

## **Appendix A**

# **Work Plan for Borings and Laboratory Testing**



**Stantec**



Work Plan for Soil Borings  
and Laboratory Testing

Ash Disposal Area 2  
Johnsonville Fossil Plant  
New Johnsonville, Tennessee

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Prepared for:  
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**WORK PLAN FOR SOIL BORINGS AND LABORATORY TESTING  
ASH DISPOSAL AREA 2  
JOHNSONVILLE FOSSIL PLANT  
NEW JOHNSONVILLE, TENNESSEE**

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Boring Plan  
Boring Tabulation

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ASH DISPOSAL AREA 2  
JOHNSONVILLE FOSSIL PLANT  
NEW JOHNSONVILLE, TENNESSEE**

**1. Purpose**

This work plan presents the scope, plan and procedures that will be implemented by Stantec Consulting Services Inc. (Stantec) for retrieval, classification and testing of soil samples for the Ash Disposal Area 2 geotechnical exploration at Johnsonville Fossil Plant.

**2. Overview**

Assessment of Ash Disposal Area 2 at Johnsonville Fossil Plant includes drilling and laboratory testing to support slope stability analyses and construction of a new spillway. Stantec plans to drill the borings with its own resources. Laboratory testing will be conducted at Stantec's USACE-certified laboratory. This plan has been developed so that the drilling, sampling, sample handling, sample storage and laboratory testing are consistent with industry standards.

**3. References**

The following references will be used as a guide in executing the drilling and laboratory testing for this work plan.

ER 1110-1-12	Quality Management 21 Jul 2006 W/ Change1 dated 30 Sept 2007
ER 1110-1-261	Quality Assurance of Laboratory Testing Procedures 15 June 1999
ER 1110-1-8100	Laboratory Investigations and Testing 31 December 1997
EM 1110-1-1804	Geotechnical Investigations 1 January 2001
HSDRSG	HSDRSG Guidelines, EM 1110-1-1804, <i>Geotechnical Investigations</i> , and ER 1110-1-1804, <i>Drilling through Embankments and Levees</i> , 23 October 2007
FFEB SP 7.5.5-01	Handling and Transporting Soil Samples 29 April 2006

**4. Work Plan Features**

**4.1. Drilling and Sampling**

A boring plan and tabulation showing proposed boring locations, depths and other pertinent information is attached to this document. In general, 74 borings are proposed for Ash Disposal Area 2. The following table offers a brief summary of the proposed drilling.

**Table 1. Proposed Borings**

<b>Section</b>	<b>Type of Boring</b>	<b>Proposed No. of Borings</b>
Slope Stability Sections A thru M	Sample Borings	27
	Offset Auger Boring w/Piezometer	26
New Spillway and Siphon Designs (B-1 thru B-21)	Sample Borings	21

Drilling will be performed by a qualified Stantec 2-man drill crew, truck or track-mounted drill rig, with supervision being provided by a geotechnical engineer or geologist. Field personnel will follow Stantec's typical safety procedures for drilling and sampling.

A soil test/sample boring will consist of either three-inch diameter undisturbed tube sampling or Standard Penetration Testing (SPTs) using a two-inch diameter split-tube sampler. In general, samples will be continuous through the dike material and ash deposits (for slope stability borings) and otherwise at 2.5-foot intervals. A hollow-stem auger boring of sufficient diameter is advanced as part of the sampling process. Borings will be advanced at locations shown on the attached boring layout. Each boring will be advanced to the approximate depth shown on the enclosed boring summary. If heaving or "blowback" is detected in any boring, this condition will be controlled by altering the process and pumping drilling mud into the hollow-stem augers. After completion of drilling, the boring will be tremie backfilled using cement-bentonite grout.

Piezometers will be installed in separate auger borings immediately adjacent to stability section borings (except for STN-HM). Piezometers will be constructed using 3/4 - inch diameter schedule 40 PVC slotted screen and riser pipe. The annular backfill will consist of sand filter pack to some distance above the screened zone followed by at least a two-foot bentonite seal. Remaining backfill will be cement-bentonite grout tremied into place.

All collected samples will be labeled with the project number, borehole number, sample number and sample depth interval, and then transported to Stantec's laboratory. Field logs will be maintained by the Stantec field engineer or geologist.

#### **4.2. Soil Laboratory Testing**

The Stantec laboratory facility will receive the collected samples from the field operations. A laboratory technician will log the samples. They will then be staged in the preparation area until testing assignments are made by the geotechnical engineering staff.

A summary of laboratory testing and procedures that are proposed are provided in Table 2. ASTM testing procedures listed in the table will be followed. Laboratory testing assignments will be made by geotechnical engineering staff after drilling is completed.

**Table 2. Proposed Laboratory Testing**

<b>No.</b>	<b>Test</b>	<b>Proposed No. of Tests</b>
1	Natural Moisture Content, ASTM D 2216	1,100
2	Full Classification Testing (Sieve & Hydrometer, Specific Gravity, Atterberg Limits), ASTM D 422, D 4318, D 854	20
3	Unit Dry and Wet Weight (Laboratory Determination on Undisturbed Specimens)	120
4	Triaxial Compression Test, CU with Pore Pressure Measurements, ASTM D 4767	20
5	Unconfined Compressive Strength Testing, ASTM D 2166	60

**4.3. Logging and Reporting of Borings and Laboratory Tests**

Borings logs will be prepared and presented using gINT software. Borings may also be presented graphically on drafted CADD sheets and/or on stability cross-sections. Cross-sections will be surveyed ground profiles by TVA's survey crew. Laboratory testing will be presented on standard data sheets or summarized on stability cross-sections.

**4.4. Subcontractors**

Stantec will not use any subcontractors for this work.

**4.5. Communication**

During the drilling phase, frequent communication will be maintained between Stantec's Project Lead, Geotechnical Task Manager and Drill Crew Supervisor. This will consist of weekly meetings at the drilling site, supplemented by weekend office meetings and evening phone conversations.

**5. Points of Contact**

**TVA Points of Contact:**

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Enclosures





**Johnsonville Fossil Plant  
Proposed Boring Depths**

Boring No./Name	Depth (ft)	Grout and/or Piezometer Installed
STN-B-1	30	Grout
STN-B-2	30	Grout
STN-B-3	30	Grout
STN-B-4	30	Grout
STN-B-5	30	Grout
STN-B-6	30	Grout
STN-B-7	30	Grout
STN-B-8	30	Grout
STN-B-9	30	Grout
STN-B-10	30	Grout
STN-B-11	30	Grout
STN-B-12	30	Grout
STN-B-13	30	Grout
STN-B-14	20	Grout
STN-B-15	20	Grout
STN-B-16	20	Grout
STN-B-17	20	Grout
STN-B-18	20	Grout
STN-B-19	20	Grout
STN-B-20	20	Grout
STN-B-21	20	Grout
STN-AC*	60	Grout and Piezometer
STN-AT*	50	Grout and Piezometer
STN-BC*	60	Grout and Piezometer
STN-BT*	50	Grout and Piezometer
STN-CC*	60	Grout and Piezometer
STN-CT*	50	Grout and Piezometer
STN-DC*	60	Grout and Piezometer
STN-DT*	50	Grout and Piezometer
STN-EC*	60	Grout and Piezometer
STN-ET*	50	Grout and Piezometer
STN-FC*	60	Grout and Piezometer
STN-FT*	50	Grout and Piezometer
STN-GC*	60	Grout and Piezometer
STN-GT*	50	Grout and Piezometer
STN-HC*	60	Grout and Piezometer
STN-HM	45	Grout
STN-HT*	50	Grout and Piezometer
STN-IC*	60	Grout and Piezometer
STN-IT*	50	Grout and Piezometer
STN-JC*	60	Grout and Piezometer
STN-JT*	50	Grout and Piezometer
STN-KC*	60	Grout and Piezometer
STN-KT*	50	Grout and Piezometer
STN-LC*	60	Grout and Piezometer
STN-LT*	50	Grout and Piezometer
STN-MC*	60	Grout and Piezometer
STN-MT*	50	Grout and Piezometer

\* An additional offset boring will be drilled for piezometer installation.