APPENDIX F – BACKGROUND SOIL INVESTIGATION

APPENDIX F.1

BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT



Johnsonville Fossil Plant Background Soil Investigation Sampling and Analysis Report

TDEC Commissioner's Order Environmental Investigation Plan Johnsonville Fossil Plant New Johnsonville, Tennessee

August 24, 2020

Prepared for:

Tennessee Valley Authority Chattanooga, Tennessee



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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 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 |
| EnvStds | Environmental Standards, Inc. |
| FSP | Field Sampling Personnel |
| ft bgs | feet below ground surface |
| GPS | Global Positioning System |
| HSA | Hollow Stem Auger |
| ID | Identification |
| IDW | Investigation derived waste |
| JOF Plant | Johnsonville Fossil Plant |
| PG | Professional Geologist |
| PLM | Polarized Light Microscopy |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| RJ Lee | RJ Lee Group, Inc. |
| SAP | Sampling and Analysis Plan |
| SAR | Sampling and Analysis Report |
| SOP | Standard Operating Procedure |
| Stantec | Stantec Consulting Services Inc. |
| TDEC | Tennessee Department of Environment and Conservation |
| TDEC Order | Commissioner's Order No. OGC15-0177 |
| TestAmerica | TestAmerica Laboratories, Inc. |

TITechnical InstructionTVATennessee Valley Authority

Introduction

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 Johnsonville Fossil (JOF) Plant located in New Johnsonville, 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 JOF 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 JOF Plant. The evaluation of the results will consider other aspects of the environmental investigation, as well as the 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 JOF 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 TDECapproved Programmatic- and Project-specific changes. Minor variations in scope and procedures from those outlined in the Background Soil SAP and Hydrogeological Investigation SAP occurred during field activities due to field conditions and programmatic updates, and are referenced in Section 3.6.

The BGS sampling activities were completed May 22, 2019 through June 4, 2019 and on August 23, 2019. Additional BGS samples were collected June 20, 2019 through August 28, 2019 as part of the hydrogeological investigation during background groundwater monitoring well installations as described in the Hydrogeological Investigation SAP.

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

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Lee) in Monroeville, Pennsylvania (percent ash). Additional quality assurance oversight on data acquisition protocols, sampling practices, and data validation or verification were performed by Environmental Standards, Inc. (EnvStds) under direct contract to TVA.

Objective and Scope

2.0 OBJECTIVE AND SCOPE

The primary objective of the BGS investigation conducted pursuant to the Background Soil SAP is to collect soil samples for characterization of the background soils within the vicinity of the JOF 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 three background monitoring wells using a hollow stem auger (HSA) 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 JOF Plant Hydrogeological Investigation SAR.

Field Activities

3.0 FIELD ACTIVITIES

BGS investigation field activities were conducted between May 22, 2019 and August 23, 2019. Additionally, under the hydrogeological investigation scope of work, three background monitoring well borings were drilled between June 19, 2019 and August 27, 2019. Soil samples that were collected from the 12 background soil borings and three 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 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 or verification of laboratory analytical data was performed by EnvStds under direct contract with TVA. EnvStds also conducted audits of field activities and provided quality reviews of field documentation. In addition, on behalf of TDEC, Civil and Environmental Consultants, Inc. (CEC) collected split soil samples at two boring locations (JOF-BG03 and JOF-BG04). 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 proposed in the SAP using the GPS
- Collected GPS measurements at the boring locations
- Collected soil samples from 12 BGS boring locations and three background monitoring well locations (hydrogeological investigation scope of work)
- Recorded field measurements of soil pH at the 15 sampled boring/well locations
- Collected quality control (QC) samples, including four matrix spike/matrix spike duplicates, two field duplicates, 13 field blanks, and three equipment blanks
- Conveyed collected samples via laboratory-provided courier service to TestAmerica and via Federal Express shipment to RJ Lee for analysis.

Details on each activity are presented in the sections below.

3.1 WORK LOCATIONS

The BGS investigation field activities were conducted at 12 locations near the JOF Plant under the BGS investigation scope of work and three locations near JOF Plant under the hydrogeological investigation scope of work. The BGS investigation boring locations are shown on Exhibit A.2 (Appendix A). A list of the BGS investigation borings and associated soil samples is included in Table B.1, and sample results are provided in Tables B.2 through B.4 (Appendix B).

Field Activities

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 recovery was less than five feet, the FSP collected the two-foot sample interval generally from either the mid-point of the recovered interval or from the entire recovered interval, if recovery was about 2.5 feet or less. Samples were collected from multiple soil depths to provide data for vertical characterization of background soils.

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.

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.



Field Activities

3.2.1.3 Soil pH Calibration and Inspection Log

Stantec FSP recorded daily pH meter calibrations 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.

3.2.1.5 Chain-of-Custody

Stantec FSP completed a *COC* documentation for each soil sample collected for laboratory analysis during the BGS investigation. The sample ID, sample location, sample depth (if applicable), type of sample, sampling date and 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 (SOP) - REV 1 for measurement of soil pH using 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 were taken during the BGS investigation. Photographic logs of subsurface soil cores from the BGS borings and the screened interval of the background well borings are provided in Attachments D.1 and D.2, respectively, in Appendix D.

Field Activities

3.3 SOIL BORINGS AND SAMPLING

3.3.1 Soil Borings

The BGS investigation borings were advanced by Geo Logic, Inc., under Stantec oversight, using a DPT rig equipped with a DT37 dual tube tooling system. The background monitoring wells, completed under the hydrogeological investigation, were advanced by Stantec using a HSA drilling rig with a two-inch spilt-spoon attached per American Society for Testing and Materials (ASTM) *D6151-08: Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling.*

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). BGS investigation borings were advanced in the following chronological sequence:

- <u>JOF-BG02</u> On May 22, 2019, the DPT rig mobilized to location JOF-BG02. The DPT rig advanced one soil boring at this location. Refusal was encountered at 25 ft bgs. The boring was logged and sampled as JOF-BG02. As described in Section 3.6.2, the surficial sample (0 to 0.5 ft bgs) was collected on May 24, 2019, directly adjacent to the boring location.
- <u>JOF-BG08</u> On May 22, 2019, the DPT rig mobilized to location JOF-BG08. The DPT rig advanced one soil boring at this location. Refusal was encountered at 17 ft bgs. The boring was logged and sampled as JOF-BG08. As described in Section 3.6.2, the surficial sample (0 to 0.5 ft bgs) was collected on May 24, 2019, directly adjacent to the boring location.
- <u>JOF-BG11</u> On May 23, 2019, the DPT rig mobilized to location JOF-BG11. The DPT rig advanced one soil boring at this location. Refusal was encountered at 10 ft bgs. The boring was logged and sampled as JOF-BG11. As described in Section 3.6.2, the surficial sample (0 to 0.5 ft bgs) was collected on May 24, 2019, directly adjacent to the boring location.
- <u>JOF-BG10</u> On May 23, 2019, the DPT rig mobilized to location JOF-BG10. The DPT rig advanced one soil boring at this location. Refusal was encountered at 15 ft bgs. The boring was logged and sampled as JOF-BG10. As described in Section 3.6.2, the surficial sample (0 to 0.5 ft bgs) was collected on May 24, 2019, directly adjacent to the boring location.
- <u>JOF-BG05</u> On May 24, 2019, the DPT rig mobilized to location JOF-BG05. The DPT rig advanced one soil boring at this location. Refusal was encountered at 14.0 ft bgs. The boring was logged and sampled as JOF-BG05.
- <u>JOF-BG04</u> On May 29, 2019, the DPT rig mobilized to location JOF-BG04. The DPT rig advanced one soil boring at this location. Refusal was encountered at 29.8 ft bgs (first boring), and a second boring was drilled three feet east of the first boring to obtain sufficient sampling volume to split samples with CEC. The first boring, drilled to 29.8 ft bgs, was logged and sampled as JOF-BG04 for the BGS investigation.

CEC collected split samples from 1.5 to 3.5 ft bgs and 6.5 to 8.5 ft bgs at JOF-BG04.

Field Activities

 <u>JOF-BG03</u> – On May 29, 2019, the DPT rig mobilized to location JOF-BG03. The DPT rig advanced one soil boring at this location. Refusal was encountered at 24.7 ft bgs, and a second boring was drilled three feet east of the first boring to obtain sufficient sampling volume to split samples with CEC. The first boring, 24.7 ft bgs, was logged and sampled as JOF-BG03 for the BGS investigation.

CEC collected split samples from 1.5 to 3.5 ft bgs at JOF-BG03.

- <u>JOF-BG06</u> On May 30, 2019, the DPT rig mobilized to location JOF-BG06. The DPT rig advanced one soil boring at this location. Refusal was encountered at 41.5 ft bgs. The boring was logged and sampled as JOF-BG06.
- <u>JOF-BG01</u> On June 3, 2019, the DPT rig mobilized to location JOF-BG01. The DPT rig advanced three soil borings at this location. Refusal was encountered at 4.5 ft bgs (first boring), at 4.7 ft bgs (second boring), and at 9.8 ft bgs (third boring). The deepest boring, drilled to 9.8 ft bgs, was logged and sampled as JOF-BG01.
- <u>JOF-BG07</u> On June 4, 2019, the DPT rig mobilized to location JOF-BG07. The DPT rig advanced one soil boring at this location. Refusal was encountered at 23.3 ft bgs. The boring was logged and sampled as JOF-BG07.
- <u>JOF-BG12</u> On June 4, 2019, the DPT rig mobilized to location JOF-BG12. The DPT rig advanced one soil boring at this location to a depth of 13.6 ft bgs. The boring was logged and sampled as JOF-BG12.
- <u>JOF-109</u> On June 18, 2019, the HSA rig mobilized to location JOF-109. However, during the initial attempt to level the HSA rig, it was deemed potentially unsafe and the boring was moved southeast within 25 feet of the original staked location. On June 19, 2019, the HSA rig advanced one soil boring at this location to a depth of 46.5 ft bgs. The boring was logged and sampled as JOF-109, and background monitoring well JOF-109 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.
- <u>JOF-119</u> On July 9, 2019, the HSA rig mobilized to location JOF-119. The HSA rig advanced one soil boring at this location to a depth of 45 ft bgs. The boring was logged and sampled as JOF-119, and background monitoring well JOF-119 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.
- <u>JOF-BG09</u> Due to access restrictions and as approved by TDEC, the JOF-BG09 boring location was relocated east of the original staked location. On August 23, 2019, the DPT rig mobilized to the revised location for boring JOF-BG09. The DPT rig advanced one soil boring at this location. Refusal was encountered at 8.8 ft bgs. The boring was logged and sampled as JOF-BG09.

Field Activities

 <u>JOF-112</u> – On August 27, 2019, the HSA rig mobilized to location JOF-112. The HSA rig advanced one soil boring at this location to a depth of 30.9 ft bgs. The boring was logged and sampled as JOF-112, and background monitoring well JOF-112 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.

Following sample collection, as 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 Soil Color Charts and other relevant parameters as required by the SAPs and TIs. As part of the logging process, soil cores were photographed by Stantec 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).

The sampling team typically collected approximately two-foot grab samples from the mid-point of each five-foot soil run based on recovery. 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 SOP – REV 1 (Stantec 2018d). 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 transport 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).

Field Activities

3.4 INVESTIGATION DERIVED WASTE

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

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

Soil cuttings and decontamination fluids produced during the BGS investigation were dispersed to the ground surface as authorized by TVA JOF Plant personnel and in accordance with ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination* and the Background Soil SAP.

IDW was handled in accordance with JOF Plant-specific waste management plan, and local, state, and federal regulations. Transportation and disposal of IDW was coordinated with TVA JOF Plant personnel.

3.5 SAMPLE SHIPMENT

Samples were packed and transported or 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 delivered via courier to TestAmerica in Nashville, Tennessee and then subsequently shipped to TestAmerica in Pittsburgh, Pennsylvania (all other analyses). The samples to be analyzed for percent ash by PLM were shipped separately to RJ Lee located in Monroeville, Pennsylvania. TestAmerica submitted sample receipt forms to EnvStds to document the condition in which the samples were received.

3.6 VARIATIONS

The proposed scope and procedures for the BGS investigation were 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 sampling performed to complete the scope of work in the SAP are described in the following sections. As discussed below, these variation do not impact the overall usability and representativeness of the data provided in this SAR for the BGS investigation at the JOF Plant.

3.6.1 Variations in Scope

Variations in scope from the SAP are provided below.

BGS boring JOF-BG09 was relocated because of access restrictions as approved by TDEC.

Field Activities

 The surficial sample collected at boring JOF-BG09 was submitted to the laboratory for PLM (percent ash) analysis only because the CCR Parameter analysis was inadvertently omitted; however, the overall dataset for the CCR Parameters meets the completeness goals defined in the QAPP.

3.6.2 Variations in Procedures

Variations in procedures occurring in the field are provided below.

- The soil pH was not measured before placing the soil samples into the laboratory sample containers at borings JOF-BG02 and JOF-BG08 on May 22, 2019 as specified in the SAPs. This occurred because the field pH meter calibration solutions from the vendor arrived later than scheduled. The field pH for soils at JOF-BG02 and JOF-BG08 were measured a day later on May 23, 2019. Also, the soil samples collected from these borings were submitted to the laboratory for pH testing.
- Surficial soil samples (0 to 0.5 ft bgs) for borings JOF-BG02, JOF-BG08, JOF-BG10, and JOF-BG11 were not initially collected for CCR Parameter analysis on the days the borings were drilled, so the surficial samples collected for percent ash were discarded. These surficial samples were recollected and sampled according to the Background Soil SAP on May 24, 2019.
- Field pH reading was not recorded from the JOF-BS-BG04-0.0/0.5-20190529 sample on May 29, 2019; however, pH was measured in the sample sent to the laboratory and in the field from a location immediately adjacent to the original sample on May 31, 2019.
- The frequency of field QC sample collection did not meet the specific QAPP and SAP requirements. The results of the collected field QC samples were evaluated as part of the data validation/verification process performed by EnvStds.

Summary

4.0 SUMMARY

The data presented in this report are from the BGS investigation at the JOF Plant. The BGS investigation included collecting soil analytical samples to assess CCR Parameters and percent ash. A total of 67 samples, including two duplicate samples, were collected from the 12 BGS borings (JOF-BG01 through JOF-BG12) and three background well borings (JOF-109, JOF-112, and JOF-119) 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. 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.

Stantec has completed the BGS investigation at the JOF Plant in New Johnsonville, Tennessee, in accordance with the Background Soil and Hydrogeological Investigation SAPs 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 other TDEC Order SAPs, as well as data collected under other State and CCR Programs. This evaluation will be provided in the EAR.

References

5.0 REFERENCES

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

APPENDIX A - EXHIBITS



TVA-EIP\175568286_JOF_Phase2\gis\mxd\BGS_Tech_Memo\Exhibit1_JOF_SiteLocationMap.mxd Revised: 2019-12-0

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Exhibit No. **A.1**

Title

Site Location Map

Client/Project

Tennessee Valley Authority Johnsonville Fossil Plant

| oject Location | | | | 175568286 | | | |
|------------------|----------------|---------------|---|-----------|--|--|--|
| New Johnsonville | , Tennessee | | Prepared by DMB on 2019-12-03 Technical Review by RN on 2019-12-03 | | | | |
| 0 | 1,100 | 2,200 | 3,300 | 4,400 | | | |
| | 1:13,200 (At c | original docu | ment size of | 22x34) | | | |
| .eaend | | | | | | | |



CCR Unit Boundary (Approximate)

Coal Yard



Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 Topographic Basemap Provided by ESRI Basemaps (US Topo Maps)



Page 01 of 01



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Exhibit No. **A.**2

Title

Background Soil Boring Location Map

Client/Project

Tennessee Valley Authority Johnsonville Fossil Plant

| roject l | Location | | | | 17 | 5568286 | | | |
|-----------|-------------|----------------|---------------|--------------------------------------|-----------|---------|--|--|--|
| New Jo | ohnsonville | , Tennessee | | Prepared by DMB on 2019-12-03 | | | | | |
| | | | | Technical Review by RN on 2019-12-03 | | | | | |
| | | | | | | | | | |
| | 0 | 1,300 | 2,600 | 3,900 | 5,200 | | | | |
| | | | | | Feet | | | | |
| | | 1:15,600 (At c | original docu | iment size of | 22x34) | | | | |
| 00 | and | | | | | | | | |
| -ey | enu | | | | | | | | |
| | | | | | | | | | |
| \bullet | Backo | around Soil Bo | prina | BGSId | | | | | |
| Ŭ | _ 0.0112 | <u>.</u> | | | | | | | |
| | | | | M | loll Namo | | | | |







Notes

- Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 Imagery Provided by TVA (2017) & ESRI Basemaps
 Each inset outline color correlates with the same color extent shown in the main figure.







Page 01 of 01

APPENDIX B - TABLES

| | | | | | | | 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 |
| IOE 100 | JOF-BS-JOF109-31.5/34.5-20190620 | Normal Environmental Sample | | х | х | х | х | х | х |
| JOE-109 | JOF-BS-JOF109-36.0/39.0-20190620 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-112-19.5/24.0-20190828 | Normal Environmental Sample | | х | х | х | х | х | х |
| JOF-112 | JOF-BS-DUP01-20190828 | Field Duplicate Sample | | х | х | х | х | | х |
| | JOF-BS-112-24.0/28.9-20190828 | Normal Environmental Sample | | х | х | х | х | х | х |
| IOE 110 | JOF-BS-JOF119-34.5/37.5-20190710 | Normal Environmental Sample | | х | х | х | х | х | х |
| 301-119 | JOF-BS-JOF119-39.0/42.0-20190710 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-BG01-0.0/0.5-20190603 | Normal Environmental Sample | х | х | х | х | х | х | х |
| JOF-BG01 | JOF-BS-BG01-1.5/3.5-20190603 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-BG01-6.5/8.5-20190603 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG02-0.0/0.5-20190524 | Normal Environmental Sample | х | х | х | х | х | х | х |
| | JOF-BS-BG02-0.0/2.2-20190522 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG02-6.5/8.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | х |
| JOF-BG02 | JOF-BS-BG02-11.5/13.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG02-16.5/18.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG02-21.5/23.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG03-0.0/0.5-20190529 | Normal Environmental Sample | x | х | х | х | х | х | X |
| | JOF-BS-BG03-1.5/3.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| JOF-BG03 | JOF-BS-BG03-6.5/8.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG03-11.5/13.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG03-16.5/18.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG04-0.0/0.5-20190529 | Normal Environmental Sample | х | х | х | х | х | | х |
| | JOF-BS-DUP01-20190529 | Field Duplicate Sample | х | х | х | х | х | | X |
| | JOF-BS-BG04-0.0/0.5-20190531 | Normal Environmental Sample | | | | | | х | |
| | JOF-BS-BG04-1.5/3.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| JOF-BG04 | JOF-BS-BG04-6.5/8.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG04-11.5/13.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG04-16.5/18.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG04-21.5/23.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG04-25.0/28.5-20190529 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG05-0.0/0.5-20190524 | Normal Environmental Sample | x | х | х | х | х | х | x |
| | JOF-BS-BG05-1.5/3.5-20190524 | Normal Environmental Sample | | х | х | х | х | х | x |
| JOF-BG05 | JOF-BS-BG05-6.5/8.5-20190524 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG05-11.5/13.5-20190524 | Normal Environmental Sample | | х | х | х | х | х | x |
| - | JOF-BS-BG06-0.0/0.5-20190530 | Normal Environmental Sample | х | х | х | х | х | х | x |
| | JOF-BS-BG06-1.5/3.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG06-6.5/8.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG06-11.5/13.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG06-16.5/18.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | х |
| JOE-8000 | JOF-BS-BG06-21.5/23.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-BG06-26.5/28.5-20190530 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG06-31.5/33.5-20190531 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-BG06-36.5/38.5-20190531 | Normal Environmental Sample | | х | х | х | х | х | x |
| | JOF-BS-BG06-40.0/41.5-20190531 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG07-0.0/0.5-20190604 | Normal Environmental Sample | х | х | x | х | x | х | x |
| | JOF-BS-BG07-1.5/3.5-20190604 | Normal Environmental Sample | Ì | х | x | х | х | х | x |
| | JOF-BS-BG07-6.5/8.5-20190604 | Normal Environmental Sample | | х | х | х | х | х | x |
| JOF-BG0/ | JOF-BS-BG07-11.5/13.5-20190604 | Normal Environmental Sample | | х | x | х | x | х | x |
| | JOF-BS-BG07-16.5/18.5-20190604 | Normal Environmental Sample | | х | x | х | x | х | x |
| | JOF-BS-BG07-21.5/23.3-20190604 | Normal Environmental Sample | | х | x | х | x | х | x |
| | | | | | | | | | |

See notes on last page.

| | | | | | | | 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 |
| | JOF-BS-BG08-0.0/0.5-20190524 | Normal Environmental Sample | х | х | х | x | x | x | Х |
| | JOF-BS-BG08-1.5/3.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | Х |
| JOF-BG08 | JOF-BS-BG08-6.5/8.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | Х |
| | JOF-BS-BG08-11.5/13.5-20190522 | Normal Environmental Sample | | х | х | х | х | х | Х |
| | JOF-BS-BG08-15.0/17.0-20190522 | Normal Environmental Sample | | х | х | х | х | х | х |
| | JOF-BS-BG09-0.0/0.5-20190823 | Normal Environmental Sample | х | | | | | х | |
| JOF-BG09 | JOF-BS-BG09-1.5/3.5-20190823 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG09-5.9/7.9-20190823 | Normal Environmental Sample | | х | х | х | х | х | Х |
| | JOF-BS-BG10-0.0/0.5-20190524 | Normal Environmental Sample | х | х | х | х | х | х | х |
| IOE BG10 | JOF-BS-BG10-1.5/3.5-20190523 | Normal Environmental Sample | | х | х | х | х | х | X |
| 301-0010 | JOF-BS-BG10-6.5/8.5-20190523 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG10-11.5/13.5-20190523 | Normal Environmental Sample | | х | х | х | х | х | Х |
| | JOF-BS-BG11-0.0/0.5-20190524 | Normal Environmental Sample | x | х | х | х | х | х | х |
| JOF-BG11 | JOF-BS-BG11-1.5/3.5-20190523 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG11-6.5/8.5-20190523 | Normal Environmental Sample | | х | х | х | х | х | X |
| | JOF-BS-BG12-0.0/0.5-20190604 | Normal Environmental Sample | х | х | х | х | х | х | Х |
| IOE BC12 | JOF-BS-BG12-1.5/3.5-20190604 | Normal Environmental Sample | | х | x | x | x | x | Х |
| JOF-DG12 | JOF-BS-BG12-6.5/8.5-20190604 | Normal Environmental Sample | | х | x | x | x | x | Х |
| | JOF-BS-BG12-11.5/13.5-20190604 | Normal Environmental Sample | | х | х | х | х | х | Х |

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 JOF-109, JOF-112, and JOF-119 under hydrogeological investigation scope of work; sample collected within well screen interval.

| Sample Location | | JOF | -109 | | JOF-112 | | JOF | -119 | JOF- | BG01 |
|--------------------------|-------|----------------------------------|----------------------------------|-------------------------------|------------------------|-------------------------------|----------------------------------|----------------------------------|------------------------------|------------------------------|
| Sample Date | | 20-Jun-19 | 20-Jun-19 | 28-Aug-19 | 28-Aug-19 | 28-Aug-19 | 10-Jul-19 | 10-Jul-19 | 3-Jun-19 | 3-Jun-19 |
| Sample ID | | JOF-BS-JOF109-31.5/34.5-20190620 | JOF-BS-JOF109-36.0/39.0-20190620 | JOF-BS-112-19.5/24.0-20190828 | JOF-BS-DUP01-20190828 | JOF-BS-112-24.0/28.9-20190828 | JOF-BS-JOF119-34.5/37.5-20190710 | JOF-BS-JOF119-39.0/42.0-20190710 | JOF-BS-BG01-0.0/0.5-20190603 | JOF-BS-BG01-0.0/0.5-20190603 |
| Sample Depth | | 31.5 - 34.5 ft | 36 - 39 ft | 19.5 - 24 ft | 19.5 - 24 ft | 24 - 28.9 ft | 34.5 - 37.5 ft | 39 - 42 ft | 0 - 0.5 ft | 0 - 0.5 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 | Validated |
| | Units | | | | | | | | | |
| PLM | | | | | | | | | | |
| % ASH | % | - | - | - | - | - | - | - | 3 | - |
| Total Metals | | | | | | | | | | |
| Antimony | mg/kg | 0.0954 J | <0.0775 | 0.115 J | 0.239 | 0.149 J | 0.101 J | 0.129 J | - | 0.197 J |
| Arsenic | mg/kg | 1.69 | 1.82 | 2.64 | 1.96 | 2.40 | 6.95 | 6.14 | - | 3.33 |
| Barium | mg/kg | 109 | 69.5 | 205 | 230 | 105 | 29.7 | 46.9 | - | 39.0 |
| Beryllium | mg/kg | 6.06 | 4.76 | 2.36 | 2.24 | 3.12 | 0.507 | 0.401 | - | 0.356 |
| Boron | mg/kg | 3.67 J | 3.48 J | <1.58 | 1.83 J | 9.59 J | <1.49 | <1.63 | - | 1.57 J |
| Cadmium | mg/kg | 0.0962 J | 0.0900 J | 0.215 | 0.173 | 1.71 | 0.124 | 0.0896 J | - | 0.0361 J |
| Calcium | mg/kg | 4,690 | 3,480 | 1,200 | 1,570 J | 56,300 | 349 | 599 | - | 466 |
| Chromium | mg/kg | 7.91 | 4.52 | 5.03 J | 7.52 J | 16.6 | 9.73 | 12.3 | - | 12.7 |
| Cobalt | mg/kg | 1.61 | 3.49 | 14.9 | 13.1 | 7.75 | 5.68 | 6.90 | - | 3.40 |
| Copper | mg/kg | 10.3 | 6.29 | 10.8 | 9.59 J | 12.6 J | 3.15 | 4.40 | - | 5.93 |
| Lead | mg/kg | 9.99 | 15.3 | 3.48 | 4.19 | 4.79 | 3.61 | 4.43 | - | 8.12 |
| Lithium | mg/kg | 0.602 | 1.02 | 1.17 | 1.67 | 5.62 | 0.861 | 2.90 | - | 4.41 |
| Mercury | mg/kg | <0.0174 | <0.0170 | 0.0208 J | <0.0155 | 0.0252 J | <0.0167 | <0.0160 | - | 0.0299 J |
| Molybdenum | mg/kg | 1.44 | 0.675 | 1.37 | 1.64 | 2.58 | 1.36 | 1.01 | - | 0.716 |
| Nickel | mg/kg | 17.2 | 27.6 | 11.5 | 11.6 J | 15.9 J | 8.17 | 8.79 | - | 4.96 |
| Selenium | mg/kg | 0.707 | 0.416 J | 0.601 | 0.541 J | 0.762 | 0.169 J | 0.439 J | - | 0.764 |
| Silver | mg/kg | <0.0308 | <0.0338 | <0.0317 | <0.0312 | <0.0331 | <0.0299 | <0.0326 | - | 0.0396 J |
| Thallium | mg/kg | 0.0326 J | 0.0339 J | 0.167 | 0.310 | 0.228 | 0.0661 J | 0.115 U* | - | 0.289 |
| Vanadium | mg/kg | 5.33 | 4.39 | 4.44 | 3.92 J | 11.1 J | 10.5 | 14.8 | - | 15.6 |
| Zinc | mg/kg | 65.4 | 92.6 | 36.4 | 31.1 J | 73.1 J | 19.9 | 26.1 | - | 56.8 |
| Anions | | | | | | | | | | |
| Chloride | mg/kg | 6.20 J | <4.70 | 5.00 J | 4.54 J | 7.11 J | <4.32 | <4.50 | - | <4.33 |
| Fluoride | mg/kg | 0.968 J | 2.27 J | 8.80 J | 7.35 J | 13.1 J | 2.04 | 4.02 | - | 0.758 UR |
| Sulfate | mg/kg | 20.6 | 18.5 | 18.0 | 12.3 | 38.6 | 11.3 | 18.9 | - | 9.03 J |
| General Chemistry | | | | | | | | | | |
| pH (lab) | SU | 6.9 | 7.3 | 8.0 | 8.0 | 8.0 | 6.8 | 7.0 | - | 5.6 |
| | | See notes on last page. | | | | | | | | |



| Sample Location | ion JOF-BG02 | | | | | | | | JOF-BG03 | |
|--------------------------|--------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------------|
| Sample Date | | 3-Jun-19 | 3-Jun-19 | 24-May-19 | 22-May-19 | 22-May-19 | 22-May-19 | 22-May-19 | 22-May-19 | 29-May-19 |
| Sample ID | | JOF-BS-BG01-1.5/3.5-20190603 | JOF-BS-BG01-6.5/8.5-20190603 | JOF-BS-BG02-0.0/0.5-20190524 | JOF-BS-BG02-0.0/2.2-20190522 | JOF-BS-BG02-6.5/8.5-20190522 | JOF-BS-BG02-11.5/13.5-20190522 | JOF-BS-BG02-16.5/18.5-20190522 | JOF-BS-BG02-21.5/23.5-20190522 | JOF-BS-BG03-0.0/0.5-20190529 |
| Sample Depth | | 1.5 - 3.5 ft | 6.5 - 8.5 ft | 0 - 0.5 ft | 0 - 2.2 ft | 6.5 - 8.5 ft | 11.5 - 13.5 ft | 16.5 - 18.5 ft | 21.5 - 23.5 ft | 0 - 0.5 ft |
| Sample Type | | Normal Environmental Sample | Normal Environmental Sample | Normal Environmental Sample | Normal Environmental Sample |
| Level of Review | | Validated | Validated | Final-Verified | Validated | Validated | Validated | Validated | Validated | Final-Verified |
| | Units | | | | | | | | | |
| PLM | | | | | | | | | | |
| % ASH | % | - | - | 1 | - | - | - | - | - | 2 |
| Total Metals | | | | | | | | | | |
| Antimony | mg/kg | 0.189 J | <0.0891 | 0.411 | 0.233 J | 0.189 J | 0.187 J | 0.155 J | 0.135 J | - |
| Arsenic | mg/kg | 2.66 | 0.348 | 8.28 | 5.51 J | 3.50 J | 3.75 J | 3.86 J | 3.18 J | - |
| Barium | mg/kg | 87.8 | 17.1 | 79.8 | 52.4 J | 35.7 J | 62.5 J | 38.9 J | 31.3 J | - |
| Beryllium | mg/kg | 0.622 | 0.670 | 0.501 | 0.197 | 0.191 | 0.253 | 0.183 | 0.164 | - |
| Boron | mg/kg | 2.31 J | 4.93 J | 2.11 J | 1.57 UJ | 1.64 UJ | 1.74 UJ | 1.68 UJ | 1.75 UJ | - |
| Cadmium | mg/kg | 0.0513 J | 0.0485 J | 0.0655 J | 0.0356 J | <0.0207 | <0.0220 | 0.0312 J | <0.0220 | - |
| Calcium | mg/kg | 1,650 | 650 | 1,270 | 964 | 101 | 110 | 126 | 155 | - |
| Chromium | mg/kg | 20.5 | 20.9 | 14.5 | 14.5 | 11.3 | 9.19 | 11.1 | 14.6 | - |
| Cobalt | mg/kg | 3.28 | 0.461 | 5.18 | 4.96 | 1.44 | 2.13 | 8.28 | 6.55 | - |
| Copper | mg/kg | 9.34 | 7.38 | 8.56 | 5.78 | 7.15 | 7.42 | 5.25 | 4.51 | - |
| Lead | mg/kg | 5.30 | 2.07 | 16.4 | 11.0 | 6.50 | 8.05 | 4.70 | 3.59 | - |
| Lithium | mg/kg | 4.45 | 1.16 | 8.85 | 5.16 | 4.16 | 3.68 | 3.12 | 2.97 U* | - |
| Mercury | mg/kg | 0.0424 | <0.0208 | 0.0780 J | 0.0587 | 0.0229 J | 0.0353 J | 0.0213 J | 0.0266 J | - |
| Molybdenum | mg/kg | 0.622 | <0.234 | 2.03 | 1.12 J | 0.960 J | 1.00 J | 1.06 J | 1.39 J | - |
| Nickel | mg/kg | 8.72 | 9.10 | 7.45 | 5.52 J | 4.41 J | 5.06 J | 5.45 J | 4.84 J | - |
| Selenium | mg/kg | 0.873 | 0.694 J | 1.42 | 0.912 | 0.867 | 1.76 | 0.808 | 0.560 J | - |
| Silver | mg/kg | 0.0674 J | 0.0618 J | <0.0362 | 0.0343 J | <0.0328 | <0.0349 | <0.0335 | <0.0350 | - |
| Thallium | mg/kg | 0.205 | 0.107 J | 0.366 | 0.209 | 0.152 | 0.156 | 0.122 J | 0.111 J | - |
| Vanadium | mg/kg | 17.8 | 10.6 | 27.2 | 29.1 J | 23.9 J | 18.9 J | 14.6 J | 12.9 J | - |
| Zinc | mg/kg | 36.9 | 103 | 29.3 | 15.8 | 14.7 | 18.2 | 17.0 | 14.0 | - |
| Anions | | | | | | | | | | |
| Chloride | mg/kg | 5.61 J | 11.5 J | 5.89 J | <4.57 | 8.14 J | 8.03 J | 5.04 J | 5.41 J | - |
| Fluoride | mg/kg | 1.58 J | 2.77 J | 0.875 UJ | 0.800 UR | 0.828 UR | 0.825 UR | 0.803 UR | 0.879 UR | - |
| Sulfate | mg/kg | 46.3 | 63.8 | 72.7 | 105 | 34.8 | 31.3 | 59.6 | 66.1 | - |
| General Chemistry | | | | | | | | | | |
| pH (lab) | SU | 7.2 | 7.6 | 5.5 J | 5.3 | 5.1 | 5.2 | 4.9 | 5.3 | - |
| | | See notes on last page. | | | | | | | | |



| Sample Location | 1 | | | JOF-BG03 | | | JOF-BG04 | | | | |
|--|-------|---|---|---|---|---|---|--|---|--|--|
| Sample Date Sample ID Sample Depth | | 29-May-19 JOF-BS-BG03-0.0/0.5-20190529 0 - 0.5 ft | 29-May-19 JOF-BS-BG03-1.5/3.5-20190529 1.5 - 3.5 ft | 29-May-19 JOF-BS-BG03-6.5/8.5-20190529 6.5 - 8.5 ft | 29-May-19 JOF-BS-BG03-11.5/13.5-20190529 11.5 - 13.5 ft | 29-May-19 JOF-BS-BG03-16.5/18.5-20190529 16.5 - 18.5 ft | 29-May-19 JOF-BS-BG04-0.0/0.5-20190529 0 - 0.5 ft | 29-May-19 JOF-BS-DUP01-20190529 0 - 0.5 ft | 29-May-19 JOF-BS-BG04-0.0/0.5-20190529 0 - 0.5 ft | 29-May-19 JOF-BS-DUP01-20190529 0 - 0.5 ft | |
| Level of Review | | Validated | Validated | Validated | Validated | Validated | Final-Verified | Final-Verified | Validated | Validated | |
| | Units | | | | | | | | | | |
| PLM | | | | | | | | | | | |
| % ASH | % | - | - | - | - | - | <1 | <1 | - | - | |
| Total Metals | | | | | | | | | | | |
| Antimony | mg/kg | 0.297 | 0.423 | 0.218 J | 0.398 | 0.387 | - | - | 0.296 | 0.330 | |
| Arsenic | mg/kg | 5.57 | 11.3 | 5.03 | 11.5 | 9.71 | - | - | 6.44 | 7.00 | |
| Barium | mg/kg | 101 | 89.2 | 31.1 | 49.5 | 47.7 | - | - | 62.7 J | 91.1 J | |
| Beryllium | mg/kg | 0.636 | 0.666 | 0.335 | 0.755 | 0.885 | - | - | 0.509 | 0.586 | |
| Boron | mg/kg | <1.66 | 1.76 J | <1.68 | <1.71 | <1.87 | - | - | <1.49 | <1.49 | |
| Cadmium | mg/kg | 0.107 J | 0.0476 J | <0.0212 | 0.0522 J | 0.125 J | - | - | 0.0592 J | 0.0758 J | |
| Calcium | mg/kg | 621 | 311 | 213 | 312 | 382 | - | - | 1,030 | 1,180 | |
| Chromium | mg/kg | 12.9 | 18.1 | 13.6 | 31.6 | 27.1 | - | - | 20.5 | 23.9 | |
| Cobalt | mg/kg | 7.15 | 13.9 | 3.73 | 5.34 | 12.7 | - | - | 7.15 J | 11.7 J | |
| Copper | mg/kg | 7.58 | 9.18 | 3.95 | 7.79 | 9.61 | - | - | 6.67 | 7.86 | |
| Lead | mg/kg | 15.1 | 31.6 | 9.42 | 10.5 | 9.46 | - | - | 9.23 | 10.1 | |
| Lithium | mg/kg | 5.56 | 6.35 | 5.00 | 5.90 | 5.15 | - | - | 4.99 | 5.69 | |
| Mercury | mg/kg | 0.0424 | 0.0594 | 0.0316 J | 0.0449 | 0.122 | - | - | 0.0480 | 0.0396 | |
| Molybdenum | mg/kg | 1.28 | 1.90 | 0.925 | 1.90 | 1.84 | - | - | 1.44 | 1.75 | |
| Nickel | mg/kg | 7.89 J | 7.59 | 3.37 J | 6.75 J | 12.9 J | - | - | 6.99 J | 7.95 J | |
| Selenium | mg/kg | 1.48 | 1.29 | 0.502 J | 0.658 | 0.465 J | - | - | 0.865 | 1.02 | |
| Silver | mg/kg | <0.0331 | 0.0437 J | <0.0337 | <0.0341 | < 0.0374 | - | - | <0.0297 | <0.0298 | |
| Thallium | mg/kg | 0.224 | 0.326 | 0.164 | 0.185 | 0.208 | - | - | 0.197 | 0.272 | |
| Vanadium | mg/kg | 21.3 | 38.7 | 25.1 | 44.1 | 29.0 | - | - | 26.9 | 29.2 | |
| Zinc | mg/kg | 25.8 | 18.8 | 10.8 | 22.3 | 39.5 | - | - | 29.0 | 38.4 | |
| Anions | | | | | | | | | | | |
| Chloride | mg/kg | <4.58 | <4.67 | 5.74 J | <4.56 | 5.15 J | - | - | <4.24 | <4.29 | |
| Fluoride | mg/kg | 0.802 UJ | 0.819 UJ | 0.856 UJ | 0.799 UJ | 0.896 UJ | - | - | 0.743 UJ | 0.752 UJ | |
| Sulfate | mg/kg | 19.0 | 74.4 | 89.9 | 75.4 | 48.9 | - | - | 22.9 | 26.1 | |
| General Chemistry | | | | | | | | | | | |
| pH (lab) | SU | 5.3 | 5.0 | 4.8 | 5.1 | 5.8 | - | - | 6.1 | 6.0 | |
| | | See notes on last page. | | | | | | | | | |



| Sample Location | 1 | | | | JOF-BG05 | | | | | |
|--------------------------|-------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------------|------------------------------|------------------------------|
| Sample Date | | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 24-May-19 | 24-May-19 | 24-May-19 |
| Sample ID | | IOF-BS-BG04-1 5/3 5-20190529 | IOF-BS-BG04-6 5/8 5-20190529 | IOF-BS-BG04-11 5/13 5-20190529 | JOE-BS-BG04-16 5/18 5-20190529 | IOF-BS-BG04-21 5/23 5-20190529 | IOF-BS-BG04-25 0/28 5-20190529 | IOF-BS-BG05-0 0/0 5-20190524 | IOF-BS-BG05-1 5/3 5-20190524 | IOF-BS-BG05-6 5/8 5-20190524 |
| 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 | 25 - 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 | | Validated | Validated | Validated | Validated | Validated | Validated | Final-Verified | Final-Verified | Final-Verified |
| | Units | | | | | | | | | |
| PLM | | | | | | | | | | |
| % ASH | % | - | - | - | - | - | - | 2 | - | - |
| Total Metals | | | | | | | | | | |
| Antimony | mg/kg | 0.325 | 0.284 | 0.290 | 0.178 J | 0.167 J | 0.139 J | 0.264 | 0.272 | 0.172 J |
| Arsenic | mg/kg | 6.85 | 6.76 | 3.10 | 2.83 | 3.45 | 3.14 | 4.95 | 7.39 | 3.66 |
| Barium | mg/kg | 47.7 | 43.1 | 21.5 | 41.4 | 203 | 99.7 | 51.3 | 105 | 176 |
| Beryllium | mg/kg | 0.312 | 0.286 | 0.400 | 0.302 | 0.706 | 0.735 | 0.437 | 0.547 | 0.510 |
| Boron | mg/kg | <1.70 | <1.66 | <1.55 | <1.61 | <1.67 | <1.65 | 1.85 J | 1.85 J | <1.59 |
| Cadmium | mg/kg | <0.0214 | <0.0210 | 0.0247 J | <0.0203 | <0.0210 | 0.0399 J | 0.0399 J | <0.0217 | <0.0200 |
| Calcium | mg/kg | 324 | 225 | 431 | 591 | 376 | 270 | 292 | 204 | 466 |
| Chromium | mg/kg | 15.0 | 16.5 | 12.0 | 15.3 | 12.7 | 11.7 | 12.7 | 16.7 | 14.2 |
| Cobalt | mg/kg | 3.65 | 2.19 | 2.12 | 1.94 | 2.37 | 3.20 | 7.35 | 5.90 | 6.92 |
| Copper | mg/kg | 6.35 | 4.14 | 3.93 | 3.74 | 5.46 | 5.33 | 3.71 | 9.96 | 4.81 |
| Lead | mg/kg | 11.0 | 9.54 | 6.64 | 12.1 | 8.75 | 5.59 | 13.4 | 13.2 | 10.0 |
| Lithium | mg/kg | 8.52 | 6.25 | 2.39 | 3.29 | 3.52 | 3.63 | 6.18 | 9.25 | 6.54 |
| Mercury | mg/kg | 0.0574 | 0.0371 J | 0.0234 J | 0.0228 J | <0.0134 | 0.0335 J | 0.0453 J | 0.0267 J | 0.0268 J |
| Molybdenum | mg/kg | 1.26 | 1.16 | 1.95 | 1.09 | 1.13 | 0.803 | 1.20 | 1.16 | 0.645 |
| Nickel | mg/kg | 6.32 J | 3.98 J | 6.51 J | 2.62 J | 4.39 J | 5.95 J | 5.74 | 10.6 | 8.32 |
| Selenium | mg/kg | 0.861 | 0.769 | 0.441 J | 0.738 | 2.13 | 1.14 | 1.11 | 1.57 | 1.32 |
| Silver | mg/kg | <0.0340 | <0.0333 | <0.0309 | <0.0323 | <0.0334 | <0.0330 | 0.0321 J | <0.0345 | 0.0331 J |
| Thallium | mg/kg | 0.228 | 0.212 | 0.0987 J | 0.142 | 0.208 | 0.133 | 0.320 | 0.315 | 0.192 |
| Vanadium | mg/kg | 30.9 | 33.5 | 16.4 | 24.6 | 14.4 | 13.9 | 19.9 | 26.5 | 21.6 |
| Zinc | mg/kg | 19.1 | 11.6 | 11.1 | 9.44 | 14.9 | 19.5 | 20.8 | 43.3 | 21.1 |
| Anions | | | | | | | | | | |
| Chloride | mg/kg | 5.15 J | 5.18 J | 4.52 J | <4.62 | <4.75 | <4.95 | 6.61 J | 12.5 J | 28.2 |
| Fluoride | mg/kg | 0.816 UJ | 0.785 UJ | 2.13 J | 1.26 J | 0.832 UJ | 0.867 UJ | 0.805 UJ | 0.891 UJ | 2.44 J |
| Sulfate | mg/kg | 50.2 | 25.9 | 26.6 | 25.7 | 44.3 | 47.7 | 29.2 | 51.0 | 51.3 |
| General Chemistry | | | | | | | | | | |
| pH (lab) | SU | 5.2 | 5.5 | 6.6 | 6.4 | 5.5 | 5.5 | 5.1 J | 5.4 J | 5.6 J |
| | | See notes on last page. | | | | | | | | |

| Page | 4 | of | 8 |
|------|---|----|---|
|------|---|----|---|

| Sample Location | 1 | | | | | | | | | | |
|---------------------------|-------|---|------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--|
| Sample Location | | 301 -B603 | 20 May 19 | 20 May 19 | 20 May 19 | 20 May 19 | 20 May 19 | 20 May 19 | 20 May 19 | 21 Mov 19 | |
| Sample Date | | 24-may-19 IOE-BS-BG05-11 5/13 5-20190524 | IOE-BS-BG06-0 0/0 5-20190530 | IOE-BS-BG06-1 5/3 5-20190530 | IOF-RS-RG06-6 5/8 5-20190530 | IOF-BS-BG06-11 5/13 5-20190530 | IOF-BS-BG06-16 5/18 5-20190530 | IOE-BS-BG06-21 5/23 5-20190530 | IOE-BS-BG06-26 5/28 5-20190530 | IOF-BS-BG06-31 5/33 5-20190531 | |
| Sample ID Sample Denth | | 11 5 - 13 5 ft | 0 - 0 5 ft | 15-35# | 65-85ft | 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 | |
| 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 | 0.227 J | 0.217 J | 0.266 J | 0.114 J | 0.123 J | 0.127 J | 0.0768 UJ | 0.0704 UJ | 0.124 J | |
| Arsenic | mg/kg | 5.13 | 4.91 | 5.36 | 2.55 | 3.44 | 3.31 | 0.769 | 0.390 | 2.81 | |
| Barium | mg/kg | 22.8 | 51.9 | 75.6 | 68.8 | 77.2 | 48.6 | 11.1 | 26.3 | 70.7 | |
| Beryllium | mg/kg | 0.140 | 0.395 | 0.735 | 0.452 | 0.336 | 0.345 | 0.108 J | 0.220 | 0.586 | |
| Boron | mg/kg | <1.69 | <1.57 | <1.76 | <1.54 | <1.70 | <1.61 | <1.67 | <1.53 | <1.76 | |
| Cadmium | mg/kg | <0.0213 | 0.0263 J | 0.0270 J | <0.0194 | <0.0214 | <0.0203 | <0.0211 | <0.0193 | <0.0222 | |
| Calcium | mg/kg | 842 | 158 | 138 | 282 | 783 | 789 | 453 | 631 | 704 | |
| Chromium | mg/kg | 13.5 | 12.1 | 15.8 | 9.70 | 12.1 | 9.96 | 5.58 | 9.50 | 13.4 | |
| Cobalt | mg/kg | 0.737 | 2.84 | 3.61 | 4.85 | 2.26 | 1.13 | 0.377 | 0.844 | 1.52 | |
| Copper | mg/kg | 2.33 | 5.87 | 8.97 | 3.65 | 4.59 | 2.86 | 1.79 | 4.13 | 5.32 | |
| Lead | mg/kg | 6.78 | 8.33 | 10.8 | 7.08 | 10.0 | 6.13 | 4.20 | 4.47 | 7.20 | |
| Lithium | mg/kg | 5.16 | 5.18 | 6.79 | 4.92 | 4.08 | 4.08 | 1.60 | 2.45 | 3.36 | |
| Mercury | mg/kg | 0.0868 J | 0.0578 | 0.0549 | 0.0190 J | <0.0182 | 0.0351 J | <0.0177 | <0.0168 | 0.0201 J | |
| Molybdenum | mg/kg | 1.02 | 0.830 | 1.05 | 0.526 J | 0.631 | 0.606 | 0.252 J | <0.185 | 1.64 | |
| Nickel | mg/kg | 2.07 | 5.42 | 6.92 | 5.70 | 4.61 | 2.68 | 1.15 | 2.08 | 4.04 | |
| Selenium | mg/kg | 0.649 | 1.03 | 1.39 | 1.20 | 0.827 | 0.854 | 0.431 J | 0.497 J | 1.17 | |
| Silver | mg/kg | 0.0372 J | <0.0315 | 0.0497 J | 0.0429 J | <0.0340 | 0.0399 J | 0.0550 J | <0.0306 | 0.0418 J | |
| Thallium | mg/kg | 0.176 | 0.213 | 0.246 | 0.179 | 0.190 | 0.172 | 0.129 | 0.167 | 0.188 | |
| Vanadium | mg/kg | 30.9 | 21.2 J | 25.7 J | 17.9 J | 23.3 J | 20.5 J | 7.96 J | 6.72 J | 16.3 J | |
| Zinc | mg/kg | 5.56 | 17.3 | 19.2 | 15.2 | 10.6 | 6.14 | 3.19 | 7.96 | 16.5 | |
| Anions | | | | | | | | | | | |
| Chloride | mg/kg | 11.9 J | 4.76 J | <4.93 | 9.60 J | 13.2 | 13.2 | 48.3 | 53.8 | 31.3 | |
| Fluoride | mg/kg | 0.849 UJ | 0.799 UR | 0.864 UR | 1.46 J | 1.60 J | 1.07 J | 0.822 UR | 0.799 UR | 1.06 J | |
| Sulfate | mg/kg | 74.7 | 25.2 J | 31.1 J | 19.7 J | 52.1 J | 109 J | 89.7 J | 19.6 J | 56.7 J | |
| General Chemistry | | | | | | | | | | | |
| pH (lab) | SU | 6.6 J | 5.2 | 5.5 | 6.0 | 6.7 | 6.0 | 5.3 | 5.2 | 5.9 | |
| | | See notes on last page. | | | | | | | | | |



| Sample Location | | JOF- | BG06 | JOF-BG07 | | | | | | |
|-------------------|-------|--------------------------------|--------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------------|
| Sample Date | | 31-May-19 | 31-May-19 | 4-Jun-19 | 4-Jun-19 | 4-Jun-19 | 4-Jun-19 | 4-Jun-19 | 4-Jun-19 | 24-May-19 |
| Sample ID | | JOF-BS-BG06-36.5/38.5-20190531 | JOF-BS-BG06-40.0/41.5-20190531 | JOF-BS-BG07-0.0/0.5-20190604 | JOF-BS-BG07-1.5/3.5-20190604 | JOF-BS-BG07-6.5/8.5-20190604 | JOF-BS-BG07-11.5/13.5-20190604 | JOF-BS-BG07-16.5/18.5-20190604 | JOF-BS-BG07-21.5/23.3-20190604 | JOF-BS-BG08-0.0/0.5-20190524 |
| Sample Depth | | 36.5 - 38.5 ft | 40 - 41.5 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 - 23.3 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 | | 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 | 0.153 J | 0.190 J | 0.268 | 0.205 J | 0.191 J | 0.421 | 0.146 J | 0.328 | 0.351 |
| Arsenic | mg/kg | 2.29 | 2.03 | 5.82 | 5.28 | 4.03 | 9.02 | 4.28 | 6.54 | 8.46 |
| Barium | mg/kg | 87.9 | 126 | 61.6 | 66.4 | 71.5 | 52.1 | 26.6 | 21.3 | 58.7 |
| Beryllium | mg/kg | 0.690 | 0.799 | 0.655 | 0.429 | 0.506 | 0.288 | 0.201 | 0.225 | 0.388 |
| Boron | mg/kg | <1.84 | <1.74 | <1.65 | 1.91 J | <1.55 | <1.60 | <1.55 | <1.59 | <1.71 |
| Cadmium | mg/kg | <0.0232 | 0.0353 J | 0.0471 J | <0.0208 | <0.0196 | <0.0201 | <0.0196 | <0.0200 | 0.0311 J |
| Calcium | mg/kg | 487 | 637 | 284 | 179 | 429 | 659 | 656 | 619 | 1,250 |
| Chromium | mg/kg | 9.21 | 9.00 | 15.5 | 17.0 | 13.7 | 25.5 | 13.7 | 22.9 | 18.1 |
| Cobalt | mg/kg | 2.07 | 3.76 | 10.2 | 3.64 | 2.65 | 2.43 | 1.88 | 1.55 | 4.33 |
| Copper | mg/kg | 5.18 | 6.88 | 4.57 | 8.72 | 4.05 | 5.55 | 3.25 | 3.72 | 9.83 |
| Lead | mg/kg | 9.59 | 11.5 | 14.7 | 10.5 | 8.63 | 13.3 | 7.60 | 9.47 | 14.4 |
| Lithium | mg/kg | 4.79 | 5.13 | 5.08 | 9.79 | 7.31 | 6.41 | 3.95 | 3.78 | 9.09 |
| Mercury | mg/kg | 0.0186 J | 0.0271 J | 0.0324 | 0.0578 | <0.0176 | 0.0562 | 0.0421 | 0.0394 J | 0.0855 J |
| Molybdenum | mg/kg | 0.709 | 0.849 | 0.933 | 0.948 | 0.838 | 1.80 | 0.860 | 1.39 | 1.34 |
| Nickel | mg/kg | 5.29 | 7.94 | 6.12 | 8.37 | 5.27 | 4.53 | 2.45 | 3.26 | 8.37 |
| Selenium | mg/kg | 1.21 | 1.77 | 1.05 | 0.997 | 0.773 | 0.884 | 0.529 J | 0.789 | 1.25 |
| Silver | mg/kg | 0.118 J | <0.0349 | <0.0331 | <0.0331 | <0.0311 | 0.0345 J | 0.0717 J | 0.0952 J | <0.0342 |
| Thallium | mg/kg | 0.395 | 0.363 | 0.229 | 0.246 | 0.225 | 0.235 | 0.148 | 0.340 | 0.228 |
| Vanadium | mg/kg | 13.3 J | 14.4 J | 22.7 | 27.6 | 24.3 | 47.3 | 25.3 | 37.6 | 30.4 |
| Zinc | mg/kg | 18.0 | 27.0 | 18.4 | 25.1 | 14.3 | 17.2 | 9.91 | 14.5 | 35.0 |
| Anions | | | | | | | | | | |
| Chloride | mg/kg | 34.7 | 15.0 | <4.51 | 5.50 J | 17.7 | 12.6 | 38.7 | 74.5 | 5.33 J |
| Fluoride | mg/kg | 0.878 UR | 0.868 UR | 0.791 UR | 0.831 UR | 2.21 J | 0.838 J | 0.798 UR | 0.789 UR | 0.797 UJ |
| Sulfate | mg/kg | 22.8 J | 12.0 J | 11.3 J | 35.9 | 15.8 | 80.5 | 35.2 | 32.6 | 45.5 |
| General Chemistry | / | | | | | | | | | |
| pH (lab) | SU | 5.4 | 5.4 | 5.2 | 5.3 | 5.6 | 6.4 | 4.0 | 5.9 | 5.6 J |
| | | See notes on last page. | | | | | | | | |

| Sample Location | 1 | | JOF | -BG08 | | | JOE-BG09 | JOE-BG10 | | |
|-------------------|-------|------------------------------|------------------------------|---|---|---|---|---|---|---|
| Sample Location | | 22-May-19 | 22-May-19 | -22-May-19 | 22-May-19 | 23_Aug_19 | 23-Aug-19 | 23_Aug_19 | 24-May-19 | 23-May-19 |
| Sample Date | | IOF-BS-BG08-1 5/3 5-20190522 | IOF-BS-BG08-6 5/8 5-20190522 | 22-may-19 IOE-BS-BG08-11 5/13 5-20190522 | 22-may-19 IOE-BS-BG08-15 0/17 0-20190522 | 23-Aug-19 IOE-BS-BG09-0 0/0 5-20190823 | 23-Aug-19 IOE-BS-BG09-1 5/3 5-20190823 | 23-Aug-19 IOE-BS-BG09-5 9/7 9-20190823 | 24-may-19 IOE-BS-BG10-0 0/0 5-20190524 | 23-way-19 IOE-BS-BG10-1 5/3 5-20190523 |
| Sample Depth | | 1.5 - 3.5 ft | 6.5 - 8.5 ft | 11.5 - 13.5 ft | 15 - 17 ft | 0 - 0.5 ft | 1.5 - 3.5 ft | 5.9 - 7.9 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 | | Validated | Validated | Validated | Validated | Final-Verified | Final-Verified | Final-Verified | Final-Verified | Validated |
| | Units | | | | | | | | | |
| PLM | | | | | | | | | | |
| % ASH | % | - | - | - | - | 1 | - | - | 1 | - |
| Total Metals | | | | | | | | | | |
| Antimony | mg/kg | 0.289 J | 0.297 J | 0.164 J | 0.229 J | - | 0.104 J | 0.249 | 0.373 | 1.55 J |
| Arsenic | mg/kg | 5.87 J | 6.58 J | 4.37 J | 7.70 J | - | 2.79 | 4.77 | 6.05 | 24.2 J |
| Barium | mg/kg | 51.6 J | 55.4 J | 18.7 J | 33.0 J | - | 48.4 | 35.8 | 197 | 35.0 J |
| Beryllium | mg/kg | 0.226 | 0.249 | 0.112 J | 0.259 | - | 0.511 | 0.458 | 1.39 | 0.215 |
| Boron | mg/kg | 1.68 UJ | 1.68 UJ | 1.66 UJ | 1.57 UJ | - | <1.53 | <1.57 | <1.67 | 1.65 UJ |
| Cadmium | mg/kg | <0.0211 | <0.0212 | 0.0213 J | 0.0618 J | - | <0.0193 | <0.0197 | 0.139 | 0.0528 J |
| Calcium | mg/kg | 317 | 705 | 667 | 421 | - | 467 | 365 | 9,740 | 467 |
| Chromium | mg/kg | 16.6 | 20.6 | 13.8 | 34.0 | - | 8.96 | 15.5 | 20.1 | 13.4 |
| Cobalt | mg/kg | 2.82 | 2.47 | 1.16 | 6.40 | - | 0.878 | 1.09 | 9.10 | 4.38 |
| Copper | mg/kg | 7.19 | 8.04 | 4.96 | 6.70 | - | 1.83 | 3.87 | 11.6 | 15.2 |
| Lead | mg/kg | 11.0 | 12.7 | 3.71 | 4.01 | - | 5.70 | 11.0 | 15.9 | 10.7 |
| Lithium | mg/kg | 6.34 | 7.03 | 4.06 | 3.59 | - | 2.83 | 4.62 | 4.24 | 4.51 |
| Mercury | mg/kg | 0.0237 J | 0.0924 | 0.0210 J | 0.0375 | - | 0.0199 J | 0.0304 J | 0.0433 J | 0.101 |
| Molybdenum | mg/kg | 1.14 J | 1.42 J | 0.949 J | 1.93 J | - | 0.472 J | 0.879 | 2.14 | 39.4 J |
| Nickel | mg/kg | 5.72 J | 5.17 J | 3.42 J | 8.71 J | - | 1.84 | 3.21 | 15.7 | 5.61 J |
| Selenium | mg/kg | 1.23 | 0.889 | 0.544 J | 0.596 | - | 0.575 | 0.568 J | 2.81 | 1.05 |
| Silver | mg/kg | <0.0335 | <0.0337 | 0.0395 J | 0.0491 J | - | 0.0667 J | 0.0368 J | <0.0334 | 0.0504 J |
| Thallium | mg/kg | 0.221 | 0.256 | 0.112 J | 0.123 | - | 0.0991 J | 0.124 | 0.526 | 0.485 |
| Vanadium | mg/kg | 31.4 J | 41.7 J | 20.8 J | 24.8 J | - | 12.4 | 25.0 | 21.8 | 46.5 J |
| Zinc | mg/kg | 20.4 | 16.3 | 10.9 | 28.8 | - | 5.55 | 7.37 | 31.7 | 14.1 |
| Anions | | | | | | | | | | |
| Chloride | mg/kg | 14.1 | 23.9 | 28.2 | 18.7 | - | <4.40 | 5.49 J | <4.62 | <4.69 |
| Fluoride | mg/kg | 0.791 UR | 0.829 UR | 0.834 J | 1.14 J | - | 0.796 J | 0.802 UJ | 5.62 J | 0.821 UR |
| Sulfate | mg/kg | 22.5 | 37.3 | 23.8 | 23.6 | - | 24.9 | 21.7 | 8.74 J | 52.6 |
| General Chemistry | / | | | | | | | | | |
| pH (lab) | SU | 3.7 | 6.6 | 7.1 | 6.9 | - | 6.8 | 6.0 | 7.9 J | 5.7 |
| | | See notes on last page. | | | | | | | | |

| Sample Location | 1 | JOF-BG10 | | JOF-BG11 | | | JOF-BG12 | | | | |
|--------------------------|-------|---|---|---|---|---|--|--|--|--|--|
| Sample Date Sample ID | | 23-May-19 JOF-BS-BG10-6.5/8.5-20190523 | 23-May-19 JOF-BS-BG10-11.5/13.5-20190523 | 24-May-19 JOF-BS-BG11-0.0/0.5-20190524 | 23-May-19 JOF-BS-BG11-1.5/3.5-20190523 | 23-May-19 JOF-BS-BG11-6.5/8.5-20190523 | 4-Jun-19 JOF-BS-BG12-0.0/0.5-20190604 | 4-Jun-19 JOF-BS-BG12-1.5/3.5-20190604 | 4-Jun-19 JOF-BS-BG12-6.5/8.5-20190604 | 4-Jun-19 JOF-BS-BG12-11.5/13.5-20190604 | |
| Sample Depth | | 6.5 - 8.5 ft | 11.5 - 13.5 ft | 0 - 0.5 ft | 1.5 - 3.5 ft | 6.5 - 8.5 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 | | Validated | Validated | Final-Verified | Validated | Validated | Final-Verified | Final-Verified | Final-Verified | Final-Verified | |
| | Units | | | | | | | | | | |
| PLM | | | | | | | | | | | |
| % ASH | % | - | - | <1 | - | - | 1 | - | - | - | |
| Total Metals | | | | | | | | | | | |
| Antimony | mg/kg | 4.92 J | 4.74 J | 0.303 | 0.189 J | 0.130 J | 0.355 | 0.184 J | 0.251 J | 0.193 J | |
| Arsenic | mg/kg | 62.8 J | 66.0 J | 4.97 | 4.08 J | 2.77 J | 5.81 | 8.17 | 5.53 | 7.97 | |
| Barium | mg/kg | 61.4 J | 83.0 J | 93.5 | 31.5 J | 32.1 J | 171 | 239 | 37.0 | 101 | |
| Beryllium | mg/kg | 0.181 | 0.195 | 0.679 | 0.160 | 0.226 | 0.601 | 0.842 | 1.03 | 0.895 | |
| Boron | mg/kg | 3.12 J | 2.58 J | <1.60 | 1.56 UJ | 1.51 UJ | <1.53 | <1.54 | <1.72 | <1.54 | |
| Cadmium | mg/kg | 0.108 J | 0.145 | 0.0828 J | 0.0207 J | <0.0190 | 0.122 | 0.144 | 0.0958 J | 0.0983 J | |
| Calcium | mg/kg | 195 | 215 | 1,580 | 216 | 294 | 425 | 339 | 199 | 279 | |
| Chromium | mg/kg | 15.5 | 11.6 | 13.1 | 9.90 | 4.97 | 13.5 | 17.3 | 38.1 | 27.3 | |
| Cobalt | mg/kg | 0.514 | 1.67 | 7.89 | 3.10 | 2.00 | 25.2 | 84.1 | 10.5 | 39.5 | |
| Copper | mg/kg | 72.5 | 61.5 | 6.40 | 9.09 | 4.38 | 6.72 | 6.96 | 6.19 | 9.06 | |
| Lead | mg/kg | 33.1 | 36.2 | 12.6 | 6.05 | 3.27 | 14.7 | 4.53 | 3.84 | 4.22 | |
| Lithium | mg/kg | 3.47 | 2.85 | 5.07 | 4.17 | 3.00 | 6.18 | 1.88 | 0.928 | 1.86 | |
| Mercury | mg/kg | 0.175 | 0.235 | 0.0458 J | 0.0620 | 0.0226 J | 0.0393 | 0.0215 J | <0.0141 | 0.0194 J | |
| Molybdenum | mg/kg | 182 J | 175 J | 0.727 | 0.704 J | 0.640 J | 1.20 | 2.03 | 1.46 | 3.13 | |
| Nickel | mg/kg | 2.02 J | 15.0 J | 10.1 | 5.41 J | 3.55 J | 7.59 | 8.42 | 11.1 | 10.5 | |
| Selenium | mg/kg | 3.51 | 3.57 | 1.41 | 0.519 J | 0.674 | 0.894 | 0.497 J | 0.539 J | 0.554 J | |
| Silver | mg/kg | 0.0847 J | 0.170 | 0.0320 J | <0.0313 | <0.0302 | 0.0317 J | 0.0324 J | <0.0345 | <0.0308 | |
| Thallium | mg/kg | 3.75 | 6.55 | 0.191 | 0.101 J | 0.0854 J | 0.697 | 0.459 | 0.125 J | 0.218 | |
| Vanadium | mg/kg | 90.3 J | 81.9 J | 20.2 | 17.0 J | 9.19 J | 23.0 | 17.1 | 24.3 | 20.7 | |
| Zinc | mg/kg | 6.71 | 6.92 | 21.2 | 15.2 | 8.56 | 25.0 | 25.8 | 35.5 | 36.1 | |
| Anions | | | | | | | | | | | |
| Chloride | mg/kg | 6.95 J | 5.98 J | <4.70 | <4.58 | <4.36 | <4.12 | <4.43 | <4.87 | <4.41 | |
| Fluoride | mg/kg | 0.994 J | 0.830 UR | 3.88 J | 0.802 UR | 0.764 UR | 0.723 UR | 0.777 UR | 0.854 UR | 0.773 UR | |
| Sulfate | mg/kg | 146 | 169 | 12.0 J | 32.5 | 23.4 | 12.9 | 14.2 | 10.8 J | 15.1 | |
| General Chemistry | / | | | | | | | | | | |
| pH (lab) | SU | 3.8 | 4.0 | 7.2 J | 5.4 | 5.5 | 5.3 | 6.6 | 6.9 | 6.8 | |

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 Microscopy - 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. |

Level of review is defined in the Quality Assurance Project Plan.
 Non-detect (ND) results reported by RJ Lee Group for percent (%) ash expressed as <1 in table.
 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.
 Level of review for % ash samples is Final-Verified.



| Sample Location | | JOF | -109 | JOF-112 | | | JOF | -119 | JOF-BG01 | |
|-----------------------------|-------|---|---|--|--|--|---|---|--|--|
| Sample Date Sample ID | | 20-Jun-19 JOF-BS-JOF109-31.5/34.5-20190620 | 20-Jun-19 JOF-BS-JOF109-36.0/39.0-20190620 | 28-Aug-19 JOF-BS-112-19.5/24.0-20190828 | 28-Aug-19 JOF-BS-DUP01-20190828 | 28-Aug-19 JOF-BS-112-24.0/28.9-20190828 | 10-Jul-19 JOF-BS-JOF119-34.5/37.5-20190710 | 10-Jul-19 JOF-BS-JOF119-39.0/42.0-20190710 | 3-Jun-19 JOF-BS-BG01-0.0/0.5-20190603 | 3-Jun-19 JOF-BS-BG01-1.5/3.5-20190603 |
| Sample Depth Sample Type | Units | 31.5 - 34.5 ft Normal Environmental Sample Final-Verified | 36 - 39 ft Normal Environmental Sample Final-Verified | 19.5 - 24 ft Normal Environmental Sample Validated | JOF-BS-112-19.5/24.0-20190828 19.5 - 24 ft Field Duplicate Sample Validated | 24 - 28.9 ft Normal Environmental Sample Validated | 34.5 - 37.5 ft Normal Environmental Sample Final-Verified | 39 - 42 ft Normal Environmental Sample Final-Verified | 0 - 0.5 ft Normal Environmental Sample Validated | 1.5 - 3.5 ft Normal Environmental Sample Validated |
| Radiological Parameter | 's | | | | | | | | | |
| Radium-226 | pCi/g | 2.89 +/-(0.444) | 1.19 +/-(0.252) | 2.45 +/-(0.336) | 2.70 +/-(0.386) | 3.59 +/-(0.523) | 0.416 +/-(0.124) | 0.363 +/-(0.101) | 1.03 +/-(0.252) | 0.760 +/-(0.210) |
| Radium-228 | pCi/g | 0.458 +/-(0.304) | 0.230 +/-(0.161) | 0.0485 +/-(0.284)U | 0.183 +/-(0.260)U | 0.167 +/-(0.294)U | 0.380 +/-(0.147) | 0.428 +/-(0.122) | 0.956 +/-(0.286) | 1.09 +/-(0.248) |
| Radium-226+228 | pCi/g | 3.35 +/-(0.538) | 1.42 +/-(0.299) | 2.50 +/-(0.440)J | 2.88 +/-(0.465)J | 3.76 +/-(0.600)J | 0.796 +/-(0.192) | 0.791 +/-(0.158) | 1.99 +/-(0.381) | 1.85 +/-(0.325) |

See notes on last page.


| Sample Location | | JOF-BG01 | JOF-BG02 | | | | | | JOF-BG03 | |
|-----------------------------|-------|--|---|--|--|--|--|--|--|--|
| Sample Date Sample ID | | 3-Jun-19 JOF-BS-BG01-6.5/8.5-20190603 | 24-May-19 JOF-BS-BG02-0.0/0.5-20190524 | 22-May-19 JOF-BS-BG02-0.0/2.2-20190522 | 22-May-19 JOF-BS-BG02-6.5/8.5-20190522 | 22-May-19 JOF-BS-BG02-11.5/13.5-20190522 | 22-May-19 JOF-BS-BG02-16.5/18.5-20190522 | 22-May-19 JOF-BS-BG02-21.5/23.5-20190522 | 29-May-19 JOF-BS-BG03-0.0/0.5-20190529 | 29-May-19 JOF-BS-BG03-1.5/3.5-20190529 |
| Sample Depth Sample Type | Units | 6.5 - 8.5 ft Normal Environmental Sample Validated | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 0 - 2.2 ft Normal Environmental Sample Validated | 6.5 - 8.5 ft Normal Environmental Sample Validated | 11.5 - 13.5 ft Normal Environmental Sample Validated | 16.5 - 18.5 ft Normal Environmental Sample Validated | 21.5 - 23.5 ft Normal Environmental Sample Validated | 0 - 0.5 ft Normal Environmental Sample Validated | 1.5 - 3.5 ft Normal Environmental Sample Validated |
| Radiological Parame | ters | | 4 | | 1 | | | | | |
| Radium-226 | pCi/g | 1.39 +/-(0.373) | 1.38 +/-(0.364) | 1.62 +/-(0.365)J | 1.22 +/-(0.279)J | 1.08 +/-(0.250)J | 0.733 +/-(0.184)J | 0.545 +/-(0.142)J | 1.03 +/-(0.271) | 1.06 +/-(0.277) |
| Radium-228 | pCi/g | 0.357 +/-(0.468)U | 1.24 +/-(0.389) | 1.64 +/-(0.334) | 1.22 +/-(0.361) | 1.06 +/-(0.359) | 0.636 +/-(0.181) | 0.498 +/-(0.139) | 1.04 +/-(0.318) | 1.36 +/-(0.325) |
| Radium-226+228 | pCi/a | 1.75 +/-(0.598)J | 2.62 + (0.533) | 3.26 +/-(0.495)J | 2.44 +/-(0.456)J | 2.14 +/-(0.437)J | 1.37 +/-(0.258)J | 1.04 +/-(0.199)J | 2.07 +/-(0.418) | 2.42 + (0.427) |

See notes on last page.



| Sample Location | 1 | JOF-BG03 | | | JOF-BG04 | | | | | | |
|----------------------|-------|------------------------------|--------------------------------|--------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--|
| Sample Date | | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | 29-May-19 | |
| Sample ID | | JOF-BS-BG03-6.5/8.5-20190529 | JOF-BS-BG03-11.5/13.5-20190529 | JOF-BS-BG03-16.5/18.5-20190529 | JOF-BS-BG04-0.0/0.5-20190529 | JOF-BS-DUP01-20190529 | JOF-BS-BG04-1.5/3.5-20190529 | JOF-BS-BG04-6.5/8.5-20190529 | JOF-BS-BG04-11.5/13.5-20190529 | JOF-BS-BG04-16.5/18.5-20190529 | |
| | | | | | | JOF-BS-BG04-0.0/0.5-20190529 | | | | | |
| Sample Depth | | 6.5 - 8.5 ft | 11.5 - 13.5 ft | 16.5 - 18.5 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 | |
| | Units | Validated | Validated | Validated | Validated | Validated | Validated | Validated | Validated | Validated | |
| Radiological Paramet | ters | <u> </u> | 1 | | 1 | 1 | | | 1 | | |
| Radium-226 | pCi/g | 0.722 +/-(0.233) | 0.923 +/-(0.236) | 0.659 +/-(0.149) | 0.858 +/-(0.218) | 0.864 +/-(0.254) | 0.872 +/-(0.230) | 1.16 +/-(0.292) | 0.999 +/-(0.219) | 0.988 +/-(0.198) | |
| Radium-228 | pCi/g | 1.05 +/-(0.306) | 0.452 +/-(0.257) | 0.591 +/-(0.181) | 0.652 +/-(0.253)J | 1.10 +/-(0.329)J | 0.962 +/-(0.265) | 1.36 +/-(0.368) | 0.943 +/-(0.381) | 1.55 +/-(0.325) | |
| Radium-226+228 | pCi/q | 1.77 +/-(0.385) | 1.38 +/-(0.349) | 1.25 +/-(0.234) | 1.51 +/-(0.334)J | 1.96 +/-(0.416)J | 1.83 +/-(0.351) | 2.52 +/-(0.470) | 1.94 +/-(0.439) | 2.54 +/-(0.381) | |

See notes on last page.



| Sample Location | | JOF- | BG04 | JOF-BG05 | | | | JOF-BG06 | | |
|-----------------------------|-------|--|--|---|---|---|---|---|---|---|
| Sample Date Sample ID | | 29-May-19 JOF-BS-BG04-21.5/23.5-20190529 | 29-May-19 JOF-BS-BG04-25.0/28.5-20190529 | 24-May-19 JOF-BS-BG05-0.0/0.5-20190524 | 24-May-19 JOF-BS-BG05-1.5/3.5-20190524 | 24-May-19 JOF-BS-BG05-6.5/8.5-20190524 | 24-May-19 JOF-BS-BG05-11.5/13.5-20190524 | 30-May-19 JOF-BS-BG06-0.0/0.5-20190530 | 30-May-19 JOF-BS-BG06-1.5/3.5-20190530 | 30-May-19 JOF-BS-BG06-6.5/8.5-2019053 |
| Sample Depth Sample Type | Units | 21.5 - 23.5 ft Normal Environmental Sample Validated | 25 - 28.5 ft Normal Environmental Sample Validated | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Final-Verified | 6.5 - 8.5 ft Normal Environmental Sample Final-Verified | 11.5 - 13.5 ft Normal Environmental Sample Final-Verified | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Final-Verified | 6.5 - 8.5 ft Normal Environmental Sample Final-Verified |
| Radiological Parame | eters | | 8 | | 8 | | 8 | | 1 | |
| Radium-226 | pCi/g | 1.26 +/-(0.269) | 0.640 +/-(0.172) | 1.23 +/-(0.361) | 1.19 +/-(0.245) | 1.73 +/-(0.366) | 1.03 +/-(0.247) | 1.25 +/-(0.273) | 1.72 +/-(0.407) | 1.06 +/-(0.265) |
| Radium-228 | pCi/g | 0.813 +/-(0.282) | 0.273 +/-(0.143)U | 1.33 +/-(0.568) | 1.39 +/-(0.325) | 1.62 +/-(0.470) | 1.15 +/-(0.306) | 1.32 +/-(0.312) | 1.88 +/-(0.466) | 1.19 +/-(0.293) |
| Radium-226+228 | pCi/a | 2.07 +/-(0.390) | 0.913 +/-(0.224)J | 2.56 +/-(0.673) | 2.58 +/-(0.407) | 3.35 +/-(0.596) | 2.18 +/-(0.393) | 2.57 +/-(0.415) | 3.60 +/-(0.619) | 2.25 +/-(0.395) |

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| Sample Location | | | | | JOF-BG06 | | | | JOF- | BG07 |
|--|-------------------------|---|---|---|---|---|---|---|---|---|
| Sample Date | | 30-May-19 | 30-May-19 | 30-May-19 | 30-May-19 | 31-May-19 | 31-May-19 | 31-May-19 | 4-Jun-19 | 4-Jun-19 |
| Sample ID | | JOF-BS-BG06-11.5/13.5-20190530 | JOF-BS-BG06-16.5/18.5-20190530 | JOF-BS-BG06-21.5/23.5-20190530 | JOF-BS-BG06-26.5/28.5-20190530 | JOF-BS-BG06-31.5/33.5-20190531 | JOF-BS-BG06-36.5/38.5-20190531 | JOF-BS-BG06-40.0/41.5-20190531 | JOF-BS-BG07-0.0/0.5-20190604 | JOF-BS-BG07-1.5/3.5-20190604 |
| Sample Depth Sample Type | Units | 11.5 - 13.5 ft Normal Environmental Sample Final-Verified | 16.5 - 18.5 ft Normal Environmental Sample Final-Verified | 21.5 - 23.5 ft Normal Environmental Sample Final-Verified | 26.5 - 28.5 ft Normal Environmental Sample Final-Verified | 31.5 - 33.5 ft Normal Environmental Sample Final-Verified | 36.5 - 38.5 ft Normal Environmental Sample Final-Verified | 40 - 41.5 ft Normal Environmental Sample Final-Verified | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Final-Verified |
| Radiological Parameters | | | 1 | | | | | | | <u></u> |
| Radium-226 | pCi/g | 0.933 +/-(0.197) | 0.840 +/-(0.238) | 1.22 +/-(0.327) | 1.21 +/-(0.250) | 0.991 +/-(0.277) | 1.25 +/-(0.289) | 1.41 +/-(0.326) | 1.13 +/-(0.266) | 1.67 +/-(0.415) |
| Radium-228 | pCi/g | 1.19 +/-(0.216) | 1.11 +/-(0.378) | 0.356 +/-(0.207) | 1.20 +/-(0.321) | 1.07 +/-(0.338) | 1.23 +/-(0.417) | 1.04 +/-(0.361) | 1.14 +/-(0.341) | 1.67 +/-(0.459) |
| Radium-226+228 | pCi/g | 2.12 +/-(0.292) | 1.95 +/-(0.447) | 1.58 +/-(0.387) | 2.41 +/-(0.407) | 2.06 +/-(0.437) | 2.48 +/-(0.507) | 2.45 +/-(0.486) | 2.27 +/-(0.432) | 3.34 +/-(0.619) |
| Radium-226 Radium-228 Radium-226+228 | pCi/g pCi/g pCi/g | 0.933 +/-(0.197) 1.19 +/-(0.216) 2.12 +/-(0.292) | 0.840 +/-(0.238) 1.11 +/-(0.378) 1.95 +/-(0.447) | 1.22 +/-(0.327) 0.356 +/-(0.207) 1.58 +/-(0.387) | 1.21 +/-(0.250) 1.20 +/-(0.321) 2.41 +/-(0.407) | 0.991+/-(0.277) 1.07+/-(0.338) 2.06+/-(0.437) | 1.25 +/-(0.289) 1.23 +/-(0.417) 2.48 +/-(0.507) | 1.41+/-(0.326) 1.04+/-(0.361) 2.45+/-(0.486) | 1.13 +/-(0.266) 1.14 +/-(0.341) 2.27 +/-(0.432) | |

See notes on last page.



| Sample Location | | JOF-BG07 | | | | | | JOF-BG08 | | |
|-----------------------------|-------|---|---|---|---|---|--|--|--|--|
| Sample Date Sample ID | | 4-Jun-19 JOF-BS-BG07-6.5/8.5-20190604 | 4-Jun-19 JOF-BS-BG07-11.5/13.5-20190604 | 4-Jun-19 JOF-BS-BG07-16.5/18.5-20190604 | 4-Jun-19 JOF-BS-BG07-21.5/23.3-20190604 | 24-May-19 JOF-BS-BG08-0.0/0.5-20190524 | 22-May-19 JOF-BS-BG08-1.5/3.5-20190522 | 22-May-19 JOF-BS-BG08-6.5/8.5-20190522 | 22-May-19 JOF-BS-BG08-11.5/13.5-20190522 | 22-May-19 JOF-BS-BG08-15.0/17.0-20190522 |
| Sample Depth Sample Type | Units | 6.5 - 8.5 ft Normal Environmental Sample Final-Verified | 11.5 - 13.5 ft Normal Environmental Sample Final-Verified | 16.5 - 18.5 ft Normal Environmental Sample Final-Verified | 21.5 - 23.3 ft Normal Environmental Sample Final-Verified | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Validated | 6.5 - 8.5 ft Normal Environmental Sample Validated | 11.5 - 13.5 ft Normal Environmental Sample Validated | 15 - 17 ft Normal Environmental Sample Validated |
| Radiological Paramete | rs | | 1 | | | | | 1 | 1 | 1 |
| Radium-226 | pCi/g | 1.34 +/-(0.415) | 1.35 +/-(0.322) | 1.19 +/-(0.232) | 1.02 +/-(0.294) | 1.19 +/-(0.307) | 1.14 +/-(0.268)J | 1.06 +/-(0.274)J | 0.818 +/-(0.229)J | 0.828 +/-(0.212)J |
| Radium-228 | pCi/g | 0.602 +/-(0.394) | 1.78 +/-(0.375) | 1.24 +/-(0.303) | 1.36 +/-(0.329) | 1.77 +/-(0.383) | 1.36 +/-(0.508) | 1.52 +/-(0.421) | 1.02 +/-(0.258) | 0.552 +/-(0.348) |
| Radium-226+228 | pCi/g | 1.94 +/-(0.572) | 3.13 +/-(0.494) | 2.43 +/-(0.382) | 2.38 +/-(0.441) | 2.96 +/-(0.491) | 2.50 +/-(0.574)J | 2.58 +/-(0.502)J | 1.84 +/-(0.345)J | 1.38 +/-(0.407)J |
| | | See notes on last page. | | | | | | | | |

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| Sample Location | ĺ | JOF | -BG09 | I | JOF-BG10 | | | JOF-BG11 | | |
|-----------------------------|-------|---|---|---|--|--|--|---|--|--|
| Sample Date Sample ID | | 23-Aug-19 JOF-BS-BG09-1.5/3.5-20190823 | 23-Aug-19 JOF-BS-BG09-5.9/7.9-20190823 | 24-May-19 JOF-BS-BG10-0.0/0.5-20190524 | 23-May-19 JOF-BS-BG10-1.5/3.5-20190523 | 23-May-19 JOF-BS-BG10-6.5/8.5-20190523 | 23-May-19 JOF-BS-BG10-11.5/13.5-20190523 | 24-May-19 JOF-BS-BG11-0.0/0.5-20190524 | 23-May-19 JOF-BS-BG11-1.5/3.5-20190523 | 23-May-19 JOF-BS-BG11-6.5/8.5-20190523 |
| Sample Depth Sample Type | Units | 1.5 - 3.5 ft Normal Environmental Sample Final-Verified | 5.9 - 7.9 ft Normal Environmental Sample Final-Verified | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Validated | 6.5 - 8.5 ft Normal Environmental Sample Validated | 11.5 - 13.5 ft Normal Environmental Sample Validated | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Validated | 6.5 - 8.5 ft Normal Environmental Sample Validated |
| Radiological Paramete | rs | | 1 | • | 8 | 8 | 8 | 4 | | |
| Radium-226 | pCi/g | 0.981 +/-(0.253) | 1.16 +/-(0.327) | 1.99 +/-(0.452) | 4.07 +/-(0.660)J | 18.3 +/-(2.23)J | 18.1 +/-(2.15)J | 1.07 +/-(0.298) | 0.578 +/-(0.146)J | 0.763 +/-(0.204)J |
| Radium-228 | pCi/g | 0.923 +/-(0.338) | 1.74 +/-(0.391) | 1.42 +/-(0.472) | 1.22 +/-(0.505) | 3.04 +/-(0.828) | 1.85 +/-(0.814) | 0.780 +/-(0.529) | 0.689 +/-(0.227) | 0.261 +/-(0.246)U |
| Radium-226+228 | pCi/g | 1.90 +/-(0.422) | 2.90 +/-(0.510) | 3.41 +/-(0.654) | 5.29 +/-(0.831)J | 21.3 +/-(2.38)J | 20.0 +/-(2.30)J | 1.85 +/-(0.607) | 1.27 +/-(0.270)J | 1.02 +/-(0.320)J |
| | | See notes on last nade | | | | | | | | |

See notes on last page.



| Sample Location | I | | JOF | -BG12 | |
|-----------------------------|-------|---|---|---|---|
| Sample Date Sample ID | | 4-Jun-19 JOF-BS-BG12-0.0/0.5-20190604 | 4-Jun-19 JOF-BS-BG12-1.5/3.5-20190604 | 4-Jun-19 JOF-BS-BG12-6.5/8.5-20190604 | 4-Jun-19 JOF-BS-BG12-11.5/13.5-20190604 |
| Sample Depth Sample Type | Units | 0 - 0.5 ft Normal Environmental Sample Final-Verified | 1.5 - 3.5 ft Normal Environmental Sample Final-Verified | 6.5 - 8.5 ft Normal Environmental Sample Final-Verified | 11.5 - 13.5 ft Normal Environmental Sample Final-Verified |
| Radiological Paramete | rs | | | | |
| Radium-226 | pCi/g | 1.04 +/-(0.225) | 0.570 +/-(0.177) | 0.516 +/-(0.114) | 0.538 +/-(0.164) |
| Radium-228 | pCi/g | 1.33 +/-(0.315) | 0.236 +/-(0.187) | 0.349 +/-(0.142) | 0.153 +/-(0.273)U |
| Radium-226+228 | pCi/g | 2.37 +/-(0.387) | 0.806 +/-(0.257) | 0.865 +/-(0.182) | 0.691 +/-(0.318)J |

Notes:

| ft | feet below ground surface |
|-------|--|
| ID | identification |
| J | quantitation is approximate due to limitations identified during data validation |
| pCi/g | picoCurie per gram |
| U | not detected |

Level of review is defined in the Quality Assurance Project Plan.
 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 ResultsJohnsonville Fossil PlantMay 2019 - August 2019

| Sample Location | Sample ID | Sample Date | Sample Depth | pH (field) |
|-----------------|----------------------------------|-------------|----------------|------------|
| | | | | SU |
| IOF-109 | JOF-BS-JOF109-31.5/34.5-20190620 | 20-Jun-19 | 31.5 - 34.5 ft | 6.06 |
| | JOF-BS-JOF109-36.0/39.0-20190620 | 20-Jun-19 | 36 - 39 ft | 6.66 |
| IOF-112 | JOF-BS-112-19.5/24.0-20190828 | 28-Aug-19 | 19.5 - 24 ft | 7.28 |
| 001-112 | JOF-BS-112-24.0/28.9-20190828 | 28-Aug-19 | 24 - 28.9 ft | 7.52 |
| | JOF-BS-JOF119-34.5/37.5-20190710 | 10-Jul-19 | 34.5 - 37.5 ft | 6.45 |
| | JOF-BS-JOF119-39.0/42.0-20190710 | 10-Jul-19 | 39 - 42 ft | 6.57 |
| | JOF-BS-BG01-0.0/0.5-20190603 | 3-Jun-19 | 0 - 0.5 ft | 5.01 |
| JOF-BG01 | JOF-BS-BG01-1.5/3.5-20190603 | 3-Jun-19 | 1.5 - 3.5 ft | 4.84 |
| | JOF-BS-BG01-6.5/8.5-20190603 | 3-Jun-19 | 6.5 - 8.5 ft | 7.03 |
| | JOF-BS-BG02-0.0/0.5-20190524 | 24-May-19 | 0 - 0.5 ft | 5.06 |
| | JOF-BS-BG02-0.0/2.2-20190522 | 22-May-19 | 0 - 2.2 ft | 4.86 |
| | JOF-BS-BG02-6.5/8.5-20190522 | 22-May-19 | 6.5 - 8.5 ft | 4.17 |
| JOF-BG02 | JOF-BS-BG02-11.5/13.5-20190522 | 22-May-19 | 11.5 - 13.5 ft | 4.21 |
| | JOF-BS-BG02-16.5/18.5-20190522 | 22-May-19 | 16.5 - 18.5 ft | 4.41 |
| | JOF-BS-BG02-21.5/23.5-20190522 | 22-May-19 | 21.5 - 23.5 ft | 4.72 |
| | JOF-BS-BG03-0.0/0.5-20190529 | 29-May-19 | 0 - 0.5 ft | 8.21 |
| | JOF-BS-BG03-1.5/3.5-20190529 | 29-May-19 | 1.5 - 3.5 ft | 5.57 |
| JOF-BG03 | JOF-BS-BG03-6.5/8.5-20190529 | 29-May-19 | 6.5 - 8.5 ft | 5.33 |
| | JOF-BS-BG03-11.5/13.5-20190529 | 29-May-19 | 11.5 - 13.5 ft | 5.63 |
| | JOF-BS-BG03-16.5/18.5-20190529 | 29-May-19 | 16.5 - 18.5 ft | 4.89 |
| | JOF-BS-BG04-0.0/0.5-20190531 | 31-May-19 | 0 - 0.5 ft | 5.88 |
| | JOF-BS-BG04-1.5/3.5-20190529 | 29-May-19 | 1.5 - 3.5 ft | 5.21 |
| | JOF-BS-BG04-6.5/8.5-20190529 | 29-May-19 | 6.5 - 8.5 ft | 5.24 |
| JOF-BG04 | JOF-BS-BG04-11.5/13.5-20190529 | 29-May-19 | 11.5 - 13.5 ft | 5.94 |
| | JOF-BS-BG04-16.5/18.5-20190529 | 29-May-19 | 16.5 - 18.5 ft | 5.33 |
| | JOF-BS-BG04-21.5/23.5-20190529 | 29-May-19 | 21.5 - 23.5 ft | 7.91 |
| | JOF-BS-BG04-25.0/28.5-20190529 | 29-May-19 | 25 - 28.5 ft | 6.91 |
| | JOF-BS-BG05-0.0/0.5-20190524 | 24-May-19 | 0 - 0.5 ft | 4.68 |
| | JOF-BS-BG05-1.5/3.5-20190524 | 24-May-19 | 1.5 - 3.5 ft | 4.22 |
| JOF-BG05 | JOF-BS-BG05-6.5/8.5-20190524 | 24-May-19 | 6.5 - 8.5 ft | 5.16 |
| | JOF-BS-BG05-11.5/13.5-20190524 | 24-May-19 | 11.5 - 13.5 ft | 5.41 |
| | JOF-BS-BG06-0.0/0.5-20190530 | 30-May-19 | 0 - 0.5 ft | 4.62 |
| | JOF-BS-BG06-1.5/3.5-20190530 | 30-May-19 | 1.5 - 3.5 ft | 4.46 |
| | JOF-BS-BG06-6.5/8.5-20190530 | 30-May-19 | 6.5 - 8.5 ft | 5.18 |
| | JOF-BS-BG06-11.5/13.5-20190530 | 30-May-19 | 11.5 - 13.5 ft | 5.87 |
| | JOF-BS-BG06-16.5/18.5-20190530 | 30-May-19 | 16.5 - 18.5 ft | 5.33 |
| JOF-BG00 | JOF-BS-BG06-21.5/23.5-20190530 | 30-May-19 | 21.5 - 23.5 ft | 4.59 |
| | JOF-BS-BG06-26.5/28.5-20190530 | 30-May-19 | 26.5 - 28.5 ft | 4.75 |
| | JOF-BS-BG06-31.5/33.5-20190531 | 31-May-19 | 31.5 - 33.5 ft | 4.99 |
| | JOF-BS-BG06-36.5/38.5-20190531 | 31-May-19 | 36.5 - 38.5 ft | 5.27 |
| | JOF-BS-BG06-40.0/41.5-20190531 | 31-May-19 | 40 - 41.5 ft | 5.81 |
| | JOF-BS-BG07-0.0/0.5-20190604 | 4-Jun-19 | 0 - 0.5 ft | 4.50 |
| | JOF-BS-BG07-1.5/3.5-20190604 | 4-Jun-19 | 1.5 - 3.5 ft | 4.82 |
| | JOF-BS-BG07-6.5/8.5-20190604 | 4-Jun-19 | 6.5 - 8.5 ft | 5.35 |
| | JOF-BS-BG07-11.5/13.5-20190604 | 4-Jun-19 | 11.5 - 13.5 ft | 5.16 |
| | JOF-BS-BG07-16.5/18.5-20190604 | 4-Jun-19 | 16.5 - 18.5 ft | 5.29 |
| | JOF-BS-BG07-21.5/23.3-20190604 | 4-Jun-19 | 21.5 - 23.3 ft | 5.11 |

See notes on last page.



TABLE B.4 - Soil Field pH ResultsJohnsonville Fossil PlantMay 2019 - August 2019

| Sample Location | Sample ID | Sample Date | Sample Depth | pH (field) |
|-----------------|--------------------------------|-------------|----------------|------------|
| • | · · · | • | • • | SU |
| | JOF-BS-BG08-0.0/0.5-20190524 | 24-May-19 | 0 - 0.5 ft | 5.51 |
| | JOF-BS-BG08-1.5/3.5-20190522 | 22-May-19 | 1.5 - 3.5 ft | 5.11 |
| JOF-BG08 | JOF-BS-BG08-6.5/8.5-20190522 | 22-May-19 | 6.5 - 8.5 ft | 5.58 |
| | JOF-BS-BG08-11.5/13.5-20190522 | 22-May-19 | 11.5 - 13.5 ft | 6.50 |
| | JOF-BS-BG08-15.0/17.0-20190522 | 22-May-19 | 15 - 17 ft | 6.28 |
| | JOF-BS-BG09-0.0/0.5-20190823 | 23-Aug-19 | 0 - 0.5 ft | 6.24 |
| JOF-BG09 | JOF-BS-BG09-1.5/3.5-20190823 | 23-Aug-19 | 1.5 - 3.5 ft | 4.60 |
| | JOF-BS-BG09-5.9/7.9-20190823 | 23-Aug-19 | 5.9 - 7.9 ft | 5.55 |
| | JOF-BS-BG10-0.0/0.5-20190524 | 24-May-19 | 0 - 0.5 ft | 7.32 |
| | JOF-BS-BG10-1.5/3.5-20190523 | 23-May-19 | 1.5 - 3.5 ft | 4.83 |
| 301-0010 | JOF-BS-BG10-6.5/8.5-20190523 | 23-May-19 | 6.5 - 8.5 ft | 3.44 |
| | JOF-BS-BG10-11.5/13.5-20190523 | 23-May-19 | 11.5 - 13.5 ft | 3.37 |
| | JOF-BS-BG11-0.0/0.5-20190524 | 24-May-19 | 0 - 0.5 ft | 6.45 |
| JOF-BG11 | JOF-BS-BG11-1.5/3.5-20190523 | 23-May-19 | 1.5 - 3.5 ft | 4.56 |
| | JOF-BS-BG11-6.5/8.5-20190523 | 23-May-19 | 6.5 - 8.5 ft | 4.86 |
| | JOF-BS-BG12-0.0/0.5-20190604 | 4-Jun-19 | 0 - 0.5 ft | 4.97 |
| IOE-BG12 | JOF-BS-BG12-1.5/3.5-20190604 | 4-Jun-19 | 1.5 - 3.5 ft | 6.26 |
| JOI -DO 12 | JOF-BS-BG12-6.5/8.5-20190604 | 4-Jun-19 | 6.5 - 8.5 ft | 6.51 |
| | JOF-BS-BG12-11.5/13.5-20190604 | 4-Jun-19 | 11.5 - 13.5 ft | 6.46 |

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 |
| 07070700 0000000 0700000 07070700 | Gravel |
| 0 0 0 0 0 0 0 0 0 0 0 0 | Well Graded Gravel (GW) |
| 0 0 0 0 9 0 0 0 0 0 0 | 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) |
| $\cdot \cdot \square$ | Well Graded Sand with Clay (SW-SC) |
| | Poorly Graded Sand with Silt (SP-SM) |
| $\boxed{\vdots}$ | 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 |

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 |
| Ā | First water level reading |
| Ţ | Second water level reading |
| <u> </u> | mmon Abbroviationa |

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.

Lithology Graphics are based on TVA drafting standards.

Stantec 🔢

SUBSURFACE LOG

| С | Client E | Borehole | ID N/A | A | Stantec Boring No. JOF-109 | | | | | | | | |
|------------|---------------------|-----------------|--|---|----------------------------|--|--------------------|-----------------------|-----------------------|----------|---------|-------------|--|
| c | lient | | Tennes | see Valley Authority | E | Boring Locatio | on | 605,123. | 62 N; 1,413,243 | 8.55 | E NAD27 | Plant Local | |
| P | roject | Number | 175568 | 3286 | 5 | Surface Eleva | atio | 1 <u>382.8</u> ft | Elevatio | on E |)atum_ | NGVD29 | |
| P | roject | Name | JOF TE | DEC Order | [| Date Started | | 6/19/19 | Comple | eted | 6/20/ | 19 | |
| P | roject | Locatio | n Ne | w Johnsonville, Humphreys Co., TN | _ [| Depth to Wate | er _ | N/A | Date/Ti | me | N/A | | |
| Ir | nspect | or <u>C</u> . B | urton | Logger C. Burton | [| Depth to Water <u>N/A</u> Date/Time <u>N/A</u> | | | | | | | |
| | Prilling | Contract | tor <u>Sta</u> | intec Consulting Services Inc. | [| Drill Rig Type and ID CME 55T#1, #709 | | | | | | | |
| C | Verbu | irden Dri | lling and | I Sampling Tools (Type and S | Size)_ | 4-1/4" HSA, 2" | SSV | v/o liners | | | | | |
| F | Rock D | rilling an | d Samp | ling Tools (Type and Size) _ | N/A | | | | | | | | |
| | Verdr | ill Tooling | д (Туре | and Size)8-1/4" HSA overdrill | of borir | ng | | | Overdrill | De | pth _ | 41.0 ft | |
| | ample | er Hamm | er Type | Automatic Weight | 140 lb | Drop <u>3</u> | 30" | | Efficiency | <u> </u> | N/A | | |
| | loreho | le Azimu | ith | N/A | E | Borehole Incli | inat | ion (from | Vertical) | N// | A | | |
| | eview | ed By | K. Ca | rey | ŀ | Approved By | | L. Tucker | | | | | |
| | | Lithology | | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI | |
| Dep | oth Ft ³ | Elevation | Graphic | Description | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % | |
| - 0 | 0.0 | 382.8 | | Top of Hole | | | | | | | | | |
| | 0.1/ | 382.7/ | | Topsoil | | / | | SS01G | 0.0 - 1.5 | 0.0 - | 0.0 | 5-7-7 | |
| - 1 | 1.5 | 381.3 | | SILTY LEAN CLAY WITH SAND, | CL, 2. | 5Y 8/3 (pale | | 00010 | 0.0 - 1.0 | 1.5 | 0.0 | | |
| - 2 | | | | medium firm. moist. [FILL] | non to i | ow plasticity, | 1 | | | 1 | | - | |
| | | | | SILTY LEAN CLAY WITH GRAVE | FI CI | 10YR 4/2 | | SS02G | 1.5 - 3.0 | 5 - 3.0 | 0.1 | 6-7-7 | |
| - 3 | | | | (dark grayish brown) to 10YR 5/2 | (grayis | sh brown), | | | | | | - | |
| | | | | low plasticity, firm, [FILL] | | | | SS03G | 3.0 - 4.5 | 3.0 - 4. | 0.5 | 3-2-2 | |
| 4 | 4.5 | 378.3 | | | | | | | | 5 | | | |
| - 5 | | | | CLAYEY SILT, CL-ML, 7.5YR 4/2 | 2 (brown | n), low | | SS04G | 45-60 | 4.5 - | 0.3 | 1-WH-WH | |
| | | | | plasticity, very soli to very hard, h | ແບເຣເ, [ເ | | | 00010 | 1.0 0.0 | 6.0 | 0.0 | | |
| - ° | | | | | | | | | | 6.0 | | - | |
| - 7 | | | | | | | | SS05G | 6.0 - 7.5 | - 7.5 | 0.3 | WH-WH-1 | |
| | 7.7 | 375.1 | Ľ∕∭ | | | | $\left\{ \right\}$ | SS06aG | 7.5 - 7.7 | | | | |
| - 8 | | | | SILTY LEAN CLAY WITH GRAVE (strong brown) to 10YR 5/1 (grav) | EL, CL,) non-n | 7.5YR 5/6 | | SS06bG | 7.7 - 9.0 | .5 - 9.0 | 0.9 | 1-4-12 | |
| - 9 | 9.0 | 373.8 | | - moist |), non p | | $\left\{ \right\}$ | | | | | - | |
| 071 | | | a a a a a a | POORLY GRADED GRAVEL WIT | TH CLA | AY, GC, | | SS07G | 9.0 - 10.2 | .0 - 10 | 1.0 | 21-40-50/2" | |
| 5 – 10 | | | a a a a a a | 10YR 5/8 (yellowish brown) to 10 | YR 7/1 | (light gray), | | | | | | _ | |
| - 11 | | | a sa a s | non-plastic, very dense | | | | SS08G | 10.5 - 11.2 | 10.5 - | 0.7 | 46-50/2" _ | |
| | | | a a a a a a | | | | | | | 11.2 | | | |
| - 12 | | | a sa a s | | | | | | 100 101 | 12.0 | | - | |
| - 13 | | | a a a a a a | | | | | SS09G | 12.0 - 13.1 | - 13.1 | 0.7 | 29-21-50/1" | |
| 20.2 | | | a a a a a a | | | | | | | = | | | |
| 5 – 14 | | | a a a a a a a | | | | | SS10G | 13.5 - 14.4 | 3.5 - 14 | 0.9 | 40-50/5" - | |
| - - 15 | | | a sa a s | | | | | | | 4 | | | |
| n_00200 | | | a a for the for | | | | | SS11G | 15.0 - 15.4 | 15.0 - | 0.4 | 50/5" | |
| - 16 | | | at a start of a | | | | | | | 15.4 | | - | |
| 17 | | | a a a a a a a | | | | | SS12G | 16.5 - 16.9 | 16.5 | 0.4 | 50/5" | |
| | | | a a a a a a | | | | | | | - 16.9 | | - | |
| <u>الا</u> | | | 111 | | | | | | | | | | |



Page: 2 of 3

| Client Borehole ID Stantec | | | | | | Stantec Boring No. JOF-109 | | | | | | |
|--------------------------------|--------------------|-----------|---------------------------------------|---|--------------------------------|----------------------------|-----------------------|----------------------------|---------------|---------|-----------------------|--|
| c | lient | | Tenness | see Valley Authority | Boring Location | on | 605,123. | 62 N; 1,413,243 | .55 I | E NAD27 | ' Plant Local | |
| P | roject | Number | 1755682 | 286 | Surface Eleva | atio | n <u>382.8 ft</u> | Elevatio | n D | atum_ | NGVD29 | |
| | | Lithology | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI | |
| Dep | th Ft ³ | Elevation | Graphic | Description | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % | |
| - 18 - 19 | | | | POORLY GRADED GRAVEL WITH C 10YR 5/8 (yellowish brown) to 10YR 7 | CLAY, GC, 7/1 (light gray), | | SS13G | 18.0 - 19.5 | 18.0 - 19. | 1.3 | 40-47-48 | |
| - 20 | | | A A A A A A A A A A A A A A A A A A A | non-plastic, very dense <i>(Continued)</i> | | | SS14G | 19.5 - 21.0 | 5 19.5 - 21.0 | 1.3 | 41-31-30 | |
| - 21 - 22 | | | | | | | SS15G | 21.0 - 22.5 |) 21.0 - 22.5 | 0.6 | 42-32-34 | |
| - 23 | | | | | | | SS16G | 22.5 - 24.0 | 5 22.5 - 24.0 | 0.6 | 14-29-49 | |
| - 24 - 25 | | | | | | | SS17G | 24.0 - 25.2 | 24.0 - 25.2 | 0.8 | - 48-42-50/2" — | |
| - 26 | 27.0 | 355.8 | | | | | SS18G | 25.5 - 27.0 | 25.5 - 27.0 | 1.5 | 47-43-25 | |
| - 27 - 28 | 21.0 | 000.0 | | POORLY GRADED GRAVEL WITH C SAND, GP-GC, 10YR 5/6 (yellowish b 8/1 (white), yery dense, moist | CLAY WITH prown) to 10YR | | SS19G | 27.0 - 28.5 | 27.0 - 28.5 | 1.4 | - 18-17-19 | |
| - 29 | | | | | | | SS20G | 28.5 - 30.0 | 28.5 - 30.0 | 0.7 | 17-17-13 | |
| - 30 - 31 | | | | | | | SS21G | 30.0 - 31.5 | 30.0 - 31.5 | 1.1 | | |
| - 32 | | | | | | 31.5/34.5- | SS22E | 31.5 - 33.0 | 31.5 - 33.0 | 0.8 | 12-12-20 | |
| - 33 _{021/28} - 34 | | | | | | 20190620 | SS23E | 33.0 - 34.5 | 33.0 - 34.5 | 0.9 | 16-44-38 _ | |
| - 35 - 36 | | | | | | | SS24G | 34.5 - 36.0 | 34.5 - 36.0 | 1.1 | 14-16-30 | |
| | | | | | | 36.0/39.0-: | SS25E | 36.0 - 37.5 | 36.0 - 37.5 | 1.0 | 25-16-10 _ | |
| | | | | | | 20190620 | SS26E | 37.5 - 39.0 | 37.5 - 39.0 | 0.4 | 30-24-16 | |
| - 39 40 | | | | | | | SS27G | 39.0 - 40.5 | 39.0 - 40.5 | 1.3 | 14-17-20 _ | |
| - 41 - 42 | 41.1 | 341.7 | | | | | SS28aG SS28bG | 40.5 - 41.1 41.1 - 42.0 | 40.5 - 42.0 | 1.1 | 15-14-7 | |

Stantec Consulting Services Inc.



TVA EIP BORING LOG

SUBSURFACE LOG

Page: 3 of 3

| Client | Borehole ID N/A | A | Stantec Boring | | -109 | | |
|-----------------------|------------------------------------|--|--|-----------------------------------|-----------------------------|-----------|-------------------------|
| Client | Tennes | ssee Valley Authority | Boring Locatio | on 605.123.0 | 62 N; 1,413.243.5 | 5 E NAD27 | Plant Local |
| Projec | t Number 175568 | 3286 | Surface Eleva | tion <u>382.8 ft</u> | Elevation | Datum_1 | NGVD29 |
| | 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. % |
| - 43 - 44.0 | 338.8 | SANDY LEAN CLAY WITH GRAVEL, (dark yellowish brown) to 10YR 6/3 (p to medium plasticity, very soft to very (<i>Continued</i>) | CL, 10YR 4/6 ale brown), low hard, moist | SS29G SS30aG | 42.0 - 43.5 43.5 - 44.0 | 0.9 | 22-13-17 _ |
| - 45 | | FAT CLAY, CH, 10R 5/3 (weak red), r plasticity, very hard, moist, iron oxide 5G 5/2 metallic appearance on 10R 5 | medium to high staining, Color 5/3 | SS30bG SS31G | 44.0 - 45.0 45.0 - 46.5 | 1.0 | 13-9-11 — 9-11-15 |
| 46.5 | 1: E = G = 2: a,b, 3: Dep | No Refusal / Bottom of Hole at 46.5 Ft. | lit Spoons may be r nvironmental and G rface | equired to obta eotechnical Sa | in sufficient samp mples | le) | |
| | | | | | | | - |



| С | lient E | Borehole | ID_N/A | ٩ | Stantec Borin | g N | lo. JOF | -112 | | | |
|----------|--------------------|-------------|--------------------|---|-------------------|------|-----------------------|-----------------------|----------|---------|-------------|
| c | lient | | Tennes | see Valley Authority | Boring Location | on | 604,376. | 52 N; 1,412,991 | .02 | E NAD27 | Plant Local |
| P | roject | Number | 175568 | 3286 | Surface Eleva | atio | n 389.8 ft | Elevatio | n E | Datum | NGVD29 |
| P | roject | Name | JOF TE |)EC Order | Date Started | | 8/27/19 | Comple | ted | 8/27/ | 19 |
| P | roject | Locatio | n Ne | w Johnsonville, Humphreys Co., TN | Depth to Wate | er _ | N/A | Date/Tir | ne | N/A | |
| Ir | spect | or S. St | anley | Logger <u>S. Stanley</u> | Depth to Wate | er _ | N/A | Date/Tir | ne | N/A | |
| | rilling | Contract | or Sta | ntec Consulting Services Inc. | Drill Rig Type | an | d ID_CME | 1050, #952 | | | |
| C | verbu | ırden Dril | ling and | Sampling Tools (Type and Size |)4-1/4" HSA, 2" : | SS۱ | w/o liners, 3 | " Shelby Tubes | | | |
| R | ock D | rilling an | d Samp | ling Tools (Type and Size)/A | A | | | | | | |
| C | verdr | ill Tooling | g (Type | and Size)8-1/4" HSA overdrill of be | oring | | | Overdrill | De | pth _ | 30.9 ft |
| s | ample | er Hamm | er Type | Automatic Weight 140 | lb Drop <u>3</u> | 30" | | Efficiency | | N/A | |
| B | oreho | le Azimu | th | N/A | Borehole Incli | inat | ion (from | Vertical) | N/. | A | |
| R | eview | ed By | J. Sni | der | Approved By | | L. Tucker | | | | |
| | | Lithology | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Graphic | Description | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| | 0.0 | 389.8 | | Top of Hole | | | | | | | |
| Ů | 0.5 | 389.3 | | Crushed stone | | | 00040 | 0.0 4 5 | 0.0 | 1.0 | 00.44.0 |
| - 1 | | | | SANDY LEAN CLAY LITTLE GRAVE | L, CL, 7.5YR | | 5501G | 0.0 - 1.5 | - 1.5 | 1.2 | 28-14-9 |
| | | | | 5/8 (strong brown), low to medium pla | isticity, very | | | | _ | | |
| Z | | | | Rock in SS02 from 1.5' to 3.0' | | | SS02G | 1.5 - 3.0 | .5 - 3.0 | 0.4 | 8-7-6 |
| - 3 | | | | | | | | | | - | |
| | 4.0 | 385.8 | | | | | SS03G | 3.0 - 4.5 | 3.0 - 4 | 1.0 | 7-3-4 |
| - 4 | 4.5 | 385.3 | | SANDY LEAN CLAY LITTLE GRAVE | L, CL, 7.5YR _ | | | | 4.5 | | - |
| - 5 | | | | $\sqrt{5/2}$ (brown), low to medium plasticity, | firm, moist | | | | 4.5 | | - |
| | | | | SANDY LEAN CLAY LITTLE GRAVE | L, CL, 7.5YR | | SS04G | 4.5 - 6.0 | - 6.0 | 1.2 | 4-2-3 |
| - 6 | | | | 5/8 (strong brown), low to medium pla | isticity, firm, | | | | _ | | |
| - 7 | 72 | 382.6 | | moist | | | SS05G | 6.0 - 7.5 | .0 - 7.5 | 1.2 | 3-3-2 |
| | 7.5 | 382.3 | ŹĮŲ | | , 7.5YR 4/6 / | | | | | | |
| - 8 | | | | (strong brown), low to medium plastic | ity, firm, moist | | SS06G | 7.5 - 9.0 | 7.5 - 1 | 1.4 | WH-1-WH |
| | 0.2 | 380.6 | | SANDY LEAN CLAY LITTLE GRAVE | L, CL, 2.5YR | | | | 9.0 | | _ |
| , j | 9.2 | 360.0 | | 4/6 (red), low to medium plasticity, ver | ry soft, moist | | | | 9.0 | | |
| - 10 | | | | SANDY LEAN CLAY LITTLE GRAVE | L, CL, 2.5YR | | SS07G | 9.0 - 10.5 | - 10.5 | 1.0 | WH-WH-WH |
| 109.000 | | | | 4/6 (red), low plasticity, very soft, wet | | | | | - | | |
| °≊⊢ 11 | | | | | | | SS08G | 10.5 - 12.0 | 0.5 - 12 | 1.2 | WH-WH-2 |
| - 12 | | | | | | | | 40.0 40.5 | 2.0 | | - |
| | 12.5 | 377.3 | | | | | SS09aG | 12.0 - 12.5 | 12.0 - | 15 | 10-10-35 |
| - 13 | | | 8 8 8 8 8 8 | 4/6 (strong brown), non-plastic, very h | ard. wet. | | SS09bG | 12.5 - 13.5 | 13.5 | 1.5 | 10-19-00 |
| - 14 | | | 8 8 8 8 8 8 8 8 | limestone rock fragments | , | | | | 13. | 1 | - |
| | | | 8 8 8 8 8 8 8 8 | | | | SS10G | 13.5 - 15.0 | 5 - 15.0 | 1.5 | 18-26-42 |
| 5 – 15 | | | 8 8 8 8 8 8 8 8 | | | | | | | | - |
| 070000 | | | | | | | SS11G | 15.0 - 16.5 | 5.0 - 1 | 1.5 | 11-20-20 |
| 3 16 | | | | | | | | | 6.5 | | - |
| - 17 | | | | | | | 86400 | 16 5 40.0 | 16.5 | 10 | 10 14 44 |
| | | | | | | | 33126 | 10.3 - 18.0 | - 18.0 | 1.3 | 12-14-14 |



TVA EIP BORING LOG 175568286_JOF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 2/20/20

SUBSURFACE LOG

Page: 2 of 2

| Client Borehole ID N/A Stantec Boring No. JOF-112 | | | | | | | | | | | | |
|---|-----------------|----------------|--|---|---------------------------|------------------------------|---------------|-----------------------------|----------------------------|------------------|-----------|---------------|
| Clie | nt | | Tennes | see Valley Authority | Во | ring Locati | on | 604,376. | 52 N; 1,412,991 | .02 | E NAD27 | ' Plant Local |
| Proj | ect | Number | 175568 | 286 | Su | rface Eleva | atio | n <u>389.8 ft</u> | Elevatio | on E |)atum_ | NGVD29 |
| | L | ithology. | | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Depth F | -t ³ | Elevation | Graphic | Description | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 18 - 19 | | | | POORLY GRADED GRAVEL WITH S 4/6 (strong brown), non-plastic, very h limestone rock fragments (Continued | ilLT, ard, v d) | GP, 7.5YR wet, | | SS13G | 18.0 - 19.5 | 18.0 - 19.5 | 1.0 | 9-5-8 |
| - 20 | | | | | | | 19. | SS14E | 19.5 - 21.0 | 19.5 - 21.0 | 1.3 | |
| - 22 | | | | | | | 5/24.0-201908 | SS15E | 21.0 - 22.5 | 21.0 - 22.5 | 1.1 | 16-14-11 _ |
| - 23 | | | 8 8 8 9 8 8 9 8 8 8 8 | | | | 28 | SS16E | 22.5 - 24.0 | 22.5 - 24.0 | 1.5 | 9-7-5 |
| - 24 | | | 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 8 8 8 9 9 9 9 9 | | | | | SS17E | 24.0 - 25.5 | 24.0 - 25.5 | 0.9 | 12-16-43 |
| - 26 | 6.9 | 362 9 | 8 8 8 9 8 8 8 9 | | | | 24.0/28.9-201 | SS18E | 25.5 - 26.9 | 25.5 - 26.9 | 1.4 | 27-37-50/5" |
| - 27 2 | Z.0 7 3 | 362.8 | | Auger without sampling | | /г | 190828 | SS19E | 27.0 - 27.3 | 27.0 | 0.3 | 50/4" - |
| - 28 28 - 29 | 8.5 8.9 | 361.3 360.9 | 000 | POORLY GRADED GRAVEL WITH S 4/6 (strong brown), non-plastic, very ha | ILT, ard, v | GP, 7.5YR wet, | - | SS20E | 28.5 - 28.9 | - 27.3 28.5 - 28 | 0.4 | |
| - 30 30 | 0.0 | 359.8 | | | | | | | | 3 | | _ |
| 30 | 0.9 | 358.9 | 000 000 000 000 | 4/3 (brown), non-plastic, very hard, we lock fragments | oi∟i, i et, lim | iestone | | SS21G | 30.0 - 30.9 | 0.0 - 30.9 | 0.9 | 40-50/5" |
| | | | | Auger without sampling | | | | | | | | _ |
| | | | | POORLY GRADED GRAVEL WITH S 4/3 (brown), non-plastic, very hard, we rock fragments | ilLT, et, lim | GP, 7.5YR nestone | | | | | | - |
| | | | | Refusal / | | | | | | | | - |
| | | | Perma | Bottom of Hole at 30.9 Ft. nent monitoring well JOF-112 installed in ation log for details | n this | boring followi | ing c | ver-drilling. | See JOF-112 r | noni | toring we | |
| | | | motane | | | | | | | | | - |
| | | | 1: E = G = 2: a,b,o 3: Dep | Environmental Sample Custody (two Spli Geotechnical Sample Custody c denote Split Spoon divided between En ths are reported in feet below ground sur | it Spo nviror rface | oons may be nmental and G | requ Geote | ired to obta echnical Sa | in sufficient san mples | nple) | | - |
| | | | | | | | | | | | | - |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | _ |
| | | | | | | | | | | | | - |



| | Client I | Borehole | IDN/A | 1 | S | tantec Boring | g١ | No. JOF | -119 | | | |
|-----------------|----------------------|--------------|---|--|----------------|----------------------|------|-----------------------|-----------------------|--------------------|---------|---------------|
| | Client | | Tennes | see Valley Authority | В | oring Locatio | on | 598,645. | 37 N; 1,410,031.4 | 19 | E NAD27 | ' Plant Local |
| | Project | t Number | 175568 | 286 | S | urface Eleva | itio | n 363.4 ft | Elevatior | ۱D | Datum | NGVD29 |
| | Project | Name | JOF TE | DEC Order | D | ate Started | | 7/9/19 | Complet | ed | 7/10/ | 19 |
| | Project | t Locatior | ר Nev | w Johnsonville, Humphreys Co., TN | D | epth to Wate | er - | 3.7 ft | Date/Tim | ie | 7/10/ | 19 15:38 |
| | Inspec | tor C. Bu | urton | Logger C. Burton | D | epth to Wate | er _ | N/A | Date/Tim | ie | N/A | |
| | Drilling | Contract | or Sta | ntec Consulting Services Inc. | D | rill Rig Type | an | d ID CME | 55T#1, #709 | | | |
| | Overbu | urden Drill | ling and | Sampling Tools (Type and Size |) | 4-1/4" HSA, 2" : | SS | w/o liners, 3 | " Shelby Tubes | | | |
| | Rock D | Drilling and | d Samp | ling Tools (Type and Size)// | 4 | | | | | | | |
| | Overdr | ill Tooling | і (Туре а | and Size)8-1/4" HSA overdrill of b | orinę | g | | | Overdrill I | De | pth | 45.0 ft |
| | Sample | er Hamme | er Type | Automatic Weight 140 | lb | Drop _3 | 80" | | Efficiency | 1 | N/A | |
| | Boreho | ole Azimu | th | N/A | B | orehole Incli | na | tion (from | Vertical) | N// | A | |
| | Reviev | ved By _ | J. Sni | der | A | pproved By | | L. Tucker | | | | |
| | | Lithology | | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| D | epth Ft ³ | Elevation | Graphic | Description | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| | 0.0 | 363.4 | | Top of Hole | | | | | | | | |
| ľ | | | 0404040 | Crushed stone mixed with clay, [FILL] |] | | | 00040 | 00.45 | | | 0.4.0 |
| - 1 | | | 000000000000000000000000000000000000000 | | | | | 5501G | 0.0 - 1.5 | - | 0.3 | 2-1-2 |
| | | | | | | | | | | | | |
| | | | 000000000000000000000000000000000000000 | | | | | SS02G | 1.5 - 3.0 | л - 2 - 2 | 0.5 | 3-3-3 |
| - 3 | 3.0 | 360.4 | 0909090 | | | | | | | _ | | |
| | ¥ | | | FAT CLAY, CH, 10YR 4/3 (brown) wir | th 10 stair |)YR 6/1 Ding | | SS03G | 3.0 - 4.5 | | 1.3 | 2-2-5 |
| - 4 | | | | | otan | | | | | л | | |
| - 5 | | | | | | | | | | Ал | | - |
| | | | | | | | | SS04G | 4.5 - 6.0 | 80 | 0.8 | 4-6-6 |
| - 6 | | | | | | | | | | | | |
| L 7 | | | | | | | | SS05G | 6.0 - 7.5 | | 1.1 | 3-2-4 |
| | 7.5 | 355.9 | | | | | | | | _ | | |
| - 8 | | | | SILTY FAT CLAY, CH, 10YR 5/4 (yel medium to high plasticity, very soft to | verv | sh brown), / hard | | SS06G | 7.5 - 9.0 | 75-0 | 1.4 | 2-2-2 |
| L | 9.0 | 354.4 | | | , | | | | | 5 | | |
| ູ້ | | | | SILTY FAT CLAY, CH, 10YR 5/3 (bro | wn) | to 2.5Y 6/3 | | | | 0 | | |
| - 10 17 – 10 | 0 | | | (light yellowish brown), high plasticity | , ver | y soft | | SS07G | 9.0 - 10.5 | 10 л | 1.3 | 1-1-1 - |
| 530.GU | | | | | | | | | | | | |
| nstoz – 11 | 1 | | | | | | | SS08G | 10.5 - 12.0 | J - 10 | 1.5 | 3-5-7 |
| - | 2 | | | | | | | | 1 | 5 | | |
| EC SUB | | | | | | | | SS09G | 12 0 - 13 5 | 120- | 15 | 3-3-5 |
| - 1: 2 | 3 | | | | | | | | 12.0 10.0 | <u>1</u> 2 Л | 1.0 | 000 |
| | 4 | | | | | | | | | 12 | | |
| TDEC | | | | | | | | SS10G | 13.5 - 15.0 | 15.0 | 1.5 | 3-4-7 |
| ວຸ່– 1: ຮ | 5 | | | | | | | | | | | - |
| 11289954 | a | | | | | | | SS11G | 15.0 - 16.5 | 50-1p | 1.5 | 4-4-5 |
| 501 | | | | | | | | | | л | | · |
| Mage 11 | 7 | | | | | | | SS12G | 16.5 - 18.0 | 10 7 | 13 | 2-3-6 |
| | | | | | | | | | 10.0 10.0 | 18 | | |



Page: 2 of 3

| С | lient l | Borehole | ID_N/A | | Stantec Boring No. JOF-119 | | | | | | | |
|--------------|--------------------|-----------|--|---|---------------------------------|--------------|-----------------------|----------------------------|---------------|--------------|-----------------|--|
| c | lient | | Tennes | see Valley Authority | Boring Location | on | 598,645.8 | 37 N; 1,410,031 | .49 | E NAD27 | ' Plant Local | |
| P | roject | Number | 1755682 | 286 | Surface Eleva | tior | ז <u>363.4 ft</u> | Elevatio | on E | Datum NGVD29 | | |
| \vdash | | Lithology | | | Overburden: | 5 | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI | |
| Dep | th Ft ³ | Elevation | Graphic | Description | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % | |
| - 18 | | | | | | | | | | | - | |
| - 19 | 19.5 | 343.9 | | SILTY FAT CLAY, CH, 10YR 5/3 (bro (light yellowish brown), high plasticity (<i>Continued</i>) | own) to 2.5Y 6/3 , very soft | | SS13G | 18.0 - 19.5 | 18.0 - 19.5 | 1.5 | 5-6-10 _ | |
| - 20 | | | | FAT CLAY, CH, 7.5YR 4/6 (strong bro 6/1 (gray), high plasticity | own) with 10YR | | SS14G | 19.5 - 21.0 | 19.5 - 21.0 | 1.3 | 7-8-10 – | |
| - 21 - 22 | | | | | | | SS15G | 21.0 - 22.5 | 21.0 - 22.5 | 1.5 | 7-7-9 | |
| - 23 | | | | | | | SS16G | 22.5 - 24.0 | 22.5 - 24.0 | 1.5 | 4-5-4 | |
| - 24 - 25 | 25.5 | 227.0 | | | | | SS17G | 24.0 - 25.5 | 24.0 - 25.5 | 1.5 | 5-4-6 | |
| - 26 | 20.0 | 337.3 | | SILTY FAT CLAY, CH, 10YR 4/1 (dar 7.5YR 5/6 (strong brown), high plastic | rk gray) with city | | SS18G | 25.5 - 27.0 | 25.5 - 27.0 | 1.5 | 4-2-3 | |
| - 27 - 28 | | | | | | | SS19G | 27.0 - 28.5 | 27.0 - 28. | 1.5 | - 2-2-2 | |
| - 29 | | | | | | | SS20G | 28.5 - 30.0 | 5 28.5 - 30.0 | 1.5 | WH-WH-2 | |
| - 31 | 31.3 | 332.1 | | | | | SS21aG | 30.0 - 31.3 | 30.0 - 31.5 | 1.5 | 1-1-8 | |
| - 32 | | | | POORLY GRADED GRAVEL, GP, 7. brown) to 7.5YR 5/4 (brown), fine to c | 5YR 4/6 (strong coarse, very | | SS21bG SS22G | 31.3 - 31.5 31.5 - 33.0 | 31.5 - 33 | 1.5 | 9-15-31 | |
| - 33 | | | 8 8 8 4 8 8 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 | dense, poony graded | | | SS23G | 33 0 - 34 5 | .0 33.0 - | 1.0 | - 10-14-21 | |
| - 34 | | | | | | | 00200 | 00.0 01.0 | 34.5 3 | | - | |
| - 35 | | | 0000 0000 0000 0000 | | | 34.5/37.5-2 | SS24E | 34.5 - 36.0 | 4.5 - 36.0 | 1.4 | 18-23-26 | |
| - 37 | | | | | | 0190710 | SS25E | 36.0 - 37.5 | 36.0 - 37.5 | 1.3 | 13-19-31 _ | |
| - 38 | | | 0000 0000 0000 0000 0000 0000 0000 0000 0000 | | | | SS26G | 37.5 - 39.0 | 37.5 - 39.0 | 1.5 | 15-12-15 | |
| - 39 - 40 | | | 8 8 8 9 8 8 8 9 8 9 | | | 39.0/42 | SS27E | 39.0 - 40.5 | 39.0 - 40.5 | 1.5 | - 9-10-12 | |
| - 41 | | | | | | 2.0-20190710 | SS28E | 40.5 - 42.0 | 5 40.5 - 42.0 | 1.3 | 11-18-19 - - | |



Page: 3 of 3

| Client Project N Litt Depth Ft ³ E 44 45.0 | Tenness Number 1755682 thology Elevation Graphic 318.4 Perma installa 1: E = G = 2: a,b,G 3: Dep | Beee Valley Authority 286 Description POORLY GRADED GRAVEL, GP, brown) to 7.5YR 5/4 (brown), fine to dense, poorly graded (Continued) No Refusal / Bottom of Hole at 45.0 Ft. No Refusal / Bottom of Hole at 45.0 Ft. Environmental Sample Custody (two S Geotechnical Sample Custody (two S Geotechnical Sample Custody (two shorts) are reported in feet below ground | Boring Locatio Surface Elevat Overburden: Rock Core: 7.5YR 4/6 (strong coarse, very d in this boring followin Split Spoons may be re Environmental and Ge surface | n <u>598,645.8</u> tion <u>363.4 ft</u> <u>RQD %</u> SS29G SS30G SS30G | 87 N; 1,410,031.49 Elevation Depth Ft ³ Run Ft 42.0 - 43.5 43.5 - 45.0 5 See JOF-119 mor in sufficient sample mples | PENAD27 Datum N Rec. Ft Rec. Ft 1.5 1.5 | Plant Local NGVD29 Blows/PSI Rec. % 14-11-15 9-13-18 |
|--|--|---|---|--|--|--|---|
| Project N Litt Pepth Ft ³ E 13 14 14 15 | Number 175568: thology Elevation Graphic 318.4 Perma installa 1: E = G = 2: a,b,G 3: Dep | 286 Description POORLY GRADED GRAVEL, GP, brown) to 7.5YR 5/4 (brown), fine to dense, poorly graded (Continued) No Refusal / Bottom of Hole at 45.0 Ft. Bottom of Hole at 45.0 Ft. Environmental Sample Custody (two S Geotechnical Sample Custody (two S Geotechnical Sample Custody is denote Split Spoon divided between ths are reported in feet below ground | Surface Elevat | tion <u>363.4 ft</u> Sample ^{1,2} RQD % SS29G SS30G SS30G | Elevation Depth Ft ³ Run Ft 42.0 - 43.5 43.5 - 45.0 See JOF-119 mor in sufficient sample mples | Datum N Rec. Ft 1.5 1.5 | NGVD29 Blows/PS Rec. % 14-11-15 9-13-18 |
| Liti Depth Ft ³ E | thology Elevation Graphic 318.4 Perma installa 1: E = G = 2: a,b,o 3: Dep | Description POORLY GRADED GRAVEL, GP, brown) to 7.5YR 5/4 (brown), fine to dense, poorly graded <i>(Continued)</i> No Refusal / Bottom of Hole at 45.0 Ft. hent monitoring well JOF-119 installed tion log for details. Environmental Sample Custody (two S Geotechnical Sample Custody (two S Geotechnical Sample Custody (two S is denote Split Spoon divided between ths are reported in feet below ground | Overburden: Rock Core: 7.5YR 4/6 (strong point of coarse, very d in this boring followin Split Spoons may be resurface | Sample ^{1.2} RQD % SS29G SS30G SS30G ag over-drilling. equired to obta eotechnical Sam | Depth Ft ³ Run Ft 42.0 - 43.5 43.5 - 45.0 See JOF-119 mor in sufficient sample mples | Rec. Ft Rec. Ft 1.5 1.5 | Blows/PS Rec. % 14-11-15 9-13-18 |
| Depth Ft ³ E | Elevation Graphic 318.4 Perma installa 1: E = G = 2: a,b,G 3: Dep | Description POORLY GRADED GRAVEL, GP, brown) to 7.5YR 5/4 (brown), fine to dense, poorly graded <i>(Continued)</i> No Refusal / Bottom of Hole at 45.0 Ft. No Refusal Sample Custody (two S Geotechnical Sample Custody (two S Geotechnical Sample Custody (two s) is denote Split Spoon divided between ths are reported in feet below ground | d in this boring followin Split Spoons may be re Environmental and Ge | RQD % SS29G SS30G g over-drilling. equired to obta eotechnical Sat | Run Ft 42.0 - 43.5 43.5 43.5 - 45.0 43.5 See JOF-119 mor 40.0 in sufficient sample 50.0 | Rec. Ft 1.5 1.5 nitoring wel | Rec. % |
| 43 44 45.0 | 318.4 Perma installa 1: E = G = 2: a,b,0 3: Dep | POORLY GRADED GRAVEL, GP, brown) to 7.5YR 5/4 (brown), fine to dense, poorly graded <i>(Continued)</i> No Refusal / Bottom of Hole at 45.0 Ft. | 7.5YR 4/6 (strong o coarse, very d in this boring followin Split Spoons may be re Environmental and Ge surface | g over-drilling. | 42.0 - 43.5 43.5 - 45.0 See JOF-119 mor in sufficient sample mples | nitoring wel | 14-11-15 9-13-18 |
| ₁₅ 43.0 | Perma installa 1: E = G = 2: a,b,c 3: Dep | No Refusal / Bottom of Hole at 45.0 Ft. hent monitoring well JOF-119 installed tion log for details. Environmental Sample Custody (two s Geotechnical Sample Custody denote Split Spoon divided between hs are reported in feet below ground | d in this boring followin Split Spoons may be re Environmental and Ge surface | ng over-drilling. equired to obta | See JOF-119 mor in sufficient sample | nitoring wel | 1 |
| | Perma installa 1: E = G = 2: a,b,0 3: Dep | nent monitoring well JOF-119 installed tion log for details. Environmental Sample Custody (two s Geotechnical Sample Custody denote Split Spoon divided between hs are reported in feet below ground | d in this boring followin Split Spoons may be re Environmental and Ge surface | ig over-drilling. equired to obta eotechnical Sa | See JOF-119 mor in sufficient sample mples | nitoring wel | 1 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



| Clien | t Borehole | ID N/A | <u>،</u> | Stantec Boring N | No. JOF | -BG01 | | |
|----------|---------------------------|-----------|--|-----------------------------|-----------------------|-----------------------|------------|---------------|
| Clien | t | Tennes | see Valley Authority | Boring Location | 612,015. | 70 N; 1,422,736.8 | 5 E NAD27 | ' Plant Local |
| Proje | ct Number | 175568 | 286 | Surface Elevatio | n <u>402.7 ft</u> | Elevation | Datum | NGVD29 |
| Proje | ct Name | JOF TD | EC Order | Date Started | 6/3/19 | Complete | ed 6/3/1 | 9 |
| Proje | ct Locatio | n Nev | w Johnsonville, Humphreys Co., TN | Depth to Water | N/A | Date/Tim | e N/A | |
| Inspe | ctor D. N | lihalek | Logger D. Mihalek | Depth to Water | N/A | Date/Tim | e N/A | |
| Drillir | ng Contrac | tor Geo | o Logic (Subcontractor) | Drill Rig Type an | nd ID GEO | PROBE 6610 | | |
| Over | burden Dri | lling and | Sampling Tools (Type and Size) | DT37 Dual Tube S | oil Sampling | System with 60" | PVC Liners | \$ |
| Rock | Drilling an | d Sampl | ling Tools (Type and Size) ^{2" [} | Direct Push Liner | | | | |
| Over | drill Tooling | g (Type a | and Size) <u>N/A</u> | | | Overdrill [| Depth | N/A |
| Sam | oler Hamm | er Type | N/A Weight N/A | Drop _N/A | | Efficiency | N/A | |
| Bore | nole Azimu | ith | N/A | Borehole Inclina | tion (from | Vertical) | N/A | |
| Revie | ewed By | K. Ca | rey | Approved By | P. Dunne | | | |
| | 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 |) 402.7 | | Top of Hole | | | | | |
| Ŭ | | | SILTY SAND, SM, 10YR 8/4 (very pale | e brown), fine [➡] | HA01 | 0.0 - 0.5 | 0.5 | |
| - 1 | | ╟┇╿┨ | to coarse, very loose, dry, sandstone p | bebbles | | | | - |
| | | | thoughout | | | | 111 | |
| | | | | /3.5-20 | | 0.0 | | - |
| - 3 | | | | 119060 | DP01 | 0.5 - 5.0 | 4.5 | N/A |
| 4 | 398 7 | ╟┇┝┇┝ | | ω | | | | |
| - 4 4. | 5 398.2 | | SILTY LEAN CLAY, CL, 2.5Y 8/4 (pale | e brown), | | | | - |
| - 5 | | | │ medium plasticity, soft, moist, sandsto | ne pebbles | | | 44 | _ |
| | | | \throughout | / | | | | |
| - 6 | | | FAT CLAY WITH GRAVEL, CH, 10YR | R 7/6 (yellow), | | | 22 | - |
| - 7 | | | medium to coarse, high plasticity, soit, | , IIIOISt 6.5% | | | | - |
| | | | | 3.5-201 | DP02 | 5.0 - 9.8 | 4.8 | N/A |
| - 8 | | | | 90603 | | | `\)) | - |
| | | | | | | | | |
| - 9 9. | 3 <u>393.4</u> 3 302.0 | | | and hand | | | (((| - |
| 1/8/20 | 5 552.5 | 1 | laminated, moist, flow banded, quartz | ied, nard, \square | | | 1/// | |
| 530.GD | | | Bedrock Refusal / | | | | | |
| T 20190 | | | Bottom of Hole at 9.8 Ft. | | | | | - |
| SURF D | | | Top of Book = 0.2 Et | | | | | - |
| EC SUB | | | Top of Rock Elevation = 393.4 Ft. | | | | | |
| GL 74 | | | | | | | | - |
| JRDER.G | | | | | | | | - |
| TDEC | | | | | | | | |
| 286_JOF | | 1: E = | Environmental Sample Custody (two Spli | it Spoons may be requ | uired to obta | in sufficient samp | le) | - |
| 1755682 | | G = | Geotechnical Sample Custody | vironmental and Cost | echnical So | mnles | , | - |
| 10 100 | | 3: Dep | ths are reported in feet below ground sur | face | .comical 3d | Inhies | | |
| 9 BORIN | | 4: Gra | o sample (0.0/0.5-20190603) sampled us | sing hand auger | | | | - |
| | | | | | | | | |



| С | lient E | Borehole | ID N/A | A | 5 | Stantec Borir | ng No | JOF | -BG02 | | | |
|--------|--------------------|-------------|------------------|--|-----------------------|---------------------|--------------------|----------------------|-----------------------|--------------|--------------------|---------------|
| C C | lient | | Tennes | ssee Valley Authority | E | Boring Locati | on | 604,594. | 94 N; 1,414,992. | 06 I | E NAD27 | ' Plant Local |
| P | roject | Number | 175568 | 3286 | 5 | Surface Eleva | ation | 396.4 ft | Elevatio | n D | atum_I | NGVD29 |
| P | roject | Name | JOF TE | DEC Order | [| Date Started | | 5/22/19 | Complet | ed | 5/22/ | 19 |
| P | roject | Locatior | n Ne | w Johnsonville, Humphreys Co., TN | C | Depth to Wat | er _ | 17.0 ft | Date/Tin | ne | 5/22/ ⁻ | 19 |
| Ir | nspect | or D. M | ihalek | Logger _ D. Mihalek | [| Depth to Wat | er _ | N/A | Date/Tin | ne | N/A | |
| D | rilling | Contract | or <u>G</u> e | o Logic (Subcontractor) | C | Drill Rig Type | e and | ID GEO | PROBE 6610 | | | |
| C | verbu | rden Dril | ling and | I Sampling Tools (Type and S | Size)_ | DT37 Dual Tub | be Soi | I Sampling | 3 System with 60 | " P\ | /C Liners | 3 |
| R | ock D | rilling and | d Samp | ling Tools (Type and Size) _ | 2" Dire | ect Push Liner | | | | | | |
| C | verdr | ill Tooling | ј (Туре | and Size) <u>N/A</u> | | | | | Overdrill | De | pth _ | N/A |
| s | ample | er Hamme | er Type | N/A Weight | N/A | Drop | N/A | | Efficiency | 1 | N/A | |
| B | oreho | le Azimu | th | N/A | E | Borehole Incl | inatio | on (from | Vertical) | N// | 4 | |
| | eview | ed By _ | K. Ca | irey | A | Approved By | F | P. Dunne | | | | |
| | | Lithology | | | | Overburden: | S | ample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Graphic | Description | | Rock Core: | F | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 | 0.0 | 396.4 | | Top of Hole | | | | | | | | |
| | | | | SILT, ML, 10YR 5/6 (yellowish bro | own), lo | ow plasticity, | HA ^₄ 0. | HA01 | 0.0 - 0.5 | ll | 0.5 | |
| - 1 | 1.5 | 394.9 | | meaium stiff, moist | | | 0/2.2-2 | | | | | |
| 2 | | | | FAT CLAY, CH, 10YR 4/1 (dark g | gray), m | edium to | 201905 | | | | | |
| | | | | high plasticity, soft, moist | | | 22 | DP01 | 0.0 - 5.0 | 0.0 - | 2.2 | N/A |
| - 3 | | | | | | | | | | 5 0 | | |
| | | | | | | | | | | | | |
| - 4 | | | | | | | | | | | | |
| - 5 | 5.0 | 391.4 | /// | | | | | | | Щ | | - |
| | | | | SILTY LEAN CLAY, CL, 10YR 5/6 verv fine low plasticity medium s | ට (yellov stiff mo | wish brown), ist | | | | | | |
| - 6 | | | | | , | | | | | | | |
| - 7 | | | | | | | 6.5/8 | | | <u>"</u>]]] | | |
| | | | | | | | .5-2019 | DP02 | 5.0 - 10.0 | .0 - 10 | 5.0 | N/A |
| - 8 | | | | | | | 90522 | | | ° | | |
| - 9 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| - 10 | 10.0 | 386.4 | | | ong bro | (mp) | $\left \right $ | | | | | - |
| 11 | | | | non-plastic, soft, moist | JIIG DIO | wii), | | | | | | |
| | | | | | | | _ | | | | | |
| - 12 | | | | | | | 1.5/13 | | | <u>;</u> | | - |
| | | | | | | | .5-201 | DP03 | 10.0 - 15.0 | .0 - 15 | 5.0 | N/A |
| - 13 | | | | | | | 90522 | | | °))) | | |
| - 14 | | | | | | | | | | | | |
| | 15.0 | 204 4 | | | | | | | | | | |
| 5 – 15 | 15.0 | 381.4 | ╟╁╁╁┟┟ | SILTY SAND SM 10YR 5/6 (vel) | lowish ł | orown) fine | $\left \right $ | | | ₩ | | - |
| - 16 | | | ║┇┼┇ ┥┇┥┆ | to medium, loose, wet, Groundwa | ater enc | ountered at | | | | | | |
| | | | ╟┇┝┇┝┇ | 17 ft. | | | 16.5/1 | | | | | |
| - 17 - | ¥ | | ╽┇┼┇ ┥┇┥┆ | | | | 8.5-20 | | | 15.0 | | |
| | | | ╟┇┝┇┝ | | | | 190522 | DP04 | 15.0 - 20.0 |) - 20.0 | 5.0 | N/A |



Page: 2 of 2

| Clier | t Borehole | ID N/A | | Stantec Boring No. JOF-BG02 | | | | | | | |
|---|--|---------|---|--|-----------------------|--|-------------------------------------|---------------------|--|--|--|
| Clier | t | Tennes | see Valley Authority | Boring Locatio | on 604,594.9 | 94 N; 1,414,992.06 | E NAD27 | ' Plant Local | | | |
| Proje | ect Number | 175568 | 286 | Surface Eleva | ation 396.4 ft | Elevation | Datum_ | NGVD29 | | | |
| | Lithology | | | Overburden: | Sample ^{1,2} | Depth Ft ³ | Rec. Ft | Blows/PSI | | | |
| Depth F | ³ Elevation | Graphic | Description | Rock Core: | RQD % | Run Ft | Rec. Ft | Rec. % | | | |
| Depth F - 18 - 19 - 20 - 21 - 22 - 23 - 24 25 | Lithology 3 Elevation 0 376.4 0 3772.4 0 371.4 | Graphic | Description SILTY SAND, SM, 10YR 5/6 (yellowis to medium, loose, wet, Groundwater e 17 ft. <i>(Continued)</i> POORLY GRADED GRAVEL, GP, 10 (yellowish brown), medium to coarse, poorly graded, Chert fragments Sandstone, dark brown, very fine graid quartz, Sandstone bedrock. Refusal e 25 ft. Bedrock Refusal / Bottom of Hole at 25.0 Ft. Top of Rock = 24.0 Ft. Top of Rock Elevation = 372.4 Ft. Environmental Sample Custody (two Spi Geotechnical Sample Custody c denote Split Spoon divided between Er ths are reported in feet below ground su o sample (0.0/0.5-20190524) sampled us | Overburden: Rock Core: h brown), fine encountered at YR 5/6 loose, wet, ned, hard, wet, ncountered at it Spoons may be r nvironmental and G rface sing hand auger | Prequired to obta | Depth Ft ³ Run Ft 20.0 - 25.0 | Rec. Ft Rec. Ft 5.0 | Blows/PSI Rec. % | | | |
| A EIP BORING LUG 1/55082 | | | | | | | | - | | | |



| Clier | nt Borehole | ID N/A | | | Stantec Borir | ng No | D. JOF | -BG03 | | | | |
|--------------------|--------------------------|-----------------------------|----------------------|------------------------------|--------------------|--|----------|----------------------|-----------------------|------------|-----------|-------------|
| Clier | nt | Tennes | see Valley Authority | / | | Boring Locati | on | 601,538. | 80 N; 1,415,655 | 5.31 | E NAD27 | Plant Local |
| Proje | ect Number | 175568 | 286 | | | Surface Eleva | ation | 392.0 ft | Elevatio | on E | Datum | NGVD29 |
| Proje | ect Name | JOF TD | EC Order | | | Date Started | | 5/29/19 | Comple | eted | 5/29/ | 19 |
| Proje | ect Locatio | n Nev | v Johnsonville, Hum | phreys Co., T | N | Depth to Wat | er _ | 23.0 ft | Date/Ti | me | 5/29/ | 19 |
| Inspe | ector D. M | lihalek | Logger _D | . Mihalek | | Depth to Water <u>N/A</u> Date/Time <u>N/A</u> | | | | | | |
| Drilli | ng Contrac | torGeo | o Logic (Subcontrac | tor) | | Drill Rig Type | e and | I ID GEO | PROBE 6610 | | | |
| Over | burden Dri | lling and | Sampling Tools | s (Type and | l Size) | DT37 Dual Tub | be Soi | I Sampling | g System with 6 | 0" P\ | VC Liners | ; |
| Rock | c Drilling ar | ld Sampl | ing Tools (Type | and Size) | 2" D | irect Push Liner | | | | | | |
| Over | drill Tooling | g (Type a | and Size) <u>N/A</u> | | | | | | Overdrill | l De | epth | N/A |
| Sam | pler Hamm | er Type | <u>N/A</u> | _ Weight _ | N/A | Drop | N/A | | Efficiency | <u> </u> | N/A | |
| Bore | hole Azimu | ith | N/A | | | Borehole Incl | inati | on (from | Vertical) | N/. | A | |
| Revi | ewed By | K. Ca | rey | | | Approved By | | ⁵ . Dunne | | | | |
| | Lithology | | | | | Overburden: | S | ample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Depth F | t ³ Elevation | Graphic | Description | | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| 0. | 0 392.0 | | Top of Hole | | | | - | | | | | |
| | | | SILT, ML, 7.5YR | 4/4 (brown), r | non-plas | tic, soft, dry | HA4 | HA01 | 0.0 - 0.5 | 1 1 | 0.5 | |
| - 1 | | | | | | | | | | | | - |
| - 2 | | | | | | | 1.5/3 | | | ((| | - |
| 2. | 5 389.5 | | | | | | 3.5-201 | | 05 50 | 0.5 | 12 | N1/A |
| - 3 | | | SILTY LEAN CLA | AY, CL, 10YR medium stiff | 5/6 (yell moist | owish brown), | 90529 | DPUT | 0.5 - 5.0 | - 5.0 | 4.3 | N/A |
| | | | moduli plastory | , moulan our | , molot | | | | | | | |
| 4 | | | | | | | | | | | | |
| - 5 | | | | | | | | | | | H I | _ |
| | | | | | | | | | | | | |
| - 0 | | | | | | | | | | | | - |
| -7 7. | 0 385.0 | | | | | · • • • • | 6.5/8.5 | | | 5.0 | | - |
| | | | medium to high p | plasticity, soft, | к yellow moist | isn drown), | -20190 | DP02 | 5.0 - 10.0 |) - 10.0 | 5.0 | N/A |
| - 8 | | | 0 1 | , , , | | | 1529 | | | $ \rangle$ | | - |
| - 9 | | | | | | | | | | | | - |
| | | | | | | | | | | | | |
| - 10 | | | | | | | | | | Ì | 1 | - |
| - 11 | | | | | | | | | | | | |
| | | | | | | | 11.5 | | | | | |
| - 12 | | | | | | | 5/13.5-2 | DP03 | 10.0 - 15.0 | 10.0 - | 50 | - N/A |
| - ₁₃ 13 | .0 379.0 | | | | | | 201905 | DI 00 | 10.0 10.0 | 15.0 | 0.0 | |
| | | | SILTY GRAVEL, | GM, 7.5YR 5/ | /4 (brow | n), very fine to | 29 | | | ((| | |
| - 14 | | ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ | fragments throug | jhout. | | | | | | 1 ((| | - |
| - 15 | | | | | | | | | | IЩ | 4 | _ |
| | | ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ | | | | | | | | | (| |
| - 16 | | ↓↓↓↓↓ | | | | | 16.5 | | | | | |
| 17 17 | .0 375.0 | Ĭ† Ĭ <u>†</u> Ĭ†] | | | | | /18.5-2 | | | | | - |
| | | ູ້ອີ້ອີ້ອີ້ອີ້ | | | | | 201905 | DP04 | 15.0 - 20.0 | 5.0 - 2 | 4.8 | N/A |
| | | <u> </u> | | | | | 29 | | | 12 | M | |



TVA EIP BORING LOG

SUBSURFACE LOG

Page: 2 of 2

| Client Borehole ID | \ | Stantec Boring No. JOF-BG03 | | | | | | | | |
|--|--|---|-----------------------|--|---------|---------------------|--|--|--|--|
| Client Tennes | see Valley Authority | Boring Locatio | n <u>601,538.</u> 8 | 30 N; 1,415,655.31 | E NAD27 | ' Plant Local | | | | |
| Project Number 175568 | 286 | Surface Elevat | tion <u>392.0 ft</u> | Elevation I | Datum_I | NGVD29 | | | | |
| 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. % | | | | |
| Lithology Depth Ft³ Elevation Graphic 18 | Description WELL GRADED GRAVEL WITH SILT 5/6 (strong brown), medium to coarse Angular chert sandstone fragments th (<i>Continued</i>) Sandstone, light brown to light pink, h quartz, Groundwater encountered at 2 Bedrock Refusal / Bottom of Hole at 24.7 Ft. Top of Rock = 24.0 Ft. Top of Rock Elevation = 368.0 Ft. | Overburden: Rock Core: | Sample 1.2 RQD % | Depth Ft ³ Run Ft 20.0 - 24.7 | Rec. Ft | Blows/PSI Rec. % | | | | |
| 1: E = G = 2: a,b, 3: Dep 4: Gra | Environmental Sample Custody (two Sp Geotechnical Sample Custody c denote Split Spoon divided between En ths are reported in feet below ground su b sample (0.0/0.5-20190529) sampled u | lit Spoons may be re nvironmental and Ge rface sing hand auger | equired to obta | in sufficient sample mples | ;) | - | | | | |

Stantec 🚺



Page: 1 of 2

| С | lient E | Borehole | ID N/A | A | | Stantec Boring No. JOF-BG04 | | | | | | | |
|---------|--------------------|-------------|-----------------------|-----------------------|----------------------------------|-----------------------------|-------------------------------------|------------------|-----------------------|-----------------------|----------|--------------------|-------------|
| C | lient | | Tennes | see Valley Authority | | | Boring Locati | on | 600,915. | 90 N; 1,416,080 | 0.08 | E NAD27 | Plant Local |
| P | roject | Number | 175568 | 286 | | | Surface Eleva | atior | 1 405.6 ft | Elevatio | on E | Datum I | NGVD29 |
| P | roject | Name | JOF TE | DEC Order | | | Date Started | | 5/29/19 | Comple | eted | 5/29/ ⁻ | 19 |
| P | roject | Locatio | n Ne | w Johnsonville, Hum | phreys Co., T | ٢N | Depth to Wat | er | 27.0 ft | Date/Ti | me | 5/29/ | 19 12:53 |
| In | nspect | or D.M | lihalek | Logger | D. Mihalek | | Depth to Water N/A Date/Time N/A | | | | | | |
| D | rilling | Contract | tor Ge | o Logic (Subcontract | or) | | Drill Rig Type and ID GEOPROBE 6610 | | | | | | |
| 0 | verbu | irden Dril | ling and | Sampling Tools | (Type and | l Size)_ | DT37 Dual Tub | be So | il Sampling | System with 6 | 0" P\ | VC Liners | 3 |
| R | lock D | rilling an | d Samp | ling Tools (Type | and Size) | 2" Di | rect Push Liner | | | | | | |
| 0 | verdri | ill Tooling | g (Type | and Size) <u>N/A</u> | | | | | | Overdrill | l De | pth _ | N/A |
| s | ample | er Hamm | er Type | N/A | _ Weight _ | N/A | Drop | N/A | | Efficiency | | N/A | |
| В | oreho | le Azimu | th | N/A | | | Borehole Incl | inati | on (from | Vertical) | N/. | A | |
| R | leview | ed By | K. Ca | rey | | | Approved By | | P. Dunne | | | | |
| | | Lithology | | | | | Overburden: | S | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Graphic | Description | | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 | 0.0 | 405.6 | | Top of Hole | | | | | | | | | |
| ľ | 0.5 | 405.1 | | | /EL, ML, 7.5Y | YR 4/6 (st | trong brown), | HA4 | HA01 | 0.0 - 0.5 | 1 12 | 0.5 | |
| - 1 | | | | \non-plastic, soft, o | dry, [FILL] | | / | | | | | | |
| - 2 | 2.0 | 403.6 | | GRAVELLY SILT | , ML, 7.5YR 4 drv. [FILL] | 1/6 (stron | g brown), | 1.5/3 | | | | | - |
| | | | | | 7.5YR 4/6 (s | trona bro | wn) low to | 3.5-201 | DP01 | 0.0 - 5.0 | 0.0 - 5 | NR | N/A |
| - 3 | | | | medium plasticity | , medium stiff | f, moist | win), iow to | 90529 | | | 0 | | - |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| - 5 | 5.0 | 400.6 | | | | 01 401 | 2 5 10 | $\left \right $ | | | | | - |
| | | | | (vellowish brown) | ie GRAVEL, . medium pla: | Sticity, sti | ₹ 5/6 iff. moist | | | | | | |
| - 6 | | | | , | , 1 | , , | , | | | | | | - |
| - 7 | | | | | | | | 6.5/8. | | | <u>ب</u> | | - |
| | | | | | | | | 5-2019 | DP02 | 5.0 - 10.0 | 0 - 10. | 5.0 | N/A |
| - 8 | | | | | | | | 0529 | | | | | |
| - 9 | 9.0 | 396.6 | | | | | | \Box | | | | | |
| | | | | FAT CLAY, CH, 1 | 0YR 5/6 (yell | lowish bro | own), medium | | | | | | |
| - 10 | | | | plasticity, soft, mo | ISI | | | | | | | | - |
| - 11 | | | | | | | | | | | | | |
| | 11.5 | 394.1 | | | | | | | | | | | |
| - 12 | | | | LEAN CLAY LITT | LE SAND, Cl | L, 2.5Y 7 | /2 (light gray), | 1.5/13. | | | 10 | | - |
| | | | | medium plasticity | , sun, moist | | | 5-2019 | DP03 | 10.0 - 15.0 | 0 - 15.0 | NR | N/A |
| - 13 | | | | | | | | 90529 | | | | | - |
| - 14 | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | |
| g − 15 | | | $\langle / / \rangle$ | | | | | | | | | Ĭ | - |
| - 16 | | | | | | | | | | | | | - |
| | 16.5 | 389.1 | 444 | | | | | 6.5/18 | | | | | |
| - 17 | | | $\langle / / \rangle$ | plasticity, stiff mo | 7.5YK 4/6 (sl bist. Angular s | trong bro sandstone | wn), medium e fragments | .5-201 | DDO <i>i</i> | 45 0 00 0 | 15.0 | | - |
| | | | V/// | observed through | out. | | | 90529 | DP04 | 15.0 - 20.0 | - 20.0 | 5.0 | N/A |

Stantec Consulting Services Inc.





| Client Borende ID Tensese Valley Authority Startise Eoring No. 300 1000 1000 1000 1000 1000 1000 1000 | | | | | | | Stantas Baring No. JOE-BG05 | | | | | | | |
|---|----------|---------------------|------------|----------------------|---|--|-----------------------------|------------------------------|--------------------------|---------------------------|---------|-----------|-------------|--|
| Client Linemestee Valley Authony Boring LOcation e000365/N, 1417,1635 NAD27 Hant Load Project Name JOF TDEC Order Sufface Elevation 2410.1 Elevation Datum NAVO22 Project Location New Johnsoville, Humphreys Co., TN Depth to Water NA Date/Time NA Inspector Sufface Elevation 2410.1 Elevation Datum NAVO22 Date/Time NA Drilling Contractor Gene Logic (Subcontractor) Depth to Water NA Date/Time NA Drilling and Sampling Tools (Type and Size) Z'Direct Pusit Liner Overdrill Doting (Type and Size) Z'Direct Pusit Liner Overdrill Depth NA Sampler Hammer Type NA Borehole Azimuth NA Borehole Azimuth NA Reviewed By K. Carey Approved By P. Dunne NA Elevation (Trape NA Lithology Dor of Hole Borehole Azimuth NA Borehole Azimuth NA Elevation 0 0.4210.0 Top of Hole Borehole Azimuth Sampler Ham Load Borehole Azimuth NA 1 1.5 ATT Top of Hole Borehole Azimuth Borehole Azimuth NA < | | | sorenoie | | · | | | Stantec Borin | g No. <u>J</u> | | | | | |
| Project Number 17558288 Surface Elevation 4210 ft Elevation Datum NVC028 Project Name JOF TDE Order Date Started 524/19 Completed \$24/19 Project Location New Johnsonville, Humphreys Ca., TN Depth to Water N/A Date Started 524/19 Diffling Contractor Generation Longic Subornation Diffling Contractor Defth to Water N/A Date Started Overburden Drilling and Sampling Tools (Type and Size) 27 Dired Push Liner Overdrill Depth N/A Sampler Hammer Type N/A Weight N/A Dorp N/A Efficiency N/A Borchole Azimuth N/A Borchole Inclination (from Vertical) N/A N/A N/A Borchole Azimuth N/A Borchole Inclination (from Vertical) N/A N/A N/A Iboph F/2 Elevation Graphic Depth F/A Rec. FR Borchole Inclination (from Vertical) N/A 0 0.0 420.5 English brown), non-plastic, soft, most English brown, very line to case, very lose, diff. DP01 0.0 - 5.0 N/A English brown (inv. Vertifier Spons, may be required to obtain sufficient sample) 5.0 | | lient | | Tennes | see Valley Authori | ty | | Boring Location | on <u>600,</u> | 036.57 N; 1,417,1 | 16.93 | E NAD27 | Plant Local | |
| Project Name JOF TDEC Order Data Started 524/19 Completed 524/19 Project Location New Johnsondle, Humphreys Co., TN Depth to Water N/A Date/Time N/A Inspector 0. Minalek Logger D. Minalek Depth to Water N/A Date/Time N/A Overburden Drilling and Sampling Tools (Type and Size) DT37 Dual Tube Soil Sampling System with 60° PVC Liners Rock Drilling and Sampling Tools (Type and Size) 27 Direct Push Liner Overdrill Depth N/A Overdrill Tooling (Type and Size) N/A Dorop N/A Efficiency N/A Sampler Hammer Type N/A Borehole Inclination (from Vertical) N/A Reviewed By K. Carey Approved By P. Dunne Lithology Out Top of Hole Rock Core: ROD % Run Pt Rec. Ft BlowalPSI 0 0.0 421.0 Top of Hole Topsoil Diff. TML, 10/R 5/3 (brown), non-plastic, soft, moist DP01 0.0 - 0.5 N/A Diff. Rec. Ft BlowalPSI 1 15 40.7 Sangler Angular chert fragments included. DP03 10.0 - 14.0 Environmental Sample Custo | P | roject | Number | 175568 | 286 | | | Surface Eleva | ation <u>421.</u> | <u>0 ft</u> Eleva | tion [| Datum_I | NGVD29 | |
| Project Location New Johnsonkle, Humphreys Co., TN Depth to Water N/A DateTime NA Inspector D. Minalek Logger D. Minalek Depth to Water N/A DateTime NA Drilling Contractor Geo Logic (Subcontractor) Drill Rig Type and ID_GEOPROBLE 6610 Overburden Drilling and Sampling Tools (Type and Size) 273 Dual Tube Sol Sampling System with 60° PVC Lines Rock Drilling and Sampling Tools (Type and Size) N/A Drop N/A Efficiency N/A Borrehole Azimuth NA Borchole Inclination (from Vertical) N/A Borrehole Azimuth NA Borchole Inclination (from Vertical) N/A Ethology Approved By P. Dume Ethology Rec. Fl. BlowsPSi Librology Oxerburden: Sampler ¹⁴ Depth Fl ²¹ Rec. Fl. BlowsPSi 0 0.0 421.0 Top of Hole Top of Hole DP01 0.0 - 0.5 N/A 1 0.5 420.5 SILT, ML. 10YR 5/3 (brown), non-plastic, soft, moist DP01 0.0 - 0.5 N/A N/A 1 1.5 SiLT, ML, 10YR 5/3 (brown), non-plastic, soft, moist DP03 10.0 - 14.0 | P | roject | Name | JOF TD | EC Order | | | Date Started | 5/24 | /19 Comp | letec | 5/24/ | 19 | |
| Inspector D.M.alak Logger D.Milaik Depth to Water NA Drilling Contractor Geo Logic (Subcontractor) Drill Rig Type and ID. GEOPROBE 6610 Direct Procession Drilling and Sampling Tools (Type and Size) DIR Direct Push Liner Overduriden Drilling and Sampling Tools (Type and Size) 2* Direct Push Liner Overdrill Tooling (Type and Size) NA Sampler Hammer Type NA Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A Borehole Rainer Borehole Rainer Depth Ft ² Elevation Graphic Description Reck Core: Rock Ore: Roc Nore: | P | roject | Locatio | n <u>Nev</u> | v Johnsonville, Hu | mphreys Co., T | ΓN | Depth to Wate | er <u>N/A</u> | Date/ | Time | N/A | | |
| Dilling Contractor Deril Rig Type and ID ECOPROEE 6610 Overburden Drilling and Sampling Tools (Type and Size) 27 Direct Push Liner Overdrill Tooling (Type and Size) NA Sampler Hammer Type NA Borehole Azimuth N/A Depth Ft ² Eventoring Graphic Description Reck Cre: RO 0, 4210 Top of Hole 0 0, 4210 1 Topsoll 2 SILT, ML, 10YR 5/3 (brown), non-plastic, soft, moist 4 Silt, Y, L, 10YR 5/3 (brown), non-plastic, soft, moist 4 Silt, Y, Weil graded, Angular chert fragments included. 1 Silt, Y, GRAVEL WITH SAND, GM, 10YR 5/6 9 Silt, Y GRAVEL WITH SAND, GM, 10YR 5/6 11 Silt, Weilgraded, Angular chert fragments included. 11 Silt, Graphic Graph | Ir | nspect | or D. M | lihalek | Logger | D. Mihalek | | Depth to Wate | er <u>N/A</u> | Date/ | Time | N/A | | |
| Overburden Drilling and Sampling Tools (Type and Size) 27 Direct Push Liner Overdrill Tooling (Type and Size) 27 Direct Push Liner Overdrill Tooling (Type and Size) 27 Direct Push Liner Overdrill Tooling (Type and Size) 27 Direct Push Liner Overdrill Tooling (Type and Size) NA Borehole Azimuth NA Borehole Azimuth NA Reviewed By K. Carey Approved By P. Durne Ithology Description 0 0.0 0.0 421.0 0 0.5 1 Carey 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 0 0.5 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 0 0.0 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist 1 Sit, ML, 10YR 5/3 (brown), non-plastic, soft, moist | D | rilling | Contract | tor Geo | b Logic (Subcontra | actor) | | Drill Rig Type | and ID (| GEOPROBE 6610 |) | | | |
| Rock Drilling and Sampling Tools (Type and Size) 2* Direct Push Liner Overdrill Tooling (Type and Size) N/A Overdrill Tooling (Type and Size) Sampler Hammer Type N/A Borehole Inclination (from Vertical) N/A Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A Reviewed By K. Carey Approved By P. Dune Unhology Depth Ft ² Rec. Ft Blowa/PSi Depth Ft ² Evention Graphic Description Rock Core: ROD % Run Ft Rec. Ft Rec. % 0 0.0 421.0 Top of Hole Popolition Stl.T. ML. 10YR 5/3 (brown), non-plastic, soft, moist DP01 0.0 - 5.0 N/A 2 HA01 0.0 - 5.0 Stl.T. ML. 10YR 5/3 (brown), non-plastic, soft, moist DP01 0.0 - 5.0 N/A 4 Stl.T. ML. 10YR 5/3 (brown), non-plastic, soft, moist DP02 5.0 - 10.0 Stl.T. ML Stl.T. ML 1 10.5 Stl.T. ML NIYR SAND, GM. 10YR 5/6 DP02 5.0 - 10.0 Stl.T. ML 9 10.1 Stl.T. ML NIYR GRAVEL WITH SAND, GM. 10YR 5/6 DP03 10.0 - 14.0 HA0 | C | Verbu | rden Dril | ling and | Sampling Too | ls (Type and | l Size) | DT37 Dual Tub | e Soil Sam | pling System with | 60" P | VC Liners | ; | |
| Overdrill Tooling (Type and Size) N/A Overdrill Depth N/A Sampler Hammer Type N/A Borchole Inclination (from Vertical) N/A Borchole Azimuth N/A Borchole Inclination (from Vertical) N/A Reviewed By K. Carey Approved By P. Dunne Utbloogy Depth Ft ¹ Depth Ft ¹ Depth Ft ¹ Rec. Ft Blows/PSi 0 0.0 421.0 Top of Hole Overburden: Sample' 2 Depth Ft ¹ Rec. Ft Rec. Ft <td>R</td> <td>lock D</td> <td>rilling an</td> <td>d Sampl</td> <td>ing Tools (Typ</td> <td>e and Size)</td> <td>2" D</td> <td>irect Push Liner</td> <td></td> <td></td> <td></td> <td></td> <td></td> | R | lock D | rilling an | d Sampl | ing Tools (Typ | e and Size) | 2" D | irect Push Liner | | | | | | |
| Sampler Hammer Type N/A Weight N/A Drop N/A Efficiency N/A Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A N/A Reviewed By K. Carey Approved By P. Dunne N/A Depth Ft ² Elevation Graphic Description Rock Core: RQD % Run Ft Rec. Ft Blows/PSI 0 0.5 420.5 Elevation Top of Hole P P Dunot P Roc. Ft Rec. Ft Blows/PSI 1 1 Top of Hole Top of Hole P P D O O O O Sitt T, ML, 10YR 5/3 (brown), non-plastic, soft, moist P< | C | Verdri | II Tooling | g (Type a | and Size) <u>N/</u> | A | | | | Overdi | rill De | epth _ | N/A | |
| Borehole Azimuth N/A Borehole Inclination (from Vertical) N/A Reviewed By K. Carey Approved By P. Dunne Lithology Depth FP Rec. FI Blows/PSI Dopth FP Top of Hole Rec. FI Rec. FI Blows/PSI 0 0.0 421.0 Top of Hole Rec. Core: Rec. FI Rec. FI Rec. FI Rec. FI 1 1 SILT, ML, 10YR 5/3 (brown), non-plastic, soft, molst Image: Core: Rec. FI | S | ample | er Hamm | er Type | N/A | Weight _ | N/A | Drop _N | N/A | _ Efficiency | / _ | N/A | | |
| Reviewed By K. Carey Approved By P. Dunne Lithology Overburden: Sample ¹² Depth Fl ² Rec. Fl Blows/PSi 0 0.0 421.0 Top of Hole Rock Core: RQD % Run Ft Rec. Fl Blows/PSi 1 2 1 Top of Hole Top soil 0.5 0.5 NR N/A 2 3 SILT, ML, 10YR 5/3 (brown), non-plastic, soft, moist P01 0.0 - 5.0 NR N/A 4 4 N/A SILTY GRAVEL WITH SAND, GM, 10YR 5/6 P01 0.0 - 10.0 5.0 N/A 9 4 SILTY GRAVEL WITH SAND, GM, 10YR 5/6 P02 5.0 - 10.0 5.0 N/A 11 13.5 407.5 SILTY GRAVEL WITH SAND, GM, 10YR 5/6 P02 5.0 - 10.0 5.0 N/A 14 4.0 6 - - - - - - - - - - - - - - - - - - <td>B</td> <td>oreho</td> <td>le Azimu</td> <td>th</td> <td>N/A</td> <td></td> <td></td> <td>Borehole Incli</td> <td>nation (fr</td> <td>rom Vertical)</td> <td>N</td> <td>/A</td> <td></td> | B | oreho | le Azimu | th | N/A | | | Borehole Incli | nation (fr | rom Vertical) | N | /A | | |
| Lithology Description Overburden: Sample ¹² Depth Ft ² Rec. Ft Blows/PSi 0 0.0 421.0 Top of Hole 1 Rock Core: RQD % Run Ft Rec. Ft Rec. % 0 0.5 420.5 Imital and the second s | R | leview | ed By | K. Ca | rey | | | Approved By | P. Dun | nne | | | | |
| Depth Ft ² Elevation Cock Core: RQD % Run Ft Rec. Ft Rec. % 0 0.0 421.0 Top of Hole | | | _ithology | | | | | Overburden: | Sample | e ^{1,2} Depth Ft | 3 | Rec. Ft | Blows/PSI | |
| 0.0 421.0 Top of Hole 1 1 1 1 1 0.0 0.5 420.5 III.T. ML. 10YR 5/3 (brown), non-plastic, soft, moist 0.5 NR N/A 2 3 1 1 1 0.0 0.5 1 0.5 1 0.5 1 0.5 1 1 1 0.5 1 1 1 1 1 1 1 1 1 1 1 | Dep | oth Ft ³ | Elevation | Graphic | Description | 1 | | Rock Core: | RQD 9 | % Run Ft | | Rec. Ft | Rec. % | |
| 0.5 420.5 40.0 0.5 0.5 0.5 1 1 1 1 0.0 <td></td> <td>0.0</td> <td>421.0</td> <td></td> <td>Top of Hole</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | | 0.0 | 421.0 | | Top of Hole | | | | | | | | | |
| 1 2 3 3 5 0 N/A 2 3 4 5 6 - <td>ľ</td> <td>0.5</td> <td>420.5</td> <td></td> <td>– Topsoil</td> <td></td> <td></td> <td></td> <td>, ∃ HAC</td> <td>0.0 - 0.5</td> <td></td> <td>0.5</td> <td></td> | ľ | 0.5 | 420.5 | | – Topsoil | | | | , ∃ HAC | 0.0 - 0.5 | | 0.5 | | |
| 2 3 0 | - 1 | | | | SILT, ML, 10YF | २ 5/3 (brown), n | on-plast | tic, soft, moist | <u>,</u> | | |)) | - | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | - 2 | | | | | | | | 13.5- 22 DP(| 0.0-50 | 0.0 - | | N/A | |
| 4 5 6 7 7.5 413.5 6 7 5.0 N/A 9 10 11 13.5 407.5 5.0 N/A 11 13.5 407.5 5.0 N/A 13 13.5 407.5 5.0 N/A 14.0 407.0 5.0 N/A 1.0 13 13.5 407.5 5.0 N/A 9 10.0 1.0.0 1.0.0 1.0.0 14.0 407.0 5.0 N/A 1.0.0 13 13.5 407.5 5.0 N/A 14.0 407.0 5.0 N/A 1.0.0 13.5 407.5 5.0 N/A 1.0.0 1.0.0 14.0 407.0 5.0 N/A 1.0.0 1.0.0 1.0.0 13.5 407.5 5.0 1.0.0 1.0.0 1.0.0 1.0.0 13.5 407.5 5.0 1.0.0 1.0.0 1.0.0 1.0.0 14.0 407.0 5.0 1.0.0 1.0.0 <t< td=""><td>- 3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>019052</td><td></td><td>5.0</td><td></td><td>-</td></t<> | - 3 | | | | | | | | 019052 | | 5.0 | | - | |
| - 5 - 6 - 7 7.5 413.5 - 7 - 7.5 413.5 - 7 - 7.5 413.5 - 7 | - 4 | | | | | | | | 4 | | | () | - | |
| 6 7 7.5 413.5 413.5 SILTY GRAVEL WITH SAND, GM, 10YR 5/6 (yellowish from), very fine to coarse, very loose, dry, well graded, Angular chert fragments included. DP02 5.0 - 10.0 5.0 N/A 10 11 12 13.5 407.5 4.0 N/A 11 14.0 407.0 Sandstone, light orange, fine, hard, dry, chert present DP03 10.0 - 14.0 4.0 N/A 12 13.5 407.5 Sandstone, light orange, fine, hard, dry, chert present A.0 N/A 14 Bottom of Hole at 14.0 Ft. Top of Rock Elevation = 407.5 Ft. - - 15 G Geotechnical 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: Deptos are reported in feet below ground surface - - - 4: Grab sample (0.0/0.5-20190524) sampled using hand auger - - | - 5 | | | | | | | | | | | ((| _ | |
| 0 7 7.5 413.5 9 SILTY GRAVEL WITH SAND, GM, 10YR 5/6 (yellowish brown), very fine to coarse, very loose, dry, well graded, Angular chert fragments included. DP02 5.0 N/A 10 <td< td=""><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>11</td><td></td></td<> | 6 | | | | | | | | | | | 11 | | |
| 7 7.5 413.5 413.5 5.0 N/A 9 9 5.0 - 10.0 5.0 N/A 10 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>6. 5</td><td></td><td></td><td>22</td><td>_</td></td<> | | | | | | | | | 6. 5 | | | 22 | _ | |
| 8 9 SILTY GRAVEL WITH SAND, GM, 10YR 5/6 (yellowish brown), very fine to coarse, very loose, dry, well graded, Angular chert fragments included. 10 10 11 13 13.5 407.5 4.0 N/A 14 14.0 407.0 Sandstone, light orange, fine, hard, dry, chert present 4.0 N/A 14 Bedrock Refusal / Bottom of Hole at 14.0 Ft. 5 - - 15 15 Top of Rock = 13.5 Ft. Top of Rock Elevation = 407.5 Ft. - 15 15 - - 16 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: Depth are reported in feet below ground surface - 4: Grab sample (0.00.5-20190524) sampled using hand auger - | - 7 | 7.5 | 413.5 | | | | | | ^{8.5} 20 DP(| 5.0 - 10.0 | 5.0 - 1 | 5.0 | N/A | |
| 9 10 11 13.5 407.5 4.0 N/A 11 12 13.5 407.5 4.0 N/A 14 Sandstone, light orange, fine, hard, dry, chert present Bedrock Refusal / Bottom of Hole at 14.0 Ft. - Top of Rock = 13.5 Ft. Top of Rock = 13.5 Ft. - - Top of Rock Elevation = 407.5 Ft. - - Subtract Continuental Sample Custody (two Split Spoons may be required to obtain sufficient sample) - G = Geotechnical Sample Custody - - 2. b,c denote Split Spoon divided between Environmental and Geotechnical Samples - 3. Depths are reported in feet below ground surface - - | - 8 | | | ↓ ↓↓↓↓ | SILTY GRAVEL | WITH SAND, | GM, 10 | YR 5/6 | 19052 | | 0.0 | | - | |
| 10 11 13 13.5 407.5 4.0 N/A 13 13.5 407.0 Sandstone, light orange, fine, hard, dry, chert present Bedrock Refusal / 14 Bedrock Refusal / | - 9 | | | ╽┥┥┥ | drv. well graded | n), very fine to o 1. Angular chert | coarse, t fragme | very loose, nts included. | 4 | | | \$ | - | |
| - 11 13.5 407.5 - <td< td=""><td>- 10</td><td></td><td></td><td>₩₩₩₩</td><td>,,</td><td>.,</td><td>g</td><td></td><td></td><td></td><td></td><td>44</td><td>_</td></td<> | - 10 | | | ₩₩₩₩ | ,, | ., | g | | | | | 44 | _ | |
| 11 12 13 13.5 407.5 4.0 N/A 14 Sandstone, light orange, fine, hard, dry, chert present Bedrock Refusal / - 14 Bottom of Hole at 14.0 Ft. - - Top of Rock = 13.5 Ft. Top of Rock Elevation = 407.5 Ft. - 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample) - G = Geotechnical Sample Custody (two Split Spoons may be required to obtain sufficient sample) - 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 (0.0/0.5-20190524) sampled using hand auger - | L 11 | | | ╽┫┫ | | | | | | | | ((| _ | |
| 12 13 13.5 407.5 4.0 N/A 14 Sandstone, light orange, fine, hard, dry, chert present Bedrock Refusal / - Bottom of Hole at 14.0 Ft. Top of Rock = 13.5 Ft. - Top of Rock = 13.5 Ft. Top of Rock Elevation = 407.5 Ft. - 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample) - G = Geotechnical Sample Custody (two Split Spoons may be required to obtain sufficient sample) - 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 (0.0/0.5-20190524) sampled using hand auger - | | | | ╏┥╏┥╏┥╎ | | | | | 11.5/ | | 10.0 | | | |
| 13 13.5 407.5 14 Sandstone, light orange, fine, hard, dry, chert present Bedrock Refusal / Bedrock Refusal / - Bottom of Hole at 14.0 Ft. Top of Rock = 13.5 Ft. - Top of Rock = 13.5 Ft. Top of Rock Elevation = 407.5 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 (0.0/0.5-20190524) sampled using hand auger - | - 12 | | | | | | | | 13.5-2 | 03 10.0 - 14.0 | - 14.0 | 4.0 | N/A - | |
| 14 14.0 407.0 | 13 – 13 | 13.5 | 407.5 | | | | | | 019052 | | |)) | - | |
| Bedrock Refusal / - Bottom of Hole at 14.0 Ft. - Top of Rock = 13.5 Ft. - Top of Rock Elevation = 407.5 Ft. - Top of Rock Elevation = 407.5 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 (0.0/0.5-20190524) sampled using hand auger - | - 14 | 14.0 | 407.0 | | Sandstone, ligh | t orange, fine, h | nard, dry | /, chert present | 24 | | | | | |
| Bottom of Hole at 14.0 Ft. - Top of Rock = 13.5 Ft. - Top of Rock Elevation = 407.5 Ft. - Top of Rock Elevation = 407.5 Ft. - Top of Rock Elevation = 407.5 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 (0.0/0.5-20190524) sampled using hand auger - | 201905 | | | | Bedrock Refusa | al / | | | | | | | - | |
| Top of Rock = 13.5 Ft. - Top of Rock Elevation = 407.5 Ft. - Top of Rock Elevation = 407.5 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 (0.0/0.5-20190524) sampled using hand auger - | URF DT | | | | Bottom of Hole | at 14.0 Ft. | | | | | | | - | |
| Top of Rock Elevation = 407.5 Ft. - | C SUBS | | | | Top of Rock = 1 | 13.5 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 (0.0/0.5-20190524) sampled using hand auger - | PJ TDE | | | | Top of Rock Ele | evation = 407.5 | 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 (0.0/0.5-20190524) sampled using hand auger - | ZDER.G | | | | | | | | | | | | - | |
| 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 (0.0/0.5-20190524) sampled using hand auger - | DECO | | | | | | | | | | | | - | |
| 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 (0.0/0.5-20190524) sampled using hand auger - | JOF | | | | | | | | | | | | _ | |
| 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 (0.0/0.5-20190524) sampled using hand auger | 5568286 | | | 1: E = | Environmental Sa | mple Custodv (| two Spli | t Spoons mav be i | required to | obtain sufficient s | ample | e) | - | |
| 2. a, b, c denote spin spoon divided between Environmental and Geotechnical Samples 3: Depths are reported in feet below ground surface 4: Grab sample (0.0/0.5-20190524) sampled using hand auger | -06 17. | | | G = | Geotechnical San | nple Custody | | vironmentel === C | ootook-i- | l Complea | | , | | |
| 4: Grab sample (0.0/0.5-20190524) sampled using hand auger | ORING | | | ∠: a,o, 3: Dep | ths are reported ir | i feet below gro | veen ⊨n ound sur | face | eolechnica | a oampies | | | - | |
| | A EIP B | | | 4: Gra | o sample (0.0/0.5- | 20190524) sam | npled us | ing hand auger | | | | | - | |
| | EIP BORI | | | 3: Dep 4: Gra | ths are reported in b sample (0.0/0.5- | 1 feet below gro 20190524) sam | ound sur opled us | face ing hand auger | | | | | - | |



| Client Borehole ID N/A Stantec Boring No. JOF-BG06 | | | | | | | | | | | | |
|--|--------------------|-------------|----------|-------------------------------------|----------|---------------|----------|-----------------------|-----------------------|----------|-----------|-------------|
| C | lient | | Tennes | see Valley Authority | B | oring Locati | on | 599,714. | 21 N; 1,417,299 | .68 | E NAD27 | Plant Local |
| P | roject | Number | 175568 | 286 | S | urface Eleva | atior | 1 418.7 ft | Elevatio | n D | Datum | NGVD29 |
| Р | roject | Name | JOF TE | DEC Order | D | ate Started | | 5/30/19 | Comple | ted | 5/31/ | 19 |
| P | roject | Locatio | n Nev | w Johnsonville, Humphreys Co., TN | D | epth to Wat | er | 32.0 ft | Date/Tir | ne | 5/31/ | 19 10:55 |
| l Ir | spect | or D. M | ihalek | Logger _ D. Mihalek | D | epth to Wat | er _ | N/A | Date/Tir | ne | N/A | |
| D | rilling | Contract | or Ge | o Logic (Subcontractor) | D | rill Rig Type | and | d I <u>D</u> GEO | PROBE 6610 | | | |
| C | verbu | ırden Dril | ling and | Sampling Tools (Type and Siz | .e)_[| DT37 Dual Tub | e So | il Sampling | System with 60 | " P\ | VC Liners | 3 |
| R | ock D | rilling an | d Samp | ling Tools (Type and Size) | 2" Direc | ct Push Liner | | | | | | |
| C | verdr | ill Tooling | (Type | and Size) N/A | | | | | Overdrill | De | pth | N/A |
| s | ample | er Hamm | er Type | Weight/ | A | Drop _! | N/A | | Efficiency | | N/A | |
| B | oreho | le Azimu | th | N/A | _ Bo | orehole Incli | nati | ion (from | Vertical) | N/. | A | |
| R | eview | ed By | K. Ca | rey | A | pproved By | | P. Dunne | | | | |
| | | Lithology | | | | Overburden: | 5 | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Graphic | Description | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 | 0.0 | 418.7 | | Top of Hole | | | - | | | | | |
| | 0.5 | 418.2 | | ORGANIC SILT, OL, 10YR 5/6 (yell | lowish | brown), | A. | HA01 | 0.0 - 0.5 | | 0.5 | |
| - 1 | 15 | 417.2 | | | | / | | | | | | |
| | 1.5 | 717.2 | | SILT, ML, 10YR 5/6 (yellowish brow | vn), no | n-plastic, | <u>,</u> | | | | | |
| F 2 | | | | SILTY LEAN CLAY CL 10YB 5/6 (| vellow | ///// | /3.5-20 | DP01 | 00-50 | 0.0 - | 50 | N/A |
| - 3 | | | | low plasticity, medium stiff, moist | yenen | ion browny, | 19053 | 2. 0. | | 5.0 | | |
| | | | | | | | | | | | | |
| - 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | _ |
| | | | | | | | | | | | | |
| - 6 | | | | | | | | | | | | |
| | | | | | | | 6 | | | | | |
| - 7 | | | | | | | .5/8.5-2 | 5500 | 50 400 | 5.0 - | 5.0 | |
| - 8 | | | | | | | 01905 | DP02 | 5.0 - 10.0 | 10.0 | 5.0 | N/A |
| ľ | | | | | | | 30 | | | | | |
| - 9 | 9.0 | 409.7 | | | | | | | | | | |
| | | | | to high plasticity, stiff, moist | n brow | /n), meaium | | | | | | |
| - 10 | | | | | | | | | | | 1 | - |
| - 11 | | | | | | | | | | | | |
| | | | | | | | <u>_</u> | | | | | |
| - 12 | | | | | | | 1.5/13. | | | 10.0 | | - |
| 10 | | | | | | | 5-2019 | DP03 | 10.0 - 15.0 | 0 - 15.0 | 5.0 | N/A |
| - 13 | | | | | | | 0530 | | | | | - |
| - 14 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| - 15 | | | | | | | | | | |) | - |
| _ 16 | | | | | | | | | | | | |
| | | | | | | | | | | | | - |
| 47 | | | | | | | | | | | | |



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| Clien | Client Borehole ID | | | Stantec Boring No. JOF-BG06 | | | | | | | |
|----------------------------|--------------------------------|---|--|-----------------------------|--------------------------|-----------|-------------|--|--|--|--|
| Clien | t Tenne | ssee Valley Authority | Boring Location | on <u>599,714.</u> | 21 N; 1,417,299.6 | 8 E NAD27 | Plant Local | | | | |
| Proje | ect Number 17556 | 8286 | Surface Eleva | tion 418.7 ft | Elevation | Datum_ | NGVD29 | | | | |
| | 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. % | | | | |
| - 17 | | FAT CLAY, CH, 10YR 5/4 (yellowish | brown), medium | 16.5/18. | 15.0 - 20.0 | 5.0 | N/A | | | | |
| - 18 | | to high plasticity, still, moist (Contin | lueu) | 5-20190530 | 6 | | - | | | | |
| - 20 | | | | | | | - | | | | |
| - 21 | | plasticity at 20.0' | vn), nign | | | | - | | | | |
| - 22 | | | | 21.5/23.5-201 | 20.0 - 25.0 | 5.0 | N/A | | | | |
| - 23 - 24 | | | | 90530 | o | | - | | | | |
| - 25 25 | .0 393.7 | SILTY LEAN CLAY CL 7 5YR 8/2 (| pinkish white) | | | | _ | | | | |
| - 26 | | low to medium plasticity, soft, moist | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 2 | | | - | | | | |
| - 27 - 28 | | | | 6.5/28.5-20190530 | 25.0 - 30.0 | 4.9 | N/A | | | | |
| - 29 | 0 200.7 | | | | | | - | | | | |
| - 30 | .0 388.7 | FAT CLAY, CH, 10YR 8/4 (very pale plasticity, soft, wet, Groundwater end | brown), high countered at 32 | | | | _ | | | | |
| ₂ - 32 ¥ | | ft. | | 31.5/33 | e e | | - | | | | |
| 20190530.GDT 11 - 33 | | | | DP07 | 30.0 - 35.0 ² | 4.6 | N/A - | | | | |
| | | | | | | | - | | | | |
| 35 - 35 - 36 - 36 | | | | | | | - | | | | |
| | | | | 36.5/38.5 | 35.0 | | - | | | | |
| 38 - 38 | | | | DP08 | 35.0 - 40.0 | 3.2 | N/A - | | | | |
| A EID BOKIN A EID BOKIN | | | | | | | - | | | | |

Stantec Consulting Services Inc.



Page: 3 of 3

| С | lient E | Borehole | IDN/A | A | Stantec Boring No. JOF-BG06 | | | | | | | |
|--------------|--------------------|-----------|--|--|-----------------------------|-----------------------------------|-------------------------------|---------|-------------|--|--|--|
| C | lient | | Tennes | see Valley Authority | Boring Locatio | on <u>599,714.</u> 2 | 21 N; 1,417,299.68 | BENAD27 | Plant Local | | | |
| P | roject | Number | 175568 | 286 | Surface Elevat | tion <u>418.7 ft</u> | Elevation | Datum_I | NGVD29 | | | |
| | | _ithology | | | Overburden: | Sample ^{1,2} | Depth Ft ³ | Rec. Ft | Blows/PSI | | | |
| Dept | th Ft ³ | Elevation | Graphic | Description | Rock Core: | RQD % | Run Ft | Rec. Ft | Rec. % | | | |
| - 40 - 41 | 41.0 | 377.7 | | Sandatana braum quarta graina | - throughout | 40.0/41.5-20190 | 40.0 - 41.5 | 1.5 | N/A _ | | | |
| | 41.5 | 377.2 | 1: E = G = 2: a,b, 3: Dep 4: Gra | Sandstone, brown, quartz grains Bedrock Refusal / Bottom of Hole at 41.5 Ft. Top of Rock = 41.0 Ft. Top of Rock Elevation = 377.7 F Environmental Sample Custody (tw Geotechnical Sample Custody c denote Split Spoon divided betwee ths are reported in feet below grou b sample (0.0/0.5-20190530) samp | s throughout | equired to obta eotechnical Sa | in sufficient sample mples | €) | | | | |



| С | lient E | Borehole | ID N/A | A | S | tantec Borin | ng No | JOF | -BG07 | | | |
|------------|--------------------|------------|----------|---|--------------------|---------------|------------------|----------------------|-----------------------|----------|-----------|-------------|
| C | lient | | Tennes | ssee Valley Authority | B | oring Locati | on | 599,183. | 13 N; 1,417,833 | .45 | E NAD27 | Plant Local |
| P | roject | Number | 175568 | 3286 | S | urface Eleva | ation | 424.1 ft | Elevatio | n E | Datum_I | NGVD29 |
| P | roject | Name | JOF TE | DEC Order | D | ate Started | | 6/4/19 | Comple | ted | 6/4/19 | 9 |
| P | roject | Location | n Ne | w Johnsonville, Humphreys Co., TN | D | epth to Wat | er _ | N/A | Date/Tir | ne | N/A | |
| l In | spect | or D. M | ihalek | Logger _ D. Mihalek | D | epth to Wat | er _ | N/A | Date/Tir | ne | N/A | |
| D | rilling | Contract | or Ge | o Logic (Subcontractor) | D | rill Rig Type | anc | ID GEO | PROBE 6610 | | | |
| 0 | verbu | rden Dril | ling and | I Sampling Tools (Type and S | ize) | DT37 Dual Tub | oe So | I Sampling | System with 60 |)" P\ | /C Liners | ; |
| R | ock D | rilling an | d Samp | ling Tools (Type and Size) _ | 2" Dire | ct Push Liner | | | | | | |
| 0 | verdri | II Tooling | g (Type | and Size) <u>N/A</u> | | | | | Overdrill | De | pth _ | N/A |
| S | ample | er Hamme | er Type | N/A Weight N | N/A | Drop _I | N/A | | Efficiency | <u> </u> | N/A | |
| B | oreho | le Azimu | th | N/A | B | orehole Incl | inati | on (from | Vertical) | N/. | A | |
| L R | eview | ed By | K. Ca | irey | A | pproved By | | P. Dunne | | | | |
| | | _ithology | | | | Overburden: | S | ample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Graphic | Description | | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 | 0.0 | 424.1 | | Top of Hole | | | - | | | | | |
| | 0.5 | 423.6 | | SILT, ML, 7.5YR 5/4 (brown), non | n-plastic | , very soft, | A ⁴ | HA01 | 0.0 - 0.5 | | 0.5 | |
| - 1 | | | | | 2 (11 | / | | | | | | - |
| - 2 | | | | SILTY LEAN CLAY, CL, 10YR 5/6 | o (yellov moist | vish brown), | 1.5/3 | | | | | - |
| | | | | ······, | , | | 3.5-201 | DP01 | 0.0 - 5.0 | 0.0 - 5 | 4.4 | N/A |
| - 3 | | | | | | | 90604 | | | Ö | | - |
| | | | | | | | | | | | | |
| – 4 | | | | | | | | | | | | - |
| - 5 | 5.0 | 419.1 | | | | | $\left \right $ | | | {{ | 5 | - |
| | | | | non-plastic, stiff, moist | liowisn i | prown), | | | | | | |
| - 6 | | | | | | | | | | | | - |
| - 7 | | | | | | | 6.5/8.5 | | | .5 | | - |
| | | | | | | | 5-2019 | DP02 | 5.0 - 10.0 | 0 - 10. | 5.0 | N/A |
| - 8 | | | | | | | 0604 | | | | | - |
| - 9 | | | | | | | | | | | | - |
| | | | | Sandstone fragments present from | m 9.0' to | o 10.0' | | | | | | |
| - 10 | | | | | | | | | | l ff | Ţ | _ |
| - 11 | | | | | | | | | | | | - |
| | 11.5 | 412.6 | | | | | | | | | | |
| - 12 | | | | LEAN CLAY, CL, 5YR 4/6 (yellow plasticity, very stiff, moist | vish red) | , medium | .5/13.5 | | | 10.0 | | - |
| 12 | | | | plasticity, very still, moist | | | 5-2019 | DP03 | 10.0 - 15.0 |) - 15.0 | 4.2 | N/A |
| 5 13 | | | | | | | 0604 | | | | | |
| - 14 | | | | | | | | | | | | - |
| | 15.0 | 409.1 | | | | | | | | | | |
| - 15 | | | | FAT CLAY, CH, 5YR 5/8 (yellowis | sh red), | medium to | 1 | | | | 1 | _ |
| - 16 | | | | high plasticity, medium stiff, moist | t | | | | | | | - |
| | | | | | | | 6.5/18. | | | | | |
| - 17 | | | | | | | 5-2019 | | 15.0 20.0 | 15.0 - | 5.0 | - |
| L | | | | | | | 10604 | DP04 | 15.0 - 20.0 | 20.0 | 5.0 | IN/A |



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| Client | Borehole ID N/ | Α | Stantec Boring No. JOF-BG07 | | | | | | | |
|------------------------------|-------------------------|---|---|-------------------------|-------------------------------|---------|-------------|--|--|--|
| Client | Tenne | ssee Vallev Authority | Boring Locatio | n 599.183. ⁻ | 13 N: 1.417.833.45 | E NAD27 | Plant Local | | | |
| Projec | Number 17556 | 3286 | Surface Eleval | tion <u>424.1 ft</u> | Elevation | Datum_ | NGVD29 | | | |
| | 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. % | | | |
| - 18 - 19 - 20 - 21 | | FAT CLAY, CH, 5YR 5/8 (yellowish re high plasticity, medium stiff, moist (C | ed), medium to Continued) | | 20 | | - - - | | | |
| - 22 | | | | DP05 | 20.0 - 23.3 | 3.3 | N/A _ | | | |
| - 23 23.0 23.3 | 401.1 400.8 | Sandstone, dark brown, fine grained, \laminated, moist, quartz grains throug | hard, | 90804 | | | - | | | |
| | | Bedrock Refusal / Bottom of Hole at 23.3 Ft. | | | | | _ | | | |
| | | Top of Rock = 23.0 Ft | | | | | | | | |
| | | Top of Rock Elevation = 401.1 Ft. | | | | | - | | | |
| | 1: E = G = 2: a,b | Environmental Sample Custody (two Sp Geotechnical Sample Custody c denote Split Spoon divided between Ei the created of fort below ground ou | lit Spoons may be re nvironmental and Ge | equired to obta | in sufficient sample mples | ÷) | - | | | |
| | 3. De 4: Gra | ab sample (0.0/0.5-20190604) sampled u | sing hand auger | | | | - | | | |
| | | | | | | | - | | | |
| | | | | | | | - | | | |
| 0.GDT 1/8/20 | | | | | | | - | | | |
| RF DT 2019053 | | | | | | | - | | | |
| TDEC SUBSU | | | | | | | - | | | |
| _ORDER.GPJ | | | | | | | - | | | |
| 286_JOF_TDEC | | | | | | | - | | | |
| G LOG 175568. | | | | | | | _ | | | |
| TVA EIP BORIN | | | | | | | - | | | |





Page: 1 of 2

| Client Borehole ID N/A | | | | | | | Stantec Boring No. JOF-BG08 | | | | | | |
|------------------------|-----------------|------------|-----------|----------------------------------|-------------------------------|-------------------------|-----------------------------|--------------------|-----------------------|-----------------------|----------|-----------|-------------|
| Clie | ent | | Tennes | see Valley Authority | у | | Boring Locati | on | 598,957. | 44 N; 1,412,733 | .58 | E NAD27 | Plant Local |
| Pro | oject | Number | 175568 | 286 | | | Surface Eleva | atio | n 396.3 ft | Elevatio | on E | Datum I | NGVD29 |
| Pro | oject | Name | JOF TE | EC Order | | | Date Started | | 5/22/19 | Comple | ted | 5/22/ | 19 |
| Pro | ject | Location | n Nev | w Johnsonville, Hun | nphreys Co., 1 | ΓN | Depth to Wat | er | N/A | Date/Ti | me | N/A | |
| Ins | pect | or D. M | ihalek | Logger | D. Mihalek | | Depth to Wat | er | N/A | Date/Ti | me | N/A | |
| Dril | lling | Contract | or Geo | o Logic (Subcontrac | ctor) | | Drill Rig Type | an | d ID_GEO | PROBE 6610 | | | |
| Ov | erbu | rden Dril | ling and | Sampling Tools | s (Type and | d Size)_ | DT37 Dual Tub | e S | oil Sampling | System with 60 |)" P\ | VC Liners | 3 |
| Ro | ck D | rilling an | d Samp | ling Tools (Type | e and Size) | 2" Di | irect Push Liner | | | | | | |
| Ove | erdri | ll Tooling | g (Type a | and Size) <u>N/A</u> | N | | | | | Overdrill | De | epth | N/A |
| Sai | mple | r Hamm | er Type | <u>N/A</u> | _ Weight _ | N/A | Drop _ | N/A | | Efficiency | | N/A | |
| Boi | reho | le Azimu | th | N/A | | | Borehole Incl | inat | ion (from | Vertical) | N/. | A | |
| Re | view | еа ву | K. Ca | rey | | | Approved By | | P. Dunne | | | | |
| | L | ithology | | | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Depth | Ft ³ | Elevation | Graphic | Description | | | Rock Core: | <u> </u> | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 - | 0.0 | 396.3 | | Top of Hole | | | | - | | | - | | |
| | | | | SILT, ML, 5YR 5 | 5/6 (yellowish r | red), non | -plastic, very | ₽, | HA01 | 0.0 - 0.5 | | 0.5 | |
| - 1 | | | | sun, ary | | | | | | | | | - |
| | | | | | | | | _ | | | | | |
| - 2 | | | | | | | | .5/3.5-2 | 0004 | 00 50 | 0.0 | | - |
| _ 3 | | | | | | | | 201905 | DP01 | 0.0 - 5.0 | - 5.0 | 5.0 | N/A |
| | | | | | | | | 22 | | | | | |
| - 4 | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | |
| - 5 - | 5.0 | 391.3 | | | 5VR 5/4 (red | Idish brov | wn) non to | $\left\{ \right\}$ | | | # | 1 | _ |
| | | | | low plasticity, ve | ry stiff, moist | | wirj, nori to | | | | | | |
| - 6 | | | | | | | | | | | | | - |
| - 7 | | | | | | | | 6.5/ | | | | | |
| | | | | | | | | 8.5-20 | DP02 | 5.0 - 10.0 | 5.0 - 1 | 5.0 | N/A |
| - 8 | | | | | | | | 190522 | | | 0.0 | | - |
| | 8.5 | 387.8 | | | | oddiab b | rown) low | | | | | | |
| - 9 | | | | plasticity, stiff, m | oist | | 10w11), 10w | | | | | | - |
| 10 | | | | | | | | | | | | | _ |
| | | | | | | | | | | | | | |
| - 11 | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | |
| - 12 | 10 5 | 202.0 | | | | | | 1.5/13 | | | 10 | | - |
| | 12.5 | 303.0 | | CLAYEY SAND | SC 7 5YR 5/ | 4 (brown |) fine to | .5-2019 | DP03 | 10.0 - 15.0 | 0 - 15.0 | 5.0 | N/A |
| - 13 | | | | medium, mediun | n dense, mois | t, Fine ch | nert fragments | 0522 | | | | | - |
| - 14 | | | | at 13 to 15 ft | | | | | | | | | - |
| | | | | | | | | | | | | | |
| - 15 | 15.0 | 381.3 | | | | | | | | | | 4 | - |
| | | | | POORLY GRAD 5/4 (brown), verv | ⊢D GRAVEL / fine to coarse | vvi FH SII e, loose. | LT, GP, 7.5YR moist | | | | | | |
| | | | 1 | , <i>,, ,</i> | _ | . , | | | | I | 1 10 | Л | |

Stantec Consulting Services Inc.



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| Client Borehole ID N/A | | Stantec Boring No. JOF-BG08 | | | | | | | |
|---|--|--|-----------------------|------------------------------------|---------|------------------|--|--|--|
| Client Tennessee | Valley Authority | Boring Location 598,957.44 N; 1,412,733.58 E NAD27 Plant Local | | | | | | | |
| Project Number175568286 | _ Surface Elevation 396.3 ft Elevation Datum NO | | | | | | | | |
| 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. % | | | |
| - 16 16.5 379.8 •••• 17.0 379.3 L | | ncountered at | DP04 | 15.0 - 17.0 ^{15.0} - 17.0 | NR | N/A [–] | | | |
| | 7 ft. Bedrock Refusal / Bottom of Hole at 17.0 Ft. | | | | | _ | | | |
| T | op of Rock = 16.5 Ft. op of Rock Elevation = 379.8 Ft. | | | | | _ | | | |
| 1: E = Env G = Geo 2: a,b,c de 3: Depths 4: Grab sa | vironmental Sample Custody (two Spli otechnical Sample Custody note Split Spoon divided between En are reported in feet below ground sur ample (0.0/0.5-20190524) sampled us | t Spoons may be re vironmental and Ge face ing hand auger | equired to obtai | n sufficient sample nples |) | - | | | |
| | | | | | | - | | | |
| | | | | | | - | | | |
| 07.81 | | | | | | - | | | |
| 1 12:05:06:10 1 2:0-4:1 | | | | | | - | | | |
| EKGAT TEC JUST | | | | | | - | | | |
| | | | | | | - | | | |
| TVA EP BORING LOG 1700 | | | | | | - | | | |

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| | lient F | Rorehole | | A | Stantec Borin | a No | JOF | -BG09 | | | |
|--|--|-----------|--------------|--|---|------------|----------------------|-----------------------|-------------------------|---------------------|-----------|
| Client Tennessee Valley Authority | | | | Boring Location 594.079.91 N: 1.416.560.06 E NAD27 Plant Local | | | | | | | |
| | Project Number 175569296 | | | | Surface Elevation 409.0 ft Elevation Datum NOVD20 | | | | | | |
| Project Number 175568286 | | | | | | | | | | | |
| | Project Name JOF TDEC Order | | | Date Started 8/23/19 | | | | | 19 | | |
| | Project Location New Johnsonville, Humphreys Co., IN | | | | Depth to Water <u>N/A</u> D | | | Date/Tin | Date/Time N/A | | |
| | Ispeci Irilling | Contrac | tor Ge | LOgger | Depth to Wate | ei Land | | Date/ III | le | | |
| | Drilling Contractor Geo Logic (Subcontractor) Drill Rig Type and ID Geoprobe 6610D1 | | | | | | | | | | |
| | Overburden Drilling and Sampling Tools (Type and Size) Macro Core 2.0" OD with 60" PVC liners | | | | | | | | | | |
| | Rock Drilling and Sampling Tools (Type and Size) N/A Overdrill Tooling (Type and Size) N/A | | | | | | | | | N/A | |
| | amnle | r Hamm | er Type (| N/A Weight N/A | Drop | N/A | | Efficiency | שט א | рит <u>'</u> І/А | |
| | oreho | le Azimu | ith | N/A | Drop | inatio | n (from | Vertical) | N/A | A | |
| | Review | ved By | K. Ca | rev | Approved By | P | . Dunne | | | | |
| | | | | | | | . 10 | 2 | | | |
| | | Lithology | | | Overburden: | Sa | ample ^{1,2} | Depth Ft [°] | | Rec. Ft | Blows/PSI |
| Dep | oth Ft ³ | Elevation | Graphic | Description | Rock Core: | F | RQD % | Run Ft | | Rec. Ft | Rec. % |
| - 0 | 0.0 | 408.9 | | Top of Hole | | T | 114.04 | 0.0.05 | III | 0.5 | |
| | 0.4 | 408.5 | | Topsoil | | A4 | HAUT | 0.0 - 0.5 | (((| 0.5 | |
| - 1 | | | | SILTY FAT CLAY, CH, 7.5YR 4/4 (bro | wn) with 7.5YR | | | | ll | | - |
| - 2 | | | | 7/1 (light gray), high plasticity, hard, m staining, disturbed material. [FILL] | ioist, Iron oxide | 1.5/3 | | | $\rangle\rangle\rangle$ | | _ |
| _ | 2.5 | 406.4 | | | | 3.5-201 | DP01 | 0.0 - 5.0 | 0.0 - 5 | 5.0 | N/A |
| - 3 | | | | SILTY FAT CLAY, CH, 7.5YR 4/6 (stro | ong brown) to | 90823 | | | 6 | | - |
| | | | | TOTR //T (light gray), high plasticity, h | aru, moist | | | | | | |
| - 4 | | | | | | | | | ((| | - |
| - 5 | | | | | | | | | Щ | | _ |
| | | | | | | | | | (((| | |
| - 6 | | | | | | 5.9/ | | | \mathcal{U} | | - |
| - 7 | | | | | | 7.9-20 | DP02 | 5.0 - 8.8 | 5.0 - 8 | 3.8 | N/A _ |
| ľ | | | | | | 19082: | | | | | |
| - 8 | | | | | | | | | | | - |
| | 8.8 | 400.1 | | | | | | | (((| | |
| | | | | Bedrock Refusal / | | | | | | | - |
| 120/20 | | | | Bottom of Hole at 8.8 Ft. | | | | | | | _ |
| 20.00 | | | | | | | | | | | |
| 208102 | | | | | | | | | | | - |
| | | | | | | | | | | | _ |
| | | | | | | | | | | | |
| | | | | | | | | | | | - |
| 5 | | | | | | | | | | | |
| | - 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample) | | | | | | | | | | |
| 1 | | | G = 2 a b | Geotechnical Sample Custody | vironmental and G | Senter | hnical Sa | mples | | | _ |
| 007000 | 3: Depths are reported in feet below ground surface | | | | | | | | | | |
| 4: Grab sample (0.0/0.5-20190823) sampled using hand auger | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | - |
| \$ | | | | | | | | | | | |



SUBSURFACE LOG

| Client Berehala ID N/A Stantas Paring Na JOE-BG10 | | | | | | | | | |
|--|---|-----------|---|-------------------------------|--|------------------------------|-------------------------|--------------|--|
| | | | | Stantec Boring No. JOI - BGTU | | | | | |
| Client Tennessee Valley Authority | | | Boring Locatio | n <u>596,765.</u> | <u>3,765.95 N; 1,415,886.62 E NAD27 Plant Loca</u> | | | | |
| Project | Project Number <u>175568286</u> | | | Surface Eleval | tion <u>374.6 ft</u> | 74.6 ft Elevation Datum NGVI | | | |
| Projec | Project Name JOF TDEC Order | | | Date Started | 5/23/19 | Complete | 23/19 | | |
| Projec | Project Location New Johnsonville, Humphreys Co., TN | | | Depth to Wate | r <u>N/A</u> | Date/Time N/A | | | |
| Inspec | tor <u>K.C</u> | arey | Logger <u>M. Reynolds</u> | Depth to Wate | r <u>N/A</u> | Date/Tim | | A | |
| Drilling | Drilling Contractor Geo Logic (Subcontractor) Drill Rig Type and ID GEOPROBE 6610 | | | | | | | | |
| Overbu | Overburden Drilling and Sampling Tools (Type and Size) DT37 Dual Tube Soil Sampling System with 60" PVC Liners | | | | | | | | |
| | Rock Drilling and Sampling Tools (Type and Size) 2" Direct Push Liner | | | | | | | | |
| Overdr | iii Tooling | g (Type a | | | | | | | |
| Sample | er Hamm | er Type | | Drop _N | A | Efficiency | | | |
| Boreno | | III | | Approved By | | venical) | IN/A | | |
| Review | иеа ву | K. Ca | | Арргочед Ву | P. Dunne | | | | |
| | 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 | 374.6 | | Top of Hole | | | | | | |
| | | | CLAYEY SILT, ML, 7.5YR 4/6 (strong | brown), non to | F HAU1 | 0.0 - 0.5 | 0.0 | ` | |
| | | | low plasticity, medium still, moist | | 1.5/2 | | 221 | | |
| - 2 | | | | | BP01 | 0.0 - 5.0 | 4.6 | 3 N/A | |
| - 3 | | | | | 90523 | i | ⊃\\) | - | |
| - 4 | | | | | | | | - | |
| - 5 5.0 | 369.6 | | | | | | <u>}</u> | _ | |
| - 6 | | | medium plasticity, medium stiff, moist | wri), iow to | | | | - | |
| - 7 | | | | | 5.58.5 | | 2 | - | |
| - 8 | | | | | by DP02 | 5.0 - 10.0 | 4.6 | 3 N/A | |
| | | | | | 523 | | 221 | | |
| 9 | | | | | | | $\rangle\rangle\rangle$ | | |
| - 10 | | | Very stiff, dry at 10.0' | | | | m | _ | |
| - 11 | | | | | ± | | | - | |
| - 12 | | | | | | 10.0 15.0 | | - N/A | |
| - 13 | | | | | DF 03 | 10.0 - 13.0 | 4. | - | |
| 14 14 5 | 360.1 | | | | 32 | | ((| - | |
| ⁸ / ₂ - 15 15.0 | 359.6 | | \neg Shale, dark black brown, very fine gra | ined, / | | | /// | | |
| 0T 2019(| | | \moderately hard, thin bedded, Refusa | at 15 ft. | | | | - | |
| SURF [| | | Bedrock Refusal / | | | | | _ | |
| DEC SUE | | | Bottom of Hole at 15.0 Ft. | | | | | - | |
| H (19) | | | Top of Rock = 14.5 Ft. | | | | | - | |
| ORDER | | | Top of Rock Elevation = 360.1 Ft. | | | | | - | |
| TDEC | | | | | | | | _ | |
| 86_JOF | | | | | | | | - | |
| 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient comple) | | | | | | | | | |
| G = Geotechnical Sample Custody (two opin options may be required to obtain sumple) | | | | | | | | | |
| BORIN | 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 (0.0/0.5-20190524) sampled using hand auger | | | | | | | | |


SUBSURFACE LOG

Page: 1 of 1

| | | | | N1/A | | | | | BG11 | | | |
|-----------------------------------|--------------------|-------------|-----------------------|-------------------|---|-------------------|------------------|-----------------------|-----------------------|-------|-----------|-------------|
| | | | | Stantec Boring No | | | | | | | | |
| Client Tennessee Valley Authority | | | | | see Valley Authority | Boring Locati | on | 596,594. | 13 N; 1,414,502. | 93 | E NAD27 | Plant Local |
| P | roject | Number | 175 | 568 | 286 | Surface Eleva | atio | n <u>369.9 ft</u> | Elevatio | n C | Datum_N | NGVD29 |
| P | roject | Name | JOF | TD | DEC Order | Date Started | _ | 5/23/19 | Complet | ed | 5/23/1 | 19 |
| P | roject | Locatio | n _ | Nev | w Johnsonville, Humphreys Co., TN | Depth to Wat | er _ | N/A | Date/Tir | ne | N/A | |
| Ir | spect | or D. M | lihalek | | Logger D. Mihalek | Depth to Wat | er _ | N/A | Date/Tir | ne | N/A | |
| D | rilling | Contract | tor _ | Geo | o Logic (Subcontractor) | Drill Rig Type | an | d ID GEO | PROBE 6610 | | | |
| C | verbu | irden Dril | lling a | nd | Sampling Tools (Type and Size) | DT37 Dual Tub | e So | oil Sampling | System with 60 | " P\ | /C Liners | |
| R | ock D | rilling an | d Sa | mpl | ling Tools (Type and Size) ^{2" D} | Direct Push Liner | | | | | | |
| | verdri | ill Tooling | д (Ту | be a | and Size) <u>N/A</u> | | | | Overdrill | De | pth _ | N/A |
| S | ample | er Hamm | er Ty | ре | WeightN/A | Drop | N/A | | Efficiency | 1 | N/A | |
| B | oreho | le Azimu | ith _ | | N/A | Borehole Incl | inat | ion (from | Vertical) | N// | Ą | |
| R | eview | ed By | K. | Ca | rey | Approved By | | P. Dunne | | | | |
| | | Lithology | | | | Overburden: | | Sample ^{1,2} | Depth Ft ³ | | Rec. Ft | Blows/PSI |
| Dep | th Ft ³ | Elevation | Grap | hic | Description | Rock Core: | | RQD % | Run Ft | | Rec. Ft | Rec. % |
| | 0.0 | 369.9 | | | Top of Hole | | | | | | | |
| | | | | | SILT, ML, 7.5YR 3/4 (dark brown), nor | n-plastic to low | HA4 | HA01 | 0.0 - 0.5 | - 11 | 0.5 | |
| - 1 | | | | | plasticity, soft to stiff, moist, no staining | g | | | | | | - |
| | | | | | | | <u>,</u> | | | | | |
| - 2 | | | | | | | 5/3.5-2 | | 00-50 | 0.0 - | NR | - NI/A |
| - 3 | | | | | | | 019052 | DIVI | 0.0 - 0.0 | 5.0 | | - |
| | | | | | | | 123 | | | | | |
| - 4 | | | | | | | | | | ll | | - |
| - 5 | | | | | | | | | | - M | | _ |
| ľ | | | | | | | | | | ll | | |
| - 6 | 6.0 | 363.9 | ╟╽ | ┇ | | | $\left \right $ | | | | | - |
| - | | | ∦ ↓↓↓ | ŧ | fine to coarse, very loose, dry, with che | ert fragments | 6.5 | | | | | |
| - / | | | I IIII | | , , , , | 5 | /8.5-20 | DP02 | 50-100 | 5.0 | NR | N/A |
| - 8 | | | ∦↓↓ | ∳ | | | 19052 | 2.01 | | 10.0 | | - |
| | 90 | 360.9 | Ĭ † Ĭ † | | | | ω | | | | | |
| - 9 | 0.0 | 000.0 | | • • • | Sandstone, light grav, verv coarse gra | ined. drv. | | | | | | - |
| 07/8/ | 10.0 | 359.9 | | · · · | quartz grains throughout | | | | | | | |
| 0.GDT | | | | | Bedrock Refusal / | | | | | | | |
| 2019053 | | | | | Bottom of Hole at 10.0 Ft. | | | | | | | - |
| IRF DT | | | | | Top of Rock = 9.0 Ft. | | | | | | | |
| SUBSU | | | | | Top of Rock Elevation = 360.9 Ft. | | | | | | | _ |
| U TDEC | | | | | | | | | | | | |
| DER.GP. | | | | | | | | | | | | |
| DEC_OR | | | | | | | | | | | | - |
| | | | | | | | | | | | | _ |
| 568286 | | | 1: | E = | Environmental Sample Custody (two Spli | it Spoons may be | requ | ired to obta | in sufficient sam | ple) |) | |
| 06 175 | | | 2: | a,b, | c denote Split Spoon divided between En | vironmental and (| Geote | echnical Sa | mples | | | - |
| DRINGL | | | 3: 4· | Dep Gral | oths are reported in feet below ground sur | face | | | | | | - |
| A EIP BI | | | ч. | J. u | | | | | | | | |
| ≱ | | | | | | | | | | | | |



SUBSURFACE LOG

Page: 1 of 1

| | Client F | Borehole | ID N/A | A | Stantec Boring | No JOF | -BG12 | | |
|-------------------|--|-------------|-------------------|---|------------------------------|--|-----------------------|-------------|-------------|
| | Client Tennessee Valley Authority | | | | | Boring Location 594.931.66 N; 1,416.266.42 E NAD27 Plant Local | | | |
| | Project | Number | 175568 | 3286 | Surface Eleva | tion 398 7 ft | Flevation | Datum | NGVD29 |
| | Project | Name | JOF TE | | Date Started | 6/4/19 | Complete | -d 6/4/ | 19 |
| | Project | Location | Ne ^v | w Johnsonville, Humphreys Co., TN | Depth to Wate | er N/A | Oomplex Date/Tim | e N/A | |
| | nspect | or D. Mi | ihalek | Logger D. Mihalek | Depth to Wate | er N/A | Date/Tim | ie N/A | |
| | Drillina | Contract | or Ge | o Logic (Subcontractor) | Drill Rig Type | and ID GEO | PROBE 6610 | | |
| |) Verbu | rden Drill | ling and | Sampling Tools (Type and Size |) DT37 Dual Tube | e Soil Sampling | System with 60" | PVC Line | rs |
| F | Rock D | rilling and | d Samp | ling Tools (Type and Size) 2" | Direct Push Liner | | | | |
| | Overdri | ill Tooling | (Туре | and Size) | | | Overdrill [| Depth | N/A |
| S | Sample | er Hamme | er Type | _N/A WeightN/A | Drop _N | I/A | Efficiency | N/A | |
| E | Boreho | le Azimu | th | N/A | Borehole Inclin | nation (from | Vertical) | N/A | |
| F | Review | ed By _ | K. Ca | irey | Approved By | P. Dunne | | | |
| | | Lithology | | | Overburden: | Sample ^{1,2} | Depth Ft ³ | Rec. F | t Blows/PSI |
| Dep | oth Ft ³ | Elevation | Graphic | Description | Rock Core: | RQD % | Run Ft | Rec. F | t Rec. % |
| - 0 | 0.0 | 398.7 | | Top of Hole | | T | 0.0.05 | | |
| | 0.5 | 398.2 | | SILT, ML, 7.5YR 6/6 (reddish yellow), | , non-plastic, | 5_ HA01 | 0.0 - 0.5 | 0.5 | |
| | | | | | / | 1.5 | | <u>{</u> {} | |
| - 2 | | | | to coarse, loose, dry | ng brown), fine | 3.5-20 | | | - |
| - 3 | | | | | | 19060 DP01 | 0.5 - 5.0 | 3.5 | N/A _ |
| - 4 | | | | | | * | | | - |
| - 5 | | | | | | | | 224 | _ |
| | | | | | | | | 111 | |
| Γ | | | | | | 0 5 | | 221 | |
| - 7 | | | | | | ۳ ۶۰ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ | 5.0 - 10.0 | 2.6 | N/A |
| - 8 | | | | | | 190604 | | B III | - |
| - 9 | 9.0 | 389.7 | | | | - | | | - |
| - 10 | | | ╟┇┟┇ | SILTY SAND, SM, 7.5YR 5/8 (strong coarse, very loose, moist | brown), fine to | | | <u>}}</u> | _ |
| | | | ┇ ┥┇┥┇┥┆ | , , | | | | (((| _ |
| | | | ╟╿╎ | | | ू हा DB03 | 10.0 - 13.6 | 26 | N/A |
| - 12 | | | ₩ | | | 13.5-2 | | 3 | |
| ⁸ – 13 | 13.5 | 385.2 | ┟┋┝┋┝┋ | | | 019060 | | | - |
| 0190530. | 13.6 | 385.1 | | \int Limestone, white, very fine grained, h | iard, moist, | <u> </u> | | | - |
| 4F DT 20 | | | | calcareous |] | | | | _ |
| No Refusal / | | | | | | | | _ | |
| J TDEC | Bottom of Hole at 13.6 Ft. | | | | | | | | |
| DER.GP | Top of Rock = 13.5 Ft. | | | | | | | - | |
| EC_OR | | | | TOP OF ROCK Elevation = 385.2 Ft. | | | | | - |
| JOF_TI | | | | | | | | | - |
| 5568286 | | | 4 - | | 14 On a s | - mala - toto - toto | | 1-) | - |
| 17. LOG 17. | | | 1: E = G = | Environmental Sample Custody (two Sp Geotechnical Sample Custody | bill Spoons may be re | equired to obta | in sufficient samp | ne) | - |
| ORING | | | 2: a,b, 3: Der | c denote Split Spoon divided between El | nvironmental and G Irface | eotechnical Sa | mples | | |
| VA EIP E | 4: Grab sample (0.0/0.5-20190604) sampled using hand auger | | | | | | | | |

APPENDIX D – PHOTOGRAPHIC LOGS

ATTACHMENT D.1

Photographic Logs of Soil Cores



| Client: | Tenne | essee Valley Authority | Project: | TDEC Order |
|--|-------------------------------------|------------------------|-------------------|-----------------------------|
| Site Name: | John: Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 1 | | | | |
| Photo Location: JOF-BG01 | | | | |
| Photo Date: 6/3/2019 | | | | |
| Comments: Photo of first boring location interval (0.0-4 feet) unavailable. Bori refusal at 4.5 feet. | 1.5 ng | | No Photo Applicat | ble |
| Photograph ID: 2 | | | | |
| Photo Location: JOF-BG01 | | | | |
| Photo Date: 6/3/2019 | | | | |
| Comments: Photo of second borin location interval (0.0-4 feet) unavailable. Offs feet to the southwest of first boring. Boring ref at 4.7 feet. | ig I.7 et 7 of the usal | | No Photo Applicat | ble |











| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|--|---|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 7 | | | |
| Photo Location: JOF-BG02 | | | |
| Photo Date: 5/22/2019 | | | |
| Comments: Interval (10.0-15.0 fee The boring ID on the v board should be JOF-BG02. | et). white | | May 22, 2019 at 12:17:46 PM 1953 Dupont Access Rd New Johnsonville TN 37134 |
| Photograph ID: 8 | | | Clintod Otatos |
| Photo Location: JOF-BG02 | | | |
| Photo Date: 5/22/2019 | | | |
| Comments: Interval (15.0-20.0 fee | et). | 135 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | May 22, 2019 at 12:36:51 PM New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|--|--|---|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 9 | | | |
| Photo Location: JOF-BG02 | | | |
| Photo Date: 5/22/2019 | | | |
| Comments: Interval (20.0-25.0 fee Depth shown on white board should be 20.0- | #t). -25.0'. | JOF TOF | TDEC ORDER 5/22/19 5/22/19 5/56-928-6 JOF-BG-07-26 DPC5-20-26- DPC5-0 DF-BG-07-26 DPC5-0 DF-BG-07-26 DPC5-0 DF-BG-07-26 DF-07-26 DF-07-27 DF-07-26 DF-07-27 DF-07-26 DF-07-27 DF- |
| | | | May 22, 2019 at 1:00:00 PM New Johnsonville TN 37134 United States |
| Photograph ID: 10 | | Constraint of the second | |
| Photo Location: JOF-BG03 | | | |
| Photo Date: 5/29/2019 | | | |
| Comments: Interval (0.5-5.0 feet). | Territoria de la construcción de la constru | JOF TDEC ORDER 175549294 5/29/19 JOF-BG-3 DROI 0.5'-5' R:43' | May 29, 2019 at 2:19:01 PM North St New Johnsonville TN 37134 |
| 1 | | The second se | United States |







| Client: | Tenn | essee Valley Authority | Project: | TDEC Order |
|---|---------------|------------------------|-------------------|--|
| Site Name: | John Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 15 | | | | |
| Photo Location: JOF-BG04 | | | | |
| Photo Date: 5/29/2019 | | | | |
| Comments: Photo of interval (0.5- feet) unavailable. | 5.0 | | No Photo Applicat | ble |
| Photograph ID: 16 | | the states | m Antonio | A State of the second s |
| Photo Location: JOF-BG04 | | | | A CARL CONTRACTOR |
| Photo Date: 5/29/2019 | | | | |
| Comments: Interval (5.0-10.0 feet) |). | | TOP TOECS | May 29, 2019 at 10:31:32 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennesse | e Valley Authority | Project: | TDEC Order |
|---|-------------------|--------------------|-------------------------|---|
| Site Name: | Johnsonv Plant | ille Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 17 | | | | |
| Photo Location: JOF-BG04 | | | | |
| Photo Date: 5/29/2019 | | | | |
| Comments: Photo of interval (10.0 feet) unavailable. |)-15.0 | | No Photo Applical | ble |
| Photograph ID: 18 | A.S. | A Contraction | A PARTICIPAL CONTRACTOR | |
| Photo Location: JOF-BG04 | | | | |
| Photo Date: 5/29/2019 | | | | |
| Comments: Interval (15.0-20.0 fee | et). | | | May 29, 2019 at 11:05:56 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|------------------|---|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 19 | | | |
| Photo Location: JOF-BG04 | | | the Meridian |
| Photo Date: 5/29/2019 | | | |
| Comments: Interval (20.0-25.0 fee The boring ID on the board should be JOF-BG04. | et). white | | May 29, 2019 at 11:26:39 AM North St New Johnsonville TN 37134 United States |
| Photograph ID: 20 | | | |
| Photo Location: JOF-BG04 | | | |
| Photo Date: 5/29/2019 | | | |
| Comments: Photo of interval (25.0 feet) unavailable. | D-29.8 | No Photo Applica | ble |



| Client: | Tenne | essee Valley Authority | Project: | TDEC Order |
|---|----------------|------------------------|-------------------|---|
| Site Name: | Johns Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 21 | | | | |
| Photo Location: JOF-BG05 | | | | |
| Photo Date: 5/24/2019 | | | | |
| Comments: Photo of interval (0.5- feet) unavailable. | -5.0 | | No Photo Applical | ble |
| Photograph ID: 22 | | 十一、改革武学的4 | 的上帝的法学 | |
| Photo Location: JOF-BG05 | | | | |
| Photo Date: 5/24/2019 | | | | and the second se |
| Comments: Interval (5.0-10.0 feet | ;). | | | May 24, 2019 at 10:03:28 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|------------------|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 23 | | | a la ser a ser |
| Photo Location: JOF-BG05 | | | |
| Photo Date: 5/24/2019 | | | A Contraction of the second se |
| Comments: Interval (10.0-14.0 fee | et). | TOP THE | May 24, 2019 at 10:14:00 AM North St New Johnsonville TN 37134 United States |
| Photograph ID: 24 | | | |
| Photo Location: JOF-BG06 | | | |
| Photo Date: 5/30/2019 | | | |
| Comments: Photo of interval (0.0- feet) unavailable. | 5.0 | No Photo Applica | ble |



| Client: | Tenne | essee Valley Authority | Project: | TDEC Order |
|---|----------------|------------------------|-------------------|-----------------------------|
| Site Name: | John: Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 25 | | | | |
| Photo Location: JOF-BG06 | | | | |
| Photo Date: 5/30/2019 | | | | |
| Comments: Photo of interval (5.0- feet) unavailable. | 10.0 | | No Photo Applicat | ble |
| Photograph ID: 26 | | | | |
| Photo Location: JOF-BG06 | | | | |
| Photo Date: 5/30/2019 | | | | |
| Comments: Photo of interval (10.0 feet) unavailable. |)-15.0 | | No Photo Applicat | ble |



| Client: | Tenn | essee Valley Authority | Project: | TDEC Order |
|---|---------------|------------------------|-------------------|-----------------------------|
| Site Name: | John Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 27 | | | | |
| Photo Location: JOF-BG06 | | | | |
| Photo Date: 5/30/2019 | | | | |
| Comments: Photo of interval (15.0 feet) unavailable. |)-20.0 | | No Photo Applicat | ble |
| Photograph ID: 28 | | | | |
| Photo Location: JOF-BG06 | | | | |
| Photo Date: 5/30/2019 | | | | |
| Comments: Photo of interval (20.0 feet) unavailable. |)-25.0 | | No Photo Applicat | ble |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|--------------------------------------|------------------------------------|--|---|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 29 | | and the state | |
| Photo Location: JOF-BG06 | | Sector Sector | |
| Photo Date: 5/30/2019 | | | |
| Comments: Interval (25.0-30.0 fee | et). | Jor-Book Drob 25-30 R: 4.9 | May 30, 2019 at 12:39:01 PM North St New Johnsonville TN 37134 United States |
| Photograph ID: 30 | | | |
| Photo Location: JOF-BG06 | | | |
| Photo Date: 5/31/2019 | | | |
| Comments: Interval (30.0-35.0 fee | et). | Jor The original and the second secon | May 31, 2019 at 9:59:41 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|---|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 31 | | | |
| Photo Location: JOF-BG06 | | | |
| Photo Date: 5/31/2019 | | | |
| Comments: Interval (35.0-40.0 fee | et). | JOF TDEC ORD 17556 3226 5/31/19 JOF-BEOG DPOS 35-4 R:3.2 | New Johnsonville TN 37134 United States |
| Photograph ID: 32 | | | |
| Photo Location: JOF-BG06 | | | |
| Photo Date: | | | |
| Comments: Photo of interval (40.0 feet) unavailable. |)-41.5 | No Photo Applicat | ble |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|--|------------------------------------|--|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 33 | | | |
| Photo Location: JOF-BG07 | | | |
| Photo Date: 6/4/2019 | | | |
| Comments: Interval (0.5-5.0 feet). | Bart | | |
| | | TOF | ТДЕС ОРДЕР 75549286 (4/19 NF-BGOT NPOI 0.0-0.5 R:4.4 Вын- |
| | | | Jun 4, 2019 at 10:31:25 AM North St New Johnsonville TN 37134 United States |
| Photograph ID: 34 | T. A. C. S. S. | | |
| Photo Location: JOF-BG07 | | and the second s | |
| Photo Date: 6/4/2019 | | Alexandres - | |
| Comments: Interval (5.0-10.0 feet | | TOF TO 1765 3/4 | EC OPDER 549296 /1A BGOT. 2 5-10 R:5.0 |
| | | | Jun 4, 2019 at 10:39:06 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|--|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 35 | | and the second second | |
| Photo Location: JOF-BG07 | | | |
| Photo Date: 6/4/2019 | | | and the second |
| Comments: Interval (10.0-15.0 fee | et). | JOF TDEC ORDE ITESL928G G (4 / 19 JOF TOF CORDE G (4 / 19 JOF JOE CO DPO3 10- DPO3 10- DPO3 10- C | 2.15 |
| | | | Jun 4, 2019 at 10:49:23 AM North St New Johnsonville TN 37134 United States |
| Photograph ID: 36 | All and the second | and the second of the | |
| Photo Location: JOF-BG07 | | | |
| Photo Date: 6/4/2019 | | | |
| Comments: Interval (15.0-20.0 fee | et). | JOF TDEC ITBELG G (4) JOF-DEC DEC ET | OPDE & 128/6 19 10 15-20 2:5,0' |
| | | | Jun 4, 2019 at 11:00:45 AM North St New Johnsonville TN 37134 United States |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|--|---------------------------------------|---|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 37 | saibis batinu | | |
| Photo Location: JOF-BG07 | ₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩ | WeN | |
| Photo Date: 6/4/2019 | | | |
| Comments: Interval (20.0-23.3 fee Recovery and refusal shown on white board should be 3.3' and 23. respectively. | rt). depth .3', | JOF TDEC OF 17854928 6 (4/19) JOF-BG DPOS RENSA TEP | 20ER 16 26-25 32' 23-2 344 |
| Photograph ID: 38 | | | |
| Photo Location: JOF-BG08 | | | |
| Photo Date: 5/22/2019 | | | |
| Comments: Interval (0.0-5.0 feet). | | TOF TJECO JOF-E DOL TOF-E | May 22, 2019 at 2:59:13 PM 697–737 Herbert Rd New Johnsonville TN 37134 United States |





| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|---|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 41 | | | |
| Photo Location: JOF-BG08 | | | |
| Photo Date: 5/22/2019 | | | |
| Comments: Photo of interval (15.0 feet) unavailable. | 0-17.0 | No Photo Applical | ble |
| Photograph ID: 42 | | | Aug 23, 2019 at 9:34:34 AM |
| Photo Location: JOF-BG09 | | | Undustrial Park Dr Waverly TN 37185 |
| Photo Date: 8/23/2019 | | | United States |
| Comments: Interval (0.0-5.0 feet). | | And Stand And And And And And And And And And A | Sorder Sorder Krannet Krannet |











| Client: | Tenne | essee Valley Authority | Project: | TDEC Order |
|---|---------------|------------------------|-------------------|-----------------------------|
| Site Name: | John Plant | sonville Fossil (JOF) | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 47 | | | | |
| Photo Location: JOF-BG11 | | | | |
| Photo Date: 5/23/2019 | | - | | |
| Comments: Photo of interval (0.0- feet) unavailable. | 5.0 | | No Photo Applicat | ble |
| Photograph ID: 48 | | | | |
| Photo Location: JOF-BG11 | | | | |
| Photo Date: 5/23/2019 | | - | | |
| Comments: Photo of interval (5.0-feet) unavailable. | 10.0 | | No Photo Applicat | ble |



| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|------------------------------------|---|--|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 49 | | | |
| Photo Location: JOF-BG12 | and a street | | |
| Photo Date: 6/4/2019 | | T AND THE PART | and the second second |
| Comments: Interval (0.5-5.0 feet). recovery shown on the white board should be feet. | The e a 3.5 | JOF TDEC.C IT556829 G/4/19 JOF-BGI DPOI O. R:2 | Jun 4, 2019 at 1:09:57 PM |
| | | | Waverly TN 37185 United States |
| Photograph ID: 50 | | | |
| Photo Location: JOF-BG12 | | Carl Kill | |
| Photo Date: 6/4/2019 | | | |
| Comments: Interval (5.0-10.0 feet) | | JOF TDEC 175568 6/4/19 JOF-BG DP02 R: | Jun 4, 2019 at 1:15:56 PM Industrial Park Dr Waverly TN 37185 United States |



ATTACHMENT D.2

Photographic Logs of Soil Cores – Background Wells

New Johnsonville, Tennessee

TDEC Order



Project:

Site Location:

Stantec

Tennessee Valley Authority

Johnsonville Fossil (JOF)

United States

28175 NT Allivnoanhol wAN MA 81:52:01 16 0102 ,02 nuL

Client:

Site Name:











TDEC Order Client: Tennessee Valley Authority Project: Johnsonville Fossil (JOF) Site Location: Site Name: New Johnsonville, Tennessee Plant Photograph ID: 7 Photo Location: JOF-109 Photo Date: June 20.2019 175568286 6/20/2019 JOF TDEC Order JOF-109 5527 390:405 Comments: Interval (39.0-40.5 feet). Blow Count: 14-7-20 Recovery: 1.3 140# Hammer 30-fall 2 spoon Bottom **59** 6 .7 .8 .9 .4 United States Vew Johnsonville TN 37134 North St MA 21:91:11 16 0102 ,02 nuL Photograph ID: 8 Photo Location: JOF-112 Photo Date: 7 8 9 1 2 3 8/27/2019 Comments: 175568.286 NUP Interval (19.5-21.0 feet). JOF TDEC Order JOF- 112 SS 1/4: 19.5-21.0' Blows · 10-10-15 Recovery: 1.3/1.5' New Johnsonville TN 37185 M9 27, 2019 at 2:55:46 PM



Client: **Tennessee Valley Authority Project: TDEC Order** Johnsonville Fossil (JOF) Site Location: Site Name: New Johnsonville, Tennessee Plant Photograph ID: 9 Photo Location: JOF-112 Photo Date: 8/27/2019 4 **Comments:** Interval (21.0-22.5 feet). 17 55 68 286 Got SUP JOF TDEL Order JOF- 112 SS: 15: 21.0'-22.5' Blows: 16-14-11 Recovery: 1.1 / 1.5' einis beiint 8175 NT allivnosninol way M9 14:30:515 6102 ,72 puA Photograph ID: 10 **Photo Location:** JOF-112 Photo Date: 8/27/2019 Comments: 17 55 68 286 Interval (22.5-24.0 feet). RUP JOFTDEL Order SS: 16: 22.5'-24.0' Blows: 9-7-Recovery: 1.5"// JOF- 112 United States 28176 NT <u>Allivnosnnob wak</u> M9 25:31:5 the 9102, 72 puA






| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|---|--|--|---|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 13 | Charles Startes | | |
| Photo Location: JOF-112 | The second secon | The second second | The states |
| Photo Date: 8/27/2019 | | | |
| Comments: Interval (27.0-28.5 fee Refusal at 27.3 feet. | Mg 35:14:5 je 0102 28f75 VT állivnoznio zájtsi2 bájinÚ. | 175568286 JOF TDEC ON LE JOF TDEC ON LE JOF 112 SS1/9: 27 SS1/9: 27 SOF 50+ SOF 50+ O.3 Recovery: 0.3 | Gotton - 140 18 hanne - 30" drop - 27.3 |
| Photograph ID: 14 | the second | | |
| Photo Location: JOF-112 | | The state | |
| Photo Date: 8/27/2019 | a free and | Contraction of the second | We apply the |
| Comments: Interval (28.5-30.0 fee Refusal at 28.9 feet. | et). Pt). | 17556828 JOF TDEL OFTE JOF - 112 SS 20: 28.5 JOH - 28.5 JOH - 20: 28.5 JOH - 28.5 JOH - 0.4 | 6 Gothan-> -140 B home - 3 c" drop - 28.9 |















| Client: | Tennessee Valley Authority | Project: | TDEC Order |
|--------------------------------------|---|---|---|
| Site Name: | Johnsonville Fossil (JOF) Plant | Site Location: | New Johnsonville, Tennessee |
| Photograph ID: 21 | 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | / Jul 9, 2019/at 4:25:06 PM |
| Photo Location: JOF-119 | | | New Johnsonville TN 37 185 United States |
| Photo Date: 7/9/2019 | | | |
| Comments: Interval (43.5-45.0 fee | et). Jriy 9.201 JO JOF-119 Blow Ca Recovery. 140# H | 175568286 F-TDEC Order SS 30 435-45 J. 5 L. 5 L. 5 Bottom | |