

Memo



Stantec

To: Shannon Bennett,
Ron Skelton

From: Hugo Aparicio, April Lashley,
Joshua Kopp, Mike Sendelbach

File: 175561087

Date: January 12, 2012

Reference: JSF Bottom Ash Pond Closure – Volumetric Computations

Stantec was requested to prepare an estimate of the existing volume of ash in the John Sevier Fossil (JSF) Plant Bottom Ash Pond (BAP). This memo outlines the methods, assumptions, and results of the volume estimate computations. Unless otherwise noted, volumetric calculations were carried out using the AutoCAD Civil 3D 2009 software package by building digital terrain models (“surfaces”) and determining the differences between them.

For the purpose of this analysis, the BAP was separated into two areas: the East Pond and the Stilling Pond. A separate surface model was built for each pond.

Data Sources

BAP Boring Data

During November and December of 2011 Stantec performed drilling operations within the BAP. The purpose of the drilling was to locate the top of clay/weathered shale layer underlying the ponds. There were 47 borings advanced in the East Pond and four borings advanced in the Stilling Pond. The borings in the Stilling Pond and 19 borings in the East Pond were advanced from a drill rig positioned on a barge. The data from all the borings was used to build a ‘*BAP_2011_Borings*’ surface.

Boring data collected during the Phase 2 geotechnical study was reviewed to obtain a better understanding of the new pond borings (to confirm the presence of clay and weathered shale).

Two borings were also advanced in the divider dike that separates the Stilling Pond from the East Pond. The purpose was to confirm the dike was constructed of clay as designed and that not ash was used. No ash was encountered in the borings.

Clean Out Surfaces

TVA provided contour data for three ‘clean-out’ surveys from 1994, 1995, and 1997 to Stantec. The contours represented the final groundline after the Bottom Ash Pond had

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Reference: JSF Bottom Ash Pond Closure – Volumetric Computations

been cleaned out. The data was provided on paper drawings. Actual survey data was not provided; therefore Stantec cannot confirm the accuracy of the contours. Details describing the extent of the 'clean-out' were not available.

Stantec scanned the drawings, rectified them in AutoCAD, and digitized the contours. Surfaces were then derived from the contours ('MAP Cleanout Surface_3-15-94', 'MAP Cleanout Surface_3-21-95', and 'MAP Cleanout Surface_11-17-97').

Existing Surface

TVA provided Stantec with a surface ('js000099.pro') of the main ash pond (East Pond) and Stilling Pond that was derived from survey data collected during May 2011. The survey consisted of GPS submeter hydrographic data and the pond water surface elevation which was surveyed based on a local bench mark elevation. All surveying was performed by TVA. Stantec merged the 'js000099.pro' surface into the master basemap surface ('175661025_01_conra_site_eg01_20111216').

Combining Data Sources

The 'MAP Cleanout Surface_11-17-97' (henceforth '1997 clean-out surface') displays a deeper excavation into the bottom of the pond compared to the other surveys and as such provides a more conservative volume estimate (i.e. greater volume). For this reason, the '1997 clean-out' surface was selected to be combined with the 'BAP_2011_Borings' surface to form a surface that represents the top of clay/weathered shale throughout the ponds.

East Pond

The surface 'BAP_EAST_TOP_CLAY' was built to represent the top of clay/weathered shale in the East Pond. For the '1997 clean-out' surface, the approximate upper half of the interior slope of the perimeter and divider dikes was assumed to represent the top of clay/weathered shale. This approximate upper half of the slope was extrapolated downward until it extended below the 'BAP_2011_Borings' surface. The 'BAP_2011_Borings' surface was assumed to represent the top of clay/weathered shale for the pond bottom. This surface was extrapolated outward until it extended past the '1997 clean-out' surface. The intersection of these two extrapolations was assumed to define the toe of the interior slope. This method was used for the entire East Pond.

Stilling Pond

The surface 'BAP_STILLING_POND_TOP_CLAY' was built to represent the top of clay/weathered shale in the Stilling Pond. Since there were only four borings from the Stilling Pond, the '1997 clean-out' surface was assumed to represent the top of clay/weathered shale in this pond. The only exception was that the four borings in the pond were added to the surface. When modifying the '1997 clean-out' surface, effort was made to prevent abrupt changes in the areas near where the boring data was incorporated and to match the existing slopes of the surface to the extent possible.

Stantec

January 12, 2012

Page 3 of 3

Reference: JSF Bottom Ash Pond Closure – Volumetric Computations

Results

The 'BAP_EAST_TOP_CLAY' and 'BAP_STILLING_POND_TOP_CLAY' surfaces were subtracted from their respective location in the '175661025_01_conra_site_eg01_20111216' surface to derive the volume of ash above the top of clay/weathered shale. The volumes of ash calculated in the East Pond and Stilling Pond were 692,000 and 9,000 cubic yards, respectively, for a total of 701,000 cubic yards.

According to the drilling performed within the pond, there is a well-defined top of clay/weathered shale boundary. Therefore, Stantec recommends that additional over-excavation into the clay/weathered shale not be performed with the exception of inadvertent over-excavation caused by the earth-moving equipment as it scrapes and picks up the ash.

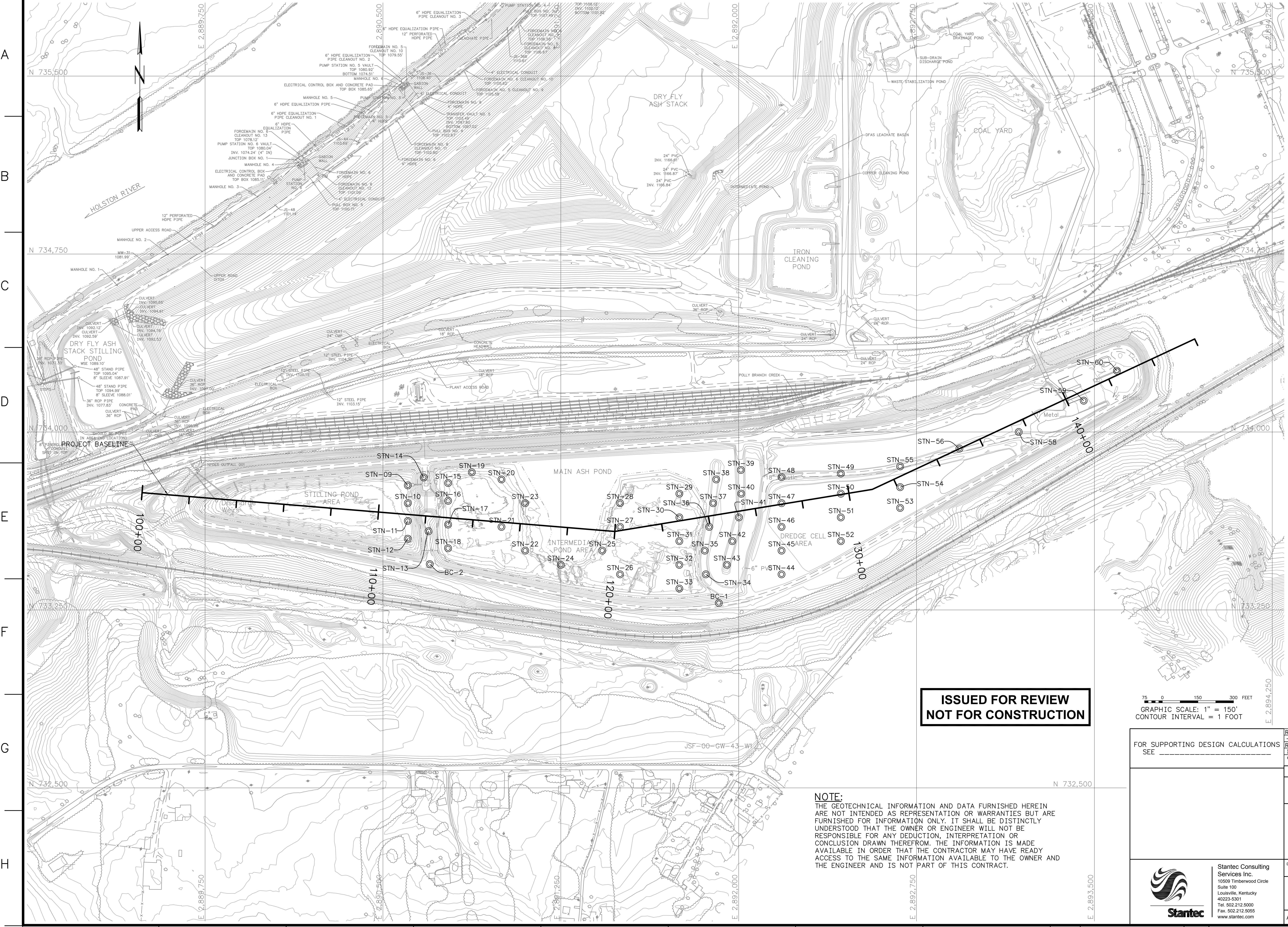
To account for the assumptions made when combining the data sources, Stantec recommends adding a contingency of $\pm 10\%$, resulting in $\pm 70,000$ cubic yards. Therefore, Stantec's estimate for the total volume of ash in the Bottom Ash Pond is **631,000 to 771,000** cubic yards.

STANTEC CONSULTING SERVICES INC.

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Attachment: None



SURVEY CONTROL NOTE:
 A GLOBAL POSITIONING SYSTEM (GPS) BASE STATION HAS BEEN ESTABLISHED AND TRANSFORMATION PARAMETERS DETERMINED BY TVA USING SELECTED SURVEY CONTROL MONUMENTS. CONTACT WITH TVA SURVEYING DEPARTMENT (423)751-8416 OR (423)751-2571 MUST BE MADE BEFORE ANY SURVEY OR CONSTRUCTION WORK IS COMMENCED. BASE STATION FREQUENCIES AND TRANSFORMATION PARAMETERS WILL BE PROVIDED TO THE CONTRACTOR FOR USE IN CONSTRUCTION ACTIVITIES AT THE SITE. PREVIOUSLY USED OR ESTABLISHED CONTROL POINTS AND MONUMENTS SHALL NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL BY TVA SURVEYING DEPARTMENT.

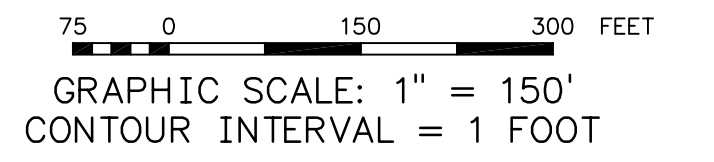
MAPPING SOURCE NOTE:
 BASEMAP DEVELOPED FROM TOPOGRAPHIC SURVEY DATA PROVIDED BY TVA. IT IS BASED ON DATA FROM TUCK MAPPING SOLUTIONS AERIAL SURVEY DRAWING TITLED "462110.DWG" DATED 9/27/2010. SURVEY DATA COMPILED FROM THE FOLLOWING SOURCES WAS USED TO SUPPLEMENT THE AERIAL TOPOGRAPHY WITH UPDATED INFORMATION:

TASK ID	DESCRIPTION OF SURVEY	DATE OF SURVEY	REFERENCE DRAWING
RK0934	GROUND SURVEY OF INTERMEDIATE SEDIMENT POND OF THE DRY FLY ASH STACK (DFAS)	07/19/2010	JS000089
RK0943	GROUND SURVEY OF SPOIL PILES	08/26/2010	JS000093
RK0944	GROUND SURVEY OF NORTHERN AND SOUTHERN SLOPES OF THE ACTIVE STACKING AREA OF THE DFAS	08/30/2010	
JSR814	HYDROGRAPHIC SURVEY OF THE INTERMEDIATE STILLING POND OF THE MAIN ASH POND	10/21/2010	JS000095
JSR822	HYDROGRAPHIC SURVEY OF THE STILLING AREA POND OF THE MAIN ASH POND	10/28/2010	JS000095
RK0977	GROUND SURVEY OF THE DFAS	02/17/2011	JS000096
RK0989	AS-BUILT PLANIMETRICS AND RIP-RAP AREA ON DFAS	04/27/2011	
JSR861	MAIN ASH AND STILLING PONDS	05/09/2011	JS000099
JCS21	GROUND SURVEY OF ROAD AND RE-GRADED/CLEANED OUT DITCH SOUTH OF THE DFAS	11/21/2011	JS000101
RK01022	GROUND SURVEY OF THE ACTIVE STACKING AREA ON THE DFAS	11/30/2011	JS000102
STN200	POLLY BRANCH AREA FROM BAP OUTFALLS TO HOLSTON RIVER	12/21/2011	2011_12_22_09

LEGEND
 — 1100 — EXISTING CONTOUR
 - - - - - 1100 - - - - - EXISTING HYDROGRAPHIC CONTOUR
 (C) SOIL BORING WITH STANDARD PENETRATION TESTS

BORING	NORTHING	EASTING	BORING	NORTHING	EASTING
BC-1	733279.24	2891916.37	STN-34	733400.00	2891861.70
BC-2	733443.03	2890697.62	STN-35	733500.00	2891857.21
STN-09	733775.00	2890605.00	STN-36	733600.00	2891876.09
STN-10	733700.00	2890605.00	STN-37	733700.00	2891892.70
STN-11	733625.00	2890605.00	STN-38	733800.00	2891905.42
STN-12	733550.00	2890605.00	STN-39	733840.00	2892009.40
STN-13	733581.86	2890692.41	STN-40	733740.00	2892010.69
STN-14	733808.31	2890672.34	STN-41	733640.00	2892001.10
STN-15	733785.00	2890775.00	STN-42	733540.00	2891973.47
STN-16	733710.00	2890775.00	STN-43	733440.00	2891950.49
STN-17	733610.00	2890775.00	STN-44	733400.00	2892180.96
STN-18	733510.00	2890775.00	STN-45	733500.00	2892180.96
STN-19	733830.00	2890875.00	STN-46	733600.00	2892180.96
STN-20	733800.00	2891000.00	STN-47	733700.00	2892180.96
STN-21	733600.00	2891000.00	STN-48	733810.00	2892180.96
STN-22	733500.00	2891100.00	STN-49	733825.00	2892430.96
STN-23	733700.00	2891100.00	STN-50	733740.00	2892430.96
STN-24	733440.00	2891250.00	STN-51	733640.00	2892430.96
STN-25	733500.00	2891425.00	STN-52	733540.00	2892430.96
STN-26	733400.00	2891500.00	STN-53	733680.00	2892680.96
STN-27	733600.00	2891500.00	STN-54	733767.50	2892680.96
STN-28	733700.00	2891500.00	STN-55	733855.00	2892680.96
STN-29	733740.00	2891750.00	STN-56	733930.00	2892930.96
STN-30	733640.00	2891750.00	STN-58	734000.00	2893180.96
STN-31	733540.00	2891750.00	STN-59	734132.00	2893455.00
STN-32	733440.00	2891750.00	STN-60	734258.00	2893595.00
STN-33	733340.00	2891750.00			

**ISSUED FOR REVIEW
 NOT FOR CONSTRUCTION**



NOTE:
 THE GEOTECHNICAL INFORMATION AND DATA FURNISHED HEREIN ARE NOT INTENDED AS REPRESENTATION OR WARRANTIES BUT ARE FURNISHED FOR INFORMATION ONLY. IT SHALL BE DISTINCTLY UNDERSTOOD THAT THE OWNER OR ENGINEER WILL NOT BE RESPONSIBLE FOR ANY DEDUCTION, INTERPRETATION OR CONCLUSION DRAWN THEREFROM. THE INFORMATION IS MADE AVAILABLE IN ORDER THAT THE CONTRACTOR MAY HAVE READY ACCESS TO THE SAME INFORMATION AVAILABLE TO THE OWNER AND THE ENGINEER AND IS NOT PART OF THIS CONTRACT.

FOR SUPPORTING DESIGN CALCULATIONS	R	A	03/01/12	KRB	DMG	ELC	HRA	SEB	MST	JCK								
SEE																		

SCALE: 1"=150' EXCEPT AS NOTED

**YARD
 BOTTOM ASH POND
 POND CLOSURE CONCEPTS
 GEOTECHNICAL EXPLORATION
 BORING LAYOUT**

DESIGNED BY:	D.M. GRAHAM	CHECKED BY:	E.L. CAUDILL	SUPERVISED BY:	H.R. APARICIO	REVIEWED BY:	S.E. BENNETT	APPROVED BY:	M.S. TURNBOW	ISSUED BY:	J.C. KAMMETER
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**JOHN SEVIER FOSSIL PLANT
 TENNESSEE VALLEY AUTHORITY
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 03/01/12 41 C XXWXXX-XX R A

STANTEC TASK COMPLETED BY: A REV NO.

PLLOT FACTOR: 150 W_TVA C.A.D. DRAWING DO NOT ALTER MANUALLY

PLOT DATE: 03/07/2012 USER: PETTY, RICHARD
 \\US425-01\project\462110\12\30\DWG\GEN\GEN\12_30_12_03_001.DWG

Project Number	175561087		Location	N 733279, E 2891916			
Project Name	TVA JSF Bottom Ash Pond		Boring No.	BC-1	Total Depth	10.5 ft	
County	Hawkins		Surface Elevation	1145.9 ft			
Project Type	Geotechnical Exploration		Date Started	11/8/11	Completed	11/8/11	
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry	Date/Time	11/8/11
Logged By	A. Hacker		Depth to Water	--	Date/Time	--	

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1145.9'	0.0'	Top of Hole							
		Fill: Lean Clay, brown, moist, stiff to hard, with traces of gravel and Manganese concretions.		SPT-1	0.0' - 1.5'	1.0'	5-5-8	--	Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-2	1.5' - 3.0'	1.0'	9-10-12	--	
				SPT-3	3.0' - 4.5'	1.1'	13-18-18	--	
				SPT-4	4.5' - 6.0'	1.3'	14-16-19	--	
				SPT-5	6.0' - 7.5'	0.8'	14-15-11	--	
				SPT-6	7.5' - 9.0'	0.2'	13-14-10	--	
				SPT-7	9.0' - 10.5'	1.5'	8-12-13	--	

No Refusal /
Bottom of Hole

STP-6 had a
rock
fragment in
the tip

The allowable bearing capacity is 3000 psf for this crane location.

Project Number	175561087		Location	N 733443, E 2890697	
Project Name	TVA JSF Bottom Ash Pond		Boring No.	BC-2	Total Depth 10.5 ft
County	Hawkins		Surface Elevation	1144.8 ft	
Project Type	Geotechnical Exploration		Date Started	11/8/11	Completed 11/8/11
Supervisor	B. Webster	Driller A. Clements	Depth to Water	Dry	Date/Time 11/8/11
Logged By	A. Hacker		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1144.8'	0.0'	Top of Hole							
		Fill: Lean Clay, brown, moist, very stiff to hard, with traces of gravel and Manganese concretions.		SPT-1	0.0' - 1.5'	1.3'	6-9-10	--	Surface elevations obtained by Stantec using GPS survey equipment. Sandy after 7.0 feet
				SPT-2	1.5' - 3.0'	1.3'	13-15-14	--	
				SPT-3	3.0' - 4.5'	1.5'	16-16-10	--	
				SPT-4	4.5' - 6.0'	1.0'	10-13-18	--	
				SPT-5	6.0' - 7.5'	1.1'	13-14-12	--	
				SPT-6	7.5' - 9.0'	1.2'	18-12-13	--	
1134.3'	10.5'				SPT-7	9.0' - 10.5'	1.5'	19-15-15	

No Refusal /
Bottom of Hole

The allowable bearing capacity is 3000 psf for this crane location.



SUBSURFACE LOG

Project Number	175561087	Location	N 733770, E 2890517		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-9	Total Depth	21.2 ft
County	Hawkins	Surface Elevation	1135.9 ft		
Project Type	Geotechnical Exploration	Date Started	12/8/11	Completed	12/8/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1135.9'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.4'	2.5'	Barge							
		Water							
1116.5'	19.4'								
1116.0'	19.9'	Bottom Ash		SPT-1	19.2' - 21.2'	1.8'	4-11-16-19	--	
1115.7'	20.2'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff							
1114.7'	21.2'	Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 19.9' (Elev. = 1116.0')							

STANTECFMISM_LEGACY_JSF_GPS_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733690, E 2890572	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-10	Total Depth 20.7 ft
County	Hawkins	Surface Elevation	1135.9 ft	
Project Type	Geotechnical Exploration	Date Started	12/8/11	Completed 12/8/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1135.9'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.4'	2.5'	Barge							
		Water							
1115.9'	20.0'								
1115.3'	20.6'	Lean Clay, light reddish brown to yellowish brown, moist, hard		SPT-1	20.0' - 20.7'	0.7'	3-50+/0.2'	--	
1115.2'	20.7'		Weathered Shale						
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 20.0' (Elev. = 1115.9')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSM_GRAPHIC.LOG_GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733613, E 2890568		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-11	Total Depth	23.9 ft
County	Hawkins	Surface Elevation	1135.9 ft		
Project Type	Geotechnical Exploration	Date Started	12/8/11	Completed	12/8/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1135.9'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.4'	2.5'	Barge							
		Water							
1113.9'	22.0'								
1113.4'	22.5'	Bottom Ash		SPT-1	21.9' - 23.9'	1.9'	3-14-20-25	--	
1113.0'	22.9'	Lean Clay, light reddish brown to yellowish brown, moist, hard							
1112.0'	23.9'	Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 22.5' (Elev. = 1113.4')							

STANTECFMNSM_LEGACY_JSF.GPJ_FMSM.GRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733544, E 2890577		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-12	Total Depth	25.6 ft
County	Hawkins	Surface Elevation	1135.9 ft		
Project Type	Geotechnical Exploration	Date Started	12/8/11	Completed	12/8/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1135.9'	0.0'	Top of Hole							
1133.4'	2.5'	Barge							Surface elevations obtained by Stantec using GPS survey equipment.
		Water							
1114.3'	21.6'								
1113.8'	22.1'	Bottom Ash, loose		SPT-1	21.6' - 23.6'	1.0'	4-4-3-6	--	
1111.3'	24.6'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff No Refusal / Bottom of Hole		SPT-2	23.6' - 25.6'	2.0'	3-6-10-12	--	
1110.3'	25.6'								
Depth to clean clay 22.1' (Elev. = 1113.8')									

Project Number	175561087	Location	N 733581, E 2890692		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-13	Total Depth	36.0 ft
County	Hawkins	Surface Elevation	1144.4 ft		
Project Type	Geotechnical Exploration	Date Started	11/2/11	Completed	11/3/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1144.4'	0.0'	Top of Hole							
		Fill: Lean Clay, light reddish brown to yellowish brown, moist, very stiff to hard, with rock fragments and sand		SPT-1	13.0' - 14.5'	0.6'	6-12-9	--	Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-2	14.5' - 16.0'	0.6'	6-8-12	--	
				SPT-3	16.0' - 17.5'	1.0'	7-10-14	--	
				SPT-4	17.5' - 18.5'	0.4'	21-50+/0.5	--	
1124.4'	20.0'	Residual: Lean Clay, light reddish brown to yellowish brown, moist, very stiff to hard		SPT-5	19.0' - 20.5'	1.5'	6-9-16	--	
				SPT-6	20.5' - 22.0'	1.5'	15-15-14	--	
				SPT-7	22.0' - 23.5'	1.5'	11-12-17	--	
				SPT-8	23.5' - 25.0'	1.5'	7-12-23	--	
				SPT-9	25.0' - 26.5'	1.5'	11-18-32	--	
				SPT-10	26.5' - 28.0'	1.5'	15-20-22	--	
				SPT-11	28.0' - 29.5'	1.5'	16-17-27	--	
				SPT-12	29.5' - 31.0'	1.5'	16-23-28	--	
				SPT-13	31.0' - 32.5'	1.5'	13-27-24	--	
1109.9'	34.5'			SPT-14	32.5' - 34.0'	1.5'	11-25-30	--	
				SPT-15	34.0' - 35.0'	1.0'	13-50+/0.5'	--	
1108.4'	36.0'	Weathered Shale		SPT-16	35.5' - 36.0'	0.5'	50+/0.5'	--	
		SPT Refusal / Bottom of Hole							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733808, E 2890672	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-14	Total Depth 38.5 ft
County	Hawkins	Surface Elevation	1145.3 ft	
Project Type	Geotechnical Exploration	Date Started	11/3/11	Completed 11/7/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1145.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Fill: Lean Clay, light reddish brown to yellowish brown, moist, very stiff, with rock fragments and sand, some coal refuse		SPT-1	13.0' - 14.5'	1.5'	8-15-14	--	
			SPT-2	14.5' - 16.0'	1.5'	5-8-8	--		
			SPT-3	16.0' - 17.5'	1.5'	5-10-8	--		
1127.8'	17.5'	Residual: Lean Clay, light reddish brown to yellowish brown, moist, medium stiff to very stiff		SPT-4	17.5' - 19.0'	1.5'	3-7-7	--	
			SPT-5	19.0' - 20.5'	0.0'	6-5-5	--		
			SPT-6	20.5' - 22.0'	0.5'	5-5-5	--		
			SPT-7	22.0' - 23.5'	1.5'	5-4-6	--		
			SPT-8	23.5' - 25.0'	1.5'	4-5-11	--		
			SPT-9	25.0' - 26.5'	0.9'	4-4-5	--		
			SPT-10	26.5' - 28.0'	1.1'	4-6-6	--		
			SPT-11	28.0' - 29.5'	1.1'	4-7-7	--		
			SPT-12	29.5' - 31.0'	1.5'	4-3-5	--		
			SPT-13	31.0' - 32.5'	1.5'	10-7-7	--		
		SPT-14	32.5' - 34.0'	1.5'	4-7-9	--			
		SPT-15	34.0' - 35.5'	1.5'	3-6-8	--			
1108.5'	36.8'			SPT-16	35.5' - 37.0'	1.5'	12-15-24	--	
1106.8'	38.5'	Weathered Shale		SPT-17	37.0' - 38.5'	1.5'	10-14-18	--	
		No Refusal / Bottom of Hole							

STANTECFMISM_LEGACY_JSF_GPS_FINALGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733785, E 2890775		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-15	Total Depth	19.9 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/10/11	Completed	12/10/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1123.3'	13.0'	Bottom Ash							
1118.2'	18.1'								
1116.4'	19.9'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-1	17.9' - 19.9'	2.0'	6-10-12-12	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 18.1' (Elev. = 1118.2')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733710, E 2890775		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-16	Total Depth	24.2 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/10/11	Completed	12/10/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1120.5'	15.8'	Bottom Ash							
1115.3'	21.0'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-1	20.2' - 22.2'	2.0'	2-5-7-5	--	
1115.0'	21.3'			SPT-2	22.2' - 24.2'	2.0'	8-9-14-14	--	
1112.1'	24.2'	Weathered Shale							
		No Refusal / Bottom of Hole							
Depth to clean clay 21.0' (Elev. = 1115.3')									

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733610, E 2890775	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-17	Total Depth 22.5 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/10/11	Completed 12/10/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1122.3'	14.0'	Bottom Ash							
1114.8'	21.5'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff Weathered Shale No Refusal / Bottom of Hole		SPT-1	20.5' - 22.5'	1.5'	10-13-12-17	--	
1114.6'	21.7'								
1113.8'	22.5'								
<p>Depth to clean clay 21.5' (Elev. = 1114.8')</p>									

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733510, E 2890775		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-18	Total Depth	20.2 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/10/11	Completed	12/10/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1124.2'	12.1'	Bottom Ash							
1117.8'	18.5'	Lean Clay, light reddish brown to yellowish brown, moist, hard Weathered Shale		SPT-1	18.2' - 20.2'	2.0'	3-18-20-24	--	
1117.1'	19.2'								
1116.1'	20.2'								
		No Refusal / Bottom of Hole							
		Depth to clean clay 18.5' (Elev. = 1117.8')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087		Location	N 733830, E 2890875	
Project Name	TVA JSF Bottom Ash Pond		Boring No.	STN-19	Total Depth 25.8 ft
County	Hawkins		Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration		Date Started	12/10/11	Completed 12/10/11
Supervisor	A. Hacker	Driller M. Martin	Depth to Water	2.5 ft	Date/Time 12/10/11
Logged By	A. Hacker		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1118.4'	17.9'								
		Bottom Ash							
1112.5'	23.8'			SPT-1	23.8' - 24.2'	0.4'	50+/-0.4'	--	
1110.5'	25.8'	Weathered Shale							

SPT Refusal /
Bottom of Hole

Project Number	175561087	Location	N 733800, E 2891000	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-20	Total Depth 23.8 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/11/11	Completed 12/11/11
Supervisor	A. Hacker Driller M. Martin	Depth to Water	2.5 ft	Date/Time 12/11/11
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.3'	11.0'	Bottom Ash							
1114.0'	22.3'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff Weathered Shale		SPT-1	21.8' - 23.8'	2.0'	3-10-14-20	--	
1113.3'	23.0'								
1112.5'	23.8'								
		No Refusal / Bottom of Hole							
<p style="text-align: center;">Depth to clean clay 22.3' (Elev. = 1114.0')</p>									

STANTECFMISM_LEGACY_JSF_GPJ_FMSM_GRAPHIC_LOG_GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733600, E 2891000		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-21	Total Depth	21.4 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/11/11	Completed	12/11/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1121.3'	15.0'	Bottom Ash							
1115.9'	20.4'	Lean Clay, light reddish brown to yellowish brown, moist, hard Weathered Shale SPT Refusal / Bottom of Hole		SPT-1	20.4' - 21.4'	1.0'	10-50+/0.5'	--	
1115.0'	21.3'								
1114.9'	21.4'								
<p>Depth to clean clay 20.4' (Elev. = 1115.9')</p>									

STANTECFINSM_LEGACY_JSF.GPJ_FINSIMGRAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733500, E 2891100		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-22	Total Depth	19.3 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/11/11	Completed	12/11/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1128.6'	7.7'	Bottom Ash							
				SPT-1	7.9' - 9.9'	0.0'	WOH	--	
				SPT-2	9.9' - 11.9'	0.5'	WOH	--	
1118.1'	18.2'			SPT-3	17.3' - 19.3'	1.5'	6-10-23-20	--	
1117.2'	19.1'	Lean Clay, light reddish brown to yellowish brown, moist, hard							
1117.0'	19.3'		Weathered Shale						
		No Refusal / Bottom of Hole							
		Depth to clean clay 18.2' (Elev. = 1118.1')							

STANTECFMISM_LEGACY_JSF_GPJ_FMSIMGRAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733700, E 2891100	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-23	Total Depth 23.6 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/11/11	Completed 12/11/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1127.2'	9.1'	Bottom Ash							
				SPT-1	10.8' - 12.8'	0.0'	WOH	--	
				SPT-2	12.8' - 14.8'	0.0'	WOH	--	
1114.4'	21.9'								
1113.5'	22.8'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-3	21.6' - 23.6'	2.0'	5-6-22-50+/0.5'	--	
1112.7'	23.6'								
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
<p>Depth to clean clay 21.9' (Elev. = 1114.4')</p>									

STANTECFMISM_LEGACY_JSF_GPJ_FMSM_GRAPHIC_LOG_GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733410, E 2891253	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-24	Total Depth 18.7 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/11/11	Completed 12/11/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1126.2'	10.1'	Bottom Ash							
1120.2'	16.1'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-1	14.7' - 16.7'	2.0'	1-1-1-6	--	
1120.0'	16.3'			SPT-2	16.7' - 18.7'	1.5'	8-10-12-14	--	
1117.6'	18.7'	Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 16.1' (Elev. = 1120.2')							

STANTECFM5M_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733500, E 2891425		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-25	Total Depth	18.4 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed	12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							
1133.8'	2.5'	Barge							Surface elevations obtained by Stantec using GPS survey equipment.
		Water							
1126.5'	9.8'	Bottom Ash							
				SPT-1	9.8' - 11.8'	2.0'	1-1-1-1	--	
				SPT-2	11.8' - 13.8'	2.0'	1-1-2-5	--	
				SPT-3	13.8' - 15.8'	2.0'	4-4-3-4	--	
1119.7'	16.6'			SPT-4	15.8' - 17.8'	2.0'	3-3-5-8	--	
1119.2'	17.1'	Lean Clay, light reddish brown to yellowish brown, moist, medium stiff		SPT-5	17.8' - 18.4'	0.6'	8-50+/0.1'	--	
1117.9'	18.4'								
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 16.6' (Elev. = 1119.7')							



SUBSURFACE LOG

Project Number	175561087	Location	N 733400, E 2891500	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-26	Total Depth 14.8 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.8'	10.5'	Bottom Ash							
1122.8'	13.5'								
1122.3'	14.0'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-1	12.8' - 14.8'	2.0'	4-14-18-25	--	
1121.5'	14.8'		Weathered Shale						
		No Refusal / Bottom of Hole							
		Depth to clean clay 13.5' (Elev. = 1122.8')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733600, E 2891500	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-27	Total Depth 18.5 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.8'	10.5'	Bottom Ash							
				SPT-1	11.0' - 13.0'	0.0'	WOH	--	
				SPT-2	13.0' - 15.0'	0.0'	WOH	--	
				SPT-3	15.0' - 17.0'	2.0'	2-3-8-8	--	
1118.1'	18.2'			SPT-4	17.0' - 18.5'	1.5'	10-10-50+/0.5'	--	

1117.8'	18.5'	Weathered Shale No Refusal / Bottom of Hole
1117.7'	18.6'	

STANTECFMISM_LEGACY_JSF_GPS_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733700, E 2891500		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-28	Total Depth	21.6 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed	12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.8'	10.5'	Bottom Ash							
				SPT-1	11.6' - 13.6'	1.5'	5-10-18-22	--	
				SPT-2	13.6' - 15.6'	2.0'	10-12-12-16	--	
				SPT-3	15.6' - 17.6'	2.0'	18-15-15-17	--	
1117.4'	18.9'			SPT-4	17.6' - 19.6'	2.0'	3-2-2-8	--	
1117.2'	19.1'	Lean Clay, light reddish brown to yellowish brown, moist, soft		SPT-5	19.6' - 21.6'	1.3'	10-14-20-26	--	
1114.7'	21.6'								
		Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 18.9' (Elev. = 1117.4')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733740, E 2891750		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-29	Total Depth	18.2 ft
County	Hawkins	Surface Elevation	1136.3 ft		
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed	12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.8'	10.5'	Bottom Ash							
				SPT-1	11.8' - 13.8'	1.5'	WOH	--	
				SPT-2	13.8' - 15.8'	0.5'	WOH	--	
1119.2'	17.1'			SPT-3	15.8' - 17.8'	1.0'	0-3-4-20	--	
1118.1'	18.2'	Weathered Shale		SPT-4	17.8' - 18.2'	0.3'	50+/-0.4'	--	

SPT Refusal /
Bottom of Hole

STANTECFM5M_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733640, E 2891750	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-30	Total Depth 24.8 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker Driller M. Martin	Depth to Water	2.5 ft	Date/Time 12/13/11
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1125.5'	10.8'	Bottom Ash							
				SPT-1	10.8' - 12.8'	1.5'	0-1-1-1	--	
				SPT-2	12.8' - 14.8'	1.5'	2-1-3-6	--	
				SPT-3	14.8' - 16.8'	1.5'	10-15-17-17	--	
				SPT-4	16.8' - 18.8'	1.5'	12-15-15-18	--	
				SPT-5	18.8' - 20.8'	2.0'	8-10-15-18	--	
1113.9'	22.4'			SPT-6	20.8' - 22.8'	2.0'	12-10-15-16	--	
1112.5'	23.8'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-7	22.8' - 24.8'	1.0'	7-12-16-18	--	
1111.5'	24.8'								
		Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 22.4' (Elev. = 1113.9')							

STANTECFMISM_LEGACY_JSJ.GPJ_FMSIMGAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733540, E 2891750	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-31	Total Depth 19.1 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1126.3'	10.0'	Bottom Ash							
				SPT-1	10.7' - 12.7'	0.5'	WOH	--	
				SPT-2	12.7' - 14.7'	2.0'	7-7-9-9	--	
				SPT-3	14.7' - 16.7'	2.0'	3-3-6-5	--	
1118.3'	18.0'			SPT-4	16.7' - 18.7'	2.0'	3-3-4-8	--	
1117.9'	18.4'	Lean Clay, light reddish brown to yellowish brown, moist, medium stiff		SPT-5	18.7' - 19.1'	0.4'	50+/-0.4'	--	
1117.2'	19.1'								
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 18.0' (Elev. = 1118.3')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733440, E 2891750	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-32	Total Depth 18.6 ft
County	Hawkins	Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration	Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water 2.5 ft
Logged By	A. Hacker	Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1127.3'	9.0'	Bottom Ash							
				SPT-1	10.6' - 12.6'	1.0'	0-0-0-1	--	
				SPT-2	12.6' - 14.6'	1.0'	4-7-8-9	--	
1120.2'	16.1'			SPT-3	14.6' - 16.6'	2.0'	3-4-5-7	--	
1117.7'	18.6'	Lean Clay, light reddish brown to yellowish brown, moist, medium stiff		SPT-4	16.6' - 18.6'	0.8'	2-3-3-5	--	

No Refusal /
Bottom of Hole

Depth to clean clay 16.1' (Elev. = 1120.2')

Project Number	175561087		Location	N 733347, E 2891757	
Project Name	TVA JSF Bottom Ash Pond		Boring No.	STN-33	Total Depth 18.3 ft
County	Hawkins		Surface Elevation	1136.3 ft	
Project Type	Geotechnical Exploration		Date Started	12/13/11	Completed 12/13/11
Supervisor	A. Hacker	Driller M. Martin	Depth to Water	2.5 ft	Date/Time 12/13/11
Logged By	A. Hacker		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1136.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
1133.8'	2.5'	Barge							
		Water							
1128.3'	8.0'	Bottom Ash							
				SPT-1	11.0' - 13.0'	0.4'	0-0-5-8	--	
				SPT-2	13.0' - 15.0'	1.5'	6-8-10-10	--	
1119.8'	16.5'			SPT-3	15.0' - 17.0'	2.0'	3-3-4-6	--	
1118.5'	17.8'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-4	17.0' - 18.3'	1.0'	5-8-50+0.3'	--	
1118.0'	18.3'								
		Weathered Shale							
		No Refusal / Bottom of Hole							
		Depth to clean clay 16.5' (Elev. = 1119.8')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733400, E 2891861	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-34	Total Depth 18.0 ft
County	Hawkins	Surface Elevation	1138.2 ft	
Project Type	Geotechnical Exploration	Date Started	11/3/11	Completed 11/3/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water Dry
Logged By	A. Hacker	Date/Time	11/3/11	
		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1138.2'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
1123.1'	15.1'								
		Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-1	15.0' - 16.5'	1.5'	5-7-10	--	
1120.2'	18.0'			SPT-2	16.5' - 18.0'	1.5'	4-9-13	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 15.1' (Elev. = 1123.1')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSM_GRAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733500, E 2891857		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-35	Total Depth	20.8 ft
County	Hawkins	Surface Elevation	1139.2 ft		
Project Type	Geotechnical Exploration	Date Started	11/3/11	Completed	11/3/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1139.2'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	15.0' - 16.5'	1.5'	3-8-17	--	
				SPT-2	17.0' - 18.5'	1.5'	15-13-15	--	
1119.2'	20.0'			SPT-3	19.0' - 20.5'	1.5'	4-5-10	--	
1118.7'	20.5'			SPT-4	20.5' - 20.8'	0.3'	50+/-0.3'	--	
1118.4'	20.8'	Lean Clay, light reddish brown to yellowish brown, moist, stiff							
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 20.0' (Elev. = 1119.2')							

Project Number	175561087	Location	N 733600, E 2891876		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-36	Total Depth	24.5 ft
County	Hawkins	Surface Elevation	1139.1 ft		
Project Type	Geotechnical Exploration	Date Started	11/3/11	Completed	11/3/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1139.1'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	17.5' - 19.0'	1.5'	10-13-14	--	
				SPT-2	20.0' - 21.5'	1.5'	3-3-4	--	
1117.1'	22.0'			SPT-3	21.5' - 23.0'	1.5'	3-3-3	--	
		Lean Clay, light reddish brown to yellowish brown, moist, medium stiff		SPT-4	23.0' - 24.5'	1.0'	2-3-5	--	
1114.6'	24.5'			No Refusal / Bottom of Hole					
				Depth to clean clay 22.0' (Elev. = 1117.1')					



SUBSURFACE LOG

Project Number	175561087	Location	N 733800, E 2891905		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-38	Total Depth	23.0 ft
County	Hawkins	Surface Elevation	1139.1 ft		
Project Type	Geotechnical Exploration	Date Started	11/8/11	Completed	11/8/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1139.1'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
1117.8'	21.3'			SPT-1	20.0' - 21.5'	1.5'	8-7-7	--	
1116.1'	23.0'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-2	21.5' - 23.0'	1.5'	6-8-8	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 21.3' (Elev. = 1117.8')							

STANTECFMNSM_LEGACY_JSJ.GPJ_FMSM_GRAPHIC.LOG_GDT_3/8/12

Project Number	175561087	Location	N 733840, E 2892009	
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-39	Total Depth 23.0 ft
County	Hawkins	Surface Elevation	1137.6 ft	
Project Type	Geotechnical Exploration	Date Started	11/2/11	Completed 11/2/11
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time 11/2/11
		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1137.6'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	15.0' - 16.5'	1.5'	11-15-17	--	
				SPT-2	17.0' - 18.5'	1.5'	9-10-16	--	
1116.9'	20.7'			SPT-3	20.0' - 21.5'	1.5'	8-19-16	--	
1114.7'	22.9'	Lean Clay, light reddish brown to yellowish brown, moist, hard		SPT-4	21.5' - 23.0'	1.5'	15-23-50+/0.5'	--	
1114.6'	23.0'	Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 20.7' (Elev. = 1116.9')							

STANTECFMISM_LEGACY_JSF_GPS_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087		Location	N 733740, E 2892010			
Project Name	TVA JSF Bottom Ash Pond		Boring No.	STN-40	Total Depth	23.0 ft	
County	Hawkins		Surface Elevation	1137.5 ft			
Project Type	Geotechnical Exploration		Date Started	11/2/11	Completed	11/2/11	
Supervisor	A. Hacker	Driller	M. Martin	Depth to Water	Dry	Date/Time	11/2/11
Logged By	A. Hacker		Depth to Water	--	Date/Time	--	

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1137.5'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-1	17.5' - 19.0'	1.5'	1-0-0	--	
1117.1'	20.4'			SPT-2	20.0' - 21.5'	1.5'	0-2-2	--	
1114.5'	23.0'	Lean Clay, light reddish brown to yellowish brown, moist, soft to hard		SPT-3	21.5' - 23.0'	1.5'	14-20-15	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 20.4' (Elev. = 1117.1')							

STANTECFMNSM_LEGACY_JSJF.GPJ_FMSM-GRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733540, E 2891973		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-42	Total Depth	20.2 ft
County	Hawkins	Surface Elevation	1137.5 ft		
Project Type	Geotechnical Exploration	Date Started	11/1/11	Completed	11/1/11
Supervisor	B. Webster	Driller	M. Martin	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1137.5'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
1119.5'	18.0'								
1118.2'	19.3'	Lean Clay, light reddish brown to yellowish brown, moist, hard		SPT-1	17.5' - 19.0'	1.5'	9-16-19	--	
1117.3'	20.2'		SPT-2	19.0' - 20.2'	1.2'	10-11-50+/0.2'	--		
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 18.0' (Elev. = 1119.5')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG_GDT_38/12

Project Number	175561087	Location	N 733400, E 2892180		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-44	Total Depth	14.5 ft
County	Hawkins	Surface Elevation	1142.7 ft		
Project Type	Geotechnical Exploration	Date Started	11/10/11	Completed	11/10/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1142.7'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
1130.7'	12.0'			SPT-1	10.0' - 11.5'	1.5'	5-0-0	--	
				SPT-2	11.5' - 13.0'	1.5'	2-3-3	--	
1128.2'	14.5'	Lean Clay, light reddish brown to yellowish brown, moist, medium stiff to stiff		SPT-3	13.0' - 14.5'	1.5'	4-7-7	--	

No Refusal /
Bottom of Hole

Depth to clean clay 12.0' (Elev. = 1130.7')

Project Number	175561087	Location	N 733500, E 2892180		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-45	Total Depth	19.5 ft
County	Hawkins	Surface Elevation	1142.1 ft		
Project Type	Geotechnical Exploration	Date Started	11/10/11	Completed	11/10/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1142.1'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
1124.9'	17.2'			SPT-1	15.0' - 16.5'	1.5'	5-7-7	--	
				SPT-2	16.5' - 18.0'	1.5'	6-3-4	--	
1122.6'	19.5'	Lean Clay, light reddish brown to yellowish brown, moist, medium stiff to stiff		SPT-3	18.0' - 19.5'	1.5'	6-5-4	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 17.2' (Elev. = 1124.9')							

STANTECFM5M_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733700, E 2892180		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-47	Total Depth	24.4 ft
County	Hawkins	Surface Elevation	1141.5 ft		
Project Type	Geotechnical Exploration	Date Started	11/10/11	Completed	11/10/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1141.5'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	19.0' - 20.5'	1.5'	2-3-4	--	
1119.1'	22.4'			SPT-2	20.5' - 22.0'	1.5'	7-7-6	--	
				SPT-3	22.0' - 23.5'	1.5'	4-10-9	--	
1117.3'	24.2'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff							
1117.1'	24.4'	Weathered Shale							
		No Refusal / Bottom of Hole							
Depth to clean clay 22.4' (Elev. = 1119.1')									

STANTECFINMIL_LEGACY_JSJF.GPJ_FINSIMGAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 733825, E 2892430		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-49	Total Depth	24.5 ft
County	Hawkins	Surface Elevation	1138.6 ft		
Project Type	Geotechnical Exploration	Date Started	11/2/11	Completed	11/2/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
				Date/Time	11/2/11
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois. Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1138.6'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-1	14.0' - 15.5'	1.5'	1-0-0	--	
				SPT-2	15.5' - 17.0'	1.5'	WOH	--	
				SPT-3	17.0' - 18.5'	1.5'	1-2-4	--	
				SPT-4	18.5' - 20.0'	1.5'	WOH	--	
1116.3'	22.3'			SPT-5	20.0' - 21.5'	1.5'	3-5-6	--	
				SPT-6	21.5' - 23.0'	1.5'	4-4-8	--	
1114.1'	24.5'	Lean Clay, light reddish brown to yellowish brown, moist, stiff to hard		SPT-7	23.0' - 24.5'	1.5'	14-13-18	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 22.3' (Elev. = 1116.3')							

Project Number	175561087	Location	N 733740, E 2892430		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-50	Total Depth	24.7 ft
County	Hawkins	Surface Elevation	1140.8 ft		
Project Type	Geotechnical Exploration	Date Started	11/10/11	Completed	11/10/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1140.8'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-1	15.0' - 16.5'	0.8'	2-1-0	--	
				SPT-2	16.5' - 18.0'	0.7'	WOH	--	
				SPT-3	18.0' - 19.5'	1.2'	WOH	--	
				SPT-4	19.5' - 21.7'	1.5'	WOH	--	
1117.8'	23.0'			SPT-5	21.7' - 23.2'	1.5'	1-1-2	--	SPT-4 fell to 21.7' due to soft material
1116.1'	24.7'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-6	23.2' - 24.7'	0.5'	3-5-6	--	
		No Refusal / Bottom of Hole							
Depth to clean clay 23.0' (Elev. = 1117.8')									

Project Number	175561087	Location	N 733540, E 2892430		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-52	Total Depth	17.3 ft
County	Hawkins	Surface Elevation	1141.0 ft		
Project Type	Geotechnical Exploration	Date Started	11/9/11	Completed	11/9/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1141.0'	0.0'	Top of Hole							
		Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
1125.4'	15.6'			SPT-1	14.0' - 15.5'	1.0'	WOH	--	
1125.0'	16.0'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-2	15.5' - 17.0'	1.5'	4-7-10	--	
1123.7'	17.3'		SPT-3	17.0' - 17.3'	0.3'	50+/-0.3'	--		
		Weathered Shale							
		SPT Refusal / Bottom of Hole							
		Depth to clean clay 15.6' (Elev. = 1125.4')							

STANTECFM5M_LEGACY_JSF.GPJ_FMSIM-GRAPHIC.LOG.GDT_3/8/12

Project Number	175561087	Location	N 733680, E 2892680		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-53	Total Depth	18.0 ft
County	Hawkins	Surface Elevation	1140.5 ft		
Project Type	Geotechnical Exploration	Date Started	11/9/11	Completed	11/9/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1140.5'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
1124.5'	16.0'			SPT-1	15.0' - 16.5'	1.5'	0-0-8	--	
1122.5'	18.0'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-2	16.5' - 18.0'	1.5'	6-6-8	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 16.0' (Elev. = 1124.5')							

STANTECFMISM_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12

Project Number	175561087		Location	N 733767, E 2892680	
Project Name	TVA JSF Bottom Ash Pond		Boring No.	STN-54	Total Depth 22.8 ft
County	Hawkins		Surface Elevation	1140.5 ft	
Project Type	Geotechnical Exploration		Date Started	11/9/11	Completed 11/9/11
Supervisor	B. Webster	Driller A. Clements	Depth to Water	Dry	Date/Time 11/9/11
Logged By	A. Hacker		Depth to Water	--	Date/Time --

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1140.5'	0.0'	Top of Hole Bottom Ash							Surface elevations obtained by Stantec using GPS survey equipment.
				SPT-1	13.0' - 14.5'	1.5'	4-2-1	--	
				SPT-2	14.5' - 16.0'	1.5'	WOH	--	
				SPT-3	16.0' - 17.5'	1.5'	WOH	--	
				SPT-4	17.5' - 19.0'	1.5'	WOH	--	
1120.3'	20.2'	Lean Clay, light reddish brown to yellowish brown, moist, stiff		SPT-5	19.7' - 21.3'	1.5'	3-5-4	--	
1117.7'	22.8'		SPT-6	21.3' - 22.8'	1.5'	5-6-6	--	SPT-4 fell to 19.7' due to soft material	
<p>No Refusal / Bottom of Hole</p> <p>Depth to clean clay 20.2' (Elev. = 1120.3')</p>									

STANTECFMSM_LEGACY_JSF_GPS_FINALGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087	Location	N 734132, E 2893455		
Project Name	TVA JSF Bottom Ash Pond	Boring No.	STN-59	Total Depth	27.3 ft
County	Hawkins	Surface Elevation	1144.5 ft		
Project Type	Geotechnical Exploration	Date Started	11/8/11	Completed	11/8/11
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry
Logged By	A. Hacker	Depth to Water	--	Date/Time	--

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1144.5'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	22.0' - 23.5'	1.5'	1-1-1	--	
				SPT-2	23.5' - 25.0'	1.5'	1-1-1	--	
				SPT-3	25.0' - 26.5'	1.5'	1-1-2	--	
1117.5'	27.0'			SPT-4	26.5' - 27.3'	0.8'	5-50+/0.3'	--	
1117.2'	27.3'	Weathered Shale							
		SPT Refusal / Bottom of Hole							

STANTECFM5M_LEGACY_JSF.GPJ_FMSIMGRAPHIC.LOG.GDT_3/8/12



SUBSURFACE LOG

Project Number	175561087		Location	N 734258, E 2893595			
Project Name	TVA JSF Bottom Ash Pond		Boring No.	STN-60	Total Depth	25.5 ft	
County	Hawkins		Surface Elevation	1144.3 ft			
Project Type	Geotechnical Exploration		Date Started	11/8/11	Completed	11/8/11	
Supervisor	B. Webster	Driller	A. Clements	Depth to Water	Dry	Date/Time	11/8/11
Logged By	A. Hacker		Depth to Water	--	Date/Time	--	

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1144.3'	0.0'	Top of Hole							Surface elevations obtained by Stantec using GPS survey equipment.
		Bottom Ash							
				SPT-1	18.0' - 19.5'	1.2'	2-1-0	--	
				SPT-2	19.5' - 21.0'	1.5'	1-1-0	--	
				SPT-3	21.0' - 22.5'	0.9'	WOH	--	
1120.4'	23.9'			SPT-4	22.5' - 24.0'	1.5'	2-2-2	--	
1118.8'	25.5'	Lean Clay, light reddish brown to yellowish brown, moist, very stiff		SPT-5	24.0' - 25.5'	1.5'	0-7-14	--	
		No Refusal / Bottom of Hole							
		Depth to clean clay 23.9' (Elev. = 1120.4')							

STANTECFMISM_LEGACY_JSF_GPS_FMSIMGRAPHIC.LOG.GDT_3/8/12