Construction Quality Assurance Plan Revision 0

Johnsonville Fossil Plant
Rock Buttressing
(TVA Project ID 605792)
New Johnsonville, Tennessee

ISSUED FOR CONSTRUCTION

Stantec Consulting Services Inc.
Design with community in mind
www.stantec.com

Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

October 2, 2014

Construction Quality Assurance Plan
Revision 0

Johnsonville Fossil Plant
Rock Buttressing (TVA Project ID 605792)
New Johnsonville, Tennessee

RECORD OF REVISION

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Revision Date	Revision Description
September 12, 2014	Revision A – Initial Draft Submittal
October 2, 2014	Revision 0 – Issued for Construction

Construction Quality Assurance Plan
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Table of Contents

Table of Contents
(Continued)

List of Tables

List of Appendices

Construction Quality Assurance Plan
Revision 0

Johnsonville Fossil Plant
Rock Buttressing Project (TVA Project ID 605792)
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1. Purpose and Scope

This document is a site-specific Construction Quality Assurance (CQA) Plan that addresses construction components of the Rock Buttressing project at the Johnsonville Fossil Plant (JOF).

The CQA Plan defines acceptable construction materials and testing methods along with responsibilities and authority of the Owner and designated Construction Quality Assurance (CQA) personnel. This plan should be considered to represent minimum CQA requirements and shall serve as an outline for use in developing site specific CQA protocols based on conditions encountered during construction. This CQA Plan will be part of the complete construction documents along with the Plans for Construction, Technical Specifications, Storm Water Pollution Prevention Plan (SWPPP), and other referenced specifications or standards.

2. Limitations

The CQA Plan does not include any facility element outside the limits of construction designated in the Plans for Construction.

3. Responsibility and Authority

A summary of CQA personnel and their corresponding roles and responsibilities for this project are presented below.

3.1. Regulatory Agency

Work conducted under the project shall be coordinated with the Tennessee Department of Environment and Conservation (TDEC). A designated Tennessee Valley Authority (TVA) Environmental Specialist shall serve as the regulatory contact.

3.2. Construction Quality Assurance Manager and Team

A qualified professional engineer employed by Stantec Consulting Services Inc. (Stantec) and licensed in the state of Tennessee shall be designated as the CQA Manager. The CQA Manager shall be responsible for documenting quality assurance for the project which includes but is not limited to management of construction monitoring, testing, and related documentation as outlined herein. Collection and review of quality assurance (QA) data received from the installer or manufacturer to

assess conformance with project requirements shall also be a function of the CQA Manager.

The CQA Manager shall develop and sign the Construction Certification Report (CCR) at the completion of the project.

The CQA Manager for this project will be Mr. Stephen Bickel, PE. He can be reached at 502-212-5075. Mr. Bickel is also the Engineer-of-Record for this project.

The CQA Team shall consist of qualified Stantec personnel working under the direct supervision of the CQA Manager. The CQA Team shall be familiar with the design, project conditions, materials utilized, and the functional intent of the respective CQA Plan components. At minimum, the CQA team shall consist of one project engineer and one onsite field representative. The project engineer will be Mr. John Spalding. He can be reached at 502-212-5084. The onsite field representative will be Mr. Norman Puckett. He can be reached at 502-262-5919.

At any time, personnel assignments are subject to change provided qualification requirements are met.

3.3. Owner

The Johnsonville Fossil Plant and its ancillary functions are owned by TVA. TVA shall be responsible for overall management of construction activities and administration as outlined in the project's Contract between the Owner and Contractor.

The Owner's designated representative for the project is the Project Manager who shall be responsible for overall management of the project.

TVA will also appoint a representative to serve as the Construction Manager who will be responsible for overall planning, coordination, and control of construction. This includes the sequence of work, coordination, scheduling, management of cost/time, and contract administration.

3.4. Engineer

The Engineer is the party retained by the Owner that is responsible for the design and preparation of the project Plans for Construction and Technical Specifications (with other various construction documents). The Engineer for this project is Stantec.

3.5. Contractor

The Contractor will be the entity with which TVA has entered into an agreement to construct the Rock Buttressing project. The Contractor shall designate a Site Superintendent responsible for construction activities and communication with the CQA Manager and Construction Manager. Any portion of the work subcontracted to others shall be under the direct supervision of the Contractor.

4. Project Description

The project will take place within the reservation boundary of the JOF Plant. The purpose of the Rock Buttressing project is to provide erosion protection and improve the maintenance for the dike slope adjacent to Kentucky Lake at Ash Area No. 1. The following design and operations issues are being addressed as part of the Rock Buttressing project:

- Clearing and Grubbing – This includes removal of trees, brush, and other vegetation within the limits of construction and disposing of the waste material offsite.
- Fence Removal – This includes the removal of the existing security fence along the crest of the dike to facilitate construction of the rock buttress.
- Rock Buttressing – This includes installing a geomembrane, crushed stone, and riprap on the existing dike slope adjacent to Kentucky Lake.
- Dike Access Road – This includes placing soil fill to raise the elevation of the dike crest and constructing a new crushed stone access road.
- Fence Installation – This includes the installation of a chain link security fence along the dike crest to replace the existing fence removed to facilitate construction.
- Site Stabilization – Crushed stone or sod will be installed in all disturbed areas.

5. Quality Assurance Activities

5.1. Project Meetings

Meetings shall be coordinated and conducted by the Construction Manager or designated representative on a weekly basis. The primary purpose of these meetings is to confirm that all parties involved are familiar with the design, required procedures, and associated CQA objectives along with any safety issues related to construction. Safety professionals designated by the Contractor shall be responsible for specific project safety issues.

Specific topics to be addressed at project meetings shall include a review of the schedule, outstanding Requests for Information (RFIs), outstanding change orders, Contractor submittals, and CQA issues. Those present at the project meetings shall include representatives of the CQA Team, Owner representatives, and the Site Superintendent.

The Construction Manager shall be responsible for documenting the minutes of each meeting and distributing them to the Project Team for inclusion with the project records.

A pre-construction meeting shall be held prior to initiating construction. The CQA Manager, Construction Manager or designated representative, TVA Project Manager, Site Superintendent, and other parties that will actively participate in the construction activities shall attend this meeting.

5.2. Alternative Methods

Consistent with the overall objectives of the project, alternative construction and CQA methods may be used following approval of the TVA Construction Manager. Proposed modifications shall be developed by the CQA Manager and submitted to the Owner for review and approval. Documentation of any modifications shall be retained for inclusion with the project records.

5.3. Contractor and Installer Submittals

Contractor submittals shall be submitted to the Construction Manager or designated representative and distributed to the CQA Manager unless otherwise directed by the Construction Manager. Submittals and shop drawings shall be provided to the CQA Manager a minimum of 10 working days prior to material or product installation or usage, except where stated otherwise in the Technical Specifications. These submittals shall be reviewed and approved by the CQA Manager prior to shipment and/or use of the respective construction materials. Copies of all submittals shall be included with the project records. Required submittals are presented in Appendix A of this plan.

Each submittal or shop drawing shall be delivered with its own individual transmittal. Paper or electronic submittals are acceptable. Submittals sent via electronic mail (email) shall be in portable document format (PDF). File names shall be sequential in the order the submittal was sent and be named according to the following: 'jof_rb_submittal_XXXX_RX.pdf' where 'XXXX' represents the sequential submittal (i.e. '0001', '0002', etc.) and 'RX' is the revision number for that particular submittal (initial submittal will be 'R0'). All reviewed submittals will be returned to the Project Team via email or a file transfer protocol (FTP) site hosted by Stantec.

All submittals and shop drawings shall include at a minimum the following:

- Project Name
- Date of Transmittal
- Name of Supplier/Manufacturer
- Unique Submittal Number/Identifier (should match electronic file naming convention)
- Number and Title of Specification Section (as appropriate)
- Drawing Number and Detail References (as appropriate)

5.4. Conformance Testing

Conformance testing of materials and constructed products shall be conducted at frequencies as specified in Appendix A and documented by the CQA Team. Results of testing shall be reviewed by the CQA Manager to assess conformance with project requirements. Copies of all conformance testing results shall be included with the project records.

5.5. Field Observations – CQA Team

The CQA Team shall observe and document (as outlined herein) construction activities associated with the project. Results shall be reported to the CQA Manager and Construction Manager or designated representative on a daily basis.

The CQA Team shall perform daily observations of the facility. Daily observations are to be documented on a Daily Field Report form approved by the Owner. An example Daily Field Report form is included in Appendix B. Completed Daily Field Report forms shall be included in the project records.

The Non-Compliance Report shall be used as needed to report deficiencies, required remediation, and resolutions to the designated representative for the Contractor and the Owner. An example of a Non-Compliance Report is included in Appendix B. Completed Non-Compliance Reports shall be included in the project records.

Any suspect conditions observed by the CQA Team shall be promptly reported to both the Owner and the CQA Manager.

5.6. Request for Information (RFI) Form – Contractor

The Contractor shall communicate issues such as constructability, discrepancies in the construction documents, requests for design support during construction, etc., to the CQA Manager and Owner using the Request for Information (RFI) form presented in Appendix B of this plan. The CQA Manager will be responsible for responding to the RFI or coordinating with the Owner/Engineer to determine a response. Completed RFI forms and the responses shall be included in the project records.

RFIs shall be filled out in their entirety by the Contractor before submitting to the CQA Manager (with the exception of the 'Reply' section). Denote sections as 'N/A' if not applicable. Attach additional sheets as necessary to provide sufficient detail for scope, schedule, or cost changes for decision making by the CQA Manager and Owner.

6. Product Submittals and Material Testing

The following paragraphs provide a general description of the product submittals, materials testing requirements, and observations to be made by the CQA Team for the major components of this project. The Plans for Construction, Technical

Specifications, and Appendix A of this document provide more specific information and requirements.

6.1. Geomembrane

6.1.1. General

A geomembrane shall be deployed above the layer of river gravel and below the layer of TDOT No. 57 crushed stone in the rock buttressing. Non-woven geotextile fabric or a geocomposite will be installed directly under and directly over the geomembrane to cushion it against the river gravel and crushed stone. Installation and placement of geomembrane panels shall be in accordance with Manufacturer recommendations and the Technical Specifications.

The Installer shall be responsible for loading, unloading, and storing. Upon delivery to the site, and daily during installation, the CQA Manager shall inspect the physical condition of each roll of material. If the protective wrapping is damaged, or if damage to the roll is suspected by the CQA Manager, then the roll shall be separated from the lot for more detailed inspection.

The Installer shall inspect and certify in writing that the surface upon which the geomembrane is to be installed is acceptable. This certification shall be submitted to the CQA Manager prior to initiating the placement of any geomembrane materials. Installation and placement of geomembrane panels shall be in accordance with Manufacturer recommendations and the Technical Specifications.

6.1.2. Quality Assurance Requirements

A minimum of four weeks prior to the anticipated shipment of geomembrane material, the Contractor shall submit samples of the geomembrane for large scale direct shear testing. The CQA Manager shall be responsible for arranging the large scale direct shear testing of supplied manufactured products. A summary of the required submittals are presented in Appendix A of this plan.

The CQA Manager shall record daily observations relative to the condition of geomembrane rolls delivered to the site. These observations shall be compiled with the project records. Laboratory quality assurance testing of the geomembrane will include non-destructive tests of samples in accordance with the Manufacturer's recommendations and the Technical Specifications. The frequency of geomembrane sampling/testing shall be as shown in the testing schedule in Appendix A.

The Installer and the CQA Manager, or their representative, shall visually observe all panels after they have been deployed in final position. The Installer and the CQA Manager, or their representative, shall verify that proper seaming protocols are followed.

The Installer shall submit complete records on all repairs, overlap locations, and panel placement.

The Installer shall prepare record drawings indicating the location of all field panels, seams, sample locations, penetrations, patches and repairs, and a typical anchor trench detail. The CQA Manager shall review the record drawings for accuracy. The Installer shall certify the record drawings.

6.1.2.1. Large Scale Direct Shear Testing

Samples of the geomembrane, geotextile (or geocomposite), crushed stone, river gravel, and subgrade material shall be provided by the Contractor/Installer or Purchasers and sent by the CQA Manager to a certified laboratory for large scale direct shear testing to determine the composite strength envelope (combination of internal friction angle and cohesion/adhesion) for the respective components. The CQA Manager will compare the results of large-scale direct shear testing of all critical interfaces following the protocols outlined below:

- Soil and CCP substrates for use in geosynthetic interface testing shall be compacted to 90% of maximum dry density at 4% above optimum moisture content as determined by standard proctor ASTM D698.
- Geosynthetic materials shall be oriented in the shear box consistent with the proposed deployment/slope alignment. (Shear in the direction in which material will be deployed).
- Normal Loads: 100 psf, 200 psf, 500 psf.
- Shear in a submerged condition following a 24-hour submerged seating period at each respective normal load.
- Shear Rate: 0.04 in/min.

Laboratory reports shall include a narrative describing the test procedures, as well as post-test observations of the failure surface and method used to fit the failure envelope line to the test data. Laboratory reports shall include color photographs of both material surfaces taken immediately following the test.

The minimum required interface strengths are presented in Appendix A.

6.2. Geotextiles

6.2.1. General

Geotextile fabric shall be deployed between the subgrade and aggregate in the toe key. Geotextile fabric shall also be installed as a cushion layer above and below the geomembrane, and around the anchor trench. Geotextile fabrics shall meet the requirements set forth in the Technical Specifications.

6.2.2. Quality Assurance Requirements

The Contractor shall submit current documentation from suppliers regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

6.3. Geocomposite Drainage Media

6.3.1. General

A geocomposite drainage media (geocomposite) may be used in lieu of the geotextile fabric for cushion application. The Installer shall be responsible for loading, unloading and storing. Upon delivery to the site, and daily during installation, the CQA Manager shall inspect the physical condition of each roll of material. If the protective wrapping is damaged, or if damage to the roll is suspected by the CQA Manager, then the roll shall be separated from the lot for more detailed inspection. The Installer shall inspect and certify in writing that the surface upon which the geocomposite is to be installed is acceptable. This certification shall be submitted to the CQA Manager prior to initiating the placement of any geocomposite. Installation and placement of geocomposite panels shall be in accordance with Manufacturer recommendations and the Technical Specifications.

6.3.2. Quality Assurance Requirements

The CQA Manager shall be provided representative conformance samples for testing. Required submittals are presented in Appendix A of this plan. The Installer and the CQA Manager, or their representative, shall visually observe all panels after they have been deployed in final position. The Installer and the CQA Manager, or their representative, shall verify that proper seaming protocols are followed. The Installer shall submit complete records, including red line drawings, on all repairs, overlap locations, and panel placement.

6.4. Turf Materials

6.4.1. General

Sod meeting the requirements set forth in the Technical Specifications will be installed in all disturbed areas as shown on the Plans for Construction.

6.4.2. Quality Assurance Requirements

The Contractor shall submit current documentation from suppliers regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

The CQA Team shall observe vegetative cover soil preparation, fertilizer and lime application, and sodding activities to confirm appropriate vegetation procedures per the project requirements.

6.5. Chain Link Fence and Swing Gate

6.5.1. General

Chain link fence and a swing gate meeting the requirements set forth in the Technical Specifications will be installed along the dike crest as shown on the Plans for Construction. Chain link fence shall be installed by a qualified Installer.

6.5.2. Quality Assurance Requirements

The Contractor shall submit certification documentation from suppliers regarding acceptability of the subject materials for the project to the CQA Manager. The Contractor shall submit shop drawings showing all information necessary for fabrication, layout, and installation of the chain link fence and swing gate. Required submittals are presented in Appendix A of this plan.

6.6. Soil

6.6.1. General

Clay fill and vegetative cover soil shall be placed in areas shown on the Plans for Construction. Clay fill shall consist of low permeability soil ($k \leq 1x10^{-7}$ cm/sec). Placement of fill shall be in accordance with the Technical Specifications.

Each lift of material shall meet the minimum requirements established in the testing schedule presented in Appendix A of this plan.

6.6.2. Quality Assurance Requirements

Compaction testing of each lift shall be conducted by a member of the CQA team. Compacted materials shall be tested at the minimum frequency specified in Appendix A of this plan. Materials for subsequent lifts shall not be placed by the Contractor until testing results of the previous lift meet the requirements in Appendix A.

6.7. Riprap

6.7.1. General

Riprap shall conform to the requirements in the Tennessee Department of Transportation (TDOT) "Standard Specifications for Road and Bridge Construction" (Standard Specifications), current edition. Riprap sizes specified for construction include TDOT Class A-1 Riprap and Class B Riprap.

6.7.2. Quality Assurance Requirements

The Contractor shall submit certification documentation from the Supplier regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

The CQA Team shall observe and document that the placement of riprap is in accordance with the Plans and Technical Specifications.

6.8. Crushed Stone

6.8.1. General

Crushed stone shall conform to the requirements in the TDOT Standard Specifications, current edition. Crushed stone sizes include TDOT No. 57, No. 2 (or No. 3), and crusher run.

6.8.2. Quality Assurance Requirements

The Contractor shall submit certification documentation from the supplier regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

The CQA Team shall observe and document that the placement of crushed stone is in accordance with the Plans and Technical Specifications.

6.9. River Gravel

6.9.1. General

River gravel shall be placed in the locations shown on the plans. River gravel shall consist of natural gravel dredged from the Tennessee River, and shall conform to the requirements set forth in the Technical Specifications.

6.9.2. Quality Assurance Requirements

The Contractor shall submit certification documentation from suppliers regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

6.10. Erosion and Sediment Control Measures

6.10.1. General

Erosion and sediment control measures are shown on the Plans for Construction and are described in the SWPPP. These control measures include silt fence and silt control rock bags.

Erosion and sediment control products shall meet the requirements set forth in the Technical Specifications.

6.10.2. Quality Assurance Requirements

The Contractor shall submit certification documentation from suppliers regarding acceptability of the subject materials for the project to the CQA Manager. Required submittals are presented in Appendix A of this plan.

The CQA Team shall observe all constructed sediment control structures and overall site drainage conditions at a minimum of once each week. Observations of sediment control structures and overall site drainage conditions shall be made by JOF plant personnel within 24 hours of every 0.5-inch or greater precipitation event.

7. Tolerances

Allowable construction tolerances shall follow industry standard guidelines unless specifically listed in Table 1. The following guidelines shall be referenced for allowable tolerances for each construction component.

Table 1. Construction Tolerances

Item	Construction Tolerance
Soil Final Grade	±0.1 feet
Riprap Final Grade	+0.5 feet
Crushed Stone Roadway	+0.25 feet

8. Project Documentation

Project documentation shall be obtained and maintained by the CQA Manager and copied to the Owner during all phases of construction. This documentation shall include:

- Daily construction field reports
- Photographic documentation
- Contractor submittals and Installer submittals
- Material conformance data
- Material test results
- Geomembrane panel layouts
- Field Test results from geomembrane installation
- Contractor Requests for Information
- Design and/or specification modifications
- Non-compliance reports
- Meeting minutes
- Survey data
- Record drawings

The CQA Manager shall prepare a Construction Certification Report (CCR) at the completion of this project. This report shall include construction observations and the evaluations performed and the results obtained. This report shall also contain a statement which indicates that the construction was performed in general conformance with the Plans for Construction and Technical Specifications. The CQA Manager will also prepare Record Drawings based on information gathered in the field and as-built surveys provided by the Contractor, Installer and Owner.

The following statement shall be provided at the end of the report:

I, _____, hereby certify that I am a licensed engineer in the State of Tennessee. To the best of my knowledge, information, and belief the documentation submitted in this report indicates construction operations were performed in general conformance with the intent of the approved plans and specifications.

Appendix A

Contractor Submittals and Material Testing Schedule

Construction Quality Assurance Plan
Rock Buttressing
Johnsonville Fossil Plant
New Johnsonville, Tennessee

Contractor Submittals (page 1 of 3)

MATERIAL	REQUIREMENTS	SPECIFICATION REFERENCE	MINIMUM FREQUENCY
Access Road			
Access Road and Maintenance Plan	Contractor's Plan and all other available documentation to demonstrate that the supplied Plan meets project requirements.	per Technical Specifications, Section 012200	1/ Contractor
Erosion Control and Sediment Containment			
Silt Fence with Wire Backing and Silt Control Rock Bag	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 312500	1/ Supplier
Site Clearing			
Disposal Plan	Documentation identifying off-site disposal locations(s) and copies of disposal site permits.	per Technical Specifications, Section 311000	1/ Contractor
Aggregate Materials			
Crusher Run	Supplier certification from representative sample of source material and letter issued by TDOT verifying material meets requirements.	per TDOT Standard Specifications, Section 903.04 (Type B, Grading D)	1/ Supplier / Source
No. 57 Crushed Stone and No. 2 (or No. 3) Crushed Stone	Supplier certification from representative sample of source material and letter issued by TDOT verifying material meets requirements.	per TDOT Standard Specification, Section 903.22 (Table 1)	1/ Supplier / Source
Class A-1 Riprap	Supplier certification from representative sample of source material and letter issued by TDOT verifying material meets requirements.	per TDOT Standard Specifications, Section 709.03	1/ Supplier / Source
Class B Riprap	Supplier certification from representative sample of source material and letter issued by TDOT verifying material meets requirements.	per TDOT Standard Specifications, Section 709.03	1/ Supplier / Source
River Gravel	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements	per Technical Specifications, Section 312000	1/ Supplier / Source
Chain Link Fence			
Qualification Data	Installer's qualifications.	per Technical Specifications, Section 323113	1/ Contractor
Product Data	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 323113	1/ Contractor / Supplier
Shop Drawings	Drawings detailing all necessary information for the fabrication, layout, and installation of chain link fence and swing gate.	per Technical Specifications, Section 323113	1/ Contractor
Geotextile Fabric			
Non-woven Geotextile (cushion application)	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 314000	1/ Supplier / Product
Sample for Shear Box Test	Sample size to be specified by CQA Manager	per Technical Specifications, Section 314000	1/ Supplier / Product
Non-woven Geotextile (separator application)	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 314000	1/ Supplier / Product

Construction Quality Assurance Plan
Rock Buttressing
Johnsonville Fossil Plant
New Johnsonville, Tennessee

Contractor Submittals (page 2 of 3)

MATERIAL	REQUIREMENTS	SPECIFICATION REFERENCE	MINIMUM FREQUENCY
Geomembrane			
Product Data	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 310530	1/ Supplier / Product
Sample for Shear Box Test	Sample size to be specified by CQA Manager.	per Technical Specifications, Section 310530	1/ Supplier / Product
Proposed Layout and Installer Plan	Installation layout drawings and Installer's geosynthetic field installation quality control installation plan.	per Technical Specifications, Section 310530	1/ Supplier / Product
Certifications and As-Builts	Installer's certification, material and installation warranties, as-builts.	per Technical Specifications, Section 310530	1/ Contractor
Geocomposite			
Sample for Shear Box Test	Sample size to be specified by CQA Manager.	per Technical Specifications, Section 314000	1/ Supplier / Product
Panel Orientation Plan	Installation layout drawings and seaming details. Submit as-built drawings after installation.	per Technical Specifications, Section 314000	1/ Supplier / Product
Turf and Grasses (Includes Sod and Soil Amendments)			
Qualification Data	Installer's qualifications.	per Technical Specifications, Section 329200	1/ Contractor
Product Data	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications, Section 329200	1/ Supplier / Product
Agronomic Soil Testing	Soil nutrient test results with recommendations.	per Technical Specifications, Section 329200	1/ Project
Precast Concrete Barrier			
Product Data	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Plans for Construction	1/ Supplier / Product

Construction Quality Assurance Plan
Rock Buttressing
Johnsonville Fossil Plant
New Johnsonville, Tennessee

Testing Requirements (page 3 of 3)

MATERIAL	PROPERTY	TEST METHOD	VALUE / SPECIFICATION REFERENCE	MINIMUM FREQUENCY[1]
Large Scale Direct Shear Testing	Shear Interface	ASTM D5321	Interface Friction Angle: Subgrade to River Gravel: ≥24° River Gravel to 16 oz. Geotextile[2]: ≥24° 16 oz. Geotextile[2] to Geomembrane: ≥24° 16 oz. Geotextile[2] to No. 57 Crushed Stone: ≥24°	1/ Interface
Geomembrane	Peel Strength	ASTM D6392	Per Technical Specifications, Section 31 05 30	1/ Test Strip
	Shear Strength	ASTM D6392	Per Technical Specifications, Section 31 05 30	1/ Test Strip
	Non-Destructive Testing	ASTM D5641, ASTM D5820	per ASTM standard	Each Seam
Clay Fill	Classification	ASTM D2487	CL or CH	1/ Source
	Permeability	ASTM D5084	$1x10^{-7}$ cm/sec (max.)	1/ Source
	Density and Moisture	ASTM D6938	95% (min.) Standard Proctor dry density and within established permeability window.	5/ Lift (spaced evenly along dike crest)
Products Delivered to Site	Defects	Visual Observation	No defects	1/ Product Delivery
	Conformance to Submittals	Visual Observation	Conforms to Plans	1/ Product Delivery

Notes:
(1) Testing frequency may be adjusted as directed by the CQA Manager.
(2) Owner-provided geocomposite may be used in lieu of the 16 oz. geotextile.

Appendix B

CQA Documentation

Stantec
10509 Timberwood Circle
Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000

Daily Field Report
Activities and Observations

Owner:		
Distribution:		

Project No.:	Rep No.:	Page No: of
Project Name:		
Location or Address:		
Date:	Day of the Week:	
Weather:	Temperature:	

Client: Tennessee Valley Authority	Stantec Project Manager/Engineer:
General Contractor:	Stantec Lab Supervisor:
GC Rep.:	Stantec Field Representative:

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By:	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☐ Yes

Did you observe anything unexpected? ☐ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☐ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

Stantec
10509 Timberwood Circle
Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000

Daily Field Report
Activities and Observations

Project Name:	Project No:	Page No: of
Stantec-Field Personnel:	Report No:	Date:

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Stantec-Field Representative's Activities

Arrive	
Depart	

Notice:
Stantec professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations and sequences of construction.

☐ This Field Report is Preliminary A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	Stantec Field Representative	Date
☐ This Field Report is Final A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	Reviewed By	Date

Stantec

10509 Timberwood Circle
Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000

Daily Field Report
Field Density Test

Project Name:	Project No:	Page No: of
Field Representative:	Report No:	Date:

Test No.	Test Location / Provided By:	Dry Density (pcf)	Moisture (%)	Proctor Density (pcf)	Optimum Moisture (%)	Compaction (%)	Required Compaction (%)	Pass or Fail

Remarks:

TVA CONFIDENTIAL INFORMATION

Stantec

10509 Timberwood Circle
Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000

Daily Field Report
Site Sketch

Project Name:	Project No:	Page No: of
Field Representative:	Report No:	Date:

Approximate Scale
1 Block = ft.

Stantec
10509 Timberwood Circle
Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000

Daily Field Report
Plan View Drawing

Project Name:	Project No:	Page No: of
Field Representative:	Report No:	Date:

QA Team
Non-Compliance Report

Owner: Tennessee Valley Authority	
Distribution:	

Project No.:	Rep No.:	Page No: 1 of 1
Project Name:		
Location or Address: Ash Area No. 1, Johnsonville Fossil Plant		
Date:	Day of the Week:	
Weather:	Temperature:	

Item:

Deficiencies

Proposed Resolution(s)

Date Remediated:

Print Name

Signature

Tennessee Valley Authority **Johnsonville Fossil Plant**

Request for Information (RFI)		
RFI No:	**Submitted By:**	**Date:**
Project: JOF Rock Buttressing	**Area/Task:**	
Subject:		
References (drawings/specs/conditions/assumptions):		
Issues/Concerns:		
Sender's Recommendation(s):		
Reply:		
Signature:		**Date:**
Other Comments:		
FDC Received Date/Initial:		

For Construction Purposes Only - Impact(s)	RFI No:
Project:	
Area/Task:	
Date:	
Scope/MOA: (yes/no description):	
Q.A. Requirements:	
Safety: (yes/no description):	
Schedule: (yes/no description):	
Cost: (yes/no description):	