



Memorandum from the Office of the Inspector General

June 27, 2011

Robert M. Deacy, Sr., LP 5D-C

FINAL REPORT – INSPECTION 2009-12910-05 – PEER REVIEW OF JOHNSONVILLE FOSSIL PLANT DIKE STABILITY IMPROVEMENTS

Attached is the subject final report for your review and action. Your written comments, which addressed your management decision and/or actions taken, have been included in the report. No further action is needed.

The Office of the Inspector General (OIG) contracted with Marshall Miller & Associates, Inc., to conduct this review. All work pertaining to this review was conducted by Marshall Miller. The OIG relied on Marshall Miller's processes and procedures for quality control in the attached report. Information contained in this report may be subject to public disclosure. Please advise us of any sensitive information in this report that you recommend be withheld.

If you have any questions, please contact Deana D. Scoggins, Senior Auditor, at (423) 785-4822 or Greg R. Stinson, Director, Inspections, at (865) 633-7367. We appreciate the courtesy and cooperation received from your staff during this review.

Robert E. Martin

Robert E. Martin
Assistant Inspector General
(Audits and Inspections)
ET 3C-K

DDS:FAJ
Attachment
cc: See page 2

Robert M. Deacy, Sr.
Page 2
June 27, 2011

cc (Attachment):

Robert J. Fisher, LP 3K-C
Michael B. Fussell, WT 9B-K
Kimberly S. Greene, WT 7B-K
Peyton T. Hairston, Jr., WT 7B-K
John C. Kammeyer, LP 5D-C
Tom Kilgore, WT 7B-K
William R. McCollum, Jr., LP 6A-C
Annette L. Moore, LP 3K-C
Richard W. Moore, ET 4C-K
Emily J. Reynolds, OCP 1L-NST
John M. Thomas III, MR 6D-C
Robert B. Wells, WT 9B-K
Wendy Williams, WT 9B-K
OIG File No. 2009-12910-05

Mr. John Montgomery, Stantec

**Peer Review of Stantec Consulting Services, Inc.
Plans for Construction - Northeast Dike Stability Improvements
Ash Disposal Area No. 2**

**Tennessee Valley Authority Johnsonville Fossil Plant (JOF)
New Johnsonville, Humphreys County, Tennessee**



Prepared for:



**TVA Office of the Inspector General
Knoxville, Tennessee**

Prepared by:



Project No.: TVA106-07

**Effective Date:
September 8, 2010**

**Date of Issuance:
June 21, 2011**

Marshall Miller & Associates, Inc.
ENERGY/ENVIRONMENTAL/ENGINEERING/CARBON MANAGEMENT

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Raleigh, NC 27617
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Item 1: TITLE PAGE

Title of Report

Peer Review of Stantec Consulting Services, Inc. (Stantec)
Plans for Construction - Northeast Dike Stability Improvements
Ash Disposal Area No. 2
Johnsonville Fossil (JOF) Plant
New Johnsonville, Humphreys County, Tennessee
Revision R1 dated March 12, 2010, and Calculation Package dated January 26, 2010

Project Location

The project site is located in New Johnsonville, Humphreys County, Tennessee, on the eastern shore of Kentucky Lake.

Effective Date of Report

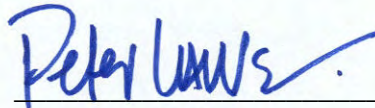
September 8, 2010

Qualified Persons



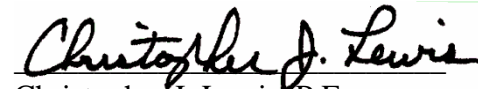
William S. Almes, P.E.

Formerly:
*TVA OIG Contract Manager
Senior Engineer & Director of
Geotechnical Services
Marshall Miller & Associates, Inc.*



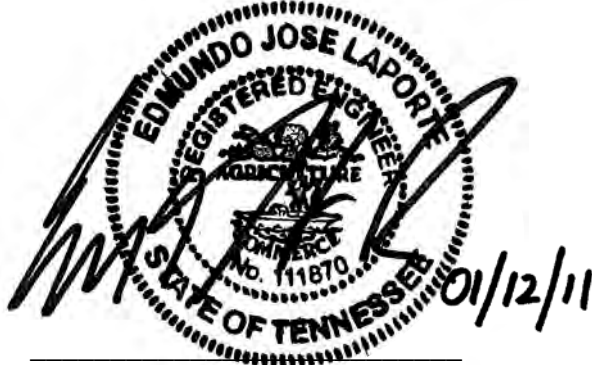
Peter Lawson.

*Executive Vice President
Principal-in-Charge
Marshall Miller & Associates, Inc.*



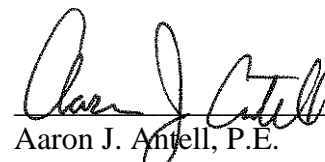
Christopher J. Lewis, P.E.

Formerly:
*Principal Engineer
D'Appolonia, Engineering Division of
Ground Technology, Inc.*



Edmundo J. Laporte, P.E.

Formerly:
*Senior Engineer
Marshall Miller & Associates, Inc.*



Aaron J. Antell, P.E.

*Project Engineer
D'Appolonia, Engineering Division of
Ground Technology, Inc.*



Item 2: EXECUTIVE SUMMARY

The Tennessee Valley Authority Office of the Inspector General retained Marshall Miller & Associates, Inc. (Marshall Miller), to conduct a peer review of the construction drawing package: “*Plans for Construction, Ash Disposal Area No. 2, Northeast Dike Stability Improvements, Johnsonville Fossil Plant, New Johnsonville, Tennessee*” (Johnsonville NE Dike Stabilization Plan) and supporting documents prepared by Stantec Consulting Services, Inc. (Stantec), of Lexington, Kentucky. Based on Marshall Miller’s technical review, Stantec used generally accepted methods and practices to design the stability improvements. Based on the Stantec Calculation Package, Stantec also designed a slope configuration that provides acceptable factors of safety for slope stability under long-term, steady-state seepage conditions.

Marshall Miller’s specific scope of work for this assignment was to review the documents prepared by Stantec with its proposed improvements to the stability of the Northeast Dike of the Ash Disposal Area No. 2, which consisted of the following documents: Johnsonville Northeast Dike Stabilization Plan Revision R1 dated March 12, 2010 (Issued for Construction), and the related Calculation Package dated January 26, 2010, Quality Control Procedures, and a sampling of Daily Field Reports (Nos. 001 through 046). These documents were prepared by Stantec to address the findings of its Geotechnical Exploration and Slope Stability Evaluation for Ash Disposal Areas 2 and 3, which Marshall Miller also peer-reviewed and commented upon in a separate report.¹

With regard to constructability, Marshall Miller found that the plans for construction prepared by Stantec provide suitable guidance for construction. However, Marshall Miller found that the details of the graded filter portion of the stabilization berm do not conform closely with current standards of practice and present constructability issues at locations where the installation conditions are more challenging (i.e., potentially submerged areas and steeper slope areas). Accordingly, Marshall Miller recommends that Stantec increase the specified minimum thickness of each filter layer, utilize a coarser aggregate filter layer directly against existing riprap areas in lieu of the currently prescribed fine aggregate (sand), and require that existing

¹ See Marshall Miller’s Report entitled “Peer Review of Stantec Consulting Services, Inc. Report of Geotechnical Exploration and Slope Stability Evaluation, Ash Disposal Areas 2 and 3, Johnsonville Fossil Plant.”



slopes be flattened to 1.5H:1V (or as otherwise determined necessary based on early observations of the construction) to facilitate proper installation of the multi-layer graded filter.

Management's Response to Draft Report

To address this report, TVA management had Stantec review and respond to the findings of this report. TVA management and its contractor provided additional information on the findings and recommendations in this report. For complete responses, please see appendices A – TVA Transmittal Memo and B – Stantec's Response.

Marshall Miller Assessment of Management's Comments to Draft Report

Marshall Miller concluded that the additional information provided adequately addressed the concerns and recommendations identified in the report. For a complete response, see appendix C – Marshall Miller Response.



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ROBERT E. MARTIN.....APPENDIX A

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JOHN KAMMEYERAPPENDIX B

MEMORANDUM DATED JUNE 15, 2011, FROM JOHN E. FEDDOCK AND PETER LAWSON TO
GREG R. STINSONAPPENDIX C



Item 4: INTRODUCTION AND BACKGROUND

The Tennessee Valley Authority (TVA) Office of the Inspector General (OIG) retained Marshall Miller & Associates, Inc. (Marshall Miller), to conduct a peer review of the construction drawing package: “*Plans for Construction, Ash Disposal Area No. 2, Northeast Dike Stability Improvements, Johnsonville Fossil Plant, New Johnsonville, Tennessee*” (Johnsonville NE Dike Stabilization Plan) and supporting documents prepared by Stantec Consulting Services, Inc. (Stantec), of Lexington, Kentucky. The TVA retained Stantec to design a stabilization plan for the Northeast Dike at the Johnsonville Ash Disposal Area No. 2. During its engagement, Marshall Miller reviewed the Northeast Dike Stabilization Plan Revision R1 dated March 12, 2010 (Issued for Construction), and the related Calculation Package dated January 26, 2010, and has documented its results herein.

This report presents:

- The Marshall Miller project team.
- A description of Marshall Miller’s scope of service.
- Background information for the Johnsonville Fossil Plant.
- The findings and recommendations from Marshall Miller’s review of Stantec’s slope stabilization plan.



Item 5: MARSHALL MILLER PROJECT TEAM

Marshall Miller, an employee-owned and Engineering News-Record Magazine top 500 company, began offering geologic services to the mining industry in 1975. Marshall Miller provides a range of services to the mining, utility, financial, governmental, and legal industries. Marshall Miller employs nearly 200 engineers, geologists, scientists and other professionals who work from regional offices in ten states.

Marshall Miller retained D'Appolonia, Engineering Division of Ground Technology, Inc., of Monroeville, Pennsylvania, for its expertise with tailings dams and impoundments, problem ground conditions, and forensic investigations.

The Marshall Miller project team comprises seven professionals:

- Mr. Peter Lawson, Executive Vice President and Principal-in-Charge.
- Mr. William S. Almes, P.E., Director of Geotechnical Services and Project Manager for the TVA OIG.
- Mr. Edmundo J. Laporte, P.E., Senior Engineer.
- Mr. William M. Lupi, P.E., Project Engineer.
- Mr. Richard G. Almes, P.E., Principal Geotechnical Engineer.
- Mr. Christopher J. Lewis, P. E., Principal Geotechnical Engineer.² Mr. Aaron J. Antell, P.E., Project Engineer.²

² Christopher J. Lewis, P.E., and Aaron J. Antell, P.E., are Geotechnical Subconsultants of Marshall Miller and as of the effective date of this report were employed by D'Appolonia, Engineering Division of Ground Technology, Inc., Monroeville, Pennsylvania.



Item 6: SCOPE OF SERVICE

The OIG engaged Marshall Miller to perform a technical peer review of the northeast dike improvement plans and supporting documents created by Stantec for Ash Disposal Area No. 2 at the Johnsonville Fossil (JOF) Plant. Documents reviewed by Marshall Miller were received in electronic format (pdf files) and included:

- Plans for Construction, Revision R1 dated March 12, 2010 (Issued for Construction).
- Calculation Package dated January 26, 2010.
- Quality Control Procedures (undated).
- Daily Field Reports, Report Nos. 001 through 046.

Marshall Miller did not perform a parallel engineering design to the Stantec design for the northeast dike improvements. Marshall Miller developed the findings and recommendations herein based on review of the above-listed documents for the Johnsonville NE Dike Stabilization Plan.

In performing the professional services to compose this report, Marshall Miller used generally accepted engineering principles and practices to develop findings and recommendations. Marshall Miller reserves the right to revise this report based on additional information. If OIG, TVA, TVA's consultants, or others discover additional information pertinent to the Johnsonville NE Dike Stabilization Plan at the JOF Plant, Marshall Miller requests the opportunity to review the information for relevance to Marshall Miller's findings and recommendations herein.



Item 7: BACKGROUND

The JOF Plant is located on the eastern shore of Kentucky Lake in New Johnsonville, Humphreys County, Tennessee, and produces 550 million kilowatt-hours of baseload energy per year. The ash disposal area is on a 125-acre island connected to the on-shore plant area by a 1,000-foot-long causeway. The causeway supports an asphalt paved road and pipes carrying sluiced ash from the plant to the disposal area. The Active Ash Disposal Area on the island is 87 acres and is surrounded by a two-tiered clay dike system with a crest elevation of 390 feet (El. 390), or about 30 to 35 feet above the Kentucky Lake pool level. The dike supports a perimeter access road and has out slopes measuring from 1.5H:1V on the inland side to greater than 2H:1V on the lake side.

The construction of the island, that would later become Ash Disposal Areas 2 and 3, was initiated as a result of dredging for the boat harbor and condenser water inlet channels. Between 1949 and 1952, dredge spoil was hydraulically placed to form a breakwater at what is now the east dike of Ash Disposal Areas 2 and 3. The top of the breakwater was about El. 370. From the JOF Plant's completion in 1952 to the mid-1960s, TVA disposed of ash in Disposal Area 1. As a result of Disposal Area 1 reaching its maximum storage capacity, TVA constructed Ash Disposal Area 2 in 1968 and 1969 using a dike to connect the ends of the breakwater, forming an enclosed area. In 1970, TVA raised the crest of the perimeter dike to El. 378 (Lower Clay Dike) to protect the island from inundation during periods of high lake levels. In 1974, TVA raised the dike crest to El. 390 (Upper Clay Dike) to provide additional ash disposal capacity.

During the 1980s and 1990s, TVA operated additional ash disposal facilities within the JOF reservation. During operation of these additional disposal facilities, TVA sluiced ash to the island disposal area and then dredged and pumped ash to the new facilities for final disposal. The current ash disposal practice at the JOF Plant consists of sluicing ash to channels on the active island disposal area, removing ash from those channels with excavators, stacking ash for drying, and hauling ash off-site for final disposal in permitted landfills. These activities are carried out by Trans-Ash Incorporated.



Item 8: TECHNICAL REVIEW

Marshall Miller reviewed documents developed by Stantec that relate to the Johnsonville NE Dike Stabilization Plan at Ash Disposal Area No. 2, including the plans for construction, calculation package, quality control procedures, and a sampling of daily field reports. In Marshall Miller's professional opinion, Stantec used generally accepted methods and practices to design the stability improvements. Based on the Calculation Package, Stantec used generally accepted methods for design of the aggregate filters. The aggregate filters are components of the riprap stabilization berm/buttress and aggregate blanket drain features of the stability improvements that reduce the potential for seepage and piping/internal erosion problems. Based on the Calculation Package, Stantec also designed a slope configuration that provides acceptable factors of safety for slope stability under long-term, steady-state seepage conditions.



Item 9: CONSTRUCTABILITY REVIEW

Marshall Miller also performed a constructability review of the plans for construction developed by Stantec for the Johnsonville NE Dike Stabilization Plan. In Marshall Miller's professional opinion and experience, the plans provide suitable guidance for construction. However, Marshall Miller found that the details of the graded filter portion of the stabilization berm do not conform closely with current standards of practice and present constructability issues at locations where the installation conditions are more challenging (i.e., potentially submerged areas and steeper slope areas).

9.1. FINDINGS

Upon review of the plans for construction developed by Stantec, Marshall Miller found the following:

- In Marshall Miller's opinion, a thickness of six inches for each filter layer is inadequate to ensure the reliability of the aggregate filter layers. In non-critical applications with well-controlled construction processes, a 12-inch minimum thickness for each filter layer would conform more closely with current standards of practice. In critical applications such as internal drainage systems for dams or in situations where construction conditions are challenging, a minimum thickness for each filter layer in the range of 18 inches to 36 inches would be more common.
- On Drawing No. 10W503-03, Stantec specifies placement of the graded filter on top of existing riprap. The bottom layer of the graded filter consists of Tennessee Department of Transportation (TDOT) fine aggregate for concrete (Section 903.01 Standard Specifications for Road and Bridge Construction), which is not suitable for placement against the existing riprap. This fine aggregate will be prone to migrate through the relatively large voids of the existing riprap, thereby compromising the graded filter.



- On Drawing No. 10W503-04, Stantec shows the graded filter installed on existing slopes that are equal to or steeper than one horizontal to one vertical (1V:1H). In Marshall Miller's opinion, the construction of thin filter layers on such steep slopes to the configurations proposed by Stantec is impractical.

9.2. RECOMMENDATIONS

Marshall Miller has developed the following recommendations for consideration.

- Marshall Miller recommends a minimum aggregate thickness of 12 inches for each filter layer to conform more closely to current standards of practice.
- Where the graded filter is proposed over existing riprap, Marshall Miller recommends that a coarser aggregate filter layer be used directly against the existing riprap in lieu of the TDOT fine aggregate (sand) for concrete.
- Marshall Miller recommends that existing slopes be flattened to 1.5H:1V (or as otherwise determined necessary based on early observations of the construction) to facilitate proper installation of the multi-layer graded filter.



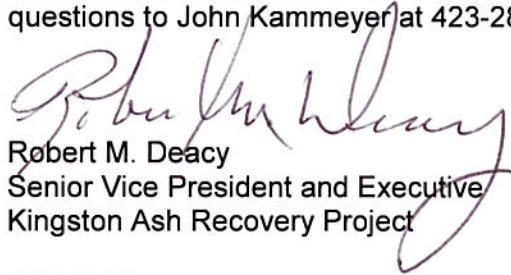
March 25, 2011

Mr. Robert E. Martin, ET 3C-K

TVA COMMENTS TO OIG DRAFT INSPECTION 2009-12910-05 - PEER REVIEW OF
JOHNSONVILLE FOSSIL PLANT DIKE STABILITY IMPROVEMENTS

Attached please find Stantec's letter to John Kammeyer dated March 24, 2011, which represents TVA comments in response to your draft inspection regarding the dike stability improvements at the Johnsonville Fossil Plant.

We appreciate the opportunity to provide comments on this draft report. Please direct any questions to John Kammeyer at 423-280-0407.



Robert M. Deacy
Senior Vice President and Executive
Kingston Ash Recovery Project

JMD:DJC

Attachment

cc (Attachment):

Joan M. Dodd, LP 5E-C
Robert J. Fisher, LP 3K-C
Michael B. Fussell, WT 9B-K
Peyton T. Hairston, Jr., WT 7B-K
John C. Kammeyer, LP 5D-C
William R. McCollum, Jr., LP 6A-C
Annette L. Moore, LP 3K-C
John M. Thomas III, MR 3A-C
Robert B. Wells, WT 9B-K
Wendy Williams, WT 9B-K
OIG File No. 2009-12910-05

Mr. John Montgomery, Stantec



Stantec Consulting Services Inc.
 1901 Nelson Miller Parkway
 Louisville KY 40223-2177
 Tel: (502) 212-5000
 Fax: (502) 212-5055

March 24, 2011

let_016_175559008

Mr. John Kammeyer
 Vice President
 Tennessee Valley Authority
 1101 Market Street, LP 5G
 Chattanooga, Tennessee 37402

Re: Response to Comments
 Marshall Miller Review – March 16, 2011
 Stantec Plans for Construction – Northeast Dike Stability Improvements
 Version R1- 3/12/2010
 Johnsonville Fossil Plant Ash Disposal Areas 2 and 3

Dear Kammeyer:

As requested, Stantec has completed a review of Marshall Miller and Associates (Marshall Miller) report: *Peer Review of Stantec Consulting Services Inc. Plans for Construction – Northeast Dike Stability Improvements Ash Disposal Areas 2 and 3*, dated March 16, 2011. Marshall Miller's recommendations and Stantec's corresponding responses are listed below.

Item 9: Constructability Review

Item 9.1 and 9.2 - First bullets - MM Findings and Recommendation: *In Marshall Miller's opinion, a thickness of six inches for each filter layer is inadequate to ensure the reliability of the aggregate filter layers. In non-critical applications with well-controlled construction processes, a 12-inch minimum thickness for each filter layer should conform more closely with current standards of practice. In critical applications such as internal drainage systems for dams or in situations where construction conditions are challenging, a minimum thickness for each filter layer in the range of 18 inches to 36 inches would be more common. Marshall Miller recommends a minimum aggregate thickness of 12 inches for each filter layer to conform more closely to current standards of practice.*

Stantec Response: Construction of this project was completed in August, 2010, and the graded filters are now buried beneath the riprap toe buttress (see attached Photos 1 and 2). During construction, filter placement was closely observed by Stantec and thicknesses were checked each day. The filters were constructed using the specified materials and to the specified minimum thicknesses. The daily inspection field reports indicate the filters were built per the construction plans and there were no constructability issues. Thicker filter layers were placed in some cases, as appropriate, to facilitate successful filter construction. Actual

Tennessee Valley Authority
 March 24, 2011
 Page 2

filter thicknesses ranged from 6 to 12 inches. In addition, the area has been observed periodically since completion of construction, and no issues have been noted. Also, the north end of the disposal facility has been dewatered by relocating the sluice channel away from this area and by maintaining a dewatered condition within the resulting abandoned channel. It is Stantec's opinion the filters were adequately constructed and that proper seepage mitigation has been achieved for the Northeast dike. The attached photos illustrate the improvements by showing before and after conditions, filter construction, and the dewatered sluice channel above the dike.

Item 9.1 and 9.2 - Second bullets - MM Findings and Recommendation: *On Drawing No. 10W503-03, Stantec specifies placement of the graded filter on top of existing riprap. The bottom layer of the graded filter consists of Tennessee Department of Transportation (TDOT) fine aggregate for concrete (Section 903.01 Standard Specifications for Road and Bridge Construction), which is not suitable for placement against the existing riprap. This fine aggregate will be prone to migrate through the relatively large voids of the existing riprap, thereby compromising the graded filter. Where the graded filter is proposed over the existing riprap, Marshall Miller recommends that a coarser aggregate filter layer be used directly against the existing riprap in lieu of the TDOT fine aggregate (sand) for concrete.*

Stantec Response: As indicated above, construction of this project was completed in August, 2010. The existing riprap pieces were typically relatively small (about 6 to 10 inches maximum size) and the riprap displayed a pre-existing "choked" surface where voids were mostly filled with smaller stone or sediment. During placement of the graded filter over the existing riprap, the Contractor made efforts to adequately spread sand and fill the remaining riprap voids prior to placing subsequent filter layers. Based on these observations and efforts, it is Stantec's opinion that an adequate filter system was constructed over the existing riprap. See attached Photos 11 and 12 which illustrate filter construction in this area.

Item 9.1 and 9.2 - Third bullets - MM Findings and Recommendation: *On Drawing No. 10W503-04, Stantec shows the graded filter installed on existing slopes that are equal to or steeper than one horizontal to one vertical (1H:1V). In Marshall Miller's opinion, the construction of thin filter layers on such steep slopes to the configurations proposed by Stantec is impractical. Marshall Miller recommends that existing slopes be flattened to 1.5H:1V (or as otherwise determined to be necessary based on early observations of the construction) to facilitate installation of the multi-layer graded filter.*

Stantec Response: Concur with MM's recommendation. During construction, the Contractor cut back steeper slope areas to create flatter slopes and then placed the filter materials. These locations varied throughout the project length, but typically extended along the lower slope in areas of trees, saplings and woody vegetation. See attached Photos 13 and 14 which illustrate these additional efforts.

Tennessee Valley Authority
March 24, 2011
Page 3

We appreciate the opportunity to provide these responses. If you have any questions or need additional information, please call.

Sincerely,

STANTEC CONSULTING SERVICES INC.



Stephen H. Bickel, PE
Senior Principal

/db

Cc: Roberto L. Sanchez, PE
Michael S. Turnbow

Enclosure - Photographs



**Johnsonville Fossil Plant (JOF)
Ash Disposal Area No. 2
Northeast Dike Stability Improvements
Response to Marshall Miller Peer Review Comments
Photo Log**



Photo 1 Northeast Dike after improvements.



Photo 2 Northeast Dike just prior to completion.



**Johnsonville Fossil Plant (JOF)
Ash Disposal Area No. 2
Northeast Dike Stability Improvements
Response to Marshall Miller Peer Review Comments
Photo Log**



Photo 3 Northeast Dike prior to remedial construction.



Photo 4 Northeast Dike prior to remedial construction.



Johnsonville Fossil Plant (JOF)
Ash Disposal Area No. 2
Northeast Dike Stability Improvements
Response to Marshall Miller Peer Review Comments
Photo Log



Photo 5 Riprap buttress after completion and prior to dike regrading.



Photo 6 Filter layers being placed during construction.



Photo 7 Filter layers placed during construction.



Photo 8 No. 3 stone filter layer being placed over the No. 57 stone layer.



**Johnsonville Fossil Plant (JOF)
Ash Disposal Area No. 2
Northeast Dike Stability Improvements
Response to Marshall Miller Peer Review Comments
Photo Log**



Photo 9 Former sluice channel now dewatered and unused along the Northeast Dike (viewed looking south).



Photo 10 Former sluice channel now dewatered and unused along the Northeast Dike (viewed looking north).



Johnsonville Fossil Plant (JOF)
 Ash Disposal Area No. 2
 Northeast Dike Stability Improvements
 Response to Marshall Miller Peer Review Comments
 Photo Log

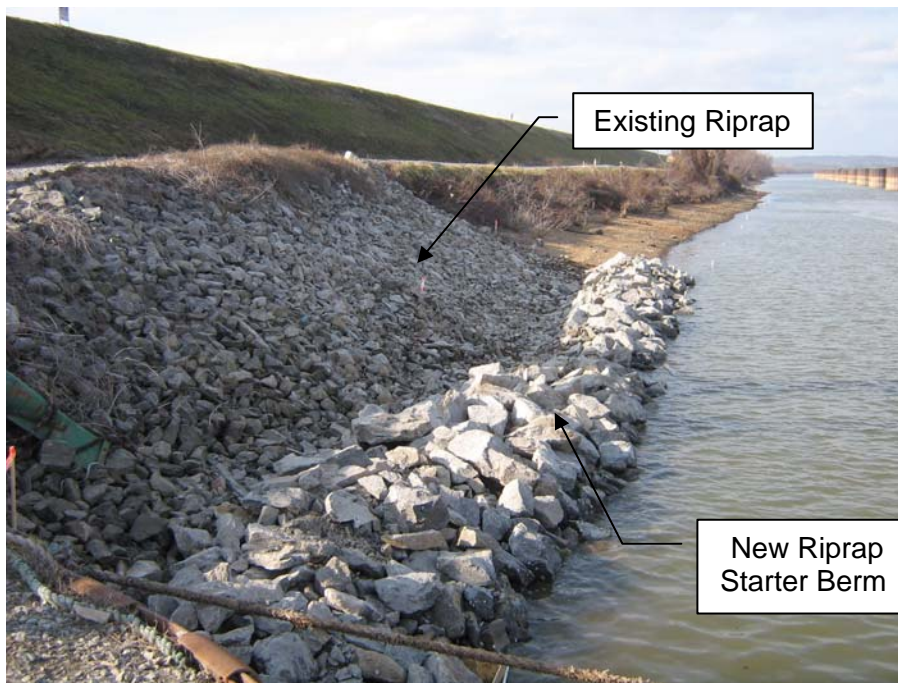


Photo 11

Slope interval containing the existing riprap prior to remedial construction. The existing riprap is relatively small (maximum size ~ 6”).

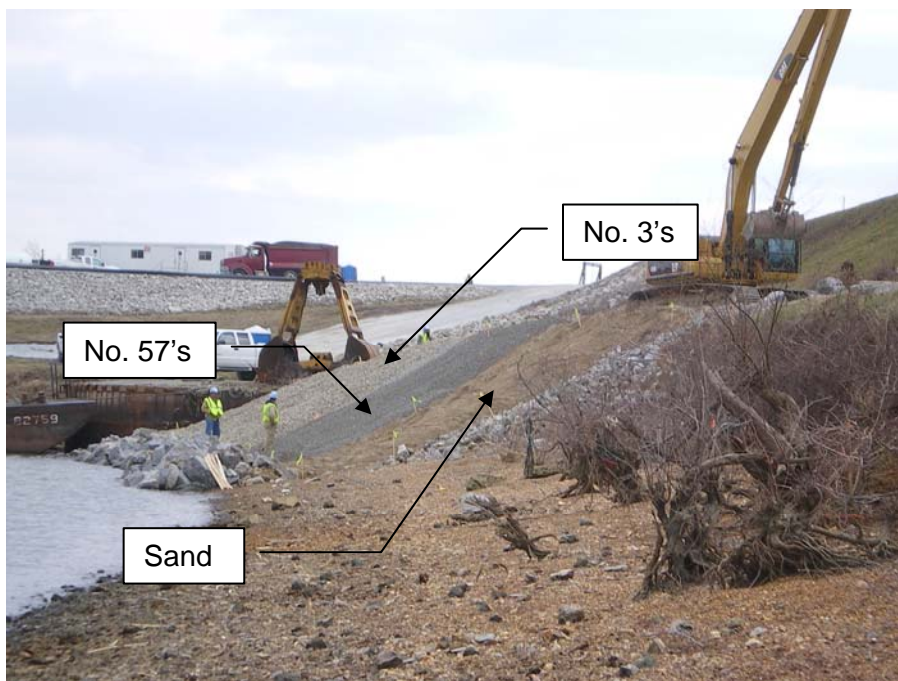


Photo 12

Filter layers being successfully placed over the existing riprap.



Photo 13

Section of slope that was cut back as a result of tree and rootwad removal.



Photo 14

Interval of lower slope that has been filled by placing thicker layers of filter materials to facilitate filter construction.

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Bossier City, LA • (318) 747-7734
Camp Hill, PA • (717) 730-7810



APPENDIX C
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5900 Triangle Drive / Raleigh, NC 27617 / Tel (919) 786-1414 / Fax (919) 786-1418 / Email raleigh@mma1.com

June 15, 2011

Mr. Greg R Stinson
Director, Inspections
Tennessee Valley Authority
Office of the Inspector General
1101 Market Street EB 2G-C
Chattanooga, TN 37402-2801

Re: Response to Comments to OIG Draft Inspection 2009-12910-05

Facility: Johnsonville Fossil Plant
Report Title: *Plans for Construction – Northeast Dike Stability Improvements, Version R1*
Firm: Stantec Consulting Services Inc. (Stantec)
Date: March 12, 2010

Dear Mr. Stinson:

Marshall Miller & Associates, Inc. (Marshall Miller) was contracted by the **Tennessee Valley Authority Office of the Inspector General (TVA OIG)** to provide response and rebuttal to comments prepared by **Stantec Consulting Services Inc. (Stantec)** dated March 24, 2011. These comments were prepared for TVA in response to Marshall Miller's Technical Peer Review of the March 12, 2010, Stantec report entitled *Plans for Construction – Northeast Dike Stability Improvements Ash Disposal Areas 2 and 3*.

Mr. Stephen H. Bickel, PE, of Stantec reviewed Marshall Miller's peer review and provided response in a March 24, 2011, letter report. Marshall Miller's responses are provided below.

Stantec's Response to Items 9.1 and 9.2

Stantec's response is acknowledged, and Marshall Miller finds that TVA and Stantec have satisfactorily addressed the TVA OIG's comments through construction performance verification and explanation/clarification, as appropriate. It should be noted that Marshall Miller still maintains that the proposed and constructed aggregate filter thicknesses associated with the Johnsonville Fossil Plant Dike Stability Improvements do not approach current standards of practice. However, given the explanation by TVA and Stantec that other seepage

Mr. Greg R. Stinson**Tennessee Valley Authority-Office of the Inspector General**

Technical Rebuttal to March 24, 2011, TVA Response to OIG Draft Inspection, 2009-12910-05

Peer Review of the Johnsonville Fossil Plant Dike Stability Improvements

June 15, 2011

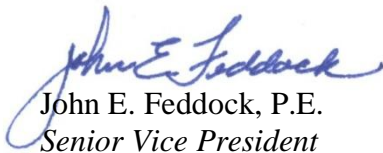
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mitigation/reduction measures have been implemented (relocation of the sluice channel away from the north end of the disposal facility and maintenance of a dewatered condition within the resulting abandoned channel), Marshall Miller can accept this position on this specific matter.

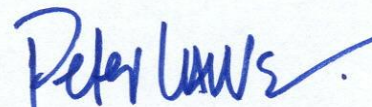
Thank you for the opportunity to submit a response to comments. Should you have any questions or need additional clarification, please contact Peter Lawson at (304) 255-8937

Sincerely,

MARSHALL MILLER & ASSOCIATES, INC.



John E. Feddock, P.E.
Senior Vice President



Peter Lawson
*Executive Vice President
Principal-in-Charge*

Attachments

cc: Mr. Robert E. Martin, Assistant Inspector General (Audits & Inspections)
Ms. Julie Lovingood, Auditor

