0-20.0 feet).			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 81			
Photo Location: WBF-BG12			
Photo Date: 9/17/2019			
Comments: Interval (20.0-25.0 feet).			



ATTACHMENT D.2

Photographic Log of Soil Cores – Background Wells


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 1			
Photo Location: WBF-102ALT1			
Photo Date: 6/20/2019			
Comments: Interval (13.5-15.0 feet).			
Photograph ID: 2			
Photo Location: WBF-102ALT1			
Photo Date: 6/20/2019			
Comments: Interval (15.0-16.5 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 3			
Photo Location: WBF-102ALT1			
Photo Date: 6/20/2019			
Comments: Interval (16.5-18.0 feet).			
Photograph ID: 4			
Photo Location: WBF-102ALT1			
Photo Date: 6/20/2019			
Comments: Interval (18.0-19.5 feet).			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 5	No Photo Applicable		
Photo Location: WBF-102 (WBF-102ALT2(Sonic))			
Photo Date: 7/8/2019			
Comments: Photo of sonic boring location interval (11.0-21.0 feet) unavailable. Offset 3 feet east from WBF-102Alt1. Refer to photos for WBF-102Alt1.			
Photograph ID: 6			
Photo Location: WBF-103			
Photo Date: 6/6/2019			
Comments: Interval (12.0-13.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 7	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding-right: 10px;"> South Elevation 3°N (T) ● 35°36'27"N, 84°46'59"W ±16.4ft ▲ 717ft </div>  </div>		
Photo Location: WBF-103			
Photo Date: 6/6/2019			
Comments: Interval (13.5-15.0 feet).			
Photograph ID: 8	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding-right: 10px;"> South Elevation 2°N (T) ● 35°36'27"N, 84°46'59"W ±16.4ft ▲ 744ft </div>  </div>		
Photo Location: WBF-103			
Photo Date: 6/6/2019			
Comments: Interval (15.0-16.5 feet).			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee



Photograph ID: 9	
Photo Location: WBF-103	
Photo Date: 6/6/2019	
Comments: Interval (16.5-18.0 feet).	



ATTACHMENT D.3



Photographic Log of Rock Outcrop Survey Areas



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 1	 <p>Jan 22, 2020 at 3:51:15 PM Spring City TN 37381 United States</p>		
Photo Location: Area 01			
Direction: North Northwest			
Survey Date:: 1/22/2020			
Comments: AREA01-01, Outcrop.			
Photograph ID: 2	 <p>Jan 22, 2020 at 3:51:33 PM Spring City TN 37381 United States</p>		
Photo Location: Area 01			
Direction: North Northwest			
Survey Date:: 1/22/2020			
Comments: AREA01-01, Outcrop.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 3			
Photo Location: Area 01			
Direction:			
Survey Date:: 1/22/2020			
Comments: AREA01-01, Outcrop Closeup.			
Photograph ID: 4			
Photo Location: Area 01			
Direction:			
Survey Date:: 1/22/2020			
Comments: AREA01-01, Outcrop Closeup.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 5	 <p>Jan 21, 2020 at 1:07:13 PM 427-499 Steam Plant Rd Spring City TN 37381 United States</p>		
Photo Location: Area 02			
Direction: West			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop.			
Photograph ID: 6	 <p>Jan 21, 2020 at 1:07:34 PM 427-499 Steam Plant Rd Spring City TN 37381 United States</p> <p>WBF 175668050 01-21-20 Area 02 WBF-ROC-AREA02-01-30200124 25°</p>		
Photo Location: Area 02			
Direction: West			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 7	 <p>Jan 21, 2020 at 1:13:16 PM 427-499 Steam Plant Rd Spring City TN 37384 United States</p>		
Photo Location: Area 02			
Direction: West Southwest			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop.			
Photograph ID: 8	 <p>Jan 21, 2020 at 1:13:35 PM 427-499 Steam Plant Rd Spring City TN 37384 United States</p>		
Photo Location: Area 02			
Direction: West Southwest			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 9			
Photo Location: Area 02			
Direction:			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop.			
Photograph ID: 10			
Photo Location: Area 02			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA02-01, Outcrop, Float			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 11			
Photo Location: Area 02			
Direction:			
Survey Date:: 1/21/2020			
Comments: AREA02, Outcrop Float			
Photograph ID: 12			
Photo Location: Area 02 Sample 01			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA02-01, Hand Sample			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 13			
Photo Location: Area 02 Sample 01			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA02-01, Hand Sample			
Photograph ID: 14			
Photo Location: Area 02 Sample 01			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA02-01, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 15	 <p>Jan 22, 2020 at 11:05:50 AM 307-423 Steam Plant Rd Spring City TN 37381 United States</p>		
Photo Location: Area 03			
Direction: West			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			
Photograph ID: 16	 <p>Jan 22, 2020 at 11:06:09 AM 307-423 Steam Plant Rd Spring City TN 37381 United States</p>		
Photo Location: Area 03			
Direction: West			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 17			
Photo Location: Area 03 Sample 01			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-01, Hand Sample			
Photograph ID: 18			
Photo Location: Area 03			
Direction: West Southwest			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 19	 <p>Jan 22, 2020 at 11:40:45 AM 307-423 Steam Plant Rd Spring City TN 37381 United States</p>		
Photo Location: Area 03			
Direction: West Southwest			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			
Photograph ID: 20	 <p>Area 03</p> <p>WBF 22 Jan 2020, 12:12:47</p>		
Photo Location: Area 03			
Direction: West Southwest			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 21	 <p>Jan 22, 2020 at 12:36:25 PM 307-423 Steam Plant Rd Spring City TN 37381 United States</p>		
Photo Location: Area 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: AREA03, Outcrop			
Photograph ID: 22	 <p>WBF 175662050 01-22-20 Area 03 WBF-ROC AREA03-03-2020001 EPV</p> <p>NSSE SR</p> <p>WBF 175662050 01-22-20 Area 03 WBF-ROC AREA03-03-2020001 EPV</p> <p>WBF-ROC-AREA03-03-20200122 Fold</p>		
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, Hand Sample			

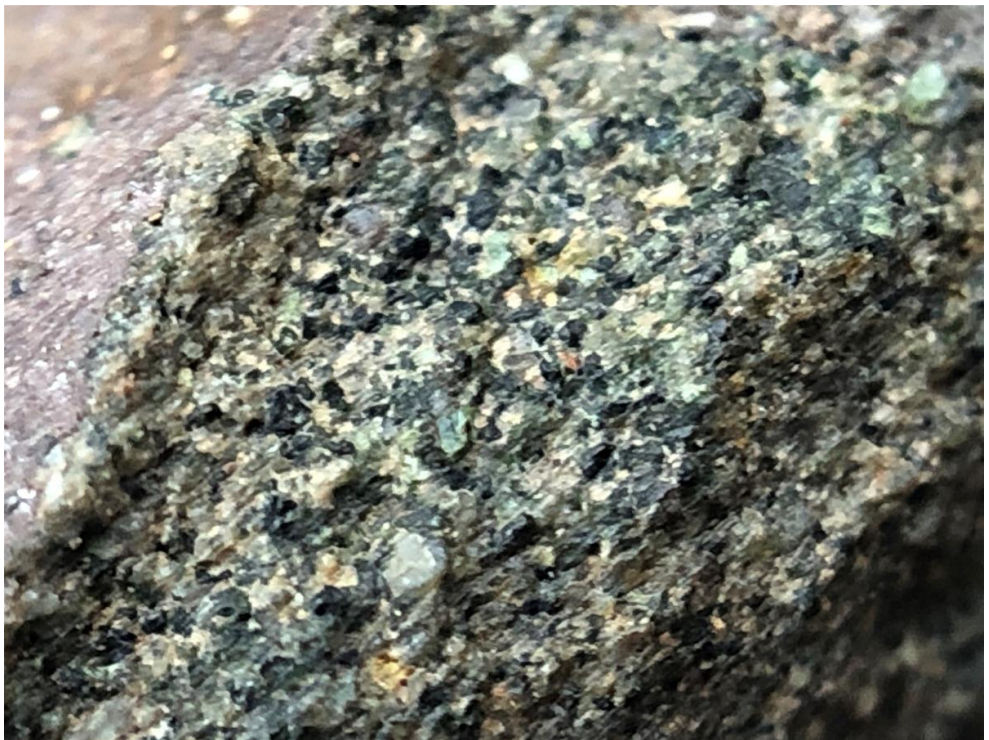
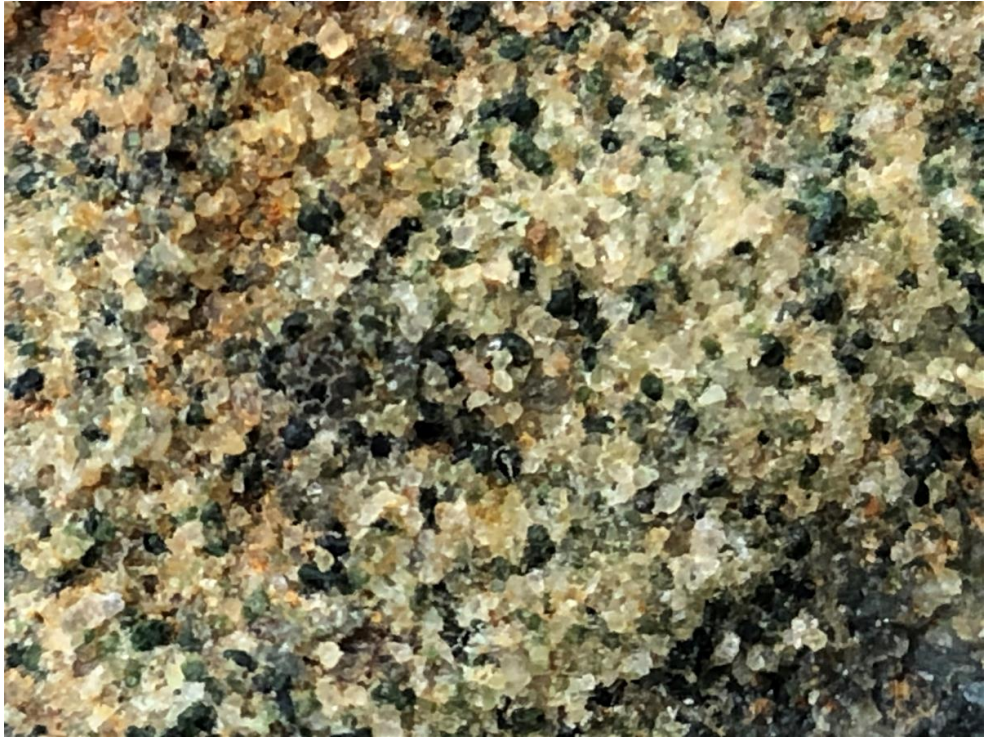
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 23			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 24			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 25			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 26			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 27			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 28			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 29			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 30			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 31			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 32			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 33			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 34			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 35			
Photo Location: Area 03 Sample 03			
Direction:			
Survey Date:: 1/22/2020			
Comments: WBF-ROC-AREA03-03, 15x zoom			
Photograph ID: 36	<div>Jan 23, 2020 at 1:16:56 PM Spring City TN 37381 United States</div> 		
Photo Location: Area 04			
Direction: North			
Survey Date:: 1/23/2020			
Comments: AREA04, Outcrop.			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 37	 <p>Jan 23, 2020 at 1:17:30 PM Spring City TN 37381 United States</p>		
Photo Location: Area 04			
Direction:			
Survey Date:: 1/23/2020			
Comments: AREA04, Outcrop.			
Photograph ID: 38	 <p>€cm N35E SE 46 WBF-ROC-AREA04-01-20200123</p>		
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, Hand Sample			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 39			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 40			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 41			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 42			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			


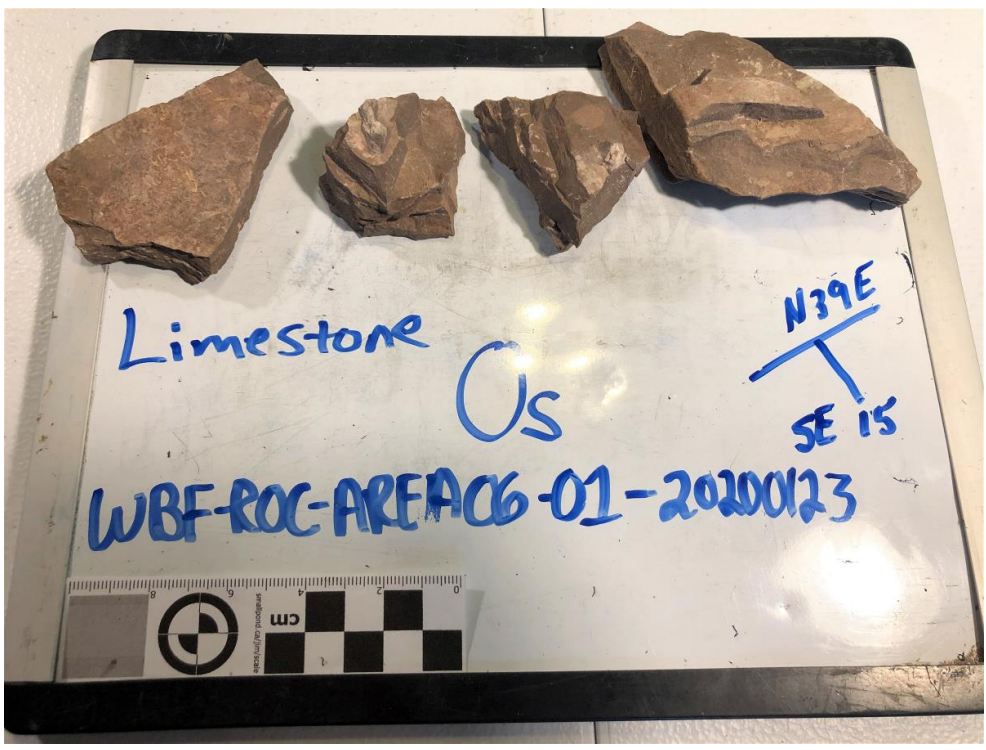
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 43			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 44			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 45			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 46			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 47			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 48			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 49			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 50			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 51			
Photo Location: Area 04 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA04-01, 15x zoom			
Photograph ID: 52	<div>Jan 23, 2020 at 12:09:43 PM Spring City TN 37381 United States</div> 		
Photo Location: Area 06			
Direction: Southeast			
Survey Date:: 1/23/2020			
Comments: AREA06, Outcrop.			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 53	 <p>Jan 23, 2020 at 12:09:50 PM Spring City TN 37381 United States</p>		
Photo Location: Area 06			
Direction: Southeast			
Survey Date:: 1/23/2020			
Comments: AREA06, Outcrop.			
Photograph ID: 54			
Photo Location: Area 06 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA06-01, Hand Sample			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 55			
Photo Location: Area 06 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA06-01, 15x zoom			
Photograph ID: 56			
Photo Location: Area 06 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA06-01, 15x zoom			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 57			
Photo Location: Area 06 Sample 01			
Direction:			
Survey Date:: 1/23/2020			
Comments: WBF-ROC-AREA06-01, 15x zoom			
Photograph ID: 58			
Photo Location: Area 07			
Direction: Southeast			
Survey Date:: 1/21/2020			
Comments: AREA07, Outcrop.			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 59			
Photo Location: Area 07			
Direction: West			
Survey Date:: 1/21/2020			
Comments: AREA07, Outcrop.			
Photograph ID: 60			
Photo Location: Area 07 Sample 01			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA07-01, Hand Sample			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	Watts Bar Fossil (WBF) Plant	Site Location:	Spring City, Tennessee
Photograph ID: 61			
Photo Location: Area 07 Sample 01			
Direction:			
Survey Date:: 1/21/2020			
Comments: WBF-ROC-AREA07-01, 15x zoom			