APPENDIX B –
BORING LOGS

APPENDIX B.1

BACKGROUND SOIL BORINGS

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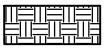
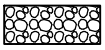
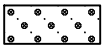
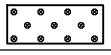
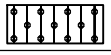
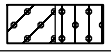
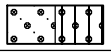
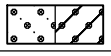
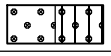
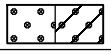
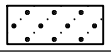
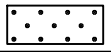
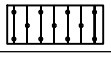
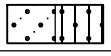
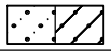
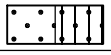
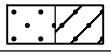
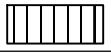
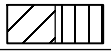
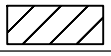
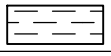
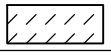
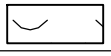
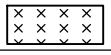
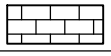
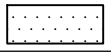
Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Lithology Graphics are based on TVA drafting standards.

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of- Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG01Alt**
Client	Tennessee Valley Authority	Boring Location	732,654.15 N; 2,890,399.54 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1132.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/5/19
Completed	2/5/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology Depth Ft[3]	Elevation	Graphic	Description	Overburden: / Rock Core:	Sample[1,2] / RQD %	Depth Ft[3] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %
0.0	1132.1		Top of Hole					
0.1	1132.0		Gravel pad material		HA01	0.0 - 0.5	0.5	
			SANDY FAT CLAY WITH SILT, CH, 7.5YR 5/4 (brown) to 7.5YR 5/8 (strong brown), medium plasticity, soft, moist		DP01	0.0 - 5.0	2.6	N/A
5.0	1127.1		FAT CLAY WITH SILT, CH, 7.5YR 5/1 (gray) to 7.5YR 5/6 (strong brown), medium to high plasticity, firm, moist, trace gravel throughout		DP02	5.0 - 10.0	4.3	N/A
10.0	1122.1		Saprolitic bedding structure visible from 9.5' to 10.0'		DP03	10.0 - 12.4	2.9	N/A
12.4	1119.7		LEAN CLAY WITH SILT, CL, 7.5YR 4/3 (brown) to 7.5YR 4/6 (strong brown), non-plastic, firm to stiff, dry to moist Recovery greater than run length due to swell Trace gravel from 12.1' to 12.4'					
			Bedrock Refusal / Bottom of Hole at 12.4 Ft.					

HA* 0.5/2.5-20190205 (0.0 - 5.0)
6.8/8.8-20190205 (5.0 - 10.0)
10.0/12.4-20190205 (10.0 - 12.4)

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190205) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG02Alt**
Client	Tennessee Valley Authority	Boring Location	732,179.98 N; 2,889,116.93 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1137.5 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/4/19
Completed	2/4/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1137.5		Top of Hole					
0.5	1137.0		Topsoil, roots		HA01	0.0 - 0.5	0.5	
			SANDY LEAN CLAY WITH SILT, CL, 10YR 5/3 (brown), medium plasticity, very soft to soft, moist, moderately fat, medium-graded sand and organics/roots throughout layer		DP01	0.0 - 5.0	3.7	N/A
5.0	1132.5		GRAVELLY CLAYEY SAND, SC, 10YR 6/1 (gray) to 10YR 6/6 (brownish yellow), fine to medium, medium dense, moist, subrounded, with gravel cobbles		DP02	5.0 - 10.0	3.7	N/A
7.5	1130.0		FAT CLAY, CH, 5YR 3/1 (very dark gray) to 5YR 4/4 (reddish brown), medium to high plasticity, very soft to firm, moist, iron oxide staining, some saprolitic bedding structure visible		DP03	10.0 - 15.0	5.0	N/A
15.0	1122.5							

HA[4] 0.9/2.9-20190204; 5.0/7.5-20190204; 11.5/13.5-20190204; 0.0 - 5.0; 5.0 - 10.0; 10.0 - 15.0

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG02Alt**
Client Tennessee Valley Authority
Boring Location 732,179.98 N; 2,889,116.93 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1137.5 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
17 18 19 19.5	1118.0		FAT CLAY WITH SILT, CH, 5YR 4/1 (dark gray) to 5YR 3/2 (dark reddish brown), medium to high plasticity, soft to firm, moist, with some lean, non-plastic intervals, saprolitic bedding structure, shale gravel, and inclined bedding (~40 deg) *(Continued)*		16.5/18.5-20190204 DP04	15.0 - 19.5	4.5	N/A
			Bedrock Refusal / Bottom of Hole at 19.5 Ft.		15.0 - 19.5			

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190204) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG03 (JSF-BG03Alt)**
Client	Tennessee Valley Authority	Boring Location	732,227.96 N; 2,888,268.92 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1132.5 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/29/19
Completed	1/29/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1132.5		Top of Hole						
0.5	1132.0		Topsoil		HA[4]	HA01	0.0 - 0.5	0.5	
			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 6/6 (reddish yellow) to 7.5YR 6/1 (gray), very fine to fine, medium plasticity, dense, moist, with silt, stiff		1.5/3.5-20190129	DP01	0.0 - 5.0	5.0	N/A
5.0	1127.5		Occasional vegetation roots from 4.0' to 5.0' Increased sand from 4.5' to 5.0'		5.0/6.6-20190129				
6.5	1126.0		POORLY GRADED SAND WITH SILT WITH CLAY, SP-SM, 7.5YR 5/8 (strong brown), medium, loose to medium dense, moist, subrounded, some subangular		7.2/9.2-20190129	DP02	5.0 - 10.0	5.0	N/A
			LEAN CLAY TRACE SILT, CL, 7.5YR 7/2 (pinkish gray), non-plastic, stiff, moist Sand lens from 7.9' to 8.4'						
10.0	1122.5		LEAN CLAY WITH SILT, CL, 7.5YR 5/6 (strong brown), medium plasticity, firm, moist, trace sand, some saprolitic bedding structure, trace organic inclusions throughout		11.5/13.5-20190129	DP03	10.0 - 14.4	5.0	N/A
14.4	1118.1		Recovery greater than run length due to swell						
			Bedrock Refusal / Bottom of Hole at 14.4 Ft.						

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190129) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG04Alt**
Client	Tennessee Valley Authority	Boring Location	731,221.53 N; 2,888,415.22 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1164.9 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/30/19
Completed	1/30/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1164.9		Top of Hole						
0.1	1164.8		Topsoil, grass, and roots		HA[4]	HA01	0.0 - 0.5	0.5	
			SILTY LEAN CLAY SOME GRAVEL, CL, 5YR 5/6 (yellowish red) to 5YR 5/8 (yellowish red), medium plasticity, soft to firm, moist, fine to medium sand and occasional gravel clasts throughout		0.9/2.9-20190130	DP01	0.0 - 5.0	3.3	N/A
5.0	1159.9		GRAVELLY WELL GRADED SAND WITH CLAY, SW-SC, 5YR 5/8 (yellowish red), medium to coarse, medium dense, moist, well graded, subangular to subrounded cobble-sized gravel throughout		7.2/9.2-20190130	DP02	5.0 - 10.0	3.6	N/A
10.0	1154.9		No sample, malfunction in sample tube			DP03	10.0 - 15.0	0.0	N/A
15.0	1149.9		LEAN CLAY WITH SILT, CL, 10YR 7/6 (yellow), non-plastic, stiff, moist, organic inclusions throughout						

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG04Alt**
Client Tennessee Valley Authority
Boring Location 731,221.53 N; 2,888,415.22 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1164.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]		Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %		Run Ft		Rec. Ft	Rec. %
17 18 18.9	1146.0		LEAN CLAY WITH SILT, CL, 10YR 7/6 (yellow), non-plastic, stiff, moist, organic inclusions throughout *(Continued)* Recovery greater than run length due to swell		15.5/18.5-20190130	DP04	15.0 - 18.9	15.0 - 18.9	4.0	N/A
			Bedrock Refusal / Bottom of Hole at 18.9 Ft.							

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190130) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG05Alt**
Client	Tennessee Valley Authority	Boring Location	731,311.74 N; 2,886,883.91 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1087.7 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/31/19
Completed	1/31/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1087.7		Top of Hole						
0.1	1087.6		Parking lot material, dirt, roots, gravel		HA[4] HA01	0.0 - 0.5		0.5	
			SANDY LEAN CLAY, CL, 7.5YR 6/1 (gray) to 7.5YR 6/6 (reddish yellow), medium plasticity, firm, moist, trace subround gravel, silty		1.3/3.3-20190131 DP01	0.0 - 5.0	0.0 - 5.0	4.7	N/A
5.0	1082.7		CLAYEY SAND TRACE GRAVEL, SC, 7.5YR 6/1 (gray) to 7.5YR 6/6 (reddish yellow), medium dense, moist, subrounded, poorly graded		6.0/8.0-20190131 DP02	5.0 - 10.0	5.0 - 10.0	4.0	N/A
10.0	1077.7		Shale, dark gray to brown, highly weathered, rotten, saprolitic		DP03	10.0 - 11.8	10.0 - 11.8	1.4	N/A
11.4	1076.3		Shale, dark gray to black, very soft, laminated, highly weathered, moist, horizontal, saprolitic						
11.8	1075.9		Bedrock Refusal / Bottom of Hole at 11.8 Ft.						

Top of Rock = 10.0 Ft.
Top of Rock Elevation = 1077.7 Ft.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190131) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG06Alt**
Client	Tennessee Valley Authority	Boring Location	732,724.08 N; 2,887,093.42 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1120.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/1/19
Completed	2/1/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1120.8		Top of Hole						
0.5	1120.3		Topsoil and grass		HA[4] HA01	0.0 - 0.5		0.5	
			LEAN CLAY WITH SILT, CL, 7.5YR 5/8 (strong brown), non-plastic, soft to firm, moist, trace organic material		1.5/3.5-20190201 DP01	0.0 - 5.0	0.0 - 5.0	5.0	N/A
			Increased organic material from 5.0' to 11.0'		6.5/8.5-20190201 DP02	5.0 - 10.0	5.0 - 10.0	5.0	N/A
			Saprolite with bedded structure from 8.5' to 10.0'						
11.0	1109.8		LEAN CLAY TRACE SILT, CL, 7.5YR 4/6 (strong brown), non-plastic, firm to stiff, damp to moist		11.2/13.2-20190201 DP03	10.0 - 14.5	10.0 - 14.5	5.0	N/A
			Recovery greater than run length due to swell						
14.5	1106.3		Saprolite with bedded structure, some shale chunks/gravel from 13.5' to 14.5'						
			Bedrock Refusal / Bottom of Hole at 14.5 Ft.						

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190201) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG07**
Client	Tennessee Valley Authority	Boring Location	731,693.73 N; 2,887,903.64 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1134.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/29/19
Completed	1/29/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1134.8		Top of Hole						
1.4	1133.4		Gravel fill from 0.0' to 1.4'	HA[4] 1.4/4.1-20190129	HA01	0.0 - 0.5	0.0 - 5.0	0.5	
8.5	1126.3		FAT CLAY WITH SILT, CH, 7.5YR 6/4 (light brown) to 7.5YR 4/6 (strong brown), medium to high plasticity, firm, moist	6.2/8.2-20190129	DP01	0.0 - 5.0		4.1	N/A
10.5	1124.3		CLAYEY SAND WITH GRAVEL, SC, 7.5YR 6/6 (reddish yellow) to 7.5YR 4/2 (brown), medium to coarse, medium dense, moist, poorly graded gravel is subangular to subrounded, gravel cobble count increases with depth		DP02	5.0 - 10.0	5.0 - 10.0	4.8	N/A
14.2	1120.6		LEAN CLAY WITH SILT, CL, 10YR 4/4 (dark yellowish brown), non-plastic, firm to stiff, moist, trace sand and trace organic inclusions throughout layer Shale rock from 14.0' to 14.2'	11.0/14.0-20190129	DP03	10.0 - 14.2	10.0 - 14.2	5.0	N/A
			Bedrock Refusal / Bottom of Hole at 14.2 Ft.						

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G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190129) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG08**
Client	Tennessee Valley Authority	Boring Location	732,700.27 N; 2,892,122.11 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1143.9 ft
Project Name	JSF TDEC Order	Date Started	1/28/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Inspector	M. Edmunds	Logger	M. Edmunds
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1143.9		Top of Hole						
0.1	1143.8		Topsoil, roots, and gravel		HA01	0.0 - 0.5		0.5	
			LEAN CLAY WITH SILT, CL, 7.5YR 6/6 (reddish yellow), non-plastic, soft to firm, moist, lean		DP01	0.0 - 5.0	0.0 - 5.0	4.0	N/A
5.0	1138.9		LEAN CLAY WITH SILT, CL, 7.5YR 5/4 (brown) to 7.5YR 7/4 (pink), non-plastic, firm to stiff, moist, some sand		DP02	5.0 - 10.0	5.0 - 10.0	5.0	N/A
			Lens of gravel (limestone) from 7.9' to 8.4'						
10.0	1133.9		SILTY LEAN CLAY WITH SAND, CL-ML, 7.5YR 5/3 (brown) to 7.5YR 5/8 (strong brown), medium plasticity, firm to hard, moist, medium-grained sand lens mixed well with clay, organic inclusions throughout interval		DP03	10.0 - 15.0	10.0 - 15.0	5.0	N/A
15.0	1128.9								

HA[4] 2.0/4.0-20190128 6.5/8.5-20190128 11.5/13.5-20190128

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG08**
Client Tennessee Valley Authority
Boring Location 732,700.27 N; 2,892,122.11 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1143.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]		Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %		Run Ft		Rec. Ft	Rec. %
17 18 19	19.3	1124.6	CLAYEY SAND WITH GRAVEL, SC, 7.5YR 5/4 (brown) to 7.5YR 5/8 (strong brown), medium to coarse, soft to medium dense, moist, poorly graded, subround to subangular gravel strains, gravel content increases with depth *(Continued)*		16.5/18.5-20190128	DP04	15.0 - 19.3	15.0 - 19.3	3.7	N/A

Bedrock Refusal /
Bottom of Hole at 19.3 Ft.

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G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190128) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG09**
Client	Tennessee Valley Authority	Boring Location	733,250.92 N; 2,892,599.19 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1141.4 ft
Project Name	JSF TDEC Order	Date Started	1/25/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Inspector	M. Edmunds	Logger	M. Edmunds
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1141.4		Top of Hole						
0.5	1140.9		Topsoil, roots, clay, and gravel		HA01	0.0 - 0.5		0.5	
			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 6/6 (brownish yellow) to 7.5YR 4/6 (strong brown), non-plastic, firm to stiff		DP01	0.0 - 5.0		4.5	N/A
5.0	1136.4		Soft from 4.5' to 5.0'						
			CLAYEY SAND WITH SILT, SC, 7.5YR 6/8 (reddish yellow) to 7.5YR 5/8 (strong brown), fine to medium, low to medium plasticity, loose, moist		DP02	5.0 - 10.0		4.2	N/A
10.0	1131.4		Organic material in gravel at base of deposit at 10.0'						
11.6	1129.8		WELL GRADED GRAVEL WITH SAND, GW-GM, medium to coarse, non-plastic, loose to medium dense, moist, with sand, silt, and clay						
			SILTY LEAN CLAY TRACE SAND, CL-ML, 7.5YR 6/8 (reddish yellow), non-plastic, stiff, moist, small organic inclusions throughout layer, trace gravel, saprolitic bedding structure visible		DP03	10.0 - 15.0		5.0	N/A
15.0	1126.4		LEAN CLAY WITH SILT, CL, 7.5YR 5/3 (brown), non-plastic, stiff to hard, moist, trace sand, some organic inclusions in places						

HA[4] 1.0/4.0-20190125 6.1/8.1-20190125 10.0/11.7-20190125 12.7/14.7-20190125

0.0 - 5.0 5.0 - 10.0 10.0 - 15.0

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG09**
Client Tennessee Valley Authority
Boring Location 733,250.92 N; 2,892,599.19 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1141.4 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
17 18 19	19.1	1122.3	LEAN CLAY WITH SILT, CL, 7.5YR 5/3 (brown), non-plastic, stiff to hard, moist, trace sand, some organic inclusions in places *(Continued)* Shale gravel with bedding from 17.1' to 19.1', saprolitic bedding visible Recovery greater than run length due to swell Bedrock Refusal / Bottom of Hole at 19.1 Ft.	16.1/18.1-20190125	DP04	15.0 - 19.1 15.0 - 19.1	5.0	N/A

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G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190125) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG10**
Client	Tennessee Valley Authority	Boring Location	734,574.59 N; 2,894,284.42 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1130.6 ft
Project Name	JSF TDEC Order	Date Started / Completed	1/24/19 / 1/24/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water / Date/Time	N/A / N/A
Inspector / Logger	M. Edmunds / M. Edmunds	Depth to Water / Date/Time	N/A / N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight / Drop / Efficiency	N/A / N/A / N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology: Depth Ft[3]	Elevation	Graphic	Description	Overburden: / Rock Core:	Sample[1,2] / RQD %	Depth Ft[3] / Run Ft	Rec. Ft / Rec. %	Blows/PSI
0.0	1130.6		Top of Hole					
0.5	1130.1		Topsoil, grass, roots, and gravel		HA[4] HA01	0.0 - 0.5	0.5	
0 to 5.0	1130.1 to 1125.6		SILTY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) to 10YR 5/8 (yellowish brown), non-plastic to low plasticity, soft to firm, moist		1.4/3.4-20190124 DP01	0.0 - 5.0	4.8	N/A
5.0 to 12.9	1125.6 to 1117.7		SILTY LEAN CLAY TRACE SAND, CL, 10YR 6/8 (brownish yellow), non-plastic, firm to stiff, moist, some manganese concretions throughout		6.5/8.5-20190124 DP02	5.0 - 10.0	5.0	N/A
			Color change to 10YR 5/6 (yellowish brown) to 10YR 5/8 (yellowish brown) at 10.0'		10.5/12.5-20190124 DP03	10.0 - 12.9	5.0	N/A
12.9	1117.7		Saprolitic bedding structure visible from 11.9' to 12.9'					
			Bedrock Refusal / Bottom of Hole at 12.9 Ft.					

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190124) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG11**
Client	Tennessee Valley Authority	Boring Location	736,964.98 N; 2,896,841.17 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1106.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/24/19
Completed	1/24/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1106.8		Top of Hole						
0.1	1106.7		Topsoil		HA[4] 1.1/3.1-20190124	HA01	0.0 - 0.5	0.5	
			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) to 7.5YR 4/1 (dark gray), non-plastic, firm, dry to moist Trace gravel inclusions from 0.1' to 1.1' Red sand and clay interval from 2.1' to 2.3'			DP01	0.0 - 5.0	4.3	N/A
5.0	1101.8		LEAN CLAY WITH SILT, CL, 7.5YR 6/8 (reddish yellow) to 7.5YR 4/6 (strong brown), medium to high plasticity, soft to stiff, moist to wet		5.5/8.5-20190124	DP02	5.0 - 10.0	4.1	N/A
10.0	1096.8		SILTY LEAN CLAY TRACE SAND, CL, 7.5YR 5/4 (brown) to 7.5YR 4/4 (brown), non-plastic to low plasticity, firm to stiff, moist		11.3/13.3-20190124	DP03	10.0 - 14.6	4.6	N/A
14.6	1092.2		Bedrock Refusal / Bottom of Hole at 14.6 Ft.						

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190124) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG12**
Client	Tennessee Valley Authority	Boring Location	737,493.41 N; 2,895,501.86 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1086.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/23/19
Completed	1/23/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7300DT
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1086.8		Top of Hole						
0.5	1086.3		Topsoil, grass, roots, some gravel, pad material (anthropogenic)		HA01	0.0 - 0.5		0.5	
			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) to 7.5YR 5/8 (strong brown), non-plastic to low plasticity, stiff to hard, dry		DP01	0.0 - 5.0	0.0 - 5.0	3.6	N/A
5.0	1081.8		CLAYEY SAND, SC, 7.5YR 6/1 (gray) to 7.5YR 6/3 (light brown), medium dense, moist		DP02	5.0 - 10.0	5.0 - 10.0	1.0	N/A
			Color change to 7.5YR 5/6 (strong brown), fine, loose to medium dense, moderately graded at 10.0'		DP03	10.0 - 15.0	10.0 - 15.0	5.0	N/A
13.5	1073.3		Some manganese inclusions from 13.0' to 13.5'						
15.0	1071.8		POORLY GRADED SAND, SP, 10YR 6/6 (brownish yellow) to 10YR 5/3 (brown), medium to coarse, loose, wet, oxidation banding in sand throughout						

HA[4] 0.8/2.8-20190123 5.0/10.0-20190123 10.75/12.75-20190123 13.5/15.0-20190123

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG12**
Client Tennessee Valley Authority
Boring Location 737,493.41 N; 2,895,501.86 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1086.8 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]		Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
15	15.9	1070.9		No recovery		DP04	15.0 - 15.9	15.0 - 15.9	0.0	N/A
				Bedrock Refusal / Bottom of Hole at 15.9 Ft.						

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20190123) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG13**
Client	Tennessee Valley Authority	Boring Location	734,206.45 N; 2,886,552.61 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1086.0 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/7/19
Completed	10/7/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	K. Carey	Logger	K. Carey
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Hawkston (Subcontractor)	Drill Rig Type and ID	Geoprobe 3230DT
Overburden Drilling and Sampling Tools (Type and Size)	DPT 2.0" liner		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	P. Dunne	Approved By	L. Price

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1086.0		Top of Hole						
0.8	1085.2		SILTY GRAVEL, GM, 10YR 4/3 (brown), dry		HA01	0.0 - 0.5		0.5	
1.6	1084.4		SILT, ML, 7.5YR 4/6 (strong brown), soft, dry						
3.7	1082.3		LEAN CLAY, CL, 7.5YR 5/6 (strong brown), non-plastic, soft, dry	1.5/3.5-20191007	DP01	0.0 - 5.0	0.0 - 5.0	3.7	N/A
10.0	1076.0		FAT CLAY, CH, 10YR 4/4 (dark yellowish brown) to 7.5YR 5/4 (brown), low plasticity, firm, moist	6.5/8.5-20191007	DP02	5.0 - 10.0	5.0 - 10.0	5.0	N/A
15.0	1071.0		FAT CLAY, CH, 7.5YR 3/2 (dark brown) to 10YR 3/3 (dark brown), medium plasticity, firm, moist	11.5/13.5-20191007	DP03	10.0 - 15.0	10.0 - 15.0	5.0	N/A
			FAT CLAY, CH, 10YR 3/6 (dark yellowish brown) to 10YR 4/4 (dark yellowish brown), medium plasticity, moist	16.5/18.5-20191007	DP04	15.0 - 20.0	15.0 - 20.0	5.0	N/A

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-BG13**
Client: Tennessee Valley Authority
Boring Location: 734,206.45 N; 2,886,552.61 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1086.0 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
20.0	1066.0		FAT CLAY, CH, 10YR 3/6 (dark yellowish brown) to 10YR 4/4 (dark yellowish brown), medium plasticity, moist *(Continued)*					
			FAT CLAY, CH, 7.5YR 4/4 (brown), medium to high plasticity, soft, moist		DP05 (21.5/23.5-20191007)	20.0 - 25.0 (20.0 - 25.0)	4.3	N/A
25.0	1061.0		SILTY SAND, SM, 7.5YR 4/3 (brown) to 10YR 4/2 (dark grayish brown), fine to medium, moist to wet		DP06 (26.5/28.5-20191007)	25.0 - 29.0 (25.0 - 29.0)	4.0	N/A
29.0	1057.0		Angular limestone pebbles/cobbles from 28.7' to 29'					
			Bedrock Refusal / Bottom of Hole at 29.0 Ft.					

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20191008) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG14**
Client	Tennessee Valley Authority	Boring Location	734,503.56 N; 2,886,376.22 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1079.2 ft
Project Name	JSF TDEC Order	Elevation Datum	NGVD29
Project Location	Hawkins Co, Rogersville, Tennessee	Date Started	10/8/19
Inspector	K. Carey	Completed	10/8/19
Logger	K. Carey	Depth to Water	N/A
Drilling Contractor	Hawkston (Subcontractor)	Date/Time	N/A
Drill Rig Type and ID	Geoprobe 3230DT	Depth to Water	N/A
Overburden Drilling and Sampling Tools (Type and Size)	DPT 2.0" liner	Date/Time	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	P. Dunne	Approved By	L. Price

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1079.2		Top of Hole						
0			CLAYEY GRAVEL, GC, 10YR 4/4 (dark yellowish brown) to 10YR 4/3 (brown), dry Fill from 0.0' to 2.0' Angular, gray gravel zone from 1.4' to 2.0'	HA[4] 0.0/0.5-20191008	HA01	0.0 - 0.5		0.5	
2.8	1076.4				DP01	0.0 - 5.0	0.0 - 5.0	2.8	N/A
3			FAT CLAY, CH, 10YR 3/3 (dark brown) to 10YR 4/4 (dark yellowish brown), low to medium plasticity, firm, dry to moist	3.0/5.0-20191008					
6.5/8.5-20191008					DP02	5.0 - 10.0	5.0 - 10.0	5.0	N/A
10.0	1069.2								
10			FAT CLAY, CH, 10YR 4/4 (dark yellowish brown), medium plasticity, moist	11.5/13.5-20191008	DP03	10.0 - 15.0	10.0 - 15.0	5.0	N/A
13.3	1065.9								
15			SILTY SAND, SM, 10YR 4/4 (dark yellowish brown), fine to medium, moist Transitions to a sandy material at 13.3'						
15.0	1064.2								
16.5/18.5-20191008			POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist		DP04	15.0 - 20.0	15.0 - 20.0	3.4	N/A
20									

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/5/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG14**
Client Tennessee Valley Authority
Boring Location 734,503.56 N; 2,886,376.22 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1079.2 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist *(Continued)*					
19								
20.0	1059.2		Grades to a poorly graded, medium sand from 19.7' to 20.0'					
20								
21			WELL GRADED GRAVEL WITH SAND, GW, 10YR 4/6 (dark yellowish brown), coarse, moist to wet					
22				21.5/23.5-20191008	DP05	20.0 - 25.0	3.3	N/A
23								
23.7	1055.5							
24			WELL GRADED GRAVEL WITH SAND, GW, 10YR 3/1 (very dark gray), coarse, moist, light gray weathered bedrock fragments/ pebbles and cobbles Rock encountered at 23.7' Terminated boring at 25.0' to not advance further into bedrock					
25.0	1054.2		Bedrock Refusal / Bottom of Hole at 25.0 Ft.					

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2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20191008) sampled using hand auger

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-BG15**
Client	Tennessee Valley Authority	Boring Location	734,653.36 N; 2,886,121.92 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1078.7 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/8/19
Completed	10/8/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	23.5 ft
Date/Time	10/8/19		
Inspector	K. Carey	Logger	K. Carey
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Hawkston (Subcontractor)	Drill Rig Type and ID	Geoprobe 3230DT
Overburden Drilling and Sampling Tools (Type and Size)	DPT 2.0" liner		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	C. Kocka	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1078.7		Top of Hole						
0			SILTY GRAVEL, GW, 10YR 2/1 (black), dry, [FILL]	HA[4]	HA01	0.0 - 0.5		0.5	
1			Color change to 10YR 6/1 (gray) at 0.9'						
2.0	1076.7			1.5/3.5-20191008					
2			LEAN CLAY, CL, 7.5YR 4/3 (brown), non to low plasticity, dry		DP01	0.0 - 5.0	0.0 - 5.0	3.9	N/A
3									
4			Color change to 7.5YR 4/4 (brown) at 3.9'						
5									
6									
7				6.5/8.5-20191008					
8					DP02	5.0 - 10.0	5.0 - 10.0	4.5	N/A
9									
10.0	1068.7								
10			FAT CLAY, CH, 7.5YR 4/4 (brown), medium to high plasticity, moist						
11				11.0/14.0-20191008					
12									
13					DP03	10.0 - 15.0	10.0 - 15.0	5.0	N/A
14									
15			Color change to 7.5YR 4/6 (strong brown) at 15.0'						
16									
17				16.5/18.5-20191008					
17.5	1061.2				DP04	15.0 - 20.0	15.0 - 20.0	NR	N/A
18									

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 1/14/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-BG15**
Client Tennessee Valley Authority
Boring Location 734,653.36 N; 2,886,121.92 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1078.7 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18 19 20			SILTY SAND, SM, 7.5YR 4/4 (brown), very fine to medium, moist to wet *(Continued)*					
20.0	1058.7							
21 22 23			POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist to wet, subangular and subrounded pebbles/cobbles within sand, alluvial material.	21.5/23.5-20191008	DP05	20.0 - 24.5	2.7	N/A
24			Encountered water from 23.5' to 24.5'					
24.5	1054.2		Bedrock Refusal / Bottom of Hole at 24.5 Ft.					

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface
4: Grab sample (0.0/0.5-20191008) sampled using hand auger

SUBSURFACE LOG

Project Number	175565262	Location	N36◦22'42.15 W82◦57'10.84 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-101** Total Depth 24.6 ft
County	Hawkins, TN	Surface Elevation	1106.6 ft
Project Type	Well Installations	Date Started	10/7/15 Completed 10/19/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	17.9 ft -bgs Date/Time 10/7/15
Logged By	C. Skees/ J. Andrew	Depth to Water	16.0 f -bgs Date/Time 10/21/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1106.6'	0.0'	Top of Hole							
1106.2'	0.4'	Topsoil							4-inch dia. PVC well installed.
1105.1'	1.5'	Fill: Gravelly Lean Clay, brown, moist							
		Lean Clay, brown to light brown, moist, medium stiff - Gray mottling below 5.0' - Becomes light brown with gray and red brown mottling, and Mn concretions below 10.0' - Fine sand, slightly wet, increasing below 13.8'		SPT-1	2.5' - 4.0'	1.3'	3-5-6	--	
				SPT-2	5.0' - 6.5'	1.5'	4-5-9	--	
				SPT-3	7.5' - 9.0'	1.5'	4-6-10	--	
				SPT-4	10.0' - 11.5'	1.4'	3-6-10	--	Analytical Samples Composite 1: SPT-5, SPT-6, SPT-7 Composite 2: SPT-8, SPT-9
				SPT-5	12.5' - 14.0'	1.4'	3-4-6	--	
1091.0'	15.6'								
		Silty Sand, wet to saturated, loose, light brown with dark brown intermixed, zones of clayey (sand is very fine) - Becomes gray to dark gray, fine to medium coarse grained below 23.7'		SPT-6	15.0' - 16.5'	1.3'	4-6-10	--	
				SPT-7	17.5' - 19.0'	1.3'	3-4-6	--	
				SPT-8	20.0' - 21.5'	1.0'	WOR-1-3	--	
				SPT-9	22.5' - 24.0'	1.1'	1-2-3	--	
1082.0'	24.6'								
		Auger Refusal / Bottom of Hole Top of Rock = 24.6' Elevation (1082.0')							

STANTEC/FMSM_LEGACY_JSF_INSTALL.GPJ FMSM-GRAPHIC LOG.GDT 4/21/16

SUBSURFACE LOG

Project Number	175565262	Location	N36°22'47.42 W82°57'27.04 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-102** Total Depth 18.2 ft
County	Hawkins, TN	Surface Elevation	1087.6 ft
Project Type	Well Installations	Date Started	10/15/15 Completed 10/15/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	7.5 ft -bgs Date/Time 10/15/15
Logged By	J. Andrew	Depth to Water	7.3 ft -bgs Date/Time 10/19/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1087.6'	0.0'	Top of Hole							
1087.1'	0.5'	Topsoil							4-inch dia. PVC well installed.
		Fill: Lean Clay with Gravel, brown, moist, medium stiff		SPT-1	2.5' - 4.0'	1.1'	2-2-3	--	
1082.6'	5.0'								
		Lean Clay, brown and light brown, moist to wet, soft to very soft		SPT-2	5.0' - 6.5'	1.0'	1-1-3	--	
				SPT-3	7.5' - 9.0'	0.2'	WOH-WOH-WOH	--	Analytical Samples Composite 1: SPT-1, SPT-2, SPT-3
1077.6'	10.0'								
		Sand, brown, wet, very loose to medium dense		SPT-4	10.0' - 11.5'	1.1'	WOH-1-2	--	Composite 2: SPT-4, SPT-5, SPT-6
				SPT-5	12.5' - 14.0'	1.4'	1-1-3	--	
				SPT-6	15.0' - 16.5'	1.5'	5-7-9	--	
1070.1'	17.5'								
1069.4'	18.2'	Weathered shale, gray		SPT-7	17.5' - 18.2'	0.2'	20-50+	--	
		Auger Refusal / Bottom of Hole Top of Rock = 17.5' Elevation (1070.1')							

STANTEC/FMSM_LEGACY_JSF_INSTALL.GPJ FMSM-GRAPHIC LOG.GDT 4/19/16

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-106**
Client	Tennessee Valley Authority	Boring Location	733,018.92 N; 2,887,105.85 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1094.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/23/19
Completed	1/24/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	7.5 ft
Date/Time	1/23/19 16:00		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	5.6 ft	Date/Time	1/24/19 08:30
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners,		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	15.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1094.8		Top of Hole						
0.5	1094.3		Topsoil						
			SILTY LEAN CLAY, CL, 10YR 5/3 (brown) and 10YR 6/8 (brownish yellow), low plasticity, soft to medium stiff, dry to moist Trace Mn nodules from 0.5' to 2.5' Color change to 10YR 5/4 (yellowish brown) at 1.5'		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	WH-3-4
					SS02G	1.5 - 3.0	1.5 - 3.0	1.5	3-5-4
3.0	1091.8		SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), medium plasticity, soft, dry to moist, trace Mn nodules		SS03G	3.0 - 4.5	3.0 - 4.5	1.0	2-1-2
			Low to medium plasticity, stiff at 4.5'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	3-5-5
6.0	1088.8		SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown) and 10YR 7/1 (light gray), medium plasticity, medium stiff, dry to moist, mottled		SS05G	6.0 - 7.5	6.0 - 7.5	1.5	3-3-4
			Color change to 10YR 6/6 (brownish yellow) and 10YR 7/1 (light gray), low to medium plasticity, moist at 7.5'		SS06G	7.5 - 9.0	7.5 - 9.0	1.3	2-3-3
			Color change to 10YR 5/8 (yellowish brown) and 10YR 7/1 (light gray), trace Mn nodules at 9.0'		SS07E	9.0 - 10.5	9.0 - 10.5	1.5	2-2-4

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-106**
Client Tennessee Valley Authority
Boring Location 733,018.92 N; 2,887,105.85 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1094.8 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
10				9.0/12.0-20190124					
10.5	1084.3								
10.8	1084.0		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 6/4 (light yellowish brown) with 10YR 7/1 (light gray), low to medium plasticity, soft, moist						
11					SS08E	10.5 - 12.0	10.5 - 12.0	1.5	2-1-3
			SILTY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10Y 7/1 (light greenish gray), non-plastic, stiff, dry, thinly laminated weathered shale, high angle laminations						
12			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light gray), low to medium plasticity, soft, moist, mottled; 0.3' dry brittle brown silty clay at 12.0'		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	2-1-3
13									
			Color change to 10YR 5/3 (brown) and 10YR 6/1 (gray) at 13.5'						
14					SS10G	13.5 - 15.0	13.5 - 15.0	1.5	2-6-40
14.2	1080.6		SILTY LEAN CLAY, CL, 10YR 4/2 (dark grayish brown) and 10YR 4/1 (dark gray), low to medium plasticity, stiff, dry, thinly laminated						
14.9	1079.9								
15	15.0	1079.8	Shale, dry						

Refusal /
Bottom of Hole at 15.0 Ft.

Top of Rock = 14.9 Ft.
Top of Rock Elevation = 1079.9 Ft.

See installation log for permanent well JSF-106 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-110**
Client	Tennessee Valley Authority	Boring Location	732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.0 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	1/28/19
		Completed	1/30/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	10.2 ft
		Date/Time	1/29/19 11:28
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" and 3" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	17.2 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1139.0		Top of Hole						
0.8	1138.2		Topsoil		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	1-1-4
			SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, soft to medium stiff, dry to moist Color change to 10Y 6/4 (pale olive) and 10Y 7/1 (light greenish gray) low to medium plasticity, medium stiff to stiff, with trace gravel at 1.5'		SS02G	1.5 - 3.0	1.5 - 3.0	1.5	4-6-6
			Color change to 10YR 6/6 (brownish yellow), medium stiff at 3.0' Root blocking recovery in SS03		SS03G	3.0 - 4.5	3.0 - 4.5	1.0	3-5-8
			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light greenish gray), very stiff, with sand at 4.5' Color change to 10YR 6/6 (brownish yellow), soft to medium stiff, dry at 5.0' Stiff, dry to moist, with trace gravel at 6.0'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	4-6-10
					SS05G	6.0 - 7.5	6.0 - 7.5	0.5	2-2-7
			With trace gravel at 7.5' 3-inch SS used from 7.5' to refusal		SS06G	7.5 - 9.0	7.5 - 9.0	1.1	6-11-13
			Medium stiff with trace gravel at 9.0'		SS07aG	9.0 - 9.9	9.0 - 10.5	1.2	4-6-11
9.9	1129.1								
			CLAYEY SAND SOME GRAVEL, SC, 10YR 5/6 (yellowish brown), medium, loose, dry to moist Gravel is coarse to very coarse, rounded Loose to medium dense at 10.5'	9.9/12.0-20190129	SS07bE	9.9 - 10.5			
					SS08E	10.5 - 12.0	10.5 - 12.0	0.9	4-7-10
12.0	1127.0								
			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	10-7-12

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-110**
Client Tennessee Valley Authority
Boring Location 732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1139.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
14			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining *(Continued)*		SS10G	13.5 - 15.0	13.5 - 15.0	0.0	4-7-10
15.0	1124.0		LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, stiff to very stiff, dry to moist, laminated, Mn staining		SS11G	15.0 - 16.5	15.0 - 16.5	1.5	9-9-18
16			Color change to 10G 5/1 (greenish gray), low to medium plasticity, stiff with gravel at 16.5'						
17					SS12G	16.5 - 18.0	16.5 - 18.0	0.2	6-50+-10
17.6	1121.4								
18.0	1121.0		Shale, dark gray						
18			Refusal / Bottom of Hole at 18.0 Ft.						

Top of Rock = 17.6 Ft.
Top of Rock Elevation = 1121.4 Ft.

See well installation log for permanent well JSF-110 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

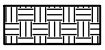
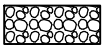
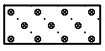
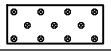
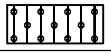
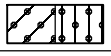
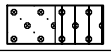
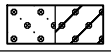
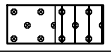
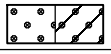
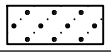
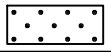
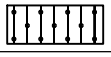
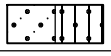
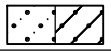
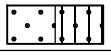
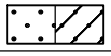
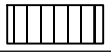
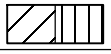
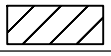
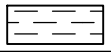
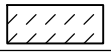
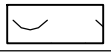
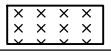
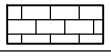
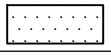
APPENDIX B.2

GEOTECHNICAL BORINGS

Table of Contents

Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Lithology Graphics are based on TVA drafting standards.

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of- Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B01**
Client	Tennessee Valley Authority	Boring Location	732,773.55 N; 2,889,548.42 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1141.9 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	3/28/19
Completed	3/28/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Pritt	Logger	M. Pritt
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Blakley	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1141.9		Top of Hole						
0.6	1141.3		SILTY LEAN CLAY LITTLE SAND, CL, 10YR 5/8 (yellowish brown), medium plasticity, medium stiff, moist, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	1.4	2-4-10
			SILTY SAND, SM, 2.5YR 2.5/1 (reddish black), medium to coarse, very loose to medium dense, moist, [CCR]		SS02G	2.5 - 4.0	2.5 - 4.0	1.1	5-4-4
					SS03G	5.0 - 6.5	5.0 - 6.5	1.3	2-2-1
					ST01G	6.5 - 8.5	6.5 - 8.5	1.3	350
10.6	1131.3		SANDY SILT, ML, 2.5YR 2.5/1 (reddish black), fine, non-plastic, soft to hard, moist to wet, [CCR]		SS04G	10.0 - 11.5	10.0 - 11.5	1.5	WH-WH-WH
					SS05G	12.5 - 14.0	12.5 - 14.0	1.1	3-WH-1

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B01**
Client: Tennessee Valley Authority
Boring Location: 732,773.55 N; 2,889,548.42 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1141.9 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
14			SANDY SILT, ML, 2.5YR 2.5/1 (reddish black), fine, non-plastic, soft to hard, moist to wet, [CCR] *(Continued)*						
15									
16					SS06G	15.0 - 16.5	15.0 - 16.5	1.5	WH-3-WH
17									
18									
19					ST02G	18.0 - 19.3	18.0 - 19.3	1.3	700
20									
21					SS07G	20.0 - 21.5	20.0 - 21.5	1.5	3-4-2
22									
23	22.9	1119.0			SS08G	22.5 - 23.8	22.5 - 23.8	1.3	1-21-50+/4"
24	24.0	1117.9	Shale, gray to dark gray, very fine grained, soft, laminated to thin bedded, freshly weathered to moderately weathered, dry to moist, 15° to 30° bedding angle, (cobble)		SS09G	24.0 - 25.2	24.0 - 25.2	1.2	2-19-50+/2"
25	24.9	1117.0	SANDY SILT, ML, 2.5YR 2.5/1 (reddish black), fine, non-plastic, soft to hard, moist to wet, [CCR]		SS10G	25.4 - 25.7	25.4 - 25.7	0.3	50+/4"
	25.7	1116.2	Shale, gray to dark gray, very fine grained, soft, laminated to thin bedded, freshly weathered to moderately weathered, dry to moist, 15° to 30° bedding angle						

Refusal /
Bottom of Hole at 25.7 Ft.

Top of Rock = 24.9 Ft.
Top of Rock Elevation = 1117.0 Ft.

Boring backfilled with 30% solids bentonite grout

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B02**
Client	Tennessee Valley Authority	Boring Location	735,189.22 N; 2,890,418.92 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1104.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/26/20
Completed	10/27/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1104.4		Top of Hole						
0.4	1104.0		Topsoil, intact roots, brown soil, [FILL]		SS01a	0.0 - 0.4	0.0 - 1.5	1.5	4-6-9
			SILTY LEAN CLAY TRACE GRAVEL, CL, 5YR 5/8 (yellowish red) to 10YR 5/6 (yellowish brown), medium plasticity, hard, dry to moist, lensed, rounded gravels and coal gravels, woody material, [FILL] Dissected roots to 1.2'		SS01bG	0.4 - 1.5			
					ST01G	2.5 - 5.0	2.5 - 5.0	0.9	NR
6.8	1097.6				SS02aG	6.0 - 6.8	6.0 - 7.5	1.2	5-6-15
			SILT WITH SAND, ML, N 5/ (gray), non-plastic, very hard, moist, [CCR]		SS02bG	6.8 - 7.5			
					SS03G	8.5 - 10.0	8.5 - 10.0	1.2	3-7-10
					SS04G	11.0 - 12.5	11.0 - 12.5	1.2	4-6-5
					ST02G	13.5 - 16.0	13.5 - 16.0	2.2	NR
17.1	1087.3		Transition in tube						

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B02**
Client: Tennessee Valley Authority
Boring Location: 735,189.22 N; 2,890,418.92 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1104.4 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			Transition in tube *(Continued)*		ST03G	17.0 - 19.5	17.0 - 19.5	2.1	NR
19									
19.4	1085.0								
20			SANDY FAT CLAY, CH, 10YR 5/6 (yellowish brown), medium to high plasticity, firm, moist, [FILL]						
21									
22					ST04G	20.5 - 23.0	20.5 - 23.0	1.4	NR
23									
24					SS05aG	24.0 - 24.4			
24.4	1080.0								
25			WELL GRADED GRAVEL WITH SILT, GW, N 3/ (very dark gray) to N 6/ (gray), medium to coarse, very dense, moist, gravel fill, road material, [CCR]		SS05bG	24.4 - 25.5	24.0 - 25.5	1.3	7-19-19
26									
27					SS06G	26.5 - 28.0	26.5 - 28.0	1.1	12-18-18
28									
29									
29.1	1075.3								
30			SILT LITTLE SAND, ML, N 5/ (gray), non-plastic, soft, moist, bottom depth approximated, encountered in tube, [CCR]		SS07G	29.0 - 30.5	29.0 - 30.5	1.4	4-1-1
31									
32									
33					ST05G	31.5 - 34.0	31.5 - 34.0	2.1	NR
34									
35									
36					ST06G	35.0 - 37.5	35.0 - 37.5	2.4	NR
37									
38									
39									
39.4	1065.0								
40			SANDY FAT CLAY TRACE SAND, CH, 7.5YR 4/4 (brown), high plasticity, firm, moist, grey sandy silt-filled fine bioturbation tubes, native soil, rounded quartz cobbles		ST07G	38.5 - 41.0	38.5 - 41.0	1.8	NR
41									
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B02**
Client Tennessee Valley Authority
Boring Location 735,189.22 N; 2,890,418.92 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1104.4 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			SANDY FAT CLAY TRACE SAND, CH, 7.5YR 4/4 (brown), high plasticity, firm, moist, grey sandy silt-filled fine bioturbation tubes, native soil, rounded quartz cobbles *(Continued)*		ST08G	42.0 - 44.5		1.3	NR
44					SS08G	43.2 - 44.7	43.2 - 44.7	0.6	N/A
44.7	1059.7		FAT CLAY, CH, N 4/ (dark gray) to 2.5Y 5/4 (light olive brown), high plasticity, very hard, moist, laminated, residuum/highly weathered shale		SS09G	44.7 - 44.9	44.7 - 44.9	0.2	50/2"
44.9	1059.5		Refusal / Bottom of Hole at 44.9 Ft.						

Begin mud rotary at 5.0' bgs.

Split spoon sample SS08G was obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

Vibrating Wire Piezometer installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B03**
Client	Tennessee Valley Authority	Boring Location	735,285.15 N; 2,890,425.12 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1092.7 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/28/20
Completed	10/29/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1092.7		Top of Hole						
0.9	1091.8		Crushed stone, road base		SS01aG	0.0 - 0.9	0.0 - 1.5	1.3	10-16-8
			SANDY LEAN CLAY, CL, 10YR 6/8 (brownish yellow) and N 7/ (light gray), medium plasticity, firm, iron oxide staining, lensed, rounded pebbles, [FILL]		SS01bG	0.9 - 1.5			
					SS02G	2.5 - 4.0	2.5 - 4.0	0.8	4-2-4
					ST01G	5.0 - 7.5	5.0 - 7.5	1.8	NR
			Color change to 5YR 4/6 (yellowish red) at 10.0'		ST02G	8.5 - 11.0	8.5 - 11.0	2.0	NR
					ST03G	12.0 - 14.5	12.0 - 14.5	1.8	NR
					ST04G	15.5 - 18.0	15.5 - 18.0	1.3	NR

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B03**
Client: Tennessee Valley Authority
Boring Location: 735,285.15 N; 2,890,425.12 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1092.7 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
19.1	1073.6		CLAYEY SILT WITH SAND, ML, 2.5Y 3/2 (very dark grayish brown) to 2.5Y 2.5/1 (black), medium to high plasticity, firm, moist, moderate organic odor, native, mottled, fragments of woody debris, some blocky horizons		SS03G	19.0 - 20.5	19.0 - 20.5	1.2	4-5-4
					ST05G	21.5 - 24.0	21.5 - 24.0	1.8	NR
					ST06G	25.0 - 27.5	25.0 - 27.5	2.4	NR
					ST07G	28.5 - 31.0	28.5 - 31.0	1.6	NR
33.1	1059.6				SS04G	32.0 - 33.1	32.0 - 33.1	1.1	35-50/6"

Refusal /
Bottom of Hole at 33.1 Ft.

Begin mud rotary at 5.0' bgs.

Boring backfilled with 30% solids bentonite grout.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B04**
Client	Tennessee Valley Authority	Boring Location	735,285.77 N; 2,890,356.82 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1081.0 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/30/20
Completed	10/30/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1081.0		Top of Hole						
0.5	1080.5		Crushed stone, road fill		SS01aG	0.0 - 0.5	0.0 - 1.5	1.2	10-6-5
			LEAN CLAY WITH SAND, CL, 10YR 4/6 (dark yellowish brown) and 10YR 6/8 (brownish yellow), medium plasticity, firm to very hard, dry to moist, lensed, [FILL]		SS01bG	0.5 - 1.5			
					ST01G	2.5 - 5.0	3.6 - 5.1	1.1	NR
					SS02G	3.6 - 5.1		1.2	N/A
					ST02G	6.0 - 8.5	7.0 - 8.5	1.2	NR
					SS03G	7.0 - 8.5		1.3	N/A
					ST03G	9.5 - 12.0	10.2 - 11.7	1.0	NR
					SS04G	10.2 - 11.7		1.2	N/A
					ST04G	13.0 - 15.5	13.0 - 15.5	1.5	NR
					ST05G	16.5 - 19.0	16.5 - 19.0	1.4	NR

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 5/11/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B04**
Client Tennessee Valley Authority
Boring Location 735,285.77 N; 2,890,356.82 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1081.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			LEAN CLAY WITH SAND, CL, 10YR 4/6 (dark yellowish brown) and 10YR 6/8 (brownish yellow), medium plasticity, firm to very hard, dry to moist, lensed, [FILL] *(Continued)*						
19									
20									
21.0	1060.0				SS05aG	20.5 - 21.0	20.5 - 22.0		
21			FAT CLAY TRACE SAND, CH, 7.5YR 5/6 (strong brown), medium to high plasticity, hard, moist, iron oxide staining, manganese nodules		ST06G	20.0 - 22.5		1.0	NR
22					SS05bG	21.0 - 22.0		1.3	N/A
23									
23.1	1057.9				SS06G	23.1 - 23.2	23.1 - 23.2	0.1	50/1"
~~23.2~~	~~1057.8~~		Shale, light gray to dark gray						
			Refusal / Bottom of Hole at 23.2 Ft.						

Begin mud rotary at 5.0' bgs.

Split spoon samples SS02G, SS03G, SS04G, and SS05G were obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

Boring backfilled with 30% solids bentonite grout.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B05**
Client	Tennessee Valley Authority	Boring Location	735,477.99 N; 2,890,759.14 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1109.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/16/20
Completed	10/17/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1109.4		Top of Hole						
0.5	1108.9		Crushed Stone, roadbed with geofabric base						
			SILTY FAT CLAY WITH GRAVEL, CH, 7.5YR 6/8 (reddish yellow) to 7.5YR 6/2 (pinkish gray), medium to high plasticity, firm to very hard, moist, Quartz gravel to cobbles, moderately rounded, [FILL]		ST01G	2.5 - 5.0	2.5 - 5.0	0.0	NR
					ST02G	3.5 - 6.0	3.5 - 6.0	0.5	NR
			Cobble encountered while pushing ST03G		ST03G	6.0 - 6.4		0.4	NR
7.0	1102.4				SS01b	6.4 - 6.9	6.4 - 7.9		
			SILT, ML, N 5/ (gray) to N 2.5/ (black), non-plastic, very soft to firm, moist, sand content increases with depth, [CCR]		SS01aG	6.9 - 7.0		1.1	9-13-16
					SS01c	7.0 - 7.9			
					ST04G	9.5 - 12.0	9.5 - 12.0	2.2	NR
					ST05G	13.0 - 15.5	13.0 - 15.5	2.2	NR
					ST06G	16.5 - 19.0	16.5 - 19.0	2.5	NR

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-B05**

Client Tennessee Valley Authority | Boring Location 735,477.99 N; 2,890,759.14 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1109.4 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT, ML, N 5/ (gray) to N 2.5/ (black), non-plastic, very soft to firm, moist, sand content increases with depth, [CCR] *(Continued)*						
19									
20									
21					ST07G	20.0 - 22.5	20.0 - 22.5	2.2	NR
22									
23									
24									
25					ST08G	23.5 - 26.0	23.5 - 26.0	2.5	NR
26									
27									
28					ST09G	27.0 - 29.5	27.0 - 29.5	2.5	NR
29									
30									
31									
32					ST10G	30.5 - 33.0	30.5 - 33.0	2.3	NR
33									
34									
35					ST11G	34.0 - 36.5	34.0 - 36.5	2.4	NR
36									
37									
38									
39					ST12G	37.5 - 40.0	37.5 - 40.0	2.5	NR
40									
41									
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B05**
Client Tennessee Valley Authority
Boring Location 735,477.99 N; 2,890,759.14 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.4 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43					ST13G	41.0 - 43.5	41.0 - 43.5	2.5	NR
43.5	1065.9								
44			ORGANIC SILT WITH SAND, OH, 7.5YR 4/1 (dark gray), high plasticity, firm to hard, moist, wood fragments						
45									
46					ST14G	44.5 - 47.0	44.5 - 47.0	2.5	NR
47									
48	48.1	1061.3			SS02G	48.0 - 48.1	48.0 - 48.1	0.1	50+/1"
			Refusal / Bottom of Hole at 48.1 Ft.						

Begin mud rotary at 5.0' bgs.

Sample ST02G was obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing.

3.34" inclinometer casing installed to facilitate crosshole seismic logging.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B06**
Client	Tennessee Valley Authority	Boring Location	735,491.42 N; 2,890,765.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1109.2 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/18/20
Completed	10/18/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1109.2		Top of Hole						
			Drill without sampling						
5.0	1104.2				ST01G	3.5 - 5.0	3.5 - 5.0	0.0	400
			SILT, ML, N 5/ (gray), non-plastic, soft, moist, [CCR]		ST02G	5.0 - 7.5	5.0 - 7.5	2.5	400
7.5	1101.7								
			Drill without sampling						

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B06**
Client Tennessee Valley Authority
Boring Location 735,491.42 N; 2,890,765.21 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.2 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			Drill without sampling *(Continued)*					
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40.0	1069.2							
40			SILTY FAT CLAY, CH, medium to high plasticity, soft, moist		ST03G	40.0 - 42.5	2.2	NR
41								
42								

40.0 - 42.5

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 5/11/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B06**
Client Tennessee Valley Authority
Boring Location 735,491.42 N; 2,890,765.21 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.2 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			SILTY FAT CLAY, CH, medium to high plasticity, soft, moist *(Continued)*						
44									
45	45.4	1063.8			ST04G	43.5 - 46.0	43.5 - 46.0	2.0	NR
46	46.4	1062.8	SILTY FAT CLAY, CH, 7.5YR 6/6 (reddish yellow), high plasticity, firm, moist		SS01G	45.5 - 46.4	45.5 - 46.4	0.0	N/A

No Refusal /
Bottom of Hole at 46.4 Ft.

Begin mud rotary at 5.0 bgs.

Split spoon sample SS01G was obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

3.34" inclinometer casing installed to facilitate crosshole seismic logging.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B07**
Client	Tennessee Valley Authority	Boring Location	735,476.91 N; 2,890,773.03 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1109.5 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/15/20
Completed	10/15/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1109.5		Top of Hole						
0.8	1108.7		Crushed stone, road bed with geofabric base		SS01aG	0.0 - 0.8	0.0 - 1.5	1.1	11-10-8
			SILTY LEAN CLAY SOME GRAVEL, CL-ML, 10YR 5/4 (yellowish brown) with 7.5YR 6/8 (reddish yellow), medium plasticity, hard, moist, iron oxide staining, Lensed, gravels of weathered shale, [FILL]		SS01bG	0.8 - 1.5			
					SS02G	2.5 - 4.0	2.5 - 4.0	1.5	4-6-9
					SS03G	5.0 - 6.5	5.0 - 6.5	0.2	2-3-6
7.6	1101.9				SS04aG	7.5 - 7.6			
			SANDY SILT, ML, N 5/ (gray) to N 2.5/ (black), non-plastic, very soft to hard, moist to wet, [CCR]		SS04bG	7.6 - 9.0	7.5 - 9.0	1.1	3-6-8
					SS05G	10.0 - 11.5	10.0 - 11.5	1.2	2-2-4
					SS06G	12.5 - 14.0	12.5 - 14.0	1.1	1-2-4
					SS07G	15.0 - 16.5	15.0 - 16.5	1.2	1-1-1

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-B07**

Client Tennessee Valley Authority | Boring Location 735,476.91 N; 2,890,773.03 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1109.5 ft | Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic			RQD %	Run Ft		Rec. Ft	Rec. %
18			SANDY SILT, ML, N 5/ (gray) to N 2.5/ (black), non-plastic, very soft to hard, moist to wet, [CCR] *(Continued)*		SS08G	17.5 - 19.0	17.5 - 19.0	1.3	WH-1-1
19									
20									
21					SS09G	20.0 - 21.5	20.0 - 21.5	1.3	WH-1-1
22									
23					SS10G	22.5 - 24.0	22.5 - 24.0	1.5	1-1-2
24			Gypsum laminae at 23.4'						
25									
26					SS11G	25.0 - 26.5	25.0 - 26.5	1.5	WH-WH-WH
27									
28					SS12G	27.5 - 29.0	27.5 - 29.0	1.5	1-WH-WH
29									
30									
31					SS13G	30.0 - 31.5	30.0 - 31.5	0.0	WR-WR-WR
32									
33					SS14G	32.5 - 34.0	32.5 - 34.0	1.5	WR-WR-WR
34									
35									
36					SS15G	35.0 - 36.5	35.0 - 36.5	1.5	WR-WR-WR
37									
38					SS16G	37.5 - 39.0	37.5 - 39.0	1.5	WR-WR-WR
39									
40									
41					SS17aG	40.0 - 41.4	40.0 - 41.5	1.5	WH-WH-WH
	41.4	1068.1			SS17bG	41.4 - 41.5			
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B07**
Client Tennessee Valley Authority
Boring Location 735,476.91 N; 2,890,773.03 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.5 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			SANDY LEAN CLAY WITH GRAVEL, CL, 10YR 5/8 (yellowish brown) to 10YR 7/1 (light gray), medium plasticity, hard to very hard, moist, iron oxide staining, weak cementation, Manganese nodules, quartz pebbles, *(Continued)*		SS18G	42.5 - 44.0	42.5 - 44.0	0.9	WR-5-9
44									
45					SS19G	44.7 - 46.2	44.7 - 46.2	1.1	13-48-41
46	46.2	1063.3	Refusal / Bottom of Hole at 46.2 Ft.						

Begin mud rotary at 5.0' bgs.

3.34" inclinometer casing installed to facilitate crosshole seismic logging.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B08**
Client	Tennessee Valley Authority	Boring Location	733,316.63 N; 2,886,400.96 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1104.9 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/12/20
Completed	10/13/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1104.9		Top of Hole						
0.7	1104.2		Crushed stone, road gravel		SS01aG	0.0 - 0.7	0.0 - 1.5	1.1	6-5-4
			SILTY FAT CLAY, CH, 10YR 5/4 (yellowish brown) and N 7/ (light gray), medium to high plasticity, hard, moist, no odor, laminated, [FILL]		SS01bG	0.7 - 1.5			
					SS02G	2.5 - 4.0	2.5 - 4.0	1.2	8-4-5
4.0	1100.9		LEAN CLAY WITH SAND, CL, 10YR 6/4 (light yellowish brown), medium plasticity, soft to very hard, moist, [FILL]		ST01G	5.0 - 5.2	5.0 - 5.2	0.2	NR
					SS03G	6.0 - 7.5	6.0 - 7.5	0.0	10-11-10
					ST02G	8.5 - 9.6	8.5 - 9.6	1.1	NR
					ST03G	10.5 - 12.1	10.5 - 12.1	1.6	NR
					ST04G	13.0 - 15.5	13.0 - 15.5	2.5	NR
					ST05G	16.5 - 17.5	16.5 - 17.5	1.0	NR

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B08**
Client: Tennessee Valley Authority
Boring Location: 733,316.63 N; 2,886,400.96 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1104.9 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			LEAN CLAY WITH SAND, CL, 10YR 6/4 (light yellowish brown), medium plasticity, soft to very hard, moist, [FILL] *(Continued)*						
19									
20					SS04G	19.0 - 20.5	19.0 - 20.5	1.2	7-11-12
21									
22					SS05aG	21.5 - 22.8	21.5 - 23.0	0.8	1-4-10
22.8	1082.1								
23.0	1081.9		SILTY LEAN CLAY SOME SAND, CL, medium to high plasticity, firm, moist, laminated, mottling		SS05bG	22.8 - 23.0			
24			LEAN CLAY, CL, unknown lithology		ST06G	24.0 - 25.0	24.0 - 25.0	1.0	NR
25.0	1079.9								
25			LEAN CLAY WITH SAND, CL, 7.5YR 4/3 (brown), medium plasticity, very hard, moist, lensed, laminated at top		SS06G	25.0 - 26.5	25.0 - 26.5	1.1	5-13-18
27									
28					SS07G	27.5 - 29.0	27.5 - 29.0	1.5	10-20-25
29									
30									
31					SS08G	30.0 - 31.5	30.0 - 31.5	1.2	10-10-13
32									
33									
34					ST07G	32.5 - 35.0	32.5 - 35.0	2.0	NR
35			Bioturbated from 34.5' to 42.0'						
36									
37					ST08G	36.0 - 38.5	36.0 - 38.5	2.3	NR
38									
39									
40									
41					ST09G	39.5 - 42.0	39.5 - 42.0	2.3	NR
42									

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B08**
Client Tennessee Valley Authority
Boring Location 733,316.63 N; 2,886,400.96 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1104.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43 44 45			LEAN CLAY WITH SAND, CL, 7.5YR 4/3 (brown), medium plasticity, very hard, moist, lensed, laminated at top *(Continued)*		ST10G	43.0 - 45.5	43.0 - 45.5	2.4	NR
45.5	1059.4								
46 47 48			SILTY LEAN CLAY TRACE GRAVEL, CL, 10GY 4/1 (dark greenish gray) with 10Y 6/1 (greenish gray), fine, low plasticity, very hard, moist, iron oxide staining, stratified, gap graded, 5G4/2, thin sand layering		SS09G	46.5 - 48.0	46.5 - 48.0	0.6	2-7-17
48.7	1056.2		Manganese nodules mica and fine sand at 45.5'		SS10G	48.0 - 48.7	48.0 - 48.7	0.6	13-50/2"

Refusal /
Bottom of Hole at 48.7 Ft.

Begin mud rotary at 5.0' gs.

Vibrating Wire Piezometer installed. See Installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B09**
Client	Tennessee Valley Authority	Boring Location	733,399.83 N; 2,886,363.23 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1081.5 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/2/20
Completed	10/3/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" & 3" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1081.5		Top of Hole						
			Riprap						
15.3	1066.2		LEAN CLAY SOME SAND, CL, 10YR 4/4 (dark yellowish brown), medium plasticity, firm, moist		SS01	15.5 - 17.0	15.5 - 17.0	1.5	3-4-4

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 8/12/21

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-B09**

Client Tennessee Valley Authority | Boring Location 733,399.83 N; 2,886,363.23 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1081.5 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			LEAN CLAY SOME SAND, CL, 10YR 4/4 (dark yellowish brown), medium plasticity, firm, moist *(Continued)*		ST01G	17.0 - 19.5	17.0 - 19.5	2.3	400
19									
20					ST02G	19.5 - 20.5	19.5 - 20.5	1.2	500
21	21.5	1060.0			SS02G	20.5 - 22.0	20.5 - 22.0	1.5	6-6-9
22			LEAN CLAY SOME SAND, CL, 10YR 4/4 (dark yellowish brown), medium plasticity, hard, moist						
23	23.0	1058.5			SS03aG	22.5 - 23.0	22.5 - 24.0	1.5	7-5-7
			POORLY GRADED SAND LITTLE CLAY, SP, 7.5YR 4/2 (brown), medium, medium dense, wet, brown transitions to grey in color		SS03bG	23.0 - 24.0			
24	24.5	1057.0			SS04G	24.5 - 24.6	24.5 - 24.6	0.1	50+/1"
25	25.5	1056.0	Top of rock like resistance. Dark grey weathered shale						

Refusal /
Bottom of Hole at 25.5 Ft.

For SS01 a 3" Split Spoon was used to collect samples for geochemical testing.

Vibrating Wire Piezometer installed. See installation log for backfill details.

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G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B10**
Client	Tennessee Valley Authority	Boring Location	733,704.45 N; 2,887,642.17 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1105.5 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/4/20
Completed	10/5/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1105.5		Top of Hole						
			SILTY LEAN CLAY LITTLE SAND, CL, 10YR 6/6 (brownish yellow), low plasticity, firm to very hard, dry, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	0.6	2-4-4
					SS02G	2.5 - 4.0	2.5 - 4.0	1.5	7-8-10
5.0	1100.5		SILT WITH SAND, ML, 10YR 5/6 (yellowish brown), medium plasticity, hard to very hard, moist, [FILL]		ST01G	5.0 - 6.0	5.0 - 6.0	1.0	500
					SS03G	6.0 - 7.5	6.0 - 7.5	1.0	3-7-7
					ST02G	8.5 - 9.5	8.5 - 9.5	1.0	550
					SS04G	9.5 - 11.0	9.5 - 11.0	1.1	7-9-11
13.0	1092.5				SS05aG	12.0 - 13.0	12.0 - 13.5	1.2	5-12-12
			SANDY LEAN CLAY SOME GRAVEL, CL, 10YR 6/6 (brownish yellow), non-plastic to low plasticity, very hard, moist, [FILL]		SS05bG	13.0 - 13.5			
					ST03G	14.5 - 14.7		0.2	600
					SS06G	14.7 - 16.2	14.7 - 16.2	1.0	8-8-12
18.4	1087.1								
18.7	1086.8		FAT CLAY, CH, 10YR 5/1 (gray), medium to high		SS07aG	18.0 - 19.0	18.0 - 19.5	1.0	6-10-13

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B10**
Client: Tennessee Valley Authority
Boring Location: 733,704.45 N; 2,887,642.17 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1105.5 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
			plasticity, firm to hard, moist, [FILL]		SS07bG	19.0 - 19.5			
			LEAN CLAY, CL, 10YR 3/4 (dark yellowish brown), non-plastic to low plasticity, very hard, moist to dry *(Continued)*		ST04G	20.5 - 21.0		0.5	600
21.4	1084.1		LEAN CLAY WITH SAND, CL, 10YR 5/1 (gray), medium plasticity, very hard, moist		SS08G	21.0 - 22.5	21.0 - 22.5	1.1	7-12-18
					ST05G	24.0 - 25.0	24.0 - 25.0	1.0	600
					SS09G	25.0 - 26.5	25.0 - 26.5	1.0	4-9-13
					ST06G	27.5 - 29.5	27.5 - 29.5	0.0	1200
30.1	1075.4				SS10aG	29.5 - 30.0	29.5 - 31.0	1.5	9-15-25
			CLAYEY POORLY GRADED SAND WITH GRAVEL, SP, 10YR 4/6 (dark yellowish brown), medium to coarse, dense, moist		SS10bG	30.0 - 31.0			
32.3	1073.2		CLAYEY SAND WITH GRAVEL, SC, 10YR 6/1 (gray) to 10YR 4/4 (dark yellowish brown), fine to coarse, medium plasticity, very dense, moist		SS11G	32.0 - 33.5	32.0 - 33.5	1.2	45-55-21
34.8	1070.7		SILTY LEAN CLAY, CL, 10YR 4/2 (dark grayish brown), non-plastic, very hard, moist, saprolite/residuum		SS12G	34.5 - 35.7	34.5 - 35.7	1.2	6-45-50+/2"
35.7	1069.8		No Refusal / Bottom of Hole at 35.7 Ft.						

Vibrating Wire Piezometer installed. See installation log for backfill details.

ST06 was advanced as a Shelby tube versus an Osterberg tube.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B11**
Client	Tennessee Valley Authority	Boring Location	733,733.32 N; 2,887,585.83 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1087.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/1/20
Completed	10/1/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology Depth Ft[3]	Elevation	Graphic	Description	Overburden: / Rock Core:	Sample[1,2]	Depth Ft[3] Run Ft		Rec. Ft / Rec. Ft	Blows/PSI / Rec. %
					RQD %				
0.0	1087.1		Top of Hole						
0			SANDY FAT CLAY, CH, 10YR 6/6 (brownish yellow) to 10YR 5/1 (gray), medium to high plasticity, firm, moist		SS01G	0.0 - 1.5	0.0 - 1.5	1.0	2-2-3
1									
2									
3									
4					ST01G	2.5 - 5.0	2.5 - 5.0	1.8	550
5									
6									
6.6	1080.5				ST02G	6.0 - 7.0	6.0 - 7.0	1.0	600
7			LEAN CLAY WITH SAND, CL, 10YR 6/8 (brownish yellow) and 10YR 6/1 (gray), low to medium plasticity, very hard, dry to moist		SS02G	7.0 - 8.5	7.0 - 8.5	0.7	9-9-9
8									
9									
10									
11					ST03G	9.5 - 12.0	9.5 - 12.0	2.3	600
12									
13.1	1074.0								
13			POORLY GRADED SAND, SP, 10YR 7/1 (light gray) to 10YR 4/6 (dark yellowish brown), medium, medium dense, moist		SS03aG	13.0 - 14.0	13.0 - 14.5	1.2	12-19-30
13.9	1073.2				SS03bG	14.0 - 14.5			
14									
15									

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B11**
Client Tennessee Valley Authority
Boring Location 733,733.32 N; 2,887,585.83 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1087.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
15									
15.8	1071.3		POORLY GRADED SAND WITH GRAVEL, SW, 10YR 7/1 (light gray) to 10YR 4/6 (dark yellowish brown), medium, very dense, moist, gap graded, medium grained sandstone with cobble sized (rounded-subang) gravel *(Continued)*		SS04aG	15.5 - 15.8	15.5 - 16.7	1.2	5-13-50+/2"
16					SS04bG	15.8 - 16.7			
16.7	1070.4		LEAN CLAY, CL, 10YR 3/4 (dark yellowish brown) and 10YR 7/1 (light gray), non-plastic, very hard, dry, saprolitic/residual clay/rock, bedding structure visible						
			Refusal / Bottom of Hole at 16.7 Ft.						

Vibrating Wire Piezometer installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B12**
Client	Tennessee Valley Authority	Boring Location	733,584.67 N; 2,887,683.87 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1108.6 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/6/20
Completed	10/6/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1108.6		Top of Hole						
0.2	1108.4		Topsoil						
			SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown), medium to high plasticity, soft, moist, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	1.0	3-1-1
					SS02aG	2.5 - 3.0	2.5 - 4.0	1.2	4-5-8
3.2	1105.4		SILT TRACE SAND, ML, 10YR 3/1 (very dark gray), very fine to fine, non-plastic, very soft to hard, dry to wet, poorly graded, [CCR]		SS02bG	3.0 - 4.0			
					SS03G	5.0 - 6.5	5.0 - 6.5	0.3	7-9-14
					ST01G	7.5 - 10.0	7.5 - 10.0	2.5	600
					ST02G	11.0 - 13.5	11.0 - 13.5	2.2	600
					ST03G	14.5 - 17.0	14.5 - 17.0	2.5	600

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B12**
Client: Tennessee Valley Authority
Boring Location: 733,584.67 N; 2,887,683.87 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1108.6 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
16			SILT TRACE SAND, ML, 10YR 3/1 (very dark gray), very fine to fine, non-plastic, very soft to hard, dry to wet, poorly graded, [CCR] *(Continued)*						
17									
18			Saturated at 18.0'						
19					SS04G	18.0 - 19.5	18.0 - 19.5	1.5	WH-WH-WH
20									
21									
22					ST04G	20.5 - 23.0	20.5 - 23.0	1.5	300
23									
24									
25					ST05G	24.0 - 26.5	24.0 - 26.5	NR	250
26									
27									
28									
29					ST06G	27.5 - 30.0	27.5 - 30.0	2.3	300
30									
31									
32					ST07G	31.0 - 33.5	31.0 - 33.5	2.5	250
33									
34	34.5	1074.1							
35			SILTY GRAVEL WITH SAND, GM, 10YR 8/1 (white) to 10YR 4/6 (dark yellowish brown), medium to coarse, non-plastic, very dense, moist to wet		SS05G	34.5 - 35.1	34.5 - 35.1	0.4	36-50+/1"
36			Suspecting clay layer between CCR and sand		SS06G	35.2 - 36.7	35.2 - 36.7	1.0	49-47-48
37	37.1	1071.5							

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B12**
Client Tennessee Valley Authority
Boring Location 733,584.67 N; 2,887,683.87 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1108.6 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]		Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
38	38.2	1070.4		Saprolite transitions to refusal *(Continued)*		SS07G	37.0 - 38.2	37.0 - 38.2	1.0	8-26-50+/2"
				Refusal / Bottom of Hole at 38.2 Ft.						

ST05G fell out bottom of tube. Material was recovered into glass sample jars.

Vibrating wire piezometers installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B13**
Client	Tennessee Valley Authority	Boring Location	732,667.18 N; 2,889,512.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.3 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	9/16/20
Completed	9/21/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1139.3		Top of Hole						
0.6	1138.7		SILTY LEAN CLAY TRACE GRAVEL, CL-ML, 10YR 4/4 (dark yellowish brown), low to medium plasticity, hard, dry, [FILL]		SS01aG SS01bG	0.0 - 0.6 0.6 - 1.5	0.0 - 1.5	1.2	3-8-12
			SILT, ML, N 4/ (dark gray), very soft, [CCR]		SS02G	2.5 - 4.0	2.5 - 4.0	1.5	2-1-1
					ST01G	5.0 - 7.5	5.0 - 7.5	2.4	500
7.5	1131.8		SILTY POORLY GRADED GRAVEL, GP, dark gray and black, fine to coarse, very loose to loose, [CCR]		ST02G SS03G	8.5 - 11.0 9.3 - 10.8	8.5 - 11.0	1.1 0.9	350 N/A
13.8	1125.5				SS04G	13.0 - 14.5	13.0 - 14.5	0.7	9-21-19
14.5	1124.8		SANDY POORLY GRADED GRAVEL LITTLE CLAY, GP-GC, 10YR 6/8 (brownish yellow), medium to coarse, dense, cobbles						
			No sample recovery		SS05G	15.5 - 17.0	15.5 - 17.0	0.0	WH-WH-WH
18.0	1121.3		GRAVELLY LEAN CLAY, CL, 10YR 6/6 (brownish yellow) to 10YR 6/8 (brownish yellow), medium to high plasticity, firm, moist		ST03G	18.0 - 20.5	18.0 - 20.5	2.5	300

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B13**
Client: Tennessee Valley Authority
Boring Location: 732,667.18 N; 2,889,512.21 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1139.3 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
20			GRAVELLY LEAN CLAY, CL, 10YR 6/6 (brownish yellow) to 10YR 6/8 (brownish yellow), medium to high plasticity, firm, moist *(Continued)*						
21									
22	22.1	1117.2							
23			SILT TRACE SAND, ML, 10YR 7/6 (yellow) and 10YR 4/3 (brown), medium plasticity, firm, moist, Laminated, residuum, intact parent rock structure		ST04G	21.5 - 24.0	21.5 - 24.0	2.4	325
24									
25									
26					ST05G	25.0 - 27.5	25.0 - 27.5	2.4	350
27									
28									
29									
30					ST06G	28.5 - 31.0	28.5 - 31.0	2.5	385
31									
32	32.6	1106.7			SS06aG	32.0 - 32.5	32.0 - 33.5	1.0	N/A
33			Shale, gray, very fine grained, hard, thin, highly weathered to moderately weathered, moist, iron oxide staining, 30° to 45° bedding angle		SS06bG ST07G	32.5 - 33.5 32.0 - 34.5		0.9	NR
34									
35	35.6	1103.7			SS07G	34.7 - 35.6	34.7 - 35.6	0.9	24-50/5"

Refusal /
Bottom of Hole at 35.6 Ft.

Auger to 5.0', begin mud rotary at 5.0'.

Split spoon samples SS03G and SS06G were obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

Vibrating wire piezometer installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B14**
Client	Tennessee Valley Authority	Boring Location	732,769.60 N; 2,889,517.53 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1141.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	9/23/20
Completed	9/23/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1141.1		Top of Hole						
0.5	1140.6		SILTY LEAN CLAY, CL-ML, 10YR 4/4 (dark yellowish brown), medium plasticity, firm, moist, roots, [FILL]		SS01aG	0.0 - 0.5	0.0 - 1.5	1.1	2-5-3
					SS01bG	0.5 - 1.5			
			SANDY SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm, moist, [CCR]						
					SS02G	2.5 - 4.0	2.5 - 4.0	1.5	4-4-3
					SS03G	5.0 - 6.5	5.0 - 6.5	1.0	3-2-2
					ST01G	7.5 - 10.0	7.5 - 10.0	2.2	NR
					ST02G	11.0 - 13.5	11.0 - 13.5	1.7	NR
					ST03G	14.5 - 17.0	14.5 - 17.0	2.4	NR

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-B14**
Client Tennessee Valley Authority
Boring Location 732,769.60 N; 2,889,517.53 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1141.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SANDY SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm, moist, [CCR] *(Continued)*		SS04G	18.0 - 19.5	18.0 - 19.5	1.2	6-3-2
19									
20									
20.9	1120.2				SS05aG	20.5 - 20.9			
21 21.3	1119.8		LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), medium plasticity, very soft, moist, iron oxide staining, blocky, residuum		SS05bG SS05cG	20.9 - 21.3 21.3 - 22.0	20.5 - 22.0	1.1	WH-WH-2
22									
23 23.2	1117.9		FAT CLAY, CH, 10YR 3/1 (very dark gray), medium to high plasticity, hard, moist, laminated		SS06G	22.5 - 23.2	22.5 - 23.2	0.7	11-50/2"
			Refusal / Bottom of Hole at 23.2 Ft.						

Auger to 5.0', begin mud rotary at 5.0'.

Vibrating wire piezometer installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B15**
Client	Tennessee Valley Authority	Boring Location	732,865.11 N; 2,889,562.01 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1143.2 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	9/24/20
Completed	9/24/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1143.2		Top of Hole						
0.5	1142.7		LEAN CLAY WITH SAND, CL, 10YR 6/6 (brownish yellow), medium plasticity, hard, moist, roots, [FILL]		SS01aG	0.0 - 0.5	0.0 - 1.5	1.3	2-6-10
					SS01bG	0.5 - 1.5			
			SANDY SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm to soft, moist, [CCR]		SS02G	2.5 - 4.0	2.5 - 4.0	1.5	4-3-3
					SS03G	5.0 - 6.5	5.0 - 6.5	1.5	8-3-4
					ST01G	7.5 - 10.0	7.5 - 10.0	2.2	NR
					SS04G	11.0 - 12.5	11.0 - 12.5	0.7	1-1-1
					ST02G	13.5 - 16.0	13.5 - 16.0	2.3	NR

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-B15**

Client Tennessee Valley Authority | Boring Location 732,865.11 N; 2,889,562.01 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1143.2 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SANDY SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm to soft, moist, [CCR] *(Continued)*		ST03G	17.0 - 19.5	17.0 - 19.5	1.3	NR
19									
20									
21					SS05G	20.5 - 22.0	20.5 - 22.0	0.8	3-5-5
22									
23									
24					ST04G	23.0 - 25.5	23.0 - 25.5	1.6	NR
25									
26					SS06G	25.0 - 26.5	25.0 - 26.5	1.4	N/A
27									
28									
29					ST05G	27.5 - 30.0	27.5 - 30.0	1.5	NR
30	29.9	1113.3							
	30.7	1112.5	SILTY LEAN CLAY, CL-ML, 10YR 4/4 (dark yellowish brown) and N 3/ (very dark gray), medium plasticity, firm, moist, iron oxide staining, residuum		SS07G	30.5 - 30.9	30.5 - 30.9	0.4	50/5"
	30.9	1112.3	Shale, light gray to dark gray, soft						
			Refusal / Bottom of Hole at 30.9 Ft.						

Auger to 5.0', begin mud rotary at 5.0'.

Split spoon sample SS06G was obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

Vibrating wire piezometers installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B16**
Client	Tennessee Valley Authority	Boring Location	732,955.85 N; 2,889,621.99 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1115.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	9/29/20
Completed	9/29/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Edmunds	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1115.8		Top of Hole						
			LEAN CLAY, CL, 10YR 5/6 (yellowish brown), medium plasticity, very hard, moist, some sand		ST01G	0.0 - 2.0	0.0 - 2.0	1.1	550
					SS01G	2.0 - 3.5	2.0 - 3.5	0.0	5-7-9
4.8	1111.0		Note: auger charged with water throughout boring		ST02G	4.0 - 5.0	4.0 - 5.0	1.0	600
			SILTY LEAN CLAY, CL, 7.5YR 5/2 (brown), low plasticity, very hard, dry, saprolitic rock/residuum		SS02aG	5.0 - 6.0	5.0 - 6.5	1.5	11-32-35
					SS02bG	6.0 - 6.5			
					SS03aG	6.5 - 7.5	6.5 - 7.7	1.0	33-42-50+/2"
					SS03bG	7.5 - 7.7			
					SS04G	10.0 - 10.6	10.0 - 10.6	0.6	13-50+/1"
11.3	1104.5		Auger refusal at 11.3'						
			Refusal / Bottom of Hole at 11.3 Ft.						

Vibrating wire piezometers installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/11/21

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B17**
Client	Tennessee Valley Authority	Boring Location	735,647.11 N; 2,891,033.53 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1111.9 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/19/20
Completed	10/20/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	5-7/8" Updraft Bit, 2" & 3" SS w/o liners, 3" ST		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	92.9%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1111.9		Top of Hole						
			LEAN CLAY WITH SAND, CL, 10YR 5/6 (yellowish brown) to 5YR 4/6 (yellowish red), medium to high plasticity, hard to very hard, dry to moist, gravels of black organic material, [FILL] Roots to 0.5'		SS01G	0.0 - 1.5	0.0 - 1.5	1.3	2-6-8
			Some quartz cobbles between 2.5' and 4.0' bgs		SS02G	2.5 - 4.0	2.5 - 4.0	1.4	5-5-8
					SS03G	5.0 - 6.5	5.0 - 6.5	1.1	6-8-11
					ST01G	7.5 - 10.0	7.5 - 10.0	1.0	NR
11.6	1100.3		SANDY SILT, ML, N 5/ (gray), non-plastic, very hard to soft, moist, [CCR]		ST02G SS04G	11.0 - 13.5 11.5 - 13.0	11.5 - 13.0	0.5 1.2	NR N/A
					ST03G	14.5 - 17.0	14.5 - 17.0	2.1	NR

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-B17**
Client: Tennessee Valley Authority
Boring Location: 735,647.11 N; 2,891,033.53 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1111.9 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SANDY SILT, ML, N 5/ (gray), non-plastic, very hard to soft, moist, [CCR] *(Continued)*		SS05G	18.0 - 19.5	18.0 - 19.5	0.9	7-8-2
19									
20					SS06G	20.0 - 21.5	20.0 - 21.5	1.1	4-7-9
21									
22					ST04G	22.0 - 24.5	22.0 - 24.5	1.5	NR
23									
24									
25					ST05G	25.5 - 28.0	25.5 - 28.0	1.5	NR
26									
27									
28									
29					SS07G	29.0 - 32.3	29.0 - 32.3	1.5	1-WR-WR
30									
31									
32			Bottom contact approximated						
33									
34	34.0	1077.9			ST06G	33.0 - 35.5	33.0 - 35.5	2.3	NR
35			SILTY FAT CLAY WITH SAND, CH, 7.5YR 5/4 (brown), firm to very hard, bioturbation, organic stringers, lenses, trace quartz cobble and fine gravels Manganese nodules in lower half						
36									
37					SS08	36.5 - 38.5	36.5 - 38.5	2.0	7-12-14
38			Sampler was driven an additional 6" to collect additional geochemical sample volume. Blow count recorded for interval between 38.0-38.5 feet is considered invalid.						
39									
40									
41					ST07G	39.5 - 42.0	39.5 - 42.0	2.3	NR
42									

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-B17**

Client Tennessee Valley Authority | Boring Location 735,647.11 N; 2,891,033.53 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1111.9 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			SILTY FAT CLAY WITH SAND, CH, 7.5YR 5/4 (brown), firm to very hard, bioturbation, organic stringers, lenses, trace quartz cobble and fine gravels Manganese nodules in lower half *(Continued)*		SS09	43.0 - 44.5	43.0 - 44.5	1.5	2-4-4
44									
45									
46									
46.7	1065.2								
47			WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, 10YR 5/4 (yellowish brown), medium to coarse, dense, moist		ST08G	45.5 - 48.0	45.5 - 48.0	1.2	NR
48									
49					SS10G	48.0 - 49.5	48.0 - 49.5	1.1	28-28-27
49.5	1062.4								
50			GRAVELLY FAT CLAY, CH, 10YR 6/6 (brownish yellow) to N 4/ (dark gray), medium to high plasticity, very hard, laminated, residuum						
51					SS11G	50.5 - 51.2	50.5 - 51.2	0.7	6-50/2"
51.2	1060.7		Refusal / Bottom of Hole at 51.2 Ft.						

Begin mud rotary at 5' bgs

Split spoon sample SS04G was obtained following attempted Shelby tube with partial recovery or no recovery. Recovered intervals may overlap due to sloughing and/or differing sampler diameters.

For SS08 and SS09 a 3" Split Spoon was used to collect samples for geochemical testing.

Vibrating Wire Piezometer Installed. See installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-B18**
Client	Tennessee Valley Authority	Boring Location	733,430.66 N; 2,886,367.62 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1071.0 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	10/14/20
Completed	10/14/20		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Halada	Approved By	A. Welshans

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1071.0		Top of Hole					
0			Riprap					
13.0	1058.0		Refusal / Bottom of Hole at 13.0 Ft.					

Boring backfilled with Riprap

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 5/11/21

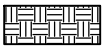
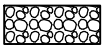
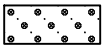
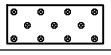
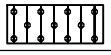
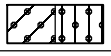
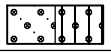
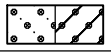
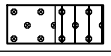
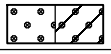
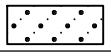
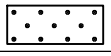
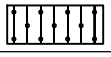
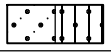
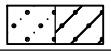
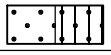
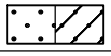
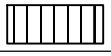
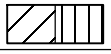
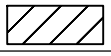
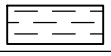
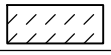
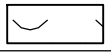
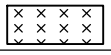
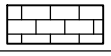
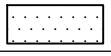
APPENDIX B.3

TEMPORARY WELLS

Table of Contents

Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Lithology Graphics are based on TVA drafting standards.

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of- Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW01**
Client	Tennessee Valley Authority	Boring Location	734,480.11 N; 2,890,013.24 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1154.8 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	4/16/19
		Completed	4/17/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
		Date/Time	N/A
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	43.0 ft	Date/Time	4/17/19 12:19
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	71.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1154.8		Top of Hole						
			Gravel, [FILL]						
3.1	1151.7								
3.8	1151.0		SILTY LEAN CLAY, CL, 10YR 5/6 (yellowish brown), medium plasticity, hard, dry, [FILL]		SS01a	3.0 - 3.8	3.0 - 4.5	1.5	8-21-32
				3.8/5.0-20190416	SS01bE	3.8 - 4.5			
			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm to hard, dry to wet, [CCR]		SS02aE	4.5 - 5.0	4.5 - 6.0	1.4	10-19-16
					SS02bG	5.0 - 6.0			
					SS03aG	6.0 - 6.5	6.0 - 7.5	1.5	17-26-30
				6.5/8.5-20190416	SS03bE	6.5 - 7.5			
					SS04aE	7.5 - 8.5	7.5 - 9.0	1.5	7-17-22
					SS04bG	8.5 - 9.0			
					SS05G	9.0 - 10.5	9.0 - 10.5	1.5	14-21-24
					SS06aG	10.5 - 11.5	10.5 - 12.0	1.5	12-23-30
				11.5/13.5-20190416	SS06bE	11.5 - 12.0			
					SS07E	12.0 - 13.5	12.0 - 13.5	1.5	12-22-26
					SS08G	13.5 - 15.0	13.5 - 15.0	1.5	10-18-19
					SS09G	15.0 - 16.5	15.0 - 16.5	1.5	7-12-18
				16.5/18.5-20190416	SS10E	16.5 - 18.0	16.5 - 18.0	1.4	10-18-25

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW01**
Client: Tennessee Valley Authority
Boring Location: 734,480.11 N; 2,890,013.24 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1154.8 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm to hard, dry to wet, [CCR] *(Continued)*		SS11aE	18.0 - 18.5	18.0 - 19.5	1.5	9-14-14
19					SS11bG	18.5 - 19.5			
20			Clay from 19.5' to 21.0'		SS12G	19.5 - 21.0	19.5 - 21.0	1.5	10-15-16
21					SS13aG	21.0 - 21.5	21.0 - 22.5	1.5	9-12-13
22				21.5/23.5-20190416	SS13bE	21.5 - 22.5			
23					SS14aE	22.5 - 23.5	22.5 - 24.0	1.5	9-18-13
24					SS14bG	23.5 - 24.0			
25					SS15G	24.0 - 25.5	24.0 - 25.5	1.5	4-5-5
26					SS16aG	25.5 - 26.5	25.5 - 27.0	1.5	5-13-18
27				26.5/28.5-20190416	SS16bE	26.5 - 27.0			
28					SS17E	27.0 - 28.5	27.0 - 28.5	1.5	3-4-7
29					SS18G	28.5 - 30.0	28.5 - 30.0	1.5	8-10-11
30					SS19G	30.0 - 31.5	30.0 - 31.5	1.3	11-16-17
31				31.5/33.5-20190416	SS20E	31.5 - 33.0	31.5 - 33.0	1.5	14-17-14
32					SS21aE	33.0 - 33.5	33.0 - 34.5	1.5	10-26-32
33					SS21bG	33.5 - 34.5			
34					SS22G	34.5 - 36.0	34.5 - 36.0	1.5	11-17-17
35					SS23aG	36.0 - 36.5	36.0 - 37.5	1.5	7-14-23
36				36.5/38.5-20190416	SS23bE	36.5 - 37.5			
37					SS24aE	37.5 - 38.5	37.5 - 39.0	1.4	9-18-19
38					SS24bG	38.5 - 39.0			
39					SS25G	39.0 - 40.5	39.0 - 40.5	1.5	6-11-13
40					SS26aG	40.5 - 41.5	40.5 - 42.0	1.5	6-8-12
41					SS26bE	41.5 - 42.0			
42									

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/19/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW01**
Client: Tennessee Valley Authority
Boring Location: 734,480.11 N; 2,890,013.24 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1154.8 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, firm to hard, dry to wet, [CCR] *(Continued)*	41.5/43.5-20190416	SS27E	42.0 - 43.5	42.0 - 43.5	1.5	7-9-13
44					SS28G	43.5 - 45.0	43.5 - 45.0	1.5	10-15-16
45					SS29G	45.0 - 46.5	45.0 - 46.5	1.5	13-31-36
46			Interlayered CCR and clay from 46.3' to 47.5'	46.5/48.5-20190416	SS30E	46.5 - 48.0	46.5 - 48.0	1.5	17-24-52
47					SS31aE	48.0 - 48.5	48.0 - 48.9	0.9	22-50/5"
48					SS31bG	48.5 - 48.9			
49					SS32G	49.5 - 50.3	49.5 - 50.3	0.8	24-50+/4"
50					SS33aG	51.0 - 51.5	51.0 - 52.5	1.5	26-39-46
51				51.5/53.5-20190417	SS33bE	51.5 - 52.5			
52					SS34aE	52.5 - 53.5	52.5 - 53.8	1.3	27-48-50+/4"
53					SS34bG	53.5 - 53.8			
54					SS35G	54.0 - 55.5	54.0 - 55.5	1.5	32-43-47
55					SS36aG	55.5 - 56.5	55.5 - 57.0	1.5	15-32-33
56				56.5/58.5-20190417	SS36bE	56.5 - 57.0			
57					SS37E	57.0 - 58.5	57.0 - 58.5	1.5	12-10-8
58					SS38G	58.5 - 60.0	58.5 - 60.0	1.5	1-1-5
59					SS39G	60.0 - 61.5	60.0 - 61.5	1.3	5-6-9
60									
61	61.5	1093.3							
62			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, very soft, moist to wet, [CCR]	61.5/63.5-20190417	SS40E	61.5 - 63.0	61.5 - 63.0	1.4	WR-WR-WR
63					SS41aE	63.0 - 63.5	63.0 - 64.5	1.5	WR-WR-WR
64					SS41bG	63.5 - 64.5			
65					SS42G	64.5 - 66.0	64.5 - 66.0	1.5	WR-WR-3
66									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW01**
Client Tennessee Valley Authority
Boring Location 734,480.11 N; 2,890,013.24 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1154.8 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
67			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, very soft, moist to wet, [CCR] *(Continued)*	66.5/68.5-20190417	SS43aG	66.0 - 66.5	66.0 - 67.5	1.5	1-WH-WH
					SS43bE	66.5 - 67.5			
68					SS44aE	67.5 - 68.5	67.5 - 69.0	1.5	WR-WR-3
69					SS44bG	68.5 - 69.0			
70					ST01G	69.0 - 71.0	69.0 - 71.0	1.8	500
71	71.0	1083.8							
72			SANDY LEAN CLAY, CL, 10YR 5/4 (yellowish brown) with 7.5YR 5/6 (strong brown), medium plasticity, firm, moist, organic inclusions		SS45G	71.0 - 72.5	71.0 - 72.5	1.5	11-16-19
	72.8	1082.0			ST02G	72.5 - 72.8	72.5 - 72.8	0.0	1000

No Refusal /
Bottom of Hole at 72.8 Ft.

Temporary well JSF-TW01 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW02**
Client	Tennessee Valley Authority	Boring Location	734,797.51 N; 2,890,671.16 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1170.0 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	4/22/19
		Completed	4/24/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	72.0 ft
		Date/Time	4/23/19 15:52
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	77.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1170.0		Top of Hole						
			Gravel, [FILL]						
3.0	1167.0								
			SILTY LEAN CLAY, CL, 10YR 5/6 (yellowish brown), medium plasticity, hard, dry, [FILL]		SS01aG	3.0 - 4.0	3.0 - 4.5	1.5	6-13-23
4.0	1166.0			4.0/5.0-20190422	SS01bE	4.0 - 4.5			
			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, dry to moist, [CCR]		SS02aE	4.5 - 5.0	4.5 - 6.0	1.5	9-17-17
					SS02bG	5.0 - 6.0			
					SS03aG	6.0 - 6.5	6.0 - 7.5	1.5	6-8-10
				6.5/8.5-20190422	SS03bE	6.5 - 7.5			
					SS04aE	7.5 - 8.5	7.5 - 9.0	1.5	5-9-13
					SS04bG	8.5 - 9.0			
					SS05G	9.0 - 10.5	9.0 - 10.5	1.5	6-9-10
					SS06aG	10.5 - 11.5	10.5 - 12.0	1.5	7-10-14
				11.5/13.5-20190422	SS06bE	11.5 - 12.0			
					SS07E	12.0 - 13.5	12.0 - 13.5	1.5	12-30-44
					SS08G	13.5 - 15.0	13.5 - 15.0	1.5	16-40-43
					SS09G	15.0 - 16.2	15.0 - 16.2	1.2	25-50-50/2"
				16.5/18.5-20190423	SS10E	16.5 - 17.6	16.5 - 17.6	1.1	24-50-50/1"

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 1/14/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW02**
Client: Tennessee Valley Authority
Boring Location: 734,797.51 N; 2,890,671.16 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1170.0 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, dry to moist, [CCR] *(Continued)*		SS11aE	18.0 - 18.5	18.0 - 19.5	1.5	8-17-23
19					SS11bG	18.5 - 19.5			
20					SS12G	19.5 - 21.0	19.5 - 21.0	1.5	11-13-26
21					SS13aG	21.0 - 21.5	21.0 - 22.5	1.5	14-24-27
22				21.5/23.5-20190423	SS13bE	21.5 - 22.5			
23					SS14aE	22.5 - 23.5	22.5 - 24.0	1.5	11-22-27
24					SS14bG	23.5 - 24.0			
25					SS15G	24.0 - 25.5	24.0 - 25.5	1.5	10-22-23
26					SS16aG	25.5 - 26.5	25.5 - 27.0	1.5	13-21-25
27				26.5/28.5-20190423	SS16bE	26.5 - 27.0			
28					SS17E	27.0 - 28.5	27.0 - 28.5	1.5	9-16-23
29					SS18G	28.5 - 30.0	28.5 - 30.0	1.5	13-17-17
30									
31					SS19G	30.0 - 31.5	30.0 - 31.5	1.5	5-7-6
32				31.5/33.5-20190423	SS20E	31.5 - 33.0	31.5 - 33.0	1.5	14-31-42
33					SS21aE	33.0 - 33.5	33.0 - 34.5	1.5	18-26-23
34			Clay lenses from 33.8' to 34.4'		SS21bG	33.5 - 34.5			
35			Cobbles at 35.0'		SS22G	34.5 - 36.0	34.5 - 36.0	1.5	9-13-14
36					SS23aG	36.0 - 36.5	36.0 - 37.5	1.5	9-12-8
37				36.5/38.5-20190423	SS23bE	36.5 - 37.5			
38					SS24aE	37.5 - 38.5	37.5 - 39.0	1.5	10-8-8
	39.0	1131.0			SS24bG	38.5 - 39.0			
39			SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, dry to moist, [CCR]						
40					SS25G	39.0 - 40.5	39.0 - 40.5	1.5	17-12-16
41					SS26aG	40.5 - 41.5	40.5 - 42.0	1.5	11-14-15
42					SS26bE	41.5 - 42.0			

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 1/14/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW02**
Client Tennessee Valley Authority
Boring Location 734,797.51 N; 2,890,671.16 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1170.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]		Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %		Run Ft	Rec. Ft	Rec. %
43			SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, dry to moist, [CCR] *(Continued)*	41.5/43.5-20190423	SS27E	42.0 - 43.5	42.0 - 43.5	1.5	17-28-34
44					SS28G	43.5 - 45.0	43.5 - 45.0	1.5	15-26-30
45					SS29G	45.0 - 46.5	45.0 - 46.5	1.5	22-25-23
46				46.5/48.5-20190423	SS30E	46.5 - 48.0	46.5 - 48.0	1.5	9-18-27
47					SS31aE	48.0 - 48.5	48.0 - 49.5		
48					SS31bG	48.5 - 49.5		1.5	16-22-27
49					SS32G	49.5 - 51.0	49.5 - 51.0	1.5	14-21-20
50					SS33E	51.0 - 52.5	51.0 - 52.5	1.5	12-21-27
51				51.0/54.0-20190423	SS34E	52.5 - 54.0	52.5 - 54.0	1.5	14-18-19
52					SS35G	54.0 - 55.5	54.0 - 55.5	1.5	13-17-16
53					SS36aG	55.5 - 56.5	55.5 - 57.0	1.5	16-32-33
54					SS36bE	56.5 - 57.0			
55				56.5/58.5-20190423	SS37E	57.0 - 58.5	57.0 - 58.5	1.5	13-22-40
56					SS38G	58.5 - 60.0	58.5 - 60.0	1.5	14-29-38
57					SS39G	60.0 - 61.5	60.0 - 61.5	1.5	27-31-34
58					SS40E	61.5 - 63.0	61.5 - 63.0	1.5	17-29-32
59				61.5/63.5-20190423	SS41aE	63.0 - 63.5	63.0 - 64.5		
60					SS41bG	63.5 - 64.5		1.5	16-25-32
61					SS42G	64.5 - 66.0	64.5 - 66.0	1.5	17-21-20
62									
63	63.2	1106.8							
64			SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, moist, [CCR]						
65									
66									

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW02**
Client: Tennessee Valley Authority
Boring Location: 734,797.51 N; 2,890,671.16 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1170.0 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
67			SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, soft to hard, moist, [CCR] *(Continued)*	66.5/68.5-20190423	SS43aG SS43bE	66.0 - 66.5 66.5 - 67.5	66.0 - 67.5	1.5	12-16-29
68					SS44aE SS44bG	67.5 - 68.5 68.5 - 69.0	67.5 - 69.0	1.5	19-25-33
69					SS45G	69.0 - 70.3	69.0 - 70.3	1.4	28-50-50+/4"
70									
71			Sandy clay lens, 7.5YR 5/6 (strong brown) at 70.2'		SS46aG	70.5 - 71.5	70.5 - 72.0	1.5	12-20-20
72				71.5/73.5-20190423	SS46bE	71.5 - 72.0			
73					SS47E	72.0 - 73.5	72.0 - 73.5	1.5	1-1-2
74									
75					ST01G	73.5 - 75.5	73.5 - 75.5	1.5	1100
76				76.5/77.4-20190423	SS48aG	75.5 - 76.5	75.5 - 77.0	1.5	8-4-11
77	77.4	1092.6			SS48bE SS49aE	76.5 - 77.0 77.0 - 77.4			
78			SILT WITH SAND, ML, 10YR 7/3 (very pale brown), non-plastic, firm, moist		SS49b SS49cG	77.4 - 77.5 77.5 - 78.5	77.0 - 78.5	1.5	1-5-8
79									
80	80.5	1089.5			ST02G	78.5 - 80.5	78.5 - 80.5	0.9	850

No Refusal /
Bottom of Hole at 80.5 Ft.

Temporary well JSF-TW02 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW03**
Client	Tennessee Valley Authority	Boring Location	735,435.38 N; 2,891,690.51 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1179.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	5/13/19
Completed	5/13/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1179.4		Top of Hole						
			Gravel, [FILL]						
3.0	1176.4		SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, hard, dry, [CCR]	3.0/5.0-20190513	SS01E	3.0 - 4.5	3.0 - 4.5	1.2	8-14-46
					SS02aE	4.5 - 5.0	4.5 - 5.4	0.5	43-50/5"
					SS02b	5.0 - 5.4			
					SS03aG	6.0 - 6.5	6.0 - 7.5	1.5	8-13-12
				6.5/8.5-20190513	SS03bE	6.5 - 7.5			
					SS04aE	7.5 - 8.5	7.5 - 9.0	1.5	6-12-16
					SS04bG	8.5 - 9.0			
					SS05G	9.0 - 10.5	9.0 - 10.5	1.5	9-16-15
					SS06aG	10.5 - 11.5	10.5 - 12.0	1.5	9-16-19
				11.5/13.5-20190513	SS06bE	11.5 - 12.0			
					SS07E	12.0 - 13.5	12.0 - 13.5	1.5	9-15-24
					SS08G	13.5 - 15.0	13.5 - 15.0	1.5	7-11-16
					SS09G	15.0 - 16.4	15.0 - 16.4	1.4	13-38-50/5"
				16.5/18.5-20190513	SS10E	16.5 - 18.0	16.5 - 18.0	1.5	10-24-19

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW03**
Client Tennessee Valley Authority
Boring Location 735,435.38 N; 2,891,690.51 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1179.4 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT WITH SAND, ML, 10YR 3/1 (very dark gray), non-plastic, hard, dry, [CCR] *(Continued)*		SS11aE	18.0 - 18.5	18.0 - 19.5	1.5	5-9-15
19					SS11bG	18.5 - 19.5			
20					SS12G	19.5 - 21.0	19.5 - 21.0	1.5	9-15-22
21					SS13aG	21.0 - 21.5	21.0 - 22.5	1.5	16-27-32
22					SS13bE	21.5 - 22.5			
23					SS14aE	22.5 - 23.5	22.5 - 24.0	1.5	27-42-41
24	24.0	1155.4			SS14bG	23.5 - 24.0			
25			SILTY SAND, SM, 10YR 3/1 (very dark gray), non-plastic, dense, dry, [CCR]		SS15G	24.0 - 25.5	24.0 - 25.5	1.5	7-10-13
26	26.0	1153.4							

21.5/23.5-20190513

No Refusal /
Bottom of Hole at 26.0 Ft.

Boring was backfilled with 30% solids bentonite grout.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW04**
Client	Tennessee Valley Authority	Boring Location	736,115.92 N; 2,892,021.39 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1173.5 ft
Project Name	JSF TDEC Order	Elevation Datum	NGVD29
Project Location	Hawkins Co, Rogersville, Tennessee	Date Started	5/14/19
Inspector	M. Pritt	Completed	5/14/19
Logger	C. Sexton	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Date/Time	N/A
Drill Rig Type and ID	CME 850XR, #953	Depth to Water	N/A
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners	Date/Time	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1173.5		Top of Hole						
			Gravel, [FILL]						
3.0	1170.5		SILT WITH SAND, ML, 10YR 3/1 (very dark gray), low plasticity, dense, dry, interlayered with SANDY LEAN CLAY, CL, 2.5YR 4/8 (red) to 10YR 6/6 (brownish yellow), low plasticity, dry, hard, [CCR] Layer of sandy lean clay from 5.0' to 6.0'	3.0/5.0-20190514	SS01E	3.0 - 4.5	3.0 - 4.5	1.5	6-10-8
					SS02aE	4.5 - 5.0	4.5 - 6.0	1.5	6-9-14
					SS02bG	5.0 - 6.0			
				6.5/8.5-20190514	SS03aG	6.0 - 6.5	6.0 - 7.5	1.5	10-18-15
					SS03bE	6.5 - 7.5			
					SS04aE	7.5 - 8.5	7.5 - 9.0	1.5	4-8-13
					SS04bG	8.5 - 9.0			
					SS05aG	9.0 - 10.0	9.0 - 10.5	1.5	5-11-18
				10.0/12.0-20190514	SS05bE	10.0 - 10.5			
					SS06E	10.5 - 12.0	10.5 - 12.0	1.5	11-17-18
12.0	1161.5		No Refusal / Bottom of Hole at 12.0 Ft.						

Boring was backfilled with 30% solids bentonite grout.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW05**
Client	Tennessee Valley Authority	Boring Location	736,521.65 N; 2,892,398.09 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1160.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	4/29/19
Completed	4/30/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1160.1		Top of Hole						
			Gravel, [FILL]						
3.0	1157.1		SILT WITH SAND, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, firm to very hard, dry to moist, [CCR]	3.0/5.0-20190429	SS01E	3.0 - 4.5	3.0 - 4.5	1.4	4-7-7
					SS02aE	4.5 - 5.0	4.5 - 6.0	1.2	5-8-15
			Layer of SANDY LEAN CLAY WITH GRAVEL, CL, from 5.0' to 6.0'		SS02bG	5.0 - 6.0			
					SS03aG	6.0 - 6.5	6.0 - 7.5	1.5	12-29-44
				6.5/8.5-20190429	SS03bE	6.5 - 7.5			
			Geofabric encountered at approximately 7.5'		SS04aE	7.5 - 8.5	7.5 - 9.0	1.5	13-22-18
					SS04bG	8.5 - 9.0			
					SS05G	9.0 - 10.5	9.0 - 10.5	1.5	15-29-35
					SS06aG	10.5 - 11.5	10.5 - 12.0	1.5	5-16-33
				11.5/13.5-20190429	SS06bE	11.5 - 12.0			
					SS07E	12.0 - 13.5	12.0 - 13.5	1.5	12-20-26
					SS08G	13.5 - 15.0	13.5 - 15.0	1.5	14-24-36
					SS09G	15.0 - 16.5	15.0 - 16.5	1.5	16-23-38

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW05**
Client: Tennessee Valley Authority
Boring Location: 736,521.65 N; 2,892,398.09 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1160.1 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
16			SILT WITH SAND, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, firm to very hard, dry to moist, [CCR] *(Continued)*						
17				16.5/18.5-20190429	SS10E	16.5 - 18.0	16.5 - 18.0	1.5	19-25-28
18					SS11aE	18.0 - 18.5	18.0 - 19.5	1.5	14-17-25
19					SS11bG	18.5 - 19.5			
20					SS12G	19.5 - 21.0	19.5 - 21.0	1.5	13-24-36
21					SS13aG	21.0 - 21.5	21.0 - 21.9	0.9	29-50/5"
22				21.5/23.2-20190429	SS13bE	21.5 - 21.9			
23					SS14E	22.5 - 23.2	22.5 - 23.2	0.7	37-50/2"
24									
25					SS15G	24.0 - 25.5	24.0 - 25.5	1.5	16-34-42
26					SS16aG	25.5 - 26.5	25.5 - 26.7	1.2	16-27-50/2"
27				26.5/28.5-20190429	SS16bE	26.5 - 26.7			
28					SS17E	27.0 - 28.5	27.0 - 28.5	1.5	15-15-27
29			Coarse-grained lens from 28.4' to 28.5' Fat clay from 29.0' to 30.6'		SS18G	28.5 - 30.0	28.5 - 30.0	1.5	12-12-15
30									
31					SS19G	30.0 - 31.5	30.0 - 31.5	1.5	14-23-25
32				31.5/33.5-20190429	SS20E	31.5 - 33.0	31.5 - 33.0	1.5	21-22-20
33					SS21aE	33.0 - 33.5			
34					SS21bG	33.5 - 34.5	33.0 - 34.5	1.5	20-32-34
35					SS22G	34.5 - 36.0	34.5 - 36.0	1.5	14-15-18
36	36.0	1124.1							
37			Equipment obstruction encountered from 36.0' to 38.5'.						

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 9/29/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW05**
Client Tennessee Valley Authority
Boring Location 736,521.65 N; 2,892,398.09 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1160.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
38 – 38.5	1121.6		Equipment obstruction encountered from 36.0' to 38.5'. *(Continued)*					

No Refusal /
Bottom of Hole at 38.5 Ft.

Boring terminated when obstruction (unrecoverable tooling in hole) encountered at 36.0'. Boring backfilled with 30% high solids bentonite grout. See JSF-TW05b boring log for continuation of boring sample and lithology information at an offset location.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW05b**
Client	Tennessee Valley Authority	Boring Location	736,522.64 N; 2,892,394.88 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1160.1 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	4/30/19
		Completed	5/1/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	70.4 ft
		Date/Time	5/1/19
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	79.8 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1160.1		Top of Hole					
			Boring advanced due to obstruction encountered at original in JSF-TW05 boring location. See boring log JSF-TW05 for sample and lithology information from 0.0' to 36.0'.					

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 7/14/20

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-TW05b**

Client Tennessee Valley Authority | Boring Location 736,522.64 N; 2,892,394.88 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1160.1 ft | Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic			RQD %	Run Ft	Rec. Ft	Rec. %
20–35			Boring advanced due to obstruction encountered at original in JSF-TW05 boring location. See boring log JSF-TW05 for sample and lithology information from 0.0' to 36.0'. *(Continued)*					
36.0	1124.1							
36–43			SILT WITH SAND, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, firm to very hard, dry, [CCR]	36.5/38.5-20190430	SS23aG	36.0 - 36.5	1.5	17-28-39
					SS23bE	36.5 - 37.5		
					SS24aE	37.5 - 38.5	1.5	19-21-28
					SS24bG	38.5 - 39.0		
					SS25G	39.0 - 40.5	1.5	16-28-27
				41.5/43.5-20190430	SS26aG	40.5 - 41.5	1.5	19-28-32
					SS26bE	41.5 - 42.0		
43.5	1116.6				SS27E	42.0 - 43.5	1.5	13-18-24
43–46			SANDY SILT, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, firm to very hard, dry, [CCR]		SS28G	43.5 - 45.0	1.5	7-19-23
					SS29G	45.0 - 46.5	1.5	15-20-18

36.0 - 37.5 | 37.5 - 39.0 | 39.0 - 40.5 | 40.5 - 42.0 | 42.0 - 43.5 | 43.5 - 45.0 | 45.0 - 46.5

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW05b**
Client Tennessee Valley Authority
Boring Location 736,522.64 N; 2,892,394.88 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1160.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
47			SANDY SILT, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, firm to very hard, dry, [CCR] *(Continued)*		SS30E	46.5 - 48.0	46.5 - 48.0	1.5	11-25-25
48				46.5/48.5-20190430	SS31aE	48.0 - 48.5	48.0 - 49.5	1.5	11-13-16
49			Interlayered CCR with clay from 48.6' to 77.4'		SS31bG	48.5 - 49.5			
50			Layer of LEAN CLAY WITH SAND, CL, from 49.5' to 51.0'		SS32G	49.5 - 51.0	49.5 - 51.0	1.5	9-10-12
51					SS33aG	51.0 - 51.5	51.0 - 52.5	1.5	10-12-18
52				51.5/53.5-20190430	SS33bE	51.5 - 52.5			
53					SS34aE	52.5 - 53.5	52.5 - 54.0	1.5	11-12-14
54					SS34bG	53.5 - 54.0			
55					SS35G	54.0 - 55.5	54.0 - 55.5	1.5	5-12-14
56					SS36aG	55.5 - 56.5	55.5 - 57.0	1.5	6-9-13
57				56.5/58.5-20190430	SS36bE	56.5 - 57.0			
58					SS37E	57.0 - 58.5	57.0 - 58.5	1.5	3-7-14
59					SS38G	58.5 - 60.0	58.5 - 60.0	1.5	9-17-21
60					SS39G	60.0 - 61.5	60.0 - 61.5	1.0	8-15-13
61					SS40E	61.5 - 63.0	61.5 - 63.0	1.5	17-21-14
62				61.5/64.5-20190501	SS41E	63.0 - 64.5	63.0 - 64.5	1.5	7-9-10
63					SS42G	64.5 - 66.0	64.5 - 66.0	1.5	6-8-10
64					SS43aG	66.0 - 66.5	66.0 - 67.5	1.5	10-9-8
65					SS43bE	66.5 - 67.5			
66				66.5/68.5-20190501	SS44aE	67.5 - 68.5	67.5 - 69.0	1.5	5-9-8
67					SS44bG	68.5 - 69.0			
68					SS45G	69.0 - 70.5	69.0 - 70.5	1.5	6-11-10
69	69.0	1091.1							
70			SILTY SAND WITH GRAVEL, SM, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), dense, moist to wet, [CCR]		SS46aG	70.5 - 71.5	70.5 - 72.0	1.5	8-10-10
71					SS46bE	71.5 - 72.0			
72				71.5/73.5-20190501	SS47E	72.0 - 73.5	72.0 - 73.5	1.5	8-8-8
73									

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 7/14/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW05b**
Client Tennessee Valley Authority
Boring Location 736,522.64 N; 2,892,394.88 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1160.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
74			SILTY SAND WITH GRAVEL, SM, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), dense, moist to wet, [CCR] *(Continued)*		SS48G	73.5 - 75.0	73.5 - 75.0	1.4	11-10-7
75									
76					SS49G	75.0 - 76.5	75.0 - 76.5	1.5	10-11-9
77					SS50a	76.5 - 77.5	76.5 - 78.0	1.5	3-5-9
78	78.0	1082.1			SS50bG	77.5 - 78.0			
79			SILT WITH SAND, ML, 10YR 3/1 (very dark gray) and 10YR 6/2 (light brownish gray), non-plastic, soft to firm, moist to wet, [CCR]		ST01G	78.0 - 80.0	78.0 - 80.0	0.8	400
80	80.5	1079.6							
81			LEAN CLAY WITH SAND, CL, 10YR 5/6 (yellowish brown) with 10YR 2/2 (very dark brown), low to medium plasticity, firm, moist		SS51G	80.0 - 81.5	80.0 - 81.5	1.5	4-9-15
82									
83	83.5	1076.6			ST02G	81.5 - 83.5	81.5 - 83.5	2.0	900

No Refusal /
Bottom of Hole at 83.5 Ft.

Temporary well JSF-TW05 installed. See well installation log for backfill details.

Boring advanced due to obstruction encountered at original JSF-TW05 boring location. See boring log JSF-TW05 for sample and lithology information from 0.0' to 36.0'.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW06**
Client	Tennessee Valley Authority	Boring Location	733,598.05 N; 2,891,811.27 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1142.7 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	4/2/19
Completed	4/2/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	13.5 ft
Date/Time	4/2/19 15:09		
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	24.4 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology								
Depth Ft[3]	Elevation	Graphic	Description	Overburden: / Rock Core:	Sample[1,2] / RQD %	Depth Ft[3] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %
0.0	1142.7		Top of Hole					
0			SANDY LEAN CLAY, CL, 10Y 3/1 (very dark greenish gray) with 5GY 4/2 (dark grayish green), medium plasticity, firm, moist, and 10YR 6/6 (brownish yellow), some gravel, [CCR]		SS01G	0.0 - 1.5	1.5	7-11-12
2				1.5/3.5-20190402	SS02E	1.5 - 3.0	1.2	8-11-9
3					SS03aE	3.0 - 3.5	0.7	4-34-27
4					SS03b	3.5 - 4.5		
5					SS04G	4.5 - 6.0	1.5	7-12-9
6					SS05a	6.0 - 6.5	1.5	6-8-7
7				6.5/8.5-20190402	SS05bE	6.5 - 7.5		
8			Interbedded CCR and clay from 7.5' to 11.3'		SS06aE	7.5 - 8.5	1.5	5-7-6
9					SS06bG	8.5 - 9.0		
10					SS07G	9.0 - 10.5	1.5	6-9-47
11	11.3	1131.4	SS08a inadvertantly discarded		SS08a	10.5 - 11.5	1.2	13-17-13
12			SILT WITH SAND, ML, 5YR 3/1 (very dark gray), non-plastic, soft to firm, dry to wet, [CCR]		SS08bE	11.5 - 12.0		
13				11.5/15.0-20190402	SS09	12.0 - 13.5	0.0	26-29-21
14					SS10E	13.5 - 15.0	1.5	3-4-4
15								
16					SS11G	15.0 - 16.5	1.5	3-3-2
17				16.5/18.5-20190402	SS12E	16.5 - 18.0	1.5	1-2-2
18								

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 8/4/20

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-TW06**

Client Tennessee Valley Authority | Boring Location 733,598.05 N; 2,891,811.27 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1142.7 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT WITH SAND, ML, 5YR 3/1 (very dark gray), non-plastic, soft to firm, dry to wet, [CCR] *(Continued)*		SS13aE	18.0 - 18.5	18.0 - 19.5	1.5	1-1-1
19					SS13bG	18.5 - 19.5			
20					ST01G	19.5 - 21.1	19.5 - 21.1	0.5	1000
21									
22				21.5/23 3-20190402	SS14E	21.5 - 23.0	21.5 - 23.0	1.5	13-20-18
23	23.3	1119.4			SS15aE	23.0 - 23.3	23.0 - 24.4		
	23.9	1118.8	LEAN CLAY WITH GRAVEL, CL, 10YR 5/4 (yellowish brown), cobbles, low to medium plasticity, medium stiff, moist		SS15bG	23.3 - 23.9		1.4	7-6-50+/5"
24	24.4	1118.3			SS15c	23.9 - 24.4			
			Shale						

Refusal /
Bottom of Hole at 24.4 Ft.

Top of Rock = 23.9 Ft.
Top of Rock Elevation = 1118.8 Ft.

Prior to drilling, TVA provided a temporary penetration through the final cover, including excavation of final cover soil and penetration of geosynthetics. The excavation was temporarily backfilled with gravel or soil to facilitate drill rig access. The depth reference (i.e., depth = 0.0 ft) and surface elevation for the boring log refer to the base of the temporary penetration, not the top of temporary backfill or the top of final cover.

Temporary well JSF-TW06 installed; see well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW07**
Client	Tennessee Valley Authority	Boring Location	733,901.54 N; 2,892,829.04 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1146.3 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	4/9/19
		Completed	4/10/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	21.4 ft
		Date/Time	4/9/19 15:12
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	34.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1146.3		Top of Hole						
0			SILTY SAND, SM, 10YR 3/1 (very dark gray), non-plastic, loose to dense, dry to wet, [CCR]		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	15-18-22
1									
2				1.5/3.5-20190409	SS02E	1.5 - 3.0	1.5 - 3.0	1.5	11-21-22
3					SS03aE	3.0 - 3.5	3.0 - 4.5	1.5	9-12-19
4					SS03bG	3.5 - 4.5			
5					SS04G	4.5 - 6.0	4.5 - 6.0	1.5	11-14-12
6					SS05aG	6.0 - 6.5	6.0 - 7.5	1.4	8-15-17
7				6.5/8.5-20190409	SS05bE	6.5 - 7.5			
8					SS06aE	7.5 - 8.5	7.5 - 9.0	1.5	15-23-26
9					SS06bG	8.5 - 9.0			
10					SS07G	9.0 - 10.5	9.0 - 10.5	1.5	17-13-10
11					SS08aG	10.5 - 11.5	10.5 - 12.0	1.5	5-3-4
12				11.5/13.5-20190409	SS08bE	11.5 - 12.0			
13					SS09E	12.0 - 13.5	12.0 - 13.5	1.5	4-4-5
14					SS10G	13.5 - 15.0	13.5 - 15.0	1.5	2-2-3
15									
16					SS11G	15.0 - 16.5	15.0 - 16.5	1.5	3-3-7

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW07**
Client: Tennessee Valley Authority
Boring Location: 733,901.54 N; 2,892,829.04 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1146.3 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
			SILTY SAND, SM, 10YR 3/1 (very dark gray), non-plastic, loose to dense, dry to wet, [CCR] *(Continued)*		SS12E	16.5 - 18.0	1.5	6-6-4
					SS13aE	18.0 - 18.5	1.5	5-4-4
					SS13bG	18.5 - 19.5		
					SS14G	19.5 - 21.0	1.5	5-3-2
					SS15E	21.0 - 22.5	1.5	3-2-1
22.5	1123.8							
			SILTY SAND, SM, 10YR 3/1 (very dark gray), non-plastic, very loose, wet, [CCR]		SS16E	22.5 - 24.0	1.5	1-WH-WH
					ST01G	24.0 - 26.0	0.0	100
					SS17aG	26.0 - 26.5	1.5	WH-WH-WH
					SS17bE	26.5 - 27.5		
					SS18E	27.5 - 29.0	1.5	WH-WH-WH
29.0	1117.3							
			SILT, ML, 10YR 3/1 (very dark gray), non-plastic, very soft, wet, [CCR]		SS19G	29.0 - 30.5	1.5	WR-WR-WR
					SS20aG	30.5 - 31.5	1.5	WH-WH-WH
					SS20bE	31.5 - 32.0		
					SS21aE	32.0 - 33.0	1.5	WH-2-20
33.0	1113.3							
			SILTY CLAY WITH GRAVEL, CL-ML, 5GY 4/2 (dark grayish green) with 10Y 5/4 (light olive), medium plasticity, very hard, moist, interlayered with CCR, with cobbles and medium to coarse gravel, [CCR]		SS21bG	33.0 - 33.5		
					SS22G	33.5 - 35.0	1.5	9-12-14
35.5	1110.8							
			LEAN CLAY WITH SAND, CL, 10Y 4/2 (dark grayish olive), medium plasticity, firm, moist, charcoal, shale blocks, broken roots		SS23G	35.0 - 36.5	1.5	7-8-11

16.5/18.5-20190409
21.0/24.0-20190409
26.5/29.0-20190409
31.5/33.0-20190409

16.5 - 18.0
18.0 - 19.5
19.5 - 21.0
21.0 - 22.5
22.5 - 24.0
24.0 - 26.0
26.0 - 27.5
27.5 - 29.0
29.0 - 30.5
30.5 - 32.0
32.0 - 33.5
33.5 - 35.0
35.0 - 36.5

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW07**
Client Tennessee Valley Authority
Boring Location 733,901.54 N; 2,892,829.04 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1146.3 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]		Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
38	38.5	1107.8				ST02G	36.5 - 38.5	36.5 - 38.5	1.5	500

No Refusal /
Bottom of Hole at 38.5 Ft.

Prior to drilling, TVA provided a temporary penetration through the final cover, including excavation of final cover soil and penetration of geosynthetics. The excavation was temporarily backfilled with gravel or soil to facilitate drill rig access. The depth reference (i.e., depth = 0.0 ft) and surface elevation for the boring log refer to the base of the temporary penetration, not the top of temporary backfill or the top of final cover.

Temporary well JSF-TW07 installed; see well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW08**
Client	Tennessee Valley Authority	Boring Location	734,209.90 N; 2,893,524.88 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1142.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	4/3/19
Completed	4/4/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	25.3 ft
Date/Time	4/4/19 09:05		
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	29.8 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1142.8		Top of Hole						
0			SILTY SAND WITH GRAVEL, SM, 10YR 3/2 (very dark grayish brown) to 10YR 2/1 (black), non-plastic, dense, dry to moist, very fine to coarse gravel, some 10YR 5/8 (yellowish brown) silty clay, [CCR]		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	14-18-13
1									
2				1.5/3.5-20190403	SS02E	1.5 - 3.0	1.5 - 3.0	1.5	10-11-8
3					SS03aE	3.0 - 3.5	3.0 - 4.5	1.5	6-7-7
4					SS03bG	3.5 - 4.5			
5					SS04G	4.5 - 6.0	4.5 - 6.0	1.5	5-6-4
6					SS05aG	6.0 - 6.5	6.0 - 7.5	1.5	4-2-3
7				6.5/8.5-20190403	SS05bE	6.5 - 7.5			
8					SS06aE	7.5 - 8.5	7.5 - 9.0	1.5	4-3-4
9					SS06bG	8.5 - 9.0			
10					SS07G	9.0 - 10.5	9.0 - 10.5	1.5	5-3-2
11					SS08aG	10.5 - 11.5	10.5 - 12.0	1.5	3-3-3
12				11.5/13.5-20190403	SS08bE	11.5 - 12.0			
13					SS09E	12.0 - 13.5	12.0 - 13.5	1.5	4-3-2
14					SS10G	13.5 - 15.0	13.5 - 15.0	1.5	4-3-4
15.0	1127.8								
15			SILT WITH SAND, ML, 10YR 3/2 (very dark grayish brown) to 10YR 2/1 (black), non-plastic, firm, dry to moist, some 10YR 5/8 (yellowish brown) clay, [CCR]		ST01G	15.0 - 16.0	15.0 - 16.0	1.0	500
16				16.5/18.5-20190404	SS11aG	16.0 - 16.5	16.0 - 17.5	1.5	14-4-4
17					SS11bE	16.5 - 17.5			
18									

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/16/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW08**
Client: Tennessee Valley Authority
Boring Location: 734,209.90 N; 2,893,524.88 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1142.8 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT WITH SAND, ML, 10YR 3/2 (very dark grayish brown) to 10YR 2/1 (black), non-plastic, firm, dry to moist, some 10YR 5/8 (yellowish brown) clay, [CCR] *(Continued)*		SS12aE	17.5 - 18.5	17.5 - 19.0	1.4	2-1-1
19					SS12bG	18.5 - 19.0			
20					SS13G	19.0 - 20.5	19.0 - 20.5	1.5	1-2-2
21					ST02G	20.5 - 22.5	20.5 - 22.5	0.0	1000
22									
23				22.5/24.5-20190404	SS14E	22.5 - 24.0	22.5 - 24.0	1.5	4-4-4
24	24.5	1118.3			SS15aE	24.0 - 24.5			
25			SILT, ML, 10YR 3/2 (very dark grayish brown) to 10YR 2/1 (black), non-plastic, soft to firm, moist, [CCR]		SS15bG	24.5 - 25.5	24.0 - 25.5	1.5	5-6-9
26					SS16aG	25.5 - 26.5	25.5 - 27.0	1.5	2-2-2
27				26.5/28.5-20190404	SS16bE	26.5 - 27.0			
28					SS17E	27.0 - 28.5	27.0 - 28.5	1.5	4-2-3
29					SS18G	28.5 - 30.0	28.5 - 30.0	1.5	2-5-3
30	30.3	1112.5							
31			SANDY SILT, ML, 10YR 5/4 (yellowish brown), medium plasticity, very hard, dry, iron oxide staining, laminated		SS19G	30.0 - 31.5	30.0 - 31.5	1.5	9-21-39
32					SS20G	31.5 - 33.0	31.5 - 33.0	1.5	9-18-21
33	33.0	1109.8							
			No Refusal / Bottom of Hole at 33.0 Ft.						

Prior to drilling, TVA provided a temporary penetration through the final cover, including excavation of final cover soil and penetration of geosynthetics. The excavation was temporarily backfilled with gravel or soil to facilitate drill rig access. The depth reference (i.e., depth = 0.0 ft) and surface elevation for the boring log refer to the base of the temporay penetration, not the top of temporary backfill or the top of final cover.

Temporary well JSF-TW08 installed; see well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW09**
Client	Tennessee Valley Authority	Boring Location	732,960.02 N; 2,886,153.10 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1107.9 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	3/6/19
		Completed	3/12/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	6.0 ft
		Date/Time	3/7/19 14:00
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	37.7 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1107.9		Top of Hole						
0.5	1107.4		Topsoil						
			GRAVELLY LEAN CLAY, CL, 10YR 5/8 (yellowish brown) to 2.5YR 4/8 (red), medium plasticity, firm, dry to moist, medium to coarse gravel, with cobbles, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	1.2	2-6-5
				1.5/3.5-20190306	SS02E	1.5 - 3.0	1.5 - 3.0	1.0	4-8-7
3.5	1104.4				SS03aE	3.0 - 3.5	3.0 - 4.5	1.5	7-20-26
			SILT, ML, N 5/ (gray), non-plastic, soft to hard, dry to wet, [CCR]		SS03bG	3.5 - 4.5			
					SS04G	4.5 - 6.0	4.5 - 6.0	1.5	14-19-20
					SS05aG	6.0 - 6.5	6.0 - 7.5	1.5	7-12-10
				6.5/8.5-20190307	SS05bE	6.5 - 7.5			
					SS06aE	7.5 - 8.5	7.5 - 9.0	1.0	2-2-3
					SS06bG	8.5 - 9.0			
					SS07G	9.0 - 10.5	9.0 - 10.5	1.5	3-6-6
					SS08aG	10.5 - 11.5	10.5 - 12.0	1.5	3-5-6
				11.5/13.5-20190307	SS08bE	11.5 - 12.0			
					SS09E	12.0 - 13.5	12.0 - 13.5	1.5	4-6-11
					ST01G	13.5 - 15.5	13.5 - 15.5	1.7	NR
					SS10aG	15.5 - 16.0			

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW09**
Client Tennessee Valley Authority
Boring Location 732,960.02 N; 2,886,153.10 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1107.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
16			SILT, ML, N 5/ (gray), non-plastic, soft to hard, dry to wet, [CCR] *(Continued)*		SS10bE	16.0 - 17.0	15.5 - 17.0	1.5	7-20-18
17				16.0/19.0-20190312					
18					SS11E	17.0 - 18.5	17.0 - 18.5	1.5	6-9-8
19					SS12aE	18.5 - 19.0	18.5 - 20.0	1.5	6-8-8
20					SS12bG	19.0 - 20.0			
21					SS13G	20.0 - 21.5	20.0 - 21.5	1.5	4-11-35
22				21.5/23.5-20190312	SS14E	21.5 - 23.0	21.5 - 23.0	1.5	5-23-36
23					SS15aE	23.0 - 23.5	23.0 - 24.5	1.5	5-9-5
24					SS15bG	23.5 - 24.5			
25					SS16G	24.5 - 26.0	24.5 - 26.0	1.5	4-4-3
26					SS17aG	26.0 - 26.5	26.0 - 27.5	1.5	2-2-2
27				26.5/28.5-20190312	SS17bE	26.5 - 27.5			
28					SS18aE	27.5 - 28.5	27.5 - 29.0	1.5	3-3-6
29					SS18bG	28.5 - 29.0			
30					SS19G	29.0 - 30.5	29.0 - 30.5	1.5	4-5-9
31					SS20aG	30.5 - 31.5	30.5 - 32.0	1.5	4-4-5
32				31.5/33.5-20190312	SS20bE	31.5 - 32.0			
33					SS21E	32.0 - 33.5	32.0 - 33.5	1.5	8-7-4
34					SS22G	33.5 - 35.0	33.5 - 35.0	1.5	5-5-3
35					SS23G	35.0 - 36.5	35.0 - 36.5	1.5	2-1-2
36							36.5 - 38.0		
37					SS24E	36.5 - 38.0		1.5	4-4-3

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/16/20

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW09**
Client Tennessee Valley Authority
Boring Location 732,960.02 N; 2,886,153.10 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1107.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
38			SILT, ML, N 5/ (gray), non-plastic, soft to hard, dry to wet, [CCR] *(Continued)*		SS25aE	38.0 - 38.5	38.0 - 39.5	1.5	3-5-8
38.7	1069.2			36.5/38.5-20190312					
39			SANDY LEAN CLAY, CL, 10YR 6/6 (brownish yellow) and 10YR 7/1 (light gray), low to medium plasticity, firm, moist, little fine to medium gravel		SS25bG	38.5 - 39.5			
40					ST02G	39.5 - 41.5	39.5 - 41.5	1.9	1000
41									
41.5	1066.4								

No Refusal /
Bottom of Hole at 41.5 Ft.

Temporary well JSF-TW09 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW10**
Client	Tennessee Valley Authority	Boring Location	733,261.50 N; 2,886,886.30 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1111.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	3/14/19
Completed	3/19/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	7.2 ft
Date/Time	3/14/19 13:47		
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	38.9 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1111.8		Top of Hole						
1.2	1110.6		FAT CLAY WITH SAND, CH, 10YR 5/6 (yellowish brown), high plasticity, firm, dry, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	5-7-7
3.8	1108.0		LEAN CLAY WITH GRAVEL, CL, 5YR 4/6 (yellowish red), medium plasticity, firm, dry to moist, iron oxide staining, with medium to coarse gravel, [FILL]	1.5/3.5-20190314	SS02E	1.5 - 3.0	1.5 - 3.0	1.2	6-7-6
					SS03aE	3.0 - 3.5	3.0 - 4.5	1.5	6-5-7
					SS03bG	3.5 - 4.0			
					SS03cG	4.0 - 4.5			
			SILT WITH SAND, ML, N 3/ (very dark gray), non-plastic, hard, moist to wet, [CCR]		SS04G	4.5 - 6.0	4.5 - 6.0	0.9	5-9-9
				6.0/9.0-20190314	SS05E	6.0 - 7.5	6.0 - 7.5	1.5	5-10-5
					SS06E	7.5 - 9.0	7.5 - 9.0	1.5	4-6-8
					SS07	9.0 - 10.5	9.0 - 10.5	1.5	4-5-6
					SS08aG	10.5 - 11.5	10.5 - 12.0	1.5	4-5-7
					SS08b	11.5 - 12.0			
				12.0/13.5-20190314	SS09E	12.0 - 13.5	12.0 - 13.5	1.5	4-5-7
13.5	1098.3								
			SILT, ML, N 3/ (very dark gray), non-plastic, hard, wet, [CCR]		ST01G	13.5 - 15.5	13.5 - 15.5	2.0	1000
					SS10aG	15.5 - 16.5	15.5 - 17.0	1.5	4-9-10
				16.5/18.5-20190314	SS10bE	16.5 - 17.0			
					SS11E	17.0 - 18.5	17.0 - 18.5	1.5	4-4-5

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW10**
Client: Tennessee Valley Authority
Boring Location: 733,261.50 N; 2,886,886.30 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1111.8 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT, ML, N 3/ (very dark gray), non-plastic, hard, wet, [CCR] *(Continued)*						
19					SS12G	18.5 - 20.0	18.5 - 20.0	1.5	31-21-31
20	20.0	1091.8							
			SILT, ML, N 3/ (very dark gray), non-plastic, very soft, wet, [CCR]		SS13aG	20.0 - 21.0	20.0 - 21.5	1.5	1-1-1
21					SS13bE	21.0 - 21.5			
22				21.0/24.0-20190314	SS14E	21.5 - 23.0	21.5 - 23.0	1.5	1-WR-WR
23					SS15aE	23.0 - 24.0	23.0 - 24.5	1.5	WH-WH-WH
24					SS15bG	24.0 - 24.5			
25					SS16G	24.5 - 26.0	24.5 - 26.0	1.5	WH-WH-WH
26									
27				26.0/29.0-20190314	SS17E	26.0 - 27.5	26.0 - 27.5	1.4	WR-WR-WR
28					SS18E	27.5 - 29.0	27.5 - 29.0	1.5	3-1-3
29									
30					SS19G	29.0 - 30.5	29.0 - 30.5	1.5	3-2-1
31					SS20aG	30.5 - 31.5	30.5 - 32.0	1.5	WH-WH-2
32					SS20bE	31.5 - 32.0			
33				31.5/33.5-20190314	SS21E	32.0 - 33.5	32.0 - 33.5	1.5	2-1-2
34					SS22G	33.5 - 35.0	33.5 - 35.0	1.5	3-1-1
35									
36					SS23G	35.0 - 36.5	35.0 - 36.5	1.5	WH-WH-WH
37				36.5/38.5-20190319	SS24E	36.5 - 38.0	36.5 - 38.0	1.5	WH-WH-WH
38					SS25aE	38.0 - 38.5	38.0 - 39.5	1.5	WH-WH-WH
39					SS25bG	38.5 - 39.5			
	39.9	1071.9							
40	40.5	1071.3	LEAN CLAY WITH GRAVEL, CL, 5YR 4/6 (yellowish red), low to medium plasticity, hard, dry to moist, iron oxide staining, with medium to coarse gravel		SS26G	39.5 - 41.0	39.5 - 41.0	1.5	4-12-23
41					ST02G	41.0 - 41.8	41.0 - 41.8	0.8	1000
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW10**
Client Tennessee Valley Authority
Boring Location 733,261.50 N; 2,886,886.30 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1111.8 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
42.7	1069.1		SANDY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10YR 2/1 (black), low plasticity, very hard, damp, iron oxide staining, laminated *(Continued)* Shale fragments in tip of spoon at 42.7'		SS27G	41.8 - 42.7	41.8 - 42.7	0.9	31-50/5"

Refusal /
Bottom of Hole at 42.7 Ft.

Top of Rock = 42.7 Ft.
Top of Rock Elevation = 1069.1 Ft.

Temporary well JSF-TW10 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW11**
Client	Tennessee Valley Authority	Boring Location	733,552.46 N; 2,887,639.90 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1108.7 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	3/21/19
		Completed	3/26/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	9.3 ft
		Date/Time	3/21/19 15:57
Inspector	M. Pritt	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	31.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology								
Depth Ft[3]	Elevation	Graphic	Description	Overburden: / Rock Core:	Sample[1,2] / RQD %	Depth Ft[3] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %
0.0	1108.7		Top of Hole					
0.1	1108.6		Topsoil					
			SILTY SAND WITH GRAVEL, SM, 10YR 4/4 (dark yellowish brown) to 10YR 7/8 (yellow), very fine to coarse, low plasticity, medium dense, dry, iron oxide staining, blocky, [FILL]		SS01G	0.0 - 1.5	1.5	7-9-8
1.6	1107.1				SS02aE	1.5 - 2.8	1.5	9-11-13
2.8	1105.9				SS02b	2.8 - 3.0		
			LEAN CLAY WITH GRAVEL, CL, 2.5YR 4/8 (red) to 10YR 7/6 (yellow), low plasticity, firm, dry, iron oxide staining, blocky, with very fine to coarse gravel, [FILL]		SS03G	3.0 - 4.5	1.4	7-11-15
			SILT WITH SAND, ML, N 3/ (very dark gray), non-plastic, firm to hard, moist to wet, slight organic odor, stratified, [CCR]		SS04G	4.5 - 6.0	1.5	9-12-14
					SS05aG	6.0 - 6.5		
				6.5/8.5-20190321	SS05bE	6.5 - 7.5	1.5	7-8-8
					SS06aE	7.5 - 8.5		
					SS06bG	8.5 - 9.0	1.5	5-3-3
					SS07G	9.0 - 10.5	1.5	3-2-3
10.5	1098.2							
			SILT WITH SAND, ML, N 3/ (very dark gray), non-plastic, very soft to soft, wet, slight organic odor, stratified, [CCR]		SS08aG	10.5 - 11.5	1.5	WH-WH-1
				11.5/13.5-20190321	SS08bE	11.5 - 12.0		
					SS09E	12.0 - 13.5	1.5	WH-1-1
13.5	1095.2							
			SILT, ML, N 3/ (very dark gray), non-plastic, very soft to soft, wet, slight organic odor, stratified, [CCR]		ST01G	13.5 - 15.5	1.0	400
					SS10aG	15.5 - 16.5		
				16.5/18.5-20190322	SS10bE	16.5 - 17.0	1.5	WH-1-1
					SS11E	17.0 - 18.5	1.5	2-1-1

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/16/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-TW11**
Client: Tennessee Valley Authority
Boring Location: 733,552.46 N; 2,887,639.90 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1108.7 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILT, ML, N 3/ (very dark gray), non-plastic, very soft to soft, wet, slight organic odor, stratified, [CCR] *(Continued)*						
19					SS12G	18.5 - 20.0	18.5 - 20.0	1.0	WH-WH-WH
20					SS13G	20.0 - 21.5	20.0 - 21.5	1.5	1-1-2
21				21.5/23.5-20190322	SS14E	21.5 - 23.0	21.5 - 23.0	1.5	WH-WH-2
22					SS15aE	23.0 - 23.5	23.0 - 24.5	1.5	2-2-1
23					SS15bG	23.5 - 24.5			
24					SS16G	24.5 - 26.0	24.5 - 26.0	1.5	2-WH-WH
25					SS17aG	26.0 - 26.5	26.0 - 27.5	1.5	1-2-1
26				26.5/28.5-20190322	SS17bE	26.5 - 27.5			
27					SS18aE	27.5 - 28.5	27.5 - 29.0	1.5	WH-WH-1
28					SS18bG	28.5 - 29.0			
29					SS19G	29.0 - 30.5	29.0 - 30.5	1.5	3-2-WH
30					SS20aG	30.5 - 31.0	30.5 - 32.0	1.5	1-WH-1
31					SS20b	31.0 - 32.0			
32	32.0	1076.7							
33	33.2	1075.5	CLAYEY GRAVEL WITH SAND, GC, 10YR 5/6 (yellowish brown) and 10YR 2/1 (black), medium plasticity, hard, moist, iron oxide staining Shale fragments in tip of spoon at 33.2'		SS21G	32.0 - 33.2	32.0 - 33.2	1.2	11-48-50+/2"
			Refusal / Bottom of Hole at 33.2 Ft.						

Temporary well JSF-TW11 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/16/20

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-TW12**
Client	Tennessee Valley Authority	Boring Location	732,773.07 N; 2,889,531.81 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1141.9 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	3/27/19
		Completed	3/27/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
		Date/Time	N/A
Inspector	M. Pritt	Logger	M. Edmunds
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	21.1 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	K. Carey	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1141.9		Top of Hole						
1.0	1140.9		SILTY LEAN CLAY TRACE SAND, CL, 7.5YR 5/4 (brown) to 7.5YR 4/4 (brown), non-plastic to low plasticity, medium stiff to stiff, moist, [FILL]		SS01aG	0.0 - 1.0	0.0 - 1.5	1.4	4-8-17
					SS01bE	1.0 - 1.5			
			SANDY SILT, ML, 5YR 2.5/1 (black), non-plastic, soft to firm, moist, medium to coarse sand particles, [CCR]	1.0/4.5-20190327	SS02E	1.5 - 3.0	1.5 - 3.0	1.3	6-9-13
					SS03E	3.0 - 4.5	3.0 - 4.5	1.5	4-3-2
					ST01G	4.5 - 6.5	4.5 - 6.5	1.3	200
7.0	1134.9			6.5/8.5-20190327	SS04E	6.5 - 8.0	6.5 - 8.0	1.5	1-1-1
			SILT, ML, 5YR 3/1 (very dark gray) to 5YR 2.5/1 (black), non-plastic to low plasticity, soft, moist to wet, [CCR]		SS05aE	8.0 - 8.5	8.0 - 9.5	1.5	2-1-WH
			Trace clay from 7.0' to 8.0'		SS05bG	8.5 - 9.5			
			Trace poorly graded, medium to coarse gravel from 8.0' to 13.8'		ST02G	9.5 - 11.5	9.5 - 11.5	0.0	500
				11.5/13.5-20190327	SS06E	11.5 - 13.0	11.5 - 13.0	1.5	2-1-1
13.8	1128.1				SS07aE	13.0 - 13.5	13.0 - 14.5	1.5	4-WH-WH
			SANDY SILT, ML, 5YR 3/1 (very dark gray) to 5YR 2.5/1 (black), non-plastic, soft to hard, wet, trace medium to coarse gravel, [CCR]		SS07bG	13.5 - 14.5			
					ST03G	14.5 - 16.5	14.5 - 16.5	2.0	500
				16.5/18.5-20190327	SS08E	16.5 - 18.0	16.5 - 18.0	1.5	WR-5-12
18.0	1123.9								

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-TW12**
Client Tennessee Valley Authority
Boring Location 732,773.07 N; 2,889,531.81 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1141.9 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILTY SAND WITH GRAVEL, SM, 5YR 3/1 (very dark gray) to 5YR 2.5/1 (black), non-plastic, soft, moist to wet, trace medium to coarse gravel, [CCR]		SS09aE	18.0 - 18.5	18.0 - 19.5	1.5	6-6-3
19					SS09bG	18.5 - 19.5			
20					ST04G	19.5 - 21.5	19.5 - 21.5	1.8	400
21									
22	22.1	1119.8			SS10G	21.5 - 23.0	21.5 - 23.0	1.5	33-48-12
23			Shale, gray to dark gray, very fine grained, soft, laminated to thin bedded, slightly weathered to moderately weathered, 15° to 30° bedding angle, transitions to competent shale		SS11G	23.0 - 23.8	23.0 - 23.8	0.8	27-50+/4"
	23.8	1118.1	Refusal / Bottom of Hole at 23.8 Ft.						

Top of Rock = 22.1 Ft.
Top of Rock Elevation = 1119.8 Ft.

Temporary well JSF-TW12 installed. See well installation log for backfill details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

APPENDIX B.4

PIEZOMETERS

Table of Contents

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**BA-2**
County	Hawkins	Surface Elevation	1145.9 ft
Project Type	Geotechnical Exploration	Date Started	3/25/09
Supervisor	A. Davis	Driller	M. Martin
Logged By	A. Davis		

Total Depth: 50.5 ft; Completed: 3/26/09; Depth to Water: 34.5 ft; Date/Time: 3/26/09; Depth to Water: --; Date/Time: --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.9	0.0	Top of Hole							
1145.3	0.6	SOIL 3: Bottom Ash, gray to dark gray, moist, medium dense, medium to very coarse grained, poorly sorted		SPT-1	0.0 - 1.5	0.6	10-12-4	13	Boring advanced with 4 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.1	6-10-19	16	
				SPT-3	3.0 - 4.5	0.4	8-10-14	13	
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown with occasional gray mottling, damp to moist, medium stiff to very stiff, with occasional manganese concretions and silty zones		SPT-4	4.5 - 6.0	0.8	9-8-9	15	Installed Piezometer with 10' of slotted screen at 40.1' and 30.1' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 50.5' with well installation materials.
				SPT-5	6.0 - 7.5	1.2	7-11-11	19	
				SPT-6	7.5 - 9.0	1.3	4-8-11	16	
				SPT-7	9.0 - 10.5	1.2	4-8-5	24	
				SPT-8	10.5 - 12.0	0.5	13-14-11	18	
				SPT-9	12.0 - 13.5	1.2	3-4-5	24	
				SPT-10	13.5 - 15.0	1.1	3-7-10	15	
				SPT-11	15.0 - 16.5	1.5	4-5-5	21	
				SPT-12	16.5 - 18.0	1.3	4-6-6	25	
1126.4	19.5			SPT-13	18.0 - 19.5	1.1	2-3-4	21	
		SOIL 10: Lean Clay, light brown to brown, moist, stiff to hard, with rare manganese concretions		SPT-14	19.5 - 21.0	1.2	3-4-6	28	
				SPT-15	21.0 - 22.5	1.4	5-10-13	25	
				SPT-16	22.5 - 24.0	1.2	4-6-7	27	
				SPT-17	24.0 - 25.5	1.4	3-6-11	28	
				SPT-18	25.5 - 27.0	1.5	6-12-12	33	
				SPT-19	27.0 - 28.5	1.5	6-12-17	29	
				SPT-20	28.5 - 30.0	1.5	5-10-13	28	
				SPT-21	30.0 - 31.5	0.8	22-26-13	29	
				SPT-22	31.5 - 33.0	1.5	5-12-10	21	
				SPT-23	33.0 - 34.5	1.1	5-9-8	21	
1109.9	36.0			SPT-24	34.5 - 36.0	1.1	5-7-6	24	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **BA-2** | Total Depth 50.5 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered) *(Continued)*		SPT-25	36.0 - 37.5	1.5	6-19-27	27	
				SPT-26	37.5 - 39.0	0.9	6-19-29	29	
				SPT-27	39.0 - 40.5	1.4	5-10-10	34	
				SPT-28	40.5 - 42.0	0.8	5-10-18	28	
				SPT-29	42.0 - 43.5	0.8	6-8-11	24	
				SPT-30	43.5 - 45.0	1.0	4-5-8	26	
				SPT-31	45.0 - 46.5	0.9	5-10-12	23	
1095.4	50.5			SPT-32	50.0 - 50.5	0.5	50+	2	

No Refusal /
Bottom of Hole

Top of Rock = 36.0
Elevation (1109.9)

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**BA-3** Total Depth 37.1 ft
County	Hawkins	Surface Elevation	1145.3 ft
Project Type	Geotechnical Exploration	Date Started	3/31/09 Completed 3/31/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	31.5 ft Date/Time 3/31/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.3	0.0	Top of Hole							
1145.2	0.1	DGA + Soil 1		SPT-1	0.0 - 1.5	0.7	3-3-3	20	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown with occasional gray mottling, damp to moist, medium stiff to hard, with occasional manganese concretions and silty zones		SPT-2	1.5 - 3.0	0.7	3-6-9	16	
				SPT-3	3.0 - 4.5	1.1	5-8-8	18	
				SPT-4	4.5 - 6.0	0.9	5-7-9	20	Installed Piezometer with 10' of slotted screen at 34.8' and 24.8' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 37.1' with well installation materials.
				SPT-5	6.0 - 7.5	1.0	6-7-11	17	
				SPT-6	7.5 - 9.0	1.0	6-8-11	23	
				SPT-7	9.0 - 10.5	0.9	8-14-14	16	
				SPT-8	10.5 - 12.0	0.7	8-23-20	15	
				SPT-9	12.0 - 13.5	0.4	7-13-10	23	
				SPT-10	13.5 - 15.0	0.6	9-14-14	24	
1128.8	16.5			SPT-11	15.0 - 16.5	1.3	8-15-15	21	Rock in Spoon Tip
		SOIL 10: Lean Clay, light brown to brown, damp to moist, stiff to hard, with rare manganese concretions		SPT-12	16.5 - 18.0	1.1	20-19-17	28	
				SPT-13	18.0 - 19.5	0.1	7-6-8	19	
				SPT-14	19.5 - 21.0	1.5	7-10-12	34	Rock in Spoon Tip
				SPT-15	21.0 - 22.5	1.4	6-7-12	31	
				SPT-16	22.5 - 24.0	1.3	7-11-12	30	
				SPT-17	24.0 - 25.5	1.5	4-9-15	27	
				SPT-18	25.5 - 27.0	0.7	5-20-22	29	
				SPT-19	27.0 - 28.5	1.3	14-15-17	27	
				SPT-20	28.5 - 30.0	1.5	4-9-11	28	
				SPT-21	30.0 - 31.5	0.4	5-8-15	26	
				SPT-22	31.5 - 33.0	1.5	20-25-27	29	
				SPT-23	33.0 - 34.5	0.5	5-12-13	34	
				SPT-24	34.5 - 36.0	0.9	5-10-12	29	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **BA-3** | Total Depth 37.1 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
				SPT-25	36.0 - 37.1	0.9	5-10-50+	28	
1108.3 / 1108.2	37.0 / 37.1	Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 37.0 Elevation (1108.3)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**BA-8**
County	Hawkins	Surface Elevation	1145.2 ft
Project Type	Geotechnical Exploration	Date Started	4/3/09
Supervisor	A. Davis	Driller M. Martin	Depth to Water 31.5 ft
Logged By	A. Davis	Depth to Water	--

Total Depth: 40.2 ft | Completed: 4/3/09 | Date/Time: 4/3/09 | Date/Time: --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.2	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown with occasional gray mottling, damp to moist, medium stiff to hard, with occasional manganese concretions and silty zones.		SPT-1	0.0 - 1.5	0.9	2-2-4	23	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.0	3-4-4	21	
				SPT-3	3.0 - 4.5	0.5	3-5-6	28	
				SPT-4	4.5 - 6.0	1.0	7-9-11	26	Installed Piezometer with 10' of slotted screen at 34.5' and 24.5' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 40.2' with well installation materials.
				SPT-5	6.0 - 7.5	1.5	4-8-15	25	
				SPT-6	7.5 - 9.0	1.2	5-8-14	24	
				SPT-7	9.0 - 10.5	1.5	7-14-10	19	
				SPT-8	10.5 - 12.0	1.5	7-6-11	24	
				SPT-9	12.0 - 13.5	1.2	7-11-12	23	
				SPT-10	13.5 - 15.0	1.3	8-8-10	26	
				SPT-11	15.0 - 16.5	0.7	7-8-9	23	
				SPT-12	16.5 - 18.0	0.5	7-13-23	22	
1125.7	19.5			SPT-13	18.0 - 19.5	1.0	14-22-19	8	
		SOIL 10: Lean Clay, light brown to brown, moist, very stiff, with rare manganese concretions		SPT-14	19.5 - 21.0	1.2	9-13-12	16	
				SPT-15	21.0 - 22.5	1.5	9-12-12	40	
				SPT-16	22.5 - 24.0	1.5	7-11-18	32	
1119.7	25.5			SPT-17	24.0 - 25.5	1.5	5-10-20	31	
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)		SPT-18	25.5 - 27.0	1.5	7-13-15	29	
				SPT-19	27.0 - 28.5	1.5	11-25-30	26	
				SPT-20	28.5 - 30.0	1.1	7-9-14	28	
				SPT-21	30.0 - 31.5	1.3	7-13-15	27	
				SPT-22	35.0 - 36.5	1.4	11-15-16	27	

SUBSURFACE LOG

Project Number 175569038 Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas Boring No. **BA-8** Total Depth 40.2 ft

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
1105.0	40.2			SPT-23	40.0 - 40.2	0.2	50+	5	
		No Refusal / Bottom of Hole Top of Rock = 25.5 Elevation (1119.7)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175655042	Location	755376.79 N, 2860567.51 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-11** Total Depth 29.5 ft
County	Hawkins County, Tennessee	Surface Elevation	1145.9 ft
Project Type	Geotechnical Exploration	Date Started	8/23/16 Completed 8/23/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	27.5 ft Date/Time 8/23/16
Logged By	C. Branson	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.9	0.0	Top of Hole							
1145.4	0.5	GRAVEL							
		FILL: FAT CLAY with Sand (CH), brown, moist, stiff to very stiff		SPT-1	4.5 - 6.0	1.5	2-5-6	22	
		- River gravel		SPT-2	9.5 - 11.0	1.5	6-8-10	19	Composite (4.5' - 16.0') LL = 50 PL = 24
				SPT-3	14.5 - 16.0	1.5	4-6-8	25	
1125.9	20.0								
		RESIDUAL: LEAN CLAY (CL), brown, moist, stiff, manganese concretions and highly weathered shale fragments throughout		SPT-4	19.5 - 21.0	1.5	3-4-6	36	
1121.0	24.9			SPT-5	24.5 - 24.9	0.4	50+/0.4'	26	
		SHALE, gray							
1116.4	29.5								
		No Refusal / Bottom of Hole							LL = Liquid Limit PL = Plastic Limit
		Top of Rock = 24.9 Elevation (1121.0)							
		Vibrating wire piezometer installed at 27.5 foot depth.							

STANTEC/FMSM_LEGACY 175655042_JSF_BAP_BORINGS.GPJ FMSM-GRAPHIC LOG.GDT 10/27/16

10/27/16

SUBSURFACE LOG

Project Number	175655042	Location	754707.17 N, 2860649.95 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-15** Total Depth 26.0 ft
County	Hawkins County, Tennessee	Surface Elevation	1145.7 ft
Project Type	Geotechnical Exploration	Date Started	8/24/16 Completed 8/24/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	22.7 ft Date/Time 8/24/16
Logged By	C. Branson	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.7	0.0	Top of Hole							
1145.1	0.6	GRAVEL							
		FILL: SANDY LEAN CLAY (CL), brown with occasional gray mottling, moist, medium stiff to stiff		SPT-1	4.5 - 6.0	1.5	2-3-6	23	
		- Black organics with Manganese concretions from 9.5' to 11.0'		SPT-2	9.5 - 11.0	1.2	8-3-3	16	Composite (4.5' - 16.0') LL = 35 PL = 18
		- Sandstone rocks from 14.5' to 16.0'		SPT-3	14.5 - 16.0	1.5	3-3-7	21	
1125.7	20.0	- Wet from 19.0' to 20.0'							
		SHALE, gray, highly weathered		SPT-4	19.5 - 21.0	1.5	2-2-4	30	Composite (19.5' - 26.0') LL = NP PL = NP
1119.7	26.0			SPT-5	24.5 - 26.0	0.3	12-19-21	9	
		No Refusal / Bottom of Hole							LL = Liquid Limit PL = Plastic Limit NP = Non Plastic
		Top of Rock = 20.0 Elevation (1125.7)							
		Vibrating wire piezometer installed at 24.0 foot depth.							

SUBSURFACE LOG

Project Number	175655042	Location	755237.07 N, 2860585.27 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-16** Total Depth 31.0 ft
County	Hawkins County, Tennessee	Surface Elevation	1143.2 ft
Project Type	Geotechnical Exploration	Date Started	8/24/16 Completed 8/24/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	19.7 ft Date/Time 8/24/16
Logged By	C. Branson / R. Fuller	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1143.2	0.0	Top of Hole							
		FLY ASH with Gravel and Clay, gray, dry to moist, very soft to medium stiff		SPT-1	4.5 - 6.0	1.5	6-4-5	19	Shale boulder (Augered) from 3.0' to 4.0'
		-Wet starting at 9.0'		SPT-2	9.5 - 11.0	1.5	1-1-1	32	Initial free water at 9.0'
				ST-1	14.5 - 16.5	2.0		--	Composite (4.5' - 21.0') LL = NP PL = NP
				SPT-3	19.5 - 21.0	1.5	1-2-2	28	
1119.6	23.6								
		RESIDUAL: LEAN CLAY with Sand (CL), brown and gray, moist, stiff to very stiff, saturated at 23.6', rock at 23.6' to 23.8'		SPT-4	24.5 - 26.0	1.5	3-5-6	21	Composite (24.5' - 31.0') LL = NP PL = NP
1112.4	30.8			SPT-5	29.5 - 31.0	1.5	6-8-13	22	
1112.2	31.0	SHALE, gray and brown, highly weathered							LL = Liquid Limit PL - Plastic Limit NP = Non Plastic
		No Refusal / Bottom of Hole							
		Top of Rock = 30.8 Elevation (1112.4)							

Stantec

SUBSURFACE LOG

Project Number	175655042	Location	755237.07 N, 2860585.27 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-16**
		Total Depth	31.0 ft

Lithology		Description	Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	Remarks
Elevation	Depth		Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	
		Vibrating wire piezometer installed at 24.0 foot depth.							

SUBSURFACE LOG

Project Number	175655042	Location	755007.34 N, 2860613.66 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-17** Total Depth 30.5 ft
County	Hawkins County, Tennessee	Surface Elevation	1147.3 ft
Project Type	Geotechnical Exploration	Date Started	8/25/16 Completed 8/25/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	16.5 ft Date/Time 8/25/16
Logged By	C. Branson	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1147.3	0.0	Top of Hole							
		BOTTOM ASH, gray, moist, very loose, coarse grained							
		- Moist to wet at 8.5'		ST-1	9.5 - 11.5	2.0		--	
		- Moist to wet at 13.0'		SPT-1	14.5 - 16.0	1.5	2-1-1	28	Initial free water at 16.0' Composite (14.5 - 21.0') LL = NP PL = NP
				SPT-2	19.5 - 21.0	1.5	WOH-1-1	22	
1122.8	24.5								
1121.2	26.1	FLY ASH, gray, moist, very stiff, fine grained - Dry at 25.5'		SPT-3	24.5 - 26.0	1.5	3-8-11	27	LL = NP PL = NP
		SHALE, brown and gray, highly, weathered							
1116.8	30.5			SPT-4	29.5 - 30.0	0.0	50+/0.5'	--	
		No Refusal / Bottom of Hole							LL = Liquid Limit PL = Plastic Limit NP = Non Plastic WOH = Weight of Hammer
		Top of Rock = 26.1 Elevation (1121.2)							

Vibrating wire piezometer installed at 25.0 foot depth.
Sondex Locations: 2 magnets 1' above seam, bottom magnet centered 6" from bottom, 6' stick-up

SUBSURFACE LOG

Project Number	175655042	Location	755187.87 N, 2861085.06 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-18** Total Depth 41.0 ft
County	Hawkins County, Tennessee	Surface Elevation	1148.3 ft
Project Type	Geotechnical Exploration	Date Started	8/25/16 Completed 8/25/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	20.0 ft Date/Time 8/25/16
Logged By	C. Branson	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1148.3	0.0	Top of Hole							
		BOTTOM ASH, gray, moist, very loose, coarse grained, coal fragments throughout		ST-1	4.5 - 6.5	2.0		--	
				ST-2	9.5 - 11.5	2.0		--	
				SPT-1	14.5 - 16.0	1.5	2-1-2	31	Composite (14.5' - 26.0') LL = NP PL = NP K = 6.1E-5 cm/s
				ST-3	19.5 - 21.5	2.0		--	Initial free water at 20.0'
				SPT-2	24.5 - 26.0	1.5	1-WOH-WOH	60	
1117.6	30.7			SPT-3	29.5 - 31.0	1.5	WOH-2-2	49	
		RESIDUAL: LEAN CLAY (CL), brown, moist, soft							
1112.8	35.5			ST-4	34.5 - 36.5	1.5		--	

SUBSURFACE LOG

Project Number 175655042 | Location 755187.87 N, 2861085.06 E

Project Name JSF Bottom Ash Pond | Boring No. **BA-18** | Total Depth 41.0 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		SHALE, gray, highly weathered *(Continued)*							
1107.3	41.0			SPT-4	39.5 - 41.0	1.5	20-8-10	18	LL = NP PL = NP
		No Refusal / Bottom of Hole							LL = Liquid Limit PL = Plastic Limit K = Hydraulic Conductivity NP = Non Plastic WOH = Weight of Hammer
		Top of Rock = 35.5 Elevation (1112.8)							
		Vibrating wire piezometer installed at 35.3 foot depth. Sondex = 46.2' slope inclinometer pipe 3 magnets placed 1' above seam, bottom magnets centered 6" from bottom							

SUBSURFACE LOG

Project Number	175655042	Location	755351.07 N, 2861497.79 E
Project Name	JSF Bottom Ash Pond	Boring No.	**BA-19** Total Depth 41.0 ft
County	Hawkins County, Tennessee	Surface Elevation	1145.5 ft
Project Type	Geotechnical Exploration	Date Started	8/24/16 Completed 8/24/16
Supervisor	C. Branson Driller T. Caudill	Depth to Water	17.9 ft Date/Time 8/24/16
Logged By	C. Branson	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1145.5	0.0	Top of Hole							
		BOTTOM ASH, gray, moist, very loose to loose, coarse grained, coal fragments throughout		SPT-1	9.5 - 11.0	1.5	5-5-3	17	Initial free water at 10.5'
				SPT-2	14.5 - 16.0	0.8	2-1-2	22	Composite (9.5' - 26.0') LL = NP PL = NP
				SPT-3	19.5 - 21.0	1.5	WOH-WOH-WOH	61	
				SPT-4	24.5 - 26.0	1.5	1-WOH-WOH	71	
				SPT-5	29.5 - 31.0	0.0	WOR-WOR-WOR	--	
1110.5	35.0	- Saturated to wet at 35.0'		SPT-6	34.5 - 36.0	1.5	WOH-5-6	34	
		SHALE, gray, weathered							

SUBSURFACE LOG

Project Number 175655042 | Location 755351.07 N, 2861497.79 E

Project Name JSF Bottom Ash Pond | Boring No. **BA-19** | Total Depth 41.0 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		SHALE, gray, weathered *(Continued)*							Composite (34.5' - 41.0') LL = 44 PL = 28
1104.5	41.0			SPT-7	39.5 - 41.0	1.5	6-11-14	30	

No Refusal /
Bottom of Hole

Top of Rock = 35.0
Elevation (1110.5)

Vibrating wire piezometer installed at 35.5 foot depth.

LL = Liquid Limit
PL = Plastic Limit
NP = Non Plastic
WOH = Weight of Hammer
WOR = Weight of Rod

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JP-03** Total Depth 35.4 ft
County	Hawkins	Surface Elevation	1105.8 ft
Project Type	Geotechnical Exploration	Date Started	5/12/09 Completed 5/12/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	Dry Date/Time 5/12/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1105.8	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand, light brown to brown with occasional gray mottling, damp to wet, medium stiff to hard, with occasional manganese concretions,shale, cobble, and silty zones		SPT-1	0.0 - 1.5	0.9	2-3-5	20	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	5.0 - 6.5	1.5	4-5-6	20	Installed Piezometer with 10' of slotted screen at 34.9' and 24.9' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 35.4 with well installation materials.
				BAG-1	6.5 - 11.5			--	
				SPT-3	10.0 - 11.5	1.5	5-6-9	26	
				SPT-4	15.0 - 16.5	1.5	5-7-13	16	
				SPT-5	20.0 - 21.5	0.5	10-17-21	18	
				SPT-6	25.0 - 26.5	0.5	8-17-17	17	
				BAG-2	26.5 - 30.0			--	
				SPT-7	30.0 - 31.5	1.1	5-8-7	18	
1073.2	32.6			SPT-8	31.5 - 33.0	1.4	5-7-13	16	
		SOIL 6: Gravel with Sand, gray to brown to tan, damp, medium dense to very dense, medium grained,		SPT-9	33.0 - 34.5	0.7	5-9-21	10	
1071.1	34.7			SPT-10	34.5 - 35.4	0.9	14-50+	13	
1070.4	35.4								

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JP-03** | Total Depth 35.4 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
		subrounded with areas of clay.							
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 34.7 Elevation (1071.1)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JP-04** Total Depth 47.7 ft
County	Hawkins	Surface Elevation	1105.6 ft
Project Type	Geotechnical Exploration	Date Started	5/12/09 Completed 5/12/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	45.7 ft Date/Time 5/12/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1105.6	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand, brown and gray, damp to wet, medium stiff to very stiff, with shale, gravel.		SPT-1	0.0 - 1.5	1.1	3-4-2	18	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	5.0 - 6.5	1.5	4-8-7	15	Installed Piezometer with 10' of slotted screen at 46.0' and 36.0' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 47.7 with well installation materials.
				BAG-1	0.0 - 11.5			--	
				SPT-3	10.0 - 11.5	1.5	7-7-11	17	
				SPT-4	15.0 - 16.5	1.5	6-7-7	21	
				SPT-5	20.0 - 21.5	1.1	9-10-11	17	
				BAG-2	20.0 - 25.0	5.0		--	
1079.9	25.7								
		SOIL 2: Lean Clay with Sand, dark brown to brown, damp to moist, soft to very stiff, with silty zones.		SPT-6	25.0 - 26.5	1.5	10-12-16	17	
				BAG-3	25.7 - 30.0			--	
				SPT-7	30.0 - 31.5	1.5	7-8-11	21	
				SPT-8	31.5 - 33.0	1.5	10-13-15	21	
				SPT-9	33.0 - 34.5	1.4	3-5-5	19	
				SPT-10	34.5 - 36.0	0.8	2-3-3	20	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JP-04** | Total Depth 47.7 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		SOIL 2: Lean Clay with Sand, dark brown to brown, damp to moist, soft to very stiff, with silty zones. *(Continued)*		SPT-11	36.0 - 37.5	1.0	7-4-5	23	
				SPT-12	37.5 - 39.0	1.2	WoR-1-4	25	
				SPT-13	39.0 - 40.5	1.2	WoR-1-3	24	
				SPT-14	40.5 - 42.0	0.5	2-4-5	24	
				BAG-4	37.5 - 45.0			--	
				SPT-15	42.0 - 43.5	1.0	5-8-9	23	
				SPT-16	43.5 - 45.0	1.5	WoR-2-2	22	
1060.0	45.6								
				SPT-17	45.0 - 46.5	1.2	WoR-2-3	21	
1058.3	47.3	SOIL 7: Sand, light brown to brown, wet, loose, medium grained, well graded		SPT-18	46.5 - 47.7	1.2	3-9-50+	19	
1057.9	47.7	Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 47.3 Elevation (1058.3)							

STANTEC/FMSM_LEGACY_JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JP-05** Total Depth 45.7 ft
County	Hawkins	Surface Elevation	1104.5 ft
Project Type	Geotechnical Exploration	Date Started	5/13/09 Completed 5/13/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	Dry Date/Time 5/13/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1104.5	0.0	Top of Hole							
		SOIL 1: Sandy Lean Clay, light brown to dark brown with occasional gray mottling, damp, medium stiff to very stiff, with gravel, cobble, shale, and silty zones		SPT-1	0.0 - 1.5	1.2	3-3-3	21	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	5.0 - 6.5	1.5	5-5-10	17	Installed Piezometer with 10' of slotted screen at 45.7' and 35.7' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 45.7' with well installation materials.
				SPT-3	10.0 - 11.5	0.2	6-8-8	18	
				BAG-1	6.5 - 16.5			--	
				SPT-4	15.0 - 16.5	0.2	5-6-10	18	
				SPT-5	20.0 - 21.5	1.5	4-7-11	22	
				SPT-6	25.0 - 26.5	1.5	3-6-8	22	
				BAG-2	26.5 - 32.0			--	
				SPT-7	30.0 - 31.5	1.5	6-8-11	22	
				SPT-8	35.0 - 36.5	1.3	2-4-8	23	

Project Number 175569038 Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas Boring No. **JP-05** Total Depth 45.7 ft

Lithology		Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
Elevation	Depth								
		SOIL 1: Sandy Lean Clay, light brown to dark brown with occasional gray mottling, damp, medium stiff to very stiff, with gravel, cobble, shale, and silty zones *(Continued)*		BAG-3	36.5 - 40.0			--	
				SPT-9	40.0 - 41.5	0.4	5-6-6	18	
1059.5	45.0								
1058.8	45.7	Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)		SPT-10	45.0 - 45.7	0.7	30-50+	13	

No Refusal / Bottom of Hole

Top of Rock = 45.0 Elevation (1059.5)

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JP-06** Total Depth 42.0 ft
County	Hawkins	Surface Elevation	1106.3 ft
Project Type	Geotechnical Exploration	Date Started	5/13/09 Completed 5/13/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	31.4 ft Date/Time 5/13/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1106.3	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand, light brown to dark brown with occasional gray mottling, damp to moist, medium stiff to very stiff, with gravel, cobble, manganese concretions, and silty zones		SPT-1	0.0 - 1.5	1.3	3-4-4	14	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	5.0 - 6.5	1.5	5-8-9	19	Installed Piezometer with 10' of slotted screen at 40.6' and 30.6' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 40.6' with well installation materials.
				BAG-1	6.5 - 15.0	1.5	5-6-11	--	
				SPT-3	10.0 - 11.5			18	
				SPT-4	15.0 - 16.5	1.3	7-5-6	25	
				SPT-5	20.0 - 21.5	1.4	4-6-6	26	
				SPT-6	25.0 - 26.5	1.5	2-4-8	23	
				BAG-2	26.5 - 34.5	1.5	4-7-9	--	
				SPT-7	30.0 - 31.5			22	
				SPT-8	31.5 - 33.0	1.2	7-11-14	22	
				SPT-9	33.0 - 34.5	1.5	3-6-9	19	
				SPT-10	34.5 - 36.0	1.5	4-6-8	20	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JP-06** | Total Depth 42.0 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
				SPT-11	36.0 - 37.5	0.9	2-2-6	22	
				SPT-12	37.5 - 39.0	1.5	3-4-8	18	
1066.7	39.6								
1066.3	40.0	SOIL 7: Sand, light brown to brown, wet, medium dense, medium to coarse grained		SPT-13	39.0 - 40.5	1.5	3-3-8	23	
1064.3	42.0	Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)		SPT-14	40.5 - 42.0	1.2	3-4-6	30	
		No Refusal / Bottom of Hole							
		Top of Rock = 40.0 Elevation (1066.3)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-10** Total Depth 23.2 ft
County	Hawkins	Surface Elevation	1085.0 ft
Project Type	Geotechnical Exploration	Date Started	4/16/09 Completed 4/16/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	21.0 ft Date/Time 4/16/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1085.0	0.0	Top of Hole							
1084.2	0.8	Topsoil and Clay		SPT-1	0.0 - 1.5	0.8	1-5-7	21	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
		Shale (Fragmented Fill)		SPT-2	1.5 - 3.0	1.3	12-11-16	14	
1080.5	4.5			SPT-3	3.0 - 4.5	1.0	4-4-6	21	
		SOIL 2: Lean Clay, light brown to brown, moist to wet, stiff to hard, with occasional manganese concretions, with and silty zones		SPT-4	4.5 - 6.0	1.5	2-4-9	21	Installed Piezometer with 10' of slotted screen at 23.8' and 16.8' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 24.3' with well installation materials. Used roller-bit to clean out hole
				SPT-5	6.0 - 7.5	1.0	2-4-6	20	
				SPT-6	7.5 - 9.0	1.3	11-12-12	20	
				SPT-7	9.0 - 10.5	1.2	12-7-8	21	
				SPT-8	10.5 - 12.0	1.5	13-6-9	22	
				SPT-9	12.0 - 13.5	1.5	9-11-5	21	
				SPT-10	13.5 - 15.0	1.5	4-6-7	23	
				SPT-11	15.0 - 16.5	1.0	4-5-7	25	
				SPT-12	16.5 - 18.0	1.1	3-5-7	23	
				SPT-13	18.0 - 19.5	1.5	1-22-33	20	
1064.0	21.0			SPT-14	19.5 - 21.0	0.4	9-25-15	22	
1062.5	22.5	SOIL 6: Gravel with Sand, gray to brown to tan, wet, dense, medium grained, poorly graded and subrounded		SPT-15	21.0 - 22.5	0.5	9-15-18	27	
1061.8	23.2			SPT-16	22.5 - 23.2	0.7	50+	10	
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered with some limestone (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 22.5 Elevation (1062.5)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-23** Total Depth 17.1 ft
County	Hawkins	Surface Elevation	1075.1 ft
Project Type	Geotechnical Exploration	Date Started	4/16/09 Completed 4/16/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	10.5 ft Date/Time 4/16/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1075.1	0.0	Top of Hole							
		SOIL 1: Lean Clay, brown, medum stiff, to very stiff, damp, with sand and gravel		SPT-1	0.0 - 1.5	1.1	2-3-5	26	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.3	7-8-11	23	
1070.6	4.5			SPT-3	3.0 - 4.5	1.5	6-8-13	22	
		SOIL 2: Lean Clay, light brown to brown, stiff to very stiff, damp to wet, with sand and gravel		SPT-4	4.5 - 6.0	1.5	6-8-12	22	Installed Piezometer with 10' of slotted screen at 16.0' and 6.0' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 17.1' with well installation materials.
				SPT-5	6.0 - 7.5	1.5	11-13-13	22	
				SPT-6	7.5 - 9.0	1.2	5-6-8	24	
				SPT-7	9.0 - 10.5	1.5	3-5-6	24	
				SPT-8	10.5 - 12.0	1.5	4-6-8	24	
				SPT-9	12.0 - 13.5	1.5	6-6-9	22	
1060.7	14.4			SPT-10	13.5 - 15.0	1.0	4-17-13	17	
1059.5	15.6	SOIL 6: Gravel with Sand, gray, tan, medium grained, poorly graded, medium dense, wet		SPT-11	15.0 - 16.5	1.1	2-6-6	24	
1058.0	17.1			SPT-12	16.5 - 17.1	0.6	50+	21	
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 15.6 Elevation (1059.5)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-28**
County	Hawkins	Surface Elevation	1074.5 ft
Project Type	Geotechnical Exploration	Date Started	4/15/09
Supervisor	A. Davis	Driller M. Martin	Depth to Water 9.0 ft
Logged By	A. Davis	Depth to Water	--

Total Depth: 18.3 ft | Completed: 4/15/09 | Date/Time: 4/15/09 | Date/Time: --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1074.5	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown, gray, with occasional gray mottling , medium stiff to very stiff, damp to moist with few manganese concretions and silty zones		SPT-1	0.0 - 1.5	1.1	3-14-8	18	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.0	8-8-11	26	
1070.0	4.5			SPT-3	3.0 - 4.5	1.3	3-3-3	24	
				SPT-4	4.5 - 6.0	1.1	3-5-6	22	Installed Piezometer with 10' of slotted screen at 16.8' and 6.8' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 17.6' with well installation materials.
				SPT-5	6.0 - 7.5	1.5	6-7-9	21	
		SOIL 2: Lean Clay, brown to tan, moist, stiff to very stiff, with sand and gravel		SPT-6	7.5 - 9.0	1.2	6-9-14	19	
1064.8	9.7			SPT-7	9.0 - 10.5	1.2	3-5-5	20	
		SOIL 7: Sand, light brown to brown, loose, wet		SPT-8	10.5 - 12.0	1.0	4-5-5	21	
1062.5	12.0			SPT-9	12.0 - 13.5	1.3	14-22-30	20	
		SOIL 6: Gravel with Sand, gray brown, medium grained, poorly graded, medium dense to very dense, subrounded, wet		SPT-10	13.5 - 15.0	0.7	11-15-13	22	
1059.5	15.0			SPT-11	15.0 - 16.5	0.5	7-9-13	24	
				SPT-12	16.5 - 18.0	1.0	10-13-	33	
1056.2	18.3			SPT-13	18.0 - 18.3	0.3	50+ / 50+	8	
		Shale, dark brown to tan to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 15.0 Elevation (1059.5)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-30** Total Depth 49.2 ft
County	Hawkins	Surface Elevation	1105.6 ft
Project Type	Geotechnical Exploration	Date Started	4/30/09 Completed 4/30/09
Supervisor	A. Davis Driller G. Thompson	Depth to Water	18.2 ft Date/Time 4/30/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1105.6	0.0	Top of Hole							
		SOIL 1: Lean Clay, brown, tan, medium stiff to very stiff, to stiff, damp, with gravel and silt		SPT-1	0.0 - 1.5	1.2	4-4-3	23	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
1102.8	2.8			SPT-2	1.5 - 3.0	0.8	10-10-8	15	
				SPT-3	3.0 - 4.5	1.1	4-3-4	17	
		SOIL 4: Compacted Fly Ash, gray to dark gray, loose to medium dense, damp to wet, with bottom ash zones		BAG-1	3.0 - 7.5	1.1	4-2-4	--	Installed Piezometer with 10' of slotted screen at 30' and 23' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 49.2' with well installation materials.
				SPT-4	4.5 - 6.0			29	
				SPT-5	6.0 - 7.5	1.5	5-9-10	34	
				SPT-6	7.5 - 9.0	1.1	3-5-7	27	
				SPT-7	9.0 - 10.5	1.5	3-6-7	29	
				SPT-8	10.5 - 12.0	1.3	3-4-5	32	
				SPT-9	12.0 - 13.5	1.5	3-6-6	25	
				SPT-10	13.5 - 15.0	1.5	3-4-5	27	
				SPT-11	15.0 - 16.5	1.5	5-5-8	27	
				SPT-12	16.5 - 18.0	1.2	7-10-11	38	
				SPT-13	18.0 - 19.5	1.5	4-5-6	36	
				SPT-14	19.5 - 21.0	1.3	5-6-9	34	
				BAG-2	19.5 - 24.0	1.2	5-7-8	--	
				SPT-15	21.0 - 22.5			33	
1081.6	24.0			SPT-16	22.5 - 24.0	0.8	2-6-3	32	
1080.6	25.0	SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose to loose		SPT-17	24.0 - 25.5	1.5	WoH	34	
				SPT-18	25.5 - 27.0	0.6	WoH-1-2	23	
		SOIL 2: Lean Clay, light brown to brown, tan, very soft to very stiff, wet, with manganese concretions, sand and gravel		SPT-19	27.0 - 28.5	0.8	WoH-2-2	20	
				SPT-20	28.5 - 30.0	1.3	4-6-8	18	
				SPT-21	30.0 - 31.5	1.5	4-5-6	19	
				SPT-22	31.5 - 33.0	1.1	8-7-8	21	
				SPT-23	33.0 - 34.5	0.3	4-4-6	20	
				SPT-24	34.5 - 36.0	1.5	2-3-3	21	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JS-30** | Total Depth 49.2 ft

Lithology		Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
Elevation	Depth								
				SPT-25	36.0 - 37.5	1.5	6-8-12	24	
1066.6	39.0			SPT-26	37.5 - 39.0	0.5	3-3-4	18	
		SOIL 6: Gravel with Sand, gray to brown to tan, medium dense to very dense, medium grained, poorly graded, subrounded, wet		SPT-27	39.0 - 40.5	0.6	7-8-8	14	
				SPT-28	40.5 - 42.0	0.0	5-19-18	23	
				SPT-29	42.0 - 43.5	1.2	22-30-50+	10	
1060.8	44.8			SPT-30	43.5 - 45.0	0.7	13-15-10	7	
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)		SPT-31	45.0 - 46.5	0.0	7-9-30	22	
				SPT-32	46.5 - 48.0	0.2	17-19-26	23	
1056.4	49.2			SPT-33	48.0 - 49.2	0.9	7-7-50+	24	
		No Refusal / Bottom of Hole Top of Rock = 44.8 Elevation (1060.8)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-34C** Total Depth 36.9 ft
County	Hawkins	Surface Elevation	1120.4 ft
Project Type	Geotechnical Exploration	Date Started	6/2/09 Completed 6/2/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	8.5 ft Date/Time 6/2/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1120.4	0.0	Top of Hole							
		SOIL 4: Compacted Fly Ash, gray to dark gray, medium dense, damp to wet, with occasional areas of clay and gravel		SPT-1	0.0 - 1.5	1.3	2-3-9	24	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.5	9-12-14	23	
				SPT-3	3.0 - 4.5	1.5	6-10-10	22	
				SPT-4	4.5 - 6.0	1.4	3-6-8	21	Installed Piezometer with 10' of slotted screen at 21.5' and 14.5' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 36.9' with well installation materials.
1112.9	7.5			SPT-5	6.0 - 7.5	1.5	11-11-14	16	
		SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose to loose		SPT-6	7.5 - 9.0	1.5	2-1-1	21	
				SPT-7	9.0 - 10.5	0.5	WoH	23	
				BAG-1	7.5 - 13.5			--	
				SPT-8	10.5 - 12.0	1.0	WoH-WoH-1	22	
				SPT-9	12.0 - 13.5	1.0	1-2-3	23	
				SPT-10	13.5 - 15.0	1.5	1-WoR-WoR	24	
				SPT-11	15.0 - 16.5	1.2	WoR-1-2	23	
				SPT-12	16.5 - 18.0	1.3	1-1-1	26	
1100.9	19.5			SPT-13	18.0 - 19.5	0.4	1-2-2	24	
		SOIL 9: Lean Clay, dark brown to gray, wet, very soft to soft, with sand and silty zones and a strong organic odor.		SPT-14	19.5 - 21.0	1.5	WoR-1-1	28	
				SPT-15	21.0 - 22.5	0.5	WoH	20	
				SPT-16	22.5 - 24.0	1.5	WoH	19	
				SPT-17	24.0 - 25.5	1.5	WoR-WoR-2	23	
				SPT-18	25.5 - 27.0	1.5	WoR-1-1	34	
1092.2	28.2			SPT-19	27.0 - 28.5	1.5	WoR-1-2	32	
		SOIL 2: Lean Clay, light brown to brown, medium stiff,		SPT-20	28.5 - 30.0	1.5	2-2-4	25	
1089.7	30.7			SPT-21	30.0 - 31.5	1.5	3-4-7	21	
		SOIL 7: Sand, light brown to brown, medium dense, medium to coarse grained, wet, with areas of clay and gravel		SPT-22	31.5 - 33.0	1.5	9-13-17	14	
				SPT-23	33.0 - 34.5	0.7	7-11-11	11	
				SPT-24	34.5 - 36.0	0.4	15-9-8	14	
1084.2	36.2			SPT-25	36.0 - 36.9	0.7	8-50+	16	

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-34C**
		Total Depth	36.9 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1083.5	36.9	Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered) *(Continued)*							
		No Refusal / Bottom of Hole							
		Top of Rock = 36.2 Elevation (1084.2)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-35** Total Depth 22.3 ft
County	Hawkins	Surface Elevation	1078.9 ft
Project Type	Geotechnical Exploration	Date Started	4/14/09 Completed 4/14/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	15.0 ft Date/Time 4/14/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1078.9	0.0	Top of Hole							
1078.5	0.4	DGA and TOPSOIL		SPT-1	0.0 - 1.5	1.0	7-9-6	21	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown, gray, with gray mottling, stiff to very stiff, damp to moist, with few manganese concretions and silty zones		SPT-2	1.5 - 3.0	1.2	7-9-11	18	
				SPT-3	3.0 - 4.5	0.2	7-6-7	16	
				SPT-4	4.5 - 6.0	1.5	3-3-6	21	Installed Piezometer with 10' of slotted screen at 21.5' and 11.5' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 21.5' with well installation materials.
1071.4	7.5			SPT-5	6.0 - 7.5	1.5	6-9-14	21	
		SOIL 9: Lean Clay, dark brown to gray, stiff, damp to moist, with sand		SPT-6	7.5 - 9.0	1.5	3-7-8	21	
				SPT-7	9.0 - 10.5	1.1	4-7-5	19	
				SPT-8	10.5 - 12.0	1.5	4-6-7	19	
				SPT-9	12.0 - 13.5	1.5	3-5-6	20	
				SPT-10	13.5 - 15.0	0.5	4-5-10	18	
1063.1	15.8			SPT-11	15.0 - 16.5	0.7	10-18-38	6	
1061.5	17.4	SOIL 6: Gravel with Sand, gray to brown to tan, wet, medium dense to very dense, medium coarse, subrounded, wet		SPT-12	16.5 - 18.0	1.5	21-8-5	23	
				SPT-13	18.0 - 19.5	1.0	4-5-8	28	
				SPT-14	19.5 - 21.0	0.7	5-10-8	28	
1056.6	22.3	Shale, brown to gray, moderately hard, very thin bedded, water stained, heavily weathered (augered)		SPT-15	21.0 - 22.3	1.1	10-13-50+	13	
		No Refusal / Bottom of Hole							
		Top of Rock = 17.4 Elevation (1061.5)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-37** Total Depth 25.0 ft
County	Hawkins	Surface Elevation	1103.8 ft
Project Type	Geotechnical Exploration	Date Started	4/17/09 Completed 4/18/09
Supervisor	R. Riker Driller G. Thompson	Depth to Water	13.8 ft Date/Time 4/18/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1103.8	0.0	Top of Hole							
1099.9	3.9	SOIL 1: Lean Clay with Sand and Gravel, brown, tan, gray, medium stiff to very stiff, damp, with cobble and silt							Boring advanced with 3 1/4 I.D. Hollow Stem Augers
1089.4	14.4	SOIL 4: Compacted Fly Ash, loose to medium dense, damp to wet, with occassional bottom ash layers							Installed Piezometer with 10' of slotted screen at 25' and 17' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 25' with well installation materials. Boring is located 5' east of JS-37
1078.8	25.0	SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose to loose							
		No Refusal / Bottom of Hole							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-37-SV** Total Depth 36.3 ft
County	Hawkins	Surface Elevation	1102.3 ft
Project Type	Geotechnical Exploration	Date Started	6/4/09 Completed 6/4/09
Supervisor	A. Davis Driller Kent C.	Depth to Water	Dry Date/Time 6/4/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1102.3	0.0	Top of Hole							
1099.0	3.3	SOIL 1: Lean Clay with Sand and Gravel, brown, tan, gray, medium stiff to very stiff, damp, with cobble and silt							
1089.4	12.9	SOIL 4: Compacted Fly Ash, loose to medium dense, damp to wet, with occassional bottom ash layers							
		SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose to loose		ST-1	18.0 - 19.7	1.7		--	Vane shear test performed at 18.5 feet. Undrained Shear Strength = 7.5 psi
				ST-2	24.5 - 26.4	1.9		--	Vane shear test performed at 25.0 feet. Undrained Shear Strength = 7.0 psi
1067.2	35.1								
1066.0	36.3	SOIL 2: Lean Clay, brown to dark		ST-3	35.0 - 36.3	1.3		--	

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-42** Total Depth 49.5 ft
County	Hawkins	Surface Elevation	1138.2 ft
Project Type	Geotechnical Exploration	Date Started	4/17/09 Completed 4/17/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	30.0 ft Date/Time 4/17/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1138.2	0.0	Top of Hole							
1137.5	0.7	SOIL 1: Lean Clay with Sand, light brown to brown, stiff, damp		SPT-1	0.0 - 1.5	0.7	2-3-7	25	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.3	15-18-21	18	
		SOIL 4: Compacted Fly Ash, gray to dark gray, medium dense to very dense, damp to wet		SPT-3	3.0 - 4.5	0.8	2-4-12	17	
				SPT-4	4.5 - 6.0	1.4	12-22-23	16	Installed Piezometer with 10' of slotted screen at 46.5' and 36.5' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 49.5' with well installation materials.
				SPT-5	6.0 - 7.5	1.5	12-12-25	18	
				BAG-1	0.0 - 15.0			--	
				SPT-6	7.5 - 9.0	1.4	10-15-19	19	
				SPT-7	9.0 - 10.5	1.5	10-14-14	19	
				SPT-8	10.5 - 12.0	1.3	12-11-15	20	
				SPT-9	12.0 - 13.5	1.5	18-27-34	23	
				SPT-10	13.5 - 15.0	1.4	11-17-21	23	
				SPT-11	15.0 - 16.5	1.5	11-18-20	22	
				SPT-12	16.5 - 18.0	1.3	11-17-11	22	
				SPT-13	18.0 - 19.5	1.5	7-11-16	23	
				SPT-14	19.5 - 21.0	1.5	7-12-13	23	
				SPT-15	21.0 - 22.5	1.5	7-15-20	24	
1114.2	24.0			SPT-16	22.5 - 24.0	1.3	10-13-14	26	
		SOIL 3: Bottom Ash, gray to dark gray to black, very loose to very dense, damp to wet		SPT-17	24.0 - 25.5	1.5	7-14-15	18	
				SPT-18	25.5 - 27.0	1.5	14-20-37	21	
				SPT-19	27.0 - 28.5	1.5	14-35-50+	19	
				SPT-20	28.5 - 30.0	1.5	18-20-20	23	
				SPT-21	30.0 - 31.5	1.2	9-12-16	23	
				SPT-22	31.5 - 33.0	1.0	7-3-3	22	
				SPT-23	33.0 - 34.5	0.8	WoR	25	
				SPT-24	34.5 - 36.0	0.3	WoR-WoR-1	23	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JS-42** | Total Depth 49.5 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
				SPT-25	36.0 - 37.5	1.5	3-3-2	20	
1099.7	38.5			SPT-26	37.5 - 39.0	1.5	WoR-1-1	27	
1097.7	40.5	SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose		SPT-27	39.0 - 40.5	1.2	WoR	27	
		SOIL 2: Lean Clay with Sand, light brown to brown, soft to		SPT-28	40.5 - 42.0	0.8	WoR-WoH-2	25	
1093.8	44.4	hard, wet		SPT-29	42.0 - 43.5	0.8	21-24-29	16	
1091.9	46.3	SOIL 6: Gravel with Sand, brown, gray, medium grained, poorly graded, medium dense, wet		SPT-30	43.5 - 45.0	0.9	14-23-8	21	
				SPT-31	45.0 - 46.5	0.8	12-11-11	34	
				SPT-32	46.5 - 48.0	1.0	12-12-24	27	
1088.7	49.5	Shale, brown to gray, moderately hard, very thin bedded, heavily weathered (augered)		SPT-33	48.0 - 49.5	0.9	12-40-27	16	
		No Refusal / Bottom of Hole							
		Top of Rock = 46.3 Elevation (1091.9)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-47** Total Depth 18.0 ft
County	Hawkins	Surface Elevation	1078.2 ft
Project Type	Geotechnical Exploration	Date Started	4/13/09 Completed 4/13/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	15.0 ft Date/Time 4/13/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1078.2	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown, with occasional gray mottling, stiff to hard ,damp to moist, with few manganese concretions and silty zones		SPT-1	0.0 - 1.5	1.5	3-3-10	21	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.5	11-18-10	16	
				SPT-3	3.0 - 4.5	0.9	19-19-19	16	
				SPT-4	4.5 - 6.0	1.5	9-8-10	21	Installed Piezometer with 5' of slotted screen at 14.4' and 9.4' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 14.4' with well installation materials.
				SPT-5	6.0 - 7.5	1.5	3-12-12	22	
1069.2	9.0			SPT-6	7.5 - 9.0	1.4	7-11-11	20	
		SOIL 2: Lean Clay, brown, stiff to hard, damp to moist		SPT-7	9.0 - 10.5	1.5	5-6-7	22	
				SPT-8	10.5 - 12.0	1.4	4-7-8	22	
				SPT-9	12.0 - 13.5	1.3	5-7-8	20	
				SPT-10	13.5 - 15.0	0.6	13-16-28	22	
1062.3	15.9			SPT-11	15.0 - 16.5	0.6	12-12-8	10	
1061.7	16.5	SOIL 6: Gravel with Sand, gray, brown, tan, medium grained, poorly graded, medium dense, subrounded, wet		SPT-12	16.5 - 18.0	0.8	4-9-30	20	
1060.2	18.0	Shale, brown to gray, soft, very thin bedded, water stained, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 16.5 Elevation (1061.7)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-49** Total Depth 27.1 ft
County	Hawkins	Surface Elevation	1098.8 ft
Project Type	Geotechnical Exploration	Date Started	4/29/09 Completed 4/29/09
Supervisor	A. Davis Driller G. Thompson	Depth to Water	6.0 ft Date/Time 4/29/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1098.8	0.0	Top of Hole							
		SOIL 1: Lean Clay, brown, tan, gray, medium stiff to stiff, damp, with gravel		SPT-1	0.0 - 1.5	1.3	2-3-4	23	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
1096.2	2.6			SPT-2	1.5 - 3.0	1.1	3-4-7	21	
		SOIL 4: Compacted Fly Ash, gray to dark gray to black, loose, damp to wet		SPT-3	3.0 - 4.5	1.2	2-4-4	24	
1092.8	6.0			SPT-4	4.5 - 6.0	1.5	2-2-2	29	Installed Piezometer with 10' of slotted screen at 25.5' and 18.5' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 27.1' with well installation materials.
		SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose		BAG-1	2.6 - 10.5	1.3	2-1-2	--	
				SPT-5	6.0 - 7.5			29	
				SPT-6	7.5 - 9.0	1.1	1-1-1	26	
				SPT-7	9.0 - 10.5	1.3	WoH-2-1	31	
				SPT-8	10.5 - 12.0	1.1	2-1-1	42	
				SPT-9	12.0 - 13.5	1.5	WoH	29	
				SPT-10	13.5 - 15.0	1.1	WoH	31	
				BAG-2	12.0 - 18.0			--	
				SPT-11	15.0 - 16.5	1.5	WoR	31	
1080.8	18.0			SPT-12	16.5 - 18.0	1.5	WoR	31	
		SOIL 2: Lean Clay, brown, tan, gray, medium stiff to stiff, damp		SPT-13	18.0 - 19.5	1.5	2-5-6	21	
				SPT-14	19.5 - 21.0	1.5	3-3-5	22	
1076.8	22.0			SPT-15	21.0 - 22.5	0.5	9-13-32	11	
		SOIL 6: Gravel with Sand, brown, medium grained, poorly graded, dense to very dense, wet		SPT-16	22.5 - 24.0	0.7	7-22-28	11	
				SPT-17	24.0 - 25.5	0.7	24-24-50+	10	
1072.3	26.5			SPT-18	25.5 - 27.0	1.5	33-27-10	28	
1071.7	27.1			SPT-19	27.0 - 27.1	0.1	50+	9	
		Shale, dark brown to gray, moderately hard, very thin bedded, heavily weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 26.5 Elevation (1072.3)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-50** Total Depth 66.3 ft
County	Hawkins	Surface Elevation	1138.7 ft
Project Type	Geotechnical Exploration	Date Started	4/20/09 Completed 4/21/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	57.0 ft Date/Time 4/21/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1138.7	0.0	Top of Hole							
1137.4	1.3	SOIL 1: Lean Clay with Sand and Gravel, light brown to brown, stiff, damp to wet		SPT-1	0.0 - 1.5	1.3	3-5-5	22	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.5	10-20-30	19	
		SOIL 4: Compacted Fly Ash, gray to dark gray to black,dense to very dense, damp, with occassional clay seams		SPT-3	3.0 - 4.5	1.5	16-37-37	18	
				SPT-4	4.5 - 6.0	1.0	6-15-15	24	Installed Piezometer with 10' of slotted screen at 62' and 55' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 64' with well installation materials.
				SPT-5	6.0 - 7.5	1.3	16-18-31	20	
				SPT-6	7.5 - 9.0	1.5	16-22-24	17	
				SPT-7	9.0 - 10.5	1.5	10-15-15	19	
				SPT-8	10.5 - 12.0	1.5	18-19-27	16	
				BAG-1	0.0 - 24.0			--	
				SPT-9	12.0 - 13.5	1.5	20-22-24	21	
				SPT-10	13.5 - 15.0	1.5	10-18-25	20	
				SPT-11	15.0 - 16.5	1.3	11-21-25	21	
				SPT-12	16.5 - 18.0	1.5	22-35-32	21	
				SPT-13	18.0 - 19.5	1.5	16-21-24	22	
				SPT-14	19.5 - 21.0	1.5	18-24-28	21	
				SPT-15	21.0 - 22.5	1.5	36-36-34	18	
				SPT-16	22.5 - 24.0	1.5	17-32-32	18	
1114.1	24.6								
		SOIL 1: Lean Clay, brown, hard, damp		SPT-17	24.0 - 25.5	1.5	16-17-21	19	
				SPT-18	25.5 - 27.0	1.4	17-22-35	20	
				SPT-19	27.0 - 28.5	1.3	16-24-25	23	
				SPT-20	28.5 - 30.0	1.2	12-19-37	21	
1108.4	30.3								
		SOIL 4: Compacted Fly Ash gray to dark gray, dense to very dense, damp to moist, with areas clay, bottom ash and gravel		SPT-21	30.0 - 31.5	1.5	36-25-42	19	
				SPT-22	31.5 - 33.0	1.5	35-40-26	21	
				SPT-23	33.0 - 34.5	1.2	25-25-33	20	
				SPT-24	34.5 - 36.0	1.2	19-19-18	24	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JS-50** | Total Depth 66.3 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		SOIL 4: Compacted Fly Ash gray to dark gray, dense to very dense, damp to moist, with areas clay, bottom ash and gravel *(Continued)*		SPT-25	36.0 - 37.5	1.3	11-12-9	23	
				SPT-26	37.5 - 39.0	1.5	9-12-17	22	
				SPT-27	39.0 - 40.5	1.5	13-16-23	24	
				SPT-28	40.5 - 42.0	1.5	10-12-26	24	
				SPT-29	42.0 - 43.5	1.5	20-33-40	20	
				SPT-30	43.5 - 45.0	1.4	19-26-30	21	
				SPT-31	45.0 - 46.5	1.5	11-12-9	24	
1091.7	47.0								
1090.7	48.0	SOIL 1: Lean Clay with Sand and Gravel, very stiff, moist		SPT-32	46.5 - 48.0	1.5	8-8-12	22	
				SPT-33	48.0 - 49.5	1.2	3-4-7	27	
		SOIL 4: Compacted Fly Ash, gray to dark gray to black, very loose, to medium dense, wet		SPT-34	49.5 - 51.0	1.5	4-7-8	29	
				SPT-35	51.0 - 52.5	1.3	7-8-13	27	
				SPT-36	52.5 - 54.0	0.9	WoR-WoR-3	36	
				SPT-37	54.0 - 55.5	1.5	3-7-7	33	
				SPT-38	55.5 - 57.0	1.3	4-4-7	34	
1081.2	57.5								
		SOIL 2: Lean Clay, brown, stiff to very stiff, wet		SPT-39	57.0 - 58.5	1.5	5-4-8	25	
				SPT-40	58.5 - 60.0	1.3	9-10-13	18	
1077.5	61.2			SPT-41	60.0 - 61.5	1.4	4-7-13	19	
		SOIL 6: Gravel with Sand, gray to brown to tan, medium grained, medium dense to very dense, wet		SPT-42	61.5 - 63.0	1.3	20-25-20	14	
				SPT-43	63.0 - 64.5	0.7	4-20-34	15	
1072.8	65.9			SPT-44	64.5 - 66.0	0.7	35-50+	22	
1072.4	66.3	Shale, dark brown to gray, moderately hard, very thin bedded, heavily weathered (augered)		SPT-45	66.0 - 67.5	0.3	50+	14	
		No Refusal / Bottom of Hole							
		Top of Rock = 65.9 Elevation (1072.8)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-52** Total Depth 54.1 ft
County	Hawkins	Surface Elevation	1136.8 ft
Project Type	Geotechnical Exploration	Date Started	6/1/09 Completed 6/1/09
Supervisor	R. Mehnert Driller G. Thompson	Depth to Water	31.5 ft Date/Time 6/1/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1136.8	0.0	Top of Hole							
1135.8	1.0	SOIL 1: Lean Clay, light brown to brown, damp , medium stiff		SPT-1	0.0 - 1.5	1.1	3-2-3	12	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.0	8-8-9	18	
		SOIL 4: Compacted Fly Ash, gray to dark gray to black, damp to wet, very loose to medium dense, with areas of bottom ash and gravel		SPT-3	3.0 - 4.5	1.3	2-4-5	18	
				SPT-4	4.5 - 6.0	1.5	1-4-3	20	Installed Piezometer with 10' of slotted screen at 45' and 38' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 54.1' with well installation materials.
				SPT-5	6.0 - 7.5	1.3	3-4-5	19	
				SPT-6	7.5 - 9.0	1.4	2-5-5	19	
				SPT-7	9.0 - 10.5	1.5	2-2-8	20	
				SPT-8	10.5 - 12.0	1.5	3-4-4	20	
				BAG-1	6.0 - 18.0			--	
				SPT-9	12.0 - 13.5	1.5	4-5-7	25	
				SPT-10	13.5 - 15.0	1.5	3-8-14	22	
				SPT-11	15.0 - 16.5	1.5	4-6-11	22	
				SPT-12	16.5 - 18.0	1.5	9-9-8	26	
				SPT-13	18.0 - 19.5	1.5	3-8-5	27	
				SPT-14	19.5 - 21.0	1.3	2-5-5	24	
				SPT-15	21.0 - 22.5	1.5	5-11-12	25	
				SPT-16	22.5 - 24.0	0.9	1-1-1	32	
				SPT-17	24.0 - 25.5	1.1	1-1-1	31	
				SPT-18	25.5 - 27.0	1.3	9-13-11	29	
1108.5	28.3			SPT-19	27.0 - 28.5	1.2	11-13-12	22	
		SOIL 1: Lean Clay, brown, damp, very stiff, with gravel		SPT-20	28.5 - 30.0	0.6	9-9-7	21	
1106.0	30.8			SPT-21	30.0 - 31.5	1.3	11-13-19	16	
		SOIL 4: Compacted Fly Ash, gray to dark gray to black, medium dense to dense, moist to wet, with areas of bottom ash, clay, and gravel		SPT-22	31.5 - 33.0	1.5	13-27-23	23	
				SPT-23	33.0 - 34.5	1.3	5-10-10	30	
				SPT-24	34.5 - 36.0	1.5	5-6-7	31	
				BAG-2	31.5 - 40.5			--	

SUBSURFACE LOG

Project Number 175569038 | Location Rogersville, TN

Project Name John Sevier Ash Disposal Areas | Boring No. **JS-52** | Total Depth 54.1 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		SOIL 4: Compacted Fly Ash, gray to dark gray to black, medium dense to dense, moist to wet, with areas of bottom ash, clay, and gravel *(Continued)*		SPT-25	36.0 - 37.5	1.5	4-8-17	28	
				SPT-26	37.5 - 39.0	1.3	12-15-18	28	
				SPT-27	39.0 - 40.5	1.5	4-11-13	28	
				SPT-28	40.5 - 42.0	1.5	4-10-9	27	
				SPT-29	42.0 - 43.5	1.5	5-10-10	26	
1092.3	44.5			SPT-30	43.5 - 45.0	1.5	3-8-10	34	
		Shale, dark brown to gray, moderately hard, very thin bedded, heavily weathered (augered)		SPT-31	45.0 - 46.5	1.1	4-8-7	32	
				SPT-32	50.0 - 51.5	1.3	8-12-13	33	
				SPT-33	51.5 - 53.0	1.4	19-12-13	33	
1082.7	54.1			SPT-34	53.0 - 54.1	1.0	19-20-50+	24	
		No Refusal / Bottom of Hole Top of Rock = 44.5 Elevation (1092.3)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-53** Total Depth 13.9 ft
County	Hawkins	Surface Elevation	1081.4 ft
Project Type	Geotechnical Exploration	Date Started	4/13/09 Completed 4/13/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	11.9 ft Date/Time 4/13/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1081.4	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown with occasional gray mottling, damp to moist, stiff to very stiff, with silty zones and manganese concretions.		SPT-1	0.0 - 1.5	1.1	3-5-7	23	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	1.4	11-9-14	20	
1077.5	3.9			SPT-3	3.0 - 4.5	1.5	16-18-22	17	
				SPT-4	4.5 - 6.0	0.6	16-15-17	20	Installed Piezometer with 5' of slotted screen at 13.4' and 8.4' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 13.4' with well installation materials.
		SOIL 2: Lean Clay, brown, stiff to hard, damp to moist		SPT-5	6.0 - 7.5	1.5	7-10-14	20	
				SPT-6	7.5 - 9.0	1.2	12-8-11	22	
				SPT-7	9.0 - 10.5	0.5	4-7-11	19	
1069.4	12.0			SPT-8	10.5 - 12.0	1.2	12-7-6	25	
		Shale, dark brown to gray, moderately hard, very thin and vertical bedded, heavily weathered (augered)		SPT-9	12.0 - 13.5	1.5	7-8-11	30	
1067.5	13.9			SPT-10	13.5 - 13.9	0.4	50+	15	
		No Refusal / Bottom of Hole							
		Top of Rock = 12.0 Elevation (1069.4)							

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-58** Total Depth 27.5 ft
County	Hawkins	Surface Elevation	1100.2 ft
Project Type	Geotechnical Exploration	Date Started	4/22/09 Completed 4/22/09
Supervisor	R. Riker Driller J. Felts	Depth to Water	10.5 ft Date/Time 4/22/09
Logged By	R. Mehnert	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1100.2	0.0	Top of Hole							
		SOIL 1: Lean Clay with Gravel, brown, tan, medium stiff, damp							Boring advanced with 3-1/4 I.D. Hollow Stem Augers
1096.2	4.0								
1095.6	4.6	SOIL 4: Compacted Fly Ash, gray to dark gray to black,very loose, damp to wet, with trace bottom ash							Installed Piezometer with 10' of slotted screen at 27.5' and 20.5' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 27.5' with well installation materials. Boring JS-58X is located 3' south of JS-58
		SOIL 5: Sluiced Fly Ash, gray to dark gray, wet, very loose							
1079.4	20.8								
		SOIL 2: Lean Clay, brown, tan, gray, very soft to medium stiff, wet, with sand							
1076.7	23.5								
		Shale, brown to gray, soft to moderately hard, very thin bedded, water stained, heavily weathered (augered)							
1072.7	27.5								
		No Refusal / Bottom of Hole							
		Top of Rock = 23.4 Elevation (1076.8)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-59** Total Depth 28.9 ft
County	Hawkins	Surface Elevation	1099.3 ft
Project Type	Geotechnical Exploration	Date Started	4/4/09 Completed 4/4/09
Supervisor	A. Davis Driller M. Martin	Depth to Water	27.5 ft Date/Time 4/4/09
Logged By	A. Davis	Depth to Water	24.2 ft Date/Time 4/8/09

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1099.3	0.0	Top of Hole							
1099.0	0.3	DGA and Topsoil		SPT-1	0.0 - 1.5	0.8	2-3-4	23	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
		SOIL 1: Lean Clay with Sand and Gravel, light brown to brown, medium stiff to hard, damp, with occasional gray mottling		SPT-2	1.5 - 3.0	0.8	5-7-7	20	
				SPT-3	3.0 - 4.5	1.3	3-5-5	23	
				SPT-4	4.5 - 6.0	1.1	3-4-5	18	Installed Piezometer with 10' of slotted screen at 31.1' and 21.1' of riser protected with flushmount manhole set in concrete pad. Boring backfilled from 0' to 31.1' with well installation materials.
				SPT-5	6.0 - 7.5	1.1	5-7-7	19	
				SPT-6	7.5 - 9.0	1.0	5-12-7	20	
				SPT-7	9.0 - 10.5	0.9	6-17-16	16	
				SPT-8	10.5 - 12.0	1.3	13-12-9	16	
				SPT-9	12.0 - 13.5	1.3	8-11-9	17	
				SPT-10	13.5 - 15.0	1.1	4-3-2	19	
				SPT-11	15.0 - 16.5	1.1	2-3-4	22	
				SPT-12	16.5 - 18.0	1.4	6-10-12	22	
				SPT-13	18.0 - 19.5	1.0	6-12-14	21	
1079.1	20.2			SPT-14	19.5 - 21.0	1.5	7-7-7	21	
		SOIL 7: Sand, light brown to brown, damp to moist, medium dense, medium to coarse grained		SPT-15	21.0 - 22.5	1.3	7-11-12	10	
1076.8	22.5			SPT-16	22.5 - 24.0	1.3	8-11-10	21	
1074.9	24.4	SOIL 2: Lean Clay, brown, very stiff, moist to wet		SPT-17	24.0 - 25.5	1.5	7-10-11	33	
				SPT-18	25.5 - 27.0	0.1	50+	18	
		Shale, brown to gray, hard, very thin bedded, water stained, heavily weathered (augered)		SPT-19	27.0 - 28.5	0.4	19-62-22	12	
1070.4	28.9			SPT-20	28.5 - 30.0	0.4	50+	14	
		No Refusal / Bottom of Hole							
		Top of Rock = 24.4 Elevation (1074.9)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

SUBSURFACE LOG

Project Number	175569038	Location	Rogersville, TN
Project Name	John Sevier Ash Disposal Areas	Boring No.	**JS-61A** Total Depth 30.0 ft
County	Hawkins	Surface Elevation	1089.7 ft
Project Type	Geotechnical Exploration	Date Started	8/20/09 Completed 8/20/09
Supervisor	A. Davis Driller S. Bradford	Depth to Water	18.0 ft Date/Time 8/20/09
Logged By	A. Davis	Depth to Water	-- Date/Time --

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1089.7	0.0	Top of Hole							
		SOIL 1: Lean Clay with Sand, light brown to brown with some reddish tint, damp, soft to stiff, with silt, manganese concretions and gravels		SPT-1	0.0 - 1.5	0.9	1-2-2	19	Boring advanced with 3 1/4 I.D. Hollow Stem Augers
				SPT-2	1.5 - 3.0	0.4	2-2-4	20	
				SPT-3	3.0 - 4.5	0.9	5-7-6	17	
1084.4	5.3			SPT-4	4.5 - 6.0	1.1	2-3-4	19	Installed Piezometer with 10' of slotted screen at 25.5' and 18.5' of riser protected with steel cover set in concrete pad. Boring backfilled from 0' to 30' with well installation materials.
		SOIL 8: Lean Clay with Sand and Silt, brown and gray, damp to moist, medium stiff to very stiff, with zones varying with more sand or silt		SPT-5	6.0 - 7.5	1.5	4-10-8	17	
				SPT-6	7.5 - 9.0	0.0	10-8-8	11	
				SPT-7	9.0 - 10.5	1.3	9-8-8	17	
				SPT-8	10.5 - 12.0	1.0	9-8-11	15	
				SPT-9	12.0 - 13.5	0.4	9-4-4	25	
				BAG-1	12.0 - 15.0			--	
				SPT-10	13.5 - 15.0	0.3	4-4-4	23	
				SPT-11	15.0 - 16.5	1.3	2-4-4	21	
1071.7	18.0			SPT-12	16.5 - 18.0	0.6	2-4-7	20	
		SOIL 2: Lean Clay, brown to tan, moist, soft to very stiff, with rare manganese concretions		SPT-13	18.0 - 19.5	1.5	8-9-11	17	
				SPT-14	19.5 - 21.0	0.4	6-8-5	16	
				SPT-15	21.0 - 22.5	0.8	4-4-5	18	
				SPT-16	22.5 - 24.0	1.0	4-3-5	21	
				SPT-17	24.0 - 25.5	0.3	2-1-3	26	
1063.0	26.7			SPT-18	25.5 - 27.0	1.5	3-4-11	22	
1061.3	28.4	SOIL 7: Sand with Clay, light brown to brown, wet, medium dense, with gravels		SPT-19	27.0 - 28.5	1.5	9-12-7	16	
1059.7	30.0			SPT-20	28.5 - 30.0	0.7	10-12-21	27	
		Shale, light brown to brown to gray, thin bedded, weathered (augered)							
		No Refusal / Bottom of Hole							
		Top of Rock = 28.4 Elevation (1061.3)							

STANTEC/FMSM_LEGACY JOHN SEVIER ASH DISPOSAL AREAS.GPJ FMSM-GRAPHIC LOG.GDT 1/23/10

1/23/10

SUBSURFACE LOG

Project Number	175661025	Location	N: 734639.83 E: 2890303.16
Project Name	JSF - Dry Stack Final Closure	Boring No.	**JS-73** Total Depth 86.5 ft
County	Hawkins, Tennessee	Surface Elevation	1167.9 ft
Project Type	Drilling and Piezometer Installation	Date Started	3/28/13 Completed 3/29/13
Supervisor	Sam Lee Driller Rob Tillery	Depth to Water	Dry Date/Time 3/29/13
Logged By	Sam Lee	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1167.9	0.0	Top of Hole							
		Compacted Fly Ash, gray to dark gray, loose to medium dense, damp to wet, with occasional bottom ash and gravel		SPT-1	0.0 - 1.5	1.5	2-3-5	--	
				SPT-2	4.0 - 5.5	1.0	4-15-15	--	Boring advanced with 4-1/4" I.D Hollow Stem Augers
				SPT-3	9.0 - 10.5	1.0	6-7-9	--	
				SPT-4	14.0 - 15.5	1.0	6-19-15	--	
1146.4	21.5			SPT-5	20.0 - 21.5	1.0	5-14-16	--	
		Bottom Ash, gray to dark gray and black, dense to very dense, medium to very coarse grained, gray to dark gray, poorly sorted, damp, angular		SPT-6	25.0 - 26.5	1.3	5-15-17	--	
				SPT-7	30.0 - 31.5	1.5	6-12-10	--	
1132.4	35.5			SPT-8	34.0 - 35.5	1.5	16-17-16	--	

STANTEC\FMSM_LEGACY BORINGS\(JS-73 TO 81).GPJ FMSM-GRAPHIC LOG.GDT 8/30/13

SUBSURFACE LOG

Project Number 175661025 | Location N: 734639.83 E: 2890303.16

Project Name JSF - Dry Stack Final Closure | Boring No. **JS-73** | Total Depth 86.5 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
		Compacted Fly Ash, gray to dark gray, loose to medium dense, damp to wet, with occasional bottom ash and gravel *(Continued)*		SPT-9	40.0 - 41.5	1.5	8-17-25	--	
				SPT-10	45.0 - 46.5	1.5	9-23-8	--	
				SPT-11	50.0 - 51.5	1.5	7-9-11	--	
				SPT-12	55.0 - 56.5	1.5	8-14-10	--	
				SPT-13	60.0 - 61.5	1.5	11-13-11	--	
				SPT-14	65.0 - 66.5	1.5		--	
				SPT-15	70.0 - 71.5	1.5	15-25-16	--	Compacted Fly Ash, gray to dark gray, loose to medium dense, damp to wet, with occasional bottom ash and gravel
				SPT-16	75.0 - 76.5	1.0	5-1-2	--	

STANTEC/FMSM_LEGACY BORINGS\(JS-73 TO 81).GPJ FMSM-GRAPHIC LOG.GDT 8/30/13

SUBSURFACE LOG

Project Number	175661025	Location	N: 734639.83 E: 2890303.16
Project Name	JSF - Dry Stack Final Closure	Boring No.	**JS-73** Total Depth 86.5 ft

Lithology		Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
Elevation	Depth								
1086.4	81.5	Compacted Fly Ash, gray to dark gray, loose to medium dense, damp to wet, with occasional bottom ash and gravel *(Continued)*		SPT-17	80.0 - 81.5	1.5	3-6-9	--	
1082.9	85.0	Lean Clay with Sand and Gravel, brown, very stiff to hard, wet							
1081.4	86.5	Shale, Brown to Gray, moderately hard, very thin bedded, highly weathered (augered)		SPT-18	85.0 - 86.5	1.0	18-20-22	--	
		No Refusal / Bottom of Hole							

STANTEC/FMSM_LEGACY BORINGS\JS-73 TO 81\.GPJ FMSM-GRAPHIC LOG.GDT 8/30/13

SUBSURFACE LOG

Project Number	175661025	Location	N: 735028.37 E: 2891089.42
Project Name	JSF - Dry Stack Final Closure	Boring No.	**JS-75** Total Depth 120.1 ft
County	Hawkins, Tennessee	Surface Elevation	1194.7 ft
Project Type	Drilling and Piezometer Installation	Date Started	5/29/13 Completed 5/30/13
Supervisor	C. Gabriel Driller Bertram G.	Depth to Water	96.3 ft Date/Time 5/29/13
Logged By	C. Gabriel	Depth to Water	N/A Date/Time N/A

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1194.7	0.0	Top of Hole							
1193.2	1.5	Top Soil: Lean clay, light brown, dry, medium stiff.							Topsoil with grass vegetation cover, 18" thick
		Fly Ash: gray to dark gray, dry to moist, loose to medium dense.		SPT-1	4.0 - 5.5	1.4	6-7-10	--	
				SPT-2	9.0 - 10.5	1.5	8-16-18	--	
				SPT-3	14.0 - 15.5	1.5	9-16-19	--	
				SPT-4	19.0 - 20.5	1.3	8-10-10	--	
				SPT-5	24.0 - 25.5	1.4	7-11-15	--	
1166.7	28.0								
		Bottom Ash: Gray to dark gray with fragments of coal. moist to wet, loose to medium dense, fine to medium coarse grained.		SPT-6	29.0 - 30.5	1.5	4-9-10	--	
				SPT-7	34.0 - 35.5	1.4	5-6-8	--	

Project Number	175661025	Location	N: 735028.37 E: 2891089.42
Project Name	JSF - Dry Stack Final Closure	Boring No.	**JS-75** Total Depth 120.1 ft

Lithology		Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
Elevation	Depth								
		Bottom Ash: Gray to dark gray with fragments of coal. moist to wet, loose to medium dense, fine to medium coarse grained. *(Continued)*		ST-1	36.0 - 38.5	1.4		--	
				SPT-8	39.0 - 40.5	0.1	1-2-2	--	
1152.7	42.0								
		Fly Ash: gray to dark gray with small fragments of coal, dry to damp, loose.		SPT-9	44.0 - 45.5	1.4	6-12-15	--	
				SPT-10	49.0 - 50.5	1.3	4-9-13	--	
				SPT-11	54.0 - 55.5	1.2	7-16-32	--	
				SPT-12	59.0 - 60.5	1.4	7-14-19	--	
1131.7	63.0								
		Bottom Ash: Gray to dark gray with fragments of coal. Moist to wet, dense, fine to medium coarse grained.		SPT-13	64.0 - 65.5	1.4	9-18-20	--	
				SPT-14	69.0 - 70.5	1.5	7-13-19	--	
				SPT-15	74.0 - 75.5	1.5	9-15-20	--	

SUBSURFACE LOG

Project Number 175661025 | Location N: 735028.37 E: 2891089.42

Project Name JSF - Dry Stack Final Closure | Boring No. **JS-75** | Total Depth 120.1 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		Bottom Ash: Gray to dark gray with fragments of coal. Moist to wet, dense, fine to medium coarse grained. *(Continued)*		SPT-16	79.0 - 80.5	1.5	10-12-18	--	
				SPT-17	84.0 - 85.5	1.5	4-14-25	--	
1104.6	90.1			SPT-18	89.0 - 90.5	1.5	5-10-14	--	Bottom 0.4' of SPT-18 is stiff reddish brown clay
1102.7	92.0	Fat Clay: Dark brown, wet, stiff. Mixed with sluiced Ash.		ST-2	91.0 - 93.5	2.2		--	Bottom edge of tube was slightly kinked during the drive.
		Sluiced Ashed: Gray to dark gray, wet, loose to medium dense, very fine grained.		SPT-19	94.0 - 95.5	1.3	4-8-11	--	
				SPT-20	99.0 - 100.5	1.4	1-1-5	--	
1090.5	104.2								
1089.5	105.2	Fat Clay: Reddish brown, wet, stiff with a few veins of ash.		SPT-21	104.0 - 105.5	1.4	10-21-27	--	
		Sandy Gravel: reddish brown, well rounded, poorly		ST-3	109.0 - 111.5	1.6		--	Tube failed but sample is preserved for other purposes.
1080.5	114.2								
1080.1	114.6	Weathered Shale: reddish brown, moderately hard, thin bedded, moderately weathered.		SPT-22	114.0 - 115.5	0.6	106----	--	Weathered Shale was augered to 115.0' depth.

STANTEC/FMSM_LEGACY BORINGS\JS-73 TO 81\.GPJ FMSM-GRAPHIC LOG.GDT 8/30/13

SUBSURFACE LOG

Project Number	175661025	Location	N: 735028.37 E: 2891089.42
Project Name	JSF - Dry Stack Final Closure	Boring No.	**JS-75** Total Depth 120.1 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
1074.6	120.1	Limestone: Light to dark gray, micro grained, moderately hard. *(Continued)*							Advanced with 6" roller bit. No water return observed.
		No Refusal / Bottom of Hole							

STANTEC/FMSM_LEGACY BORINGS\JS-73 TO 81\.GPJ FMSM-GRAPHIC LOG.GDT 8/30/13

8/30/13

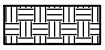
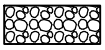
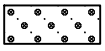
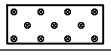
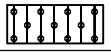
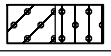
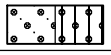
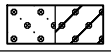
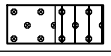
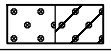
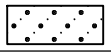
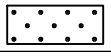
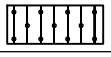
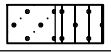
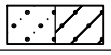
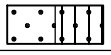
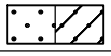
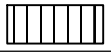
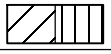
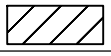
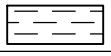
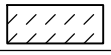
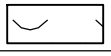
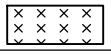
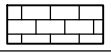
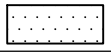
APPENDIX B.5

PERMANENT WELLS

Table of Contents

Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Lithology Graphics are based on TVA drafting standards.

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

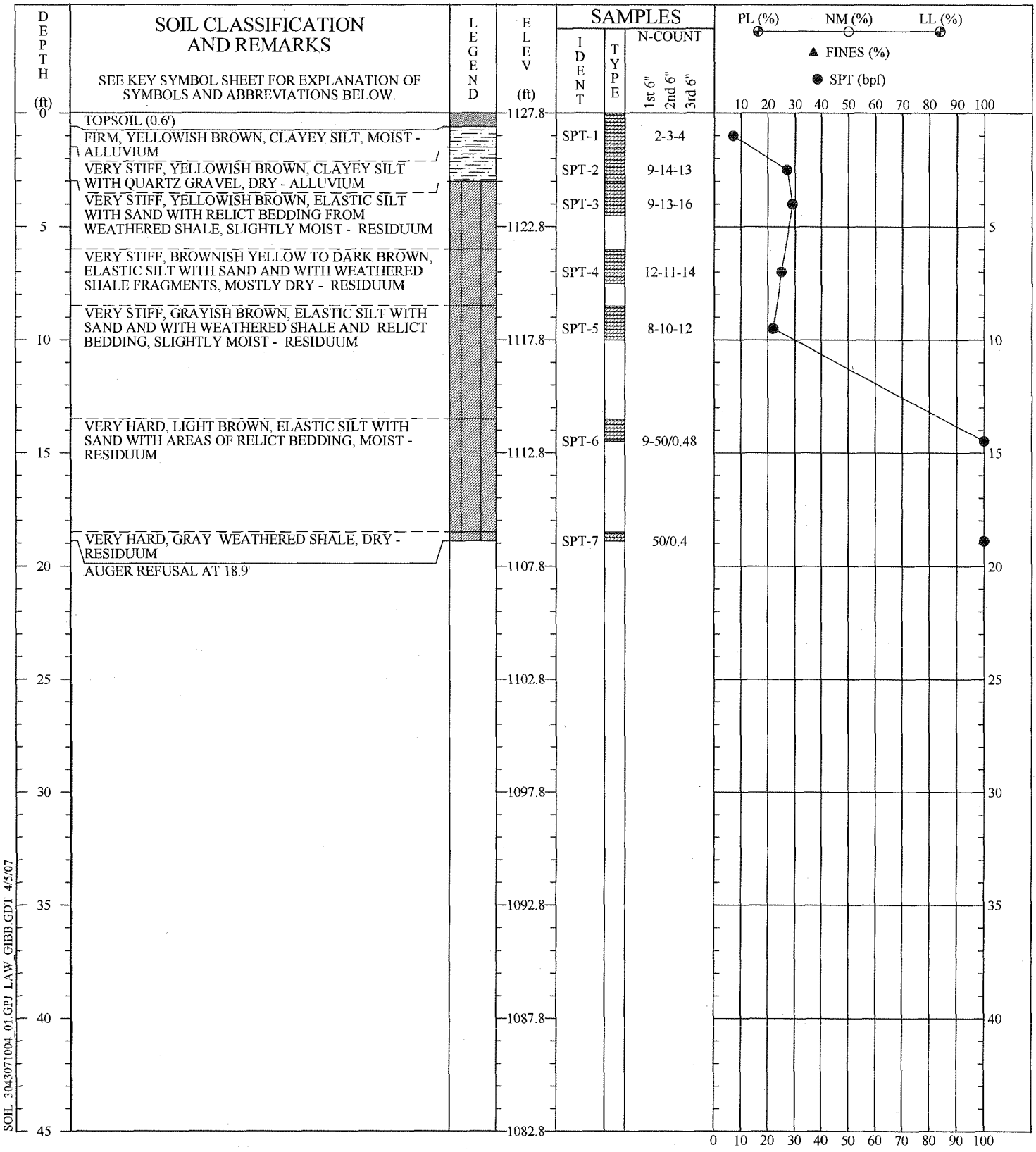
Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of- Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.



SOIL 3043071004 01.GPJ LAW_GIBB.GDT 4/5/07

REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING A SAFETY DRIVE HAMMER (HYDRAULIC BI-DIRECTIONAL FREEFALL HOIST FOR DRIVE SAMPLING OPERATIONS).

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Driller :	Snider
Prepared By:	C.N.
Checked By:	J.C.M.

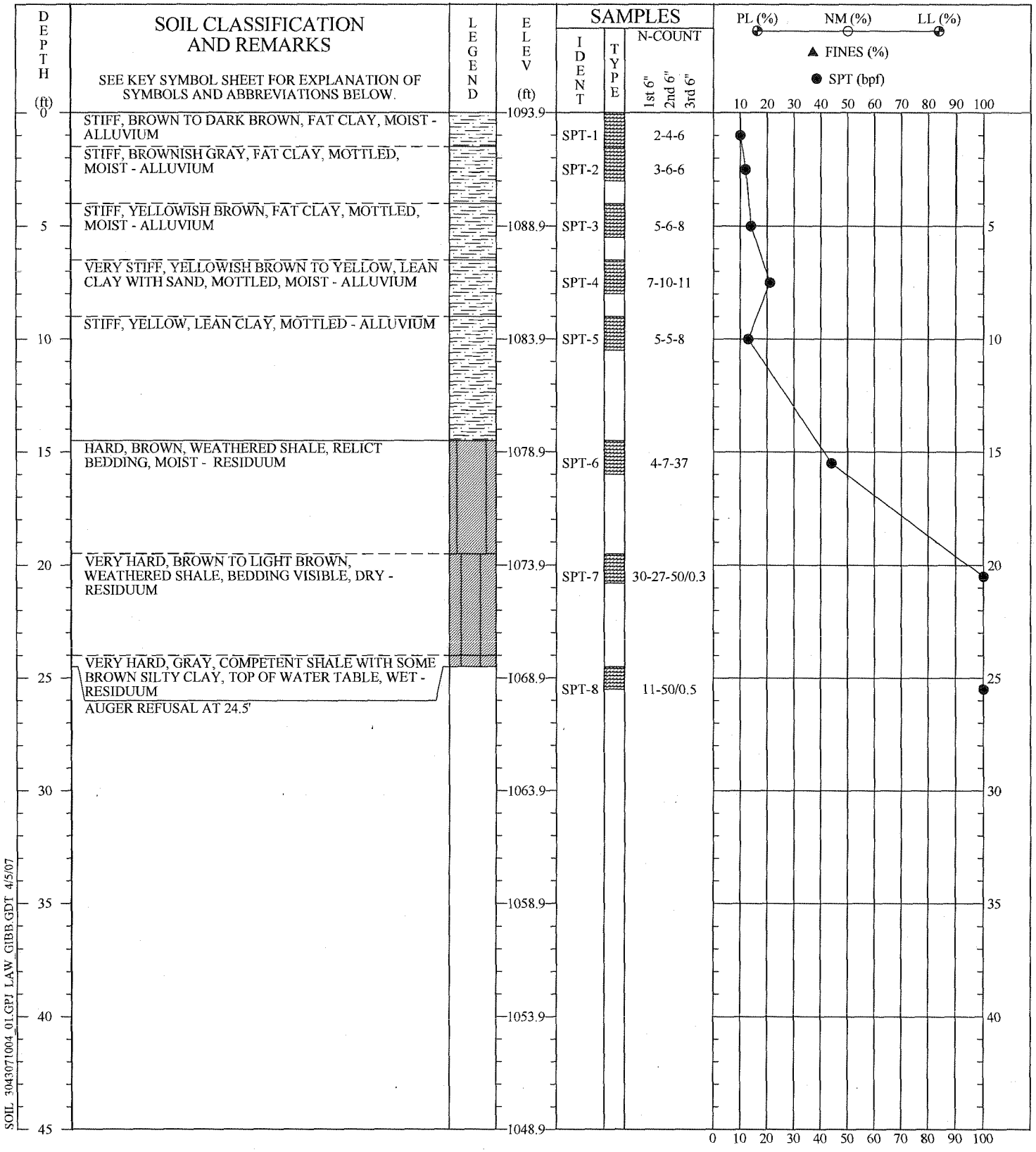
SOIL TEST BORING RECORD

PROJECT: TVA JSF Proposed Gypsum Stack

DRILLED: February 7, 2007 **BORING NO.:** MW-2

PROJ. NO.: 3043071004/0001 **PAGE** 1 **OF** 1

MACTEC



REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING AN AUTOMATIC HAMMER. MONITORING WELL MW-4 WAS INSTALLED IN BORING.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Driller : Akins
Prepared By: C.N.
Checked By: J.C.M.

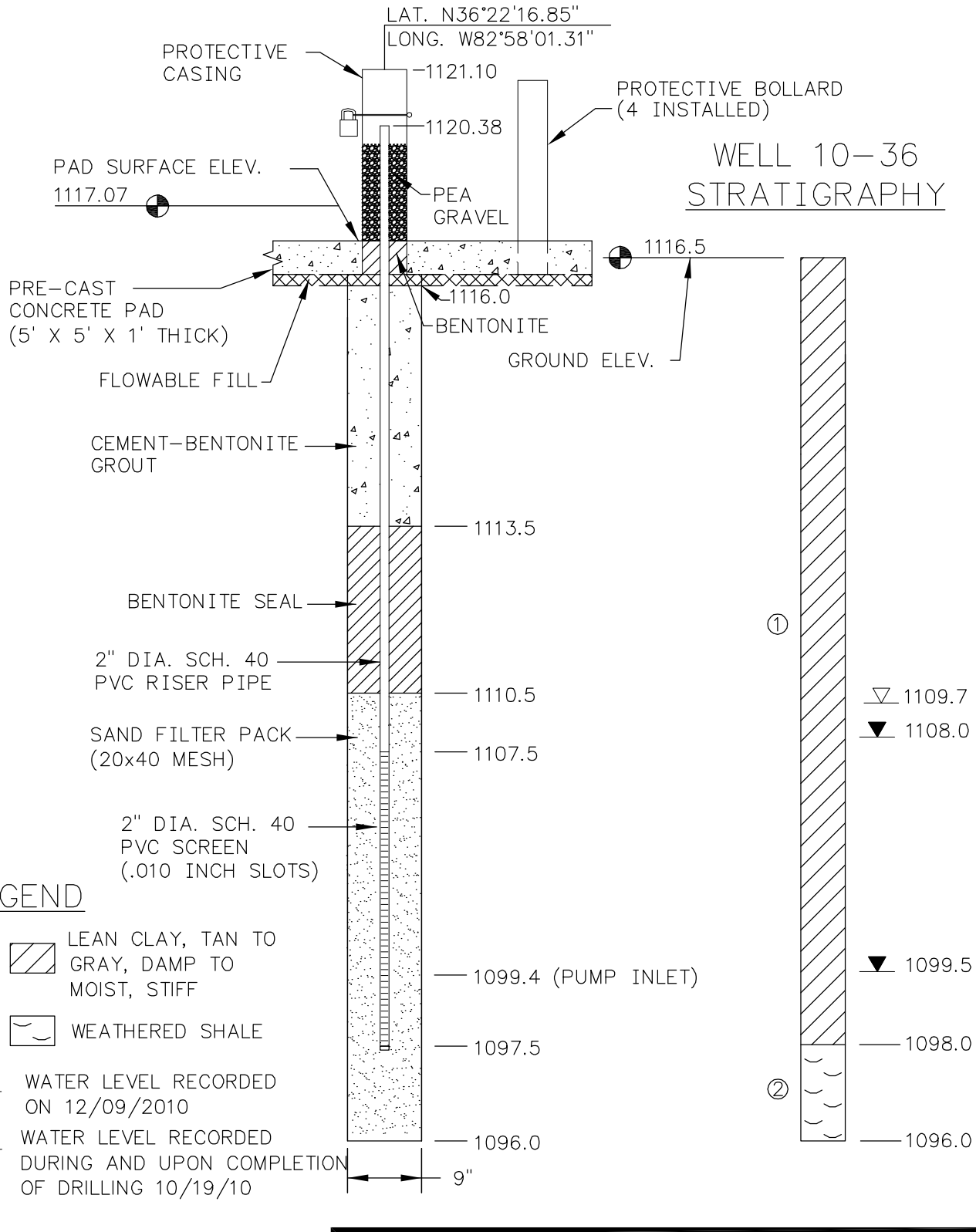
SOIL TEST BORING RECORD

PROJECT: TVA JSF Proposed Gypsum Stack

DRILLED: January 31, 2007 **BORING NO.:** MW-4

PROJ. NO.: 3043071004/0001 **PAGE 1 OF 1**

MACTEC



PLOT DATE: 04/19/2016 USER: JENNINGS, MATTHEW
U:\1755\TVA GW MONITORING WELLS - CADD\JSF\175565262 - INSTALL\WELL_LOGS\65262-MWELL-LOG_10-36.DWG

NOTES:

1. SUBSURFACE STRATIGRAPHY BASED ON SPT SAMPLES OBTAINED DURING THE DRILLING PROCESS.
2. SURVEY INFORMATION PROVIDED BY STANTEC (NAD83 SHOWN).
3. WELL INSTALLED ON 10/19/2010 BY STANTEC.

10-36 MONITORING WELL INSTALLATION DETAIL
TVA JOHN SEVIER FOSSIL PLANT
ROGERSVILLE, HAWKINS COUNTY, TN

Stantec

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

				REVISED		SHEET
DRAWN BY	MSJ	DATE	APRIL, 2016			
CHECKED BY	DRP	PROJ. NO.	175565262	1.	3.	1 of 1
CHECKED BY	BLB	SCALE	NTS	2.	4.	

SUBSURFACE LOG

Project Number	175565280	Location	N36°22'45.69 W82°58'02.72 (NAD83)
Project Name	TVA-JSF	Boring No.	**W-28SB** Total Depth 26.8 ft
County	Hawkins, TN	Surface Elevation	1079.9 ft
Project Type	Geotechnical Exploration	Date Started	10/9/15 Completed 10/9/15
Supervisor	B. Bryant Driller D. Clements	Depth to Water	Dry Date/Time 10/9/15
Logged By	C. Skees	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1079.9'	0.0'	Top of Hole							
		Fill: Lean Clay With Gravel, grayish brown, moist, medium stiff, with possible ash and organic matter, rock fragments		Grab-1	0.0' - 4.0'	2.6'		--	Backfilled with 30% solids bentonite grout upon completion.
				Grab-2	4.0' - 8.0'	0.6'		--	
1071.9'	8.0'	Lean Clay, gray and brown, moist, medium stiff, with trace gravel		Grab-3	8.0' - 12.0'	3.2'		--	
1065.4'	14.5'			Grab-4	12.0' - 16.0'	4.0'		--	
		Lean Clay With Sand, brown, moist, soft, - Gray fine sand increasing below 22.0'		Grab-5	16.0' - 20.0'	4.0'		--	
				Grab-6	20.0' - 24.0'	4.0'		--	
1055.9'	24.0'	Lean Clay, grayish brown, moist, soft, with weathered shale fragments		Grab-7	24.0' - 26.8'	2.8'		--	
1053.1'	26.8'	Auger Refusal / Bottom of Hole Top of Rock = 26.8' Elevation (1053.1')							

SUBSURFACE LOG

Project Number	175565280	Location	N36°22'40.10 W82°58'11.20 (NAD83)
Project Name	TVA-JSF	Boring No.	**W-29SB** Total Depth 18.6 ft
County	Hawkins, TN	Surface Elevation	1077.5 ft
Project Type	Geotechnical Exploration	Date Started	10/9/15 Completed 10/9/15
Supervisor	B. Bryant Driller A. Clements	Depth to Water	Dry Date/Time 10/9/15
Logged By	C. Skees	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1077.5'	0.0'	Top of Hole							
		Lean Clay, brown, moist, stiff to soft below 15.0' - Light gray mottling below 10.0' - Becomes soft below 15.0'		Grab-1	0.0' - 4.0'	2.7'		--	Backfilled with 30% solids bentonite grout upon completion.
				Grab-2	4.0' - 8.0'	4.0'		--	
				Grab-3	8.0' - 12.0'	4.0'		--	
				Grab-4	12.0' - 16.0'	'		--	
1061.4'	16.1'								
		Sandy Lean Clay, brown, moist to wet, soft		Grab-5	16.0' - 18.6'	2.5'		--	
1059.0'	18.5'								
1058.9'	18.6'	Bedrock							
		Auger Refusal / Bottom of Hole Top of Rock = 18.5' Elevation (1059.0')							

LAW ENGINEERING — SOIL TEST BORING FIELD REPORT

BORING NO. W-30

JOB NO. _____ DRILLER Voekel

GROUND SURFACE ELEV. _____

JOB NAME TVA Toho Sevier CREW Roberts

HOURS MOVING _____

DATE: 6-4-98 WEATHER Hot / Cloudy / Rainy

PAGE 1 OF 1

SAMPLING No.	Depth	"N" 1st 6"	2nd 6"	3rd 6"	SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
					0			Topsoil = 0.4	
1	3.0/4.5	4	5	7			0.2	Brown silty clay	
2	6.0/7.5	2	1	6	5		1.5	lt. brown ± fine sandy clay	moist
3	9.0/10.5	4	6	7			0.9	lt. brown clayey sand	moist
4	12.0/13.5	3	4	7	0		1.5	lt. brown sandy clay	WET
5	15.0/16.5	4	6	8	5		1.5	Orange brown clayey sand (alluvium)	WET
								*Auger refusal @ 17.9'	
								set well (compliance)	
					0				
					5				
					0				
					5				
					0				

+STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: _____

BORING REFUSAL: _____

WATER TOB DEPTH _____

WATER 24 HR.: DEPTH _____

WATER LOSSES _____

CASING: SIZE 4 1/4" LENGTH 51

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER SOLID	TO
HAND CHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
POWER AUGER HOLLOW STEM	0.0 TO 17.9

Grad: YARNELL

LAW ENGINEERING — SOIL TEST BORING FIELD REPORT

JOB NO. 50300-7-9000/81168 DRILLER Voehel

JOB NAME TVA John Sevier CREW Howie

DATE: 5-25-98 WEATHER

BORING NO. W-31

GROUND SURFACE ELEV.

HOURS MOVING

PAGE 1 OF

SAMPLING No.	Depth	"N" 1st 6"	2nd 6"	3rd 6"	SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
					0			Topsoil ≈ 0.4	
1	3.0/4.5	6	7	9			1.2	Brown clayey silt	
2	6.0/7.5	6	7	9	5		1.5	Brown/gray sandy silt	
3	9.0/10.5	9	9	7			0.1	Brown silty clay w/ 5% gravel	H_2O : WET
					0				
4	12.0/13.5	4	50/4				1.0	Brown weathered shale & gray shale	WET
5	15.0/15.5	50/4			5		0.3	Gray shale w/ wet clay	WET
								*Auger Refusal @ 15.3	
6	18.0/19.5							set well (compliance)	
7	21.0/22.5				0				
8	24.0/25.5								
					5				
					0				
					5				
					0				

+STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:

BORING REFUSAL: 15.3

WATER TOB DEPTH

WATER 24 HR.: DEPTH

WATER LOSSES

CASING: SIZE 4¼" LENGTH 5'

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER SOLID	TO
HAND CHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
POWER AUGER HOLLOW STEM	0.0 TO 15.3'

LAW ENGINEERING SOIL TEST BORING FIELD REPORT

BORING NO. W-32

JOB NO. 50300-7-9000/3168/0001 DRILLER John Voekel

GROUND SURFACE ELEV.

JOB NAME TVA John Sevier CREW ~~John~~/Howie

HOURS MOVING

DATE: 5-19-98 WEATHER Sunny/Warm

PAGE 1 OF 1

SAMPLING No.	Depth	"N" 1st 6"	2nd 6"	3rd 6"	SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
					0				
								Topsoil = 0.4	
1	3.0/4.5	2	3	2			.2	brown sil clay w/weathered shale frags some topsoil (grass roots)	
2	6.0/7.5	5	9	11	5		1.5	brown sil clay	
3	9.0/10.5	4	6	7	0		1.5	brown sil clay	
4	12.0/13.5	4	5	11			1.5	brown sil clay w/weathered shale	
5	15.0/16.5	4	5	14	5		1.5	dk brown sil clay w/weathered brown shale w/some calcite mineralization	damp (sticky)
6	18.0/19.5	8	50/4				1.1	grayish brown weathered shale	
7	21.0/22.5	50/4			0		0.5	grayish brown weathered shale.	
								*Auger refusal @ 23.2'	
								24 hr H_2O level ≈ 16.4'	
8	24.0/25.5				5			set well (compliance)	
9	27.0/28.5								
10	30.0/31.5				0				
11	33.0/34.5				5				
12	36.0/37.5								
13	39.0/40.5				0				

*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 25.5

BORING REFUSAL: 23.2'

WATER TOB DEPTH Hor41

WATER 24 HR.: DEPTH 16.4'

WATER LOSSES

CASING: SIZE 4 1/4" LENGTH 5'

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER SOLID	TO
HAND CHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
POWER AUGER HOLLOW STEM	0.0 TO 23.2

SUBSURFACE LOG

Project Number	175565262	Location	N36◦22'42.15 W82◦57'10.84 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-101** Total Depth 24.6 ft
County	Hawkins, TN	Surface Elevation	1106.6 ft
Project Type	Well Installations	Date Started	10/7/15 Completed 10/19/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	17.9 ft -bgs Date/Time 10/7/15
Logged By	C. Skees/ J. Andrew	Depth to Water	16.0 f -bgs Date/Time 10/21/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1106.6'	0.0'	Top of Hole							
1106.2'	0.4'	Topsoil							4-inch dia. PVC well installed.
1105.1'	1.5'	Fill: Gravelly Lean Clay, brown, moist							
		Lean Clay, brown to light brown, moist, medium stiff - Gray mottling below 5.0' - Becomes light brown with gray and red brown mottling, and Mn concretions below 10.0' - Fine sand, slightly wet, increasing below 13.8'		SPT-1	2.5' - 4.0'	1.3'	3-5-6	--	
				SPT-2	5.0' - 6.5'	1.5'	4-5-9	--	
				SPT-3	7.5' - 9.0'	1.5'	4-6-10	--	
				SPT-4	10.0' - 11.5'	1.4'	3-6-10	--	Analytical Samples Composite 1: SPT-5, SPT-6, SPT-7 Composite 2: SPT-8, SPT-9
				SPT-5	12.5' - 14.0'	1.4'	3-4-6	--	
1091.0'	15.6'								
		Silty Sand, wet to saturated, loose, light brown with dark brown intermixed, zones of clayey (sand is very fine) - Becomes gray to dark gray, fine to medium coarse grained below 23.7'		SPT-6	15.0' - 16.5'	1.3'	4-6-10	--	
				SPT-7	17.5' - 19.0'	1.3'	3-4-6	--	
				SPT-8	20.0' - 21.5'	1.0'	WOR-1-3	--	
				SPT-9	22.5' - 24.0'	1.1'	1-2-3	--	
1082.0'	24.6'								
		Auger Refusal / Bottom of Hole Top of Rock = 24.6' Elevation (1082.0')							

STANTEC/FMSM_LEGACY_JSF_INSTALL.GPJ FMSM-GRAPHIC LOG.GDT 4/21/16

SUBSURFACE LOG

Project Number	175565262	Location	N36°22'47.42 W82°57'27.04 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-102** Total Depth 18.2 ft
County	Hawkins, TN	Surface Elevation	1087.6 ft
Project Type	Well Installations	Date Started	10/15/15 Completed 10/15/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	7.5 ft -bgs Date/Time 10/15/15
Logged By	J. Andrew	Depth to Water	7.3 ft -bgs Date/Time 10/19/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1087.6'	0.0'	Top of Hole							
1087.1'	0.5'	Topsoil							4-inch dia. PVC well installed.
		Fill: Lean Clay with Gravel, brown, moist, medium stiff		SPT-1	2.5' - 4.0'	1.1'	2-2-3	--	
1082.6'	5.0'								
		Lean Clay, brown and light brown, moist to wet, soft to very soft		SPT-2	5.0' - 6.5'	1.0'	1-1-3	--	
				SPT-3	7.5' - 9.0'	0.2'	WOH-WOH-WOH	--	Analytical Samples Composite 1: SPT-1, SPT-2, SPT-3
1077.6'	10.0'								
		Sand, brown, wet, very loose to medium dense		SPT-4	10.0' - 11.5'	1.1'	WOH-1-2	--	Composite 2: SPT-4, SPT-5, SPT-6
				SPT-5	12.5' - 14.0'	1.4'	1-1-3	--	
				SPT-6	15.0' - 16.5'	1.5'	5-7-9	--	
1070.1'	17.5'								
1069.4'	18.2'	Weathered shale, gray		SPT-7	17.5' - 18.2'	0.2'	20-50+	--	
		Auger Refusal / Bottom of Hole Top of Rock = 17.5' Elevation (1070.1')							

STANTEC/FMSM_LEGACY_JSF_INSTALL.GPJ FMSM-GRAPHIC LOG.GDT 4/19/16

SUBSURFACE LOG

Project Number	175565262	Location	N36°22'15.09 W82°57'49.71 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-103** Total Depth 21.3 ft
County	Hawkins, TN	Surface Elevation	1122.8 ft
Project Type	Well Installations	Date Started	10/20/15 Completed 10/20/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	18.8 ft -bgs Date/Time 10/20/15
Logged By	J. Andrew	Depth to Water	9.7 ft -bgs Date/Time 10/21/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1122.8'	0.0'	Top of Hole							
1122.6'	0.2'	Topsoil							4-inch dia. PVC well installed.
		Lean Clay, brown, moist, stiff, with red, black, and dark brown mottling.		SPT-1	2.5' - 4.0'	1.5'	5-8-12	--	
				SPT-2	5.0' - 6.5'	1.5'	7-9-12	--	
				SPT-3	7.5' - 9.0'	1.5'	8-8-11	--	
1112.8'	10.0'								
		Lean Clay, brown, moist, very stiff		SPT-4	10.0' - 11.5'	1.5'	10-12-15	--	
1110.3'	12.5'								
		Lean Clay, brown, moist, stiff to very stiff, with red, black, and dark brown mottling.		SPT-5	12.5' - 14.0'	1.5'	3-6-10	--	
				SPT-6	15.0' - 16.5'	1.5'	11-13-25	--	
				SPT-7	17.5' - 19.0'	1.5'	4-8-10	--	
1101.8'	21.0'			SPT-8	20.0' - 21.3'	1.3'	12-18-50	--	
1101.5'	21.3'	Weathered Shale, gray							
		Auger Refusal / Bottom of Hole Top of Rock = 21.0' Elevation (1101.8')							

SUBSURFACE LOG

Project Number	175565262	Location	N36°22'06.41 W82°58'04.39 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-104** Total Depth 28.1 ft
County	Hawkins, TN	Surface Elevation	1141.9 ft
Project Type	Well Installations	Date Started	10/14/15 Completed 10/14/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	22.7 ft -bgs Date/Time 10/14/15
Logged By	J. Andrew	Depth to Water	18.4 ft -bgs Date/Time 10/19/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1141.9'	0.0'	Top of Hole							
1141.7'	0.2'	Topsoil							4-inch dia. PVC well installed.
		Lean Clay, brown, moist, stiff		SPT-1	2.5' - 4.0'	0.8'	4-5-6	--	
				SPT-2	5.0' - 6.5'	1.0'	4-4-5	--	
1134.4'	7.5'								
		Lean Clay With Sand, brown, moist, medium stiff to very stiff, with occassional gravels		SPT-3	7.5' - 9.0'	1.5'	1-2-2	--	
				SPT-4	10.0' - 11.5'	1.2'	2-8-19	--	
1129.4'	12.5'								
		Lean Clay, brown with dark brown mottling, moist, stiff to very stiff		SPT-5	12.5' - 14.0'	1.5'	2-4-5	--	
				SPT-6	15.0' - 16.5'	0.4'	7-12-15	--	
1124.4'	17.5'								
		Sandy Lean Clay, brown, moist, very stiff to stiff		SPT-7	17.5' - 19.0'	0.3'	7-15-15	--	
				SPT-8	20.0' - 21.5'	1.5'	4-7-9	--	
				SPT-9	22.5' - 24.0'	1.5'	3-10-12	--	
				SPT-10	25.0' - 26.5'	1.5'	2-5-7	--	
1113.9'	28.0'			SPT-11	27.5' - 28.1'	0.5'	25-50+	--	
1113.8'	28.1'	Weathered shale, light gray							
		Auger Refusal / Bottom of Hole Top of Rock = 28.0' Elevation (1113.9')							

STANTEC/FMSM_LEGACY_JSF_INSTALL.GPJ FMSM-GRAPHIC LOG.GDT 4/19/16

SUBSURFACE LOG

Project Number	175565262	Location	N36°22'16.04 W82°58'23.13 (NAD83)
Project Name	TVA - JSF Well Installation	Boring No.	**JSF-105** Total Depth 21.1 ft
County	Hawkins, TN	Surface Elevation	1117.3 ft
Project Type	Well Installations	Date Started	10/15/15 Completed 10/15/15
Supervisor	B. Bryant Driller G. Thompson	Depth to Water	16.7 ft -bgs Date/Time 10/15/15
Logged By	J. Andrew	Depth to Water	8.8 ft -bgs Date/Time 10/20/15

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
1117.3'	0.0'	Top of Hole							
1117.1'	0.2'	Topsoil							4-inch dia. PVC well installed.
		Silty Sand, brown and gray, moist, medium dense		SPT-1	2.5' - 4.0'	1.5'	4-6-6	--	
1113.3'	4.0'	Lean Clay, brown and gray, moist, stiff to medium stiff		SPT-2	5.0' - 6.5'	1.5'	2-4-7	--	
				SPT-3	7.5' - 9.0'	1.5'	3-5-7	--	
				SPT-4	10.0' - 11.5'	1.5'	5-5-7	--	
				SPT-5	12.5' - 14.0'	1.5'	2-2-4	--	
1102.3'	15.0'	Lean Clay, brown, moist, stiff to soft		SPT-6	15.0' - 16.5'	1.5'	3-5-6	--	
				SPT-7	17.5' - 19.0'	1.2'	3-15-8	--	
1098.6'	18.7'	Weathered shale, dark gray		SPT-8	20.0' - 21.1'	1.1'	8-42-50+	--	
1096.2'	21.1'	Auger Refusal / Bottom of Hole Top of Rock = 18.7' Elevation (1098.6')							

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-106**
Client	Tennessee Valley Authority	Boring Location	733,018.92 N; 2,887,105.85 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1094.8 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/23/19
Completed	1/24/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	7.5 ft
Date/Time	1/23/19 16:00		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	5.6 ft	Date/Time	1/24/19 08:30
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners,		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	15.0 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1094.8		Top of Hole						
0.5	1094.3		Topsoil						
			SILTY LEAN CLAY, CL, 10YR 5/3 (brown) and 10YR 6/8 (brownish yellow), low plasticity, soft to medium stiff, dry to moist Trace Mn nodules from 0.5' to 2.5' Color change to 10YR 5/4 (yellowish brown) at 1.5'		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	WH-3-4
					SS02G	1.5 - 3.0	1.5 - 3.0	1.5	3-5-4
3.0	1091.8		SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), medium plasticity, soft, dry to moist, trace Mn nodules		SS03G	3.0 - 4.5	3.0 - 4.5	1.0	2-1-2
			Low to medium plasticity, stiff at 4.5'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	3-5-5
6.0	1088.8		SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown) and 10YR 7/1 (light gray), medium plasticity, medium stiff, dry to moist, mottled		SS05G	6.0 - 7.5	6.0 - 7.5	1.5	3-3-4
			Color change to 10YR 6/6 (brownish yellow) and 10YR 7/1 (light gray), low to medium plasticity, moist at 7.5'		SS06G	7.5 - 9.0	7.5 - 9.0	1.3	2-3-3
			Color change to 10YR 5/8 (yellowish brown) and 10YR 7/1 (light gray), trace Mn nodules at 9.0'		SS07E	9.0 - 10.5	9.0 - 10.5	1.5	2-2-4

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-106**
Client Tennessee Valley Authority
Boring Location 733,018.92 N; 2,887,105.85 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1094.8 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
10				9.0/12.0-20190124					
10.5	1084.3								
10.8	1084.0		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 6/4 (light yellowish brown) with 10YR 7/1 (light gray), low to medium plasticity, soft, moist						
11					SS08E	10.5 - 12.0	10.5 - 12.0	1.5	2-1-3
			SILTY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10Y 7/1 (light greenish gray), non-plastic, stiff, dry, thinly laminated weathered shale, high angle laminations						
12			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light gray), low to medium plasticity, soft, moist, mottled; 0.3' dry brittle brown silty clay at 12.0'		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	2-1-3
13									
			Color change to 10YR 5/3 (brown) and 10YR 6/1 (gray) at 13.5'						
14					SS10G	13.5 - 15.0	13.5 - 15.0	1.5	2-6-40
14.2	1080.6		SILTY LEAN CLAY, CL, 10YR 4/2 (dark grayish brown) and 10YR 4/1 (dark gray), low to medium plasticity, stiff, dry, thinly laminated						
14.9	1079.9								
15	15.0	1079.8	Shale, dry						

Refusal /
Bottom of Hole at 15.0 Ft.

Top of Rock = 14.9 Ft.
Top of Rock Elevation = 1079.9 Ft.

See installation log for permanent well JSF-106 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-107**
Client	Tennessee Valley Authority	Boring Location	733,849.62 N; 2,887,998.51 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1106.3 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	2/26/19
		Completed	2/27/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
		Date/Time	N/A
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	35.5 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1106.3		Top of Hole						
0.8	1105.5		Rock Fill		SS01G	0.0 - 1.5	0.0 - 1.5	1.4	5-5-6
			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), medium plasticity, soft to medium stiff, dry to moist, mottled, fragments of gray shale, [FILL]		SS02G	1.5 - 3.0	1.5 - 3.0	1.3	3-4-4
					SS03G	3.0 - 4.5	3.0 - 4.5	1.4	2-6-8
					SS04G	4.5 - 6.0	4.5 - 6.0	1.5	4-5-7
					SS05G	6.0 - 7.5	6.0 - 7.5	1.2	7-13-12
					SS06G	7.5 - 9.0	7.5 - 9.0	1.5	4-6-9
					SS07G	9.0 - 10.5	9.0 - 10.5	1.4	4-8-12
					SS08G	10.5 - 12.0	10.5 - 12.0	1.2	4-8-11
					SS09G	12.0 - 13.5	12.0 - 13.5	1.5	4-7-11

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-107**

Client Tennessee Valley Authority | Boring Location 733,849.62 N; 2,887,998.51 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1106.3 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
14			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), medium plasticity, soft to medium stiff, dry to moist, mottled, fragments of gray shale, [FILL] *(Continued)*		SS10G	13.5 - 15.0	13.5 - 15.0	1.5	4-7-9
15									
16					SS11G	15.0 - 16.5	15.0 - 16.5	1.5	5-9-12
17					SS12G	16.5 - 18.0	16.5 - 18.0	0.9	10-15-18
18	18.3	1088.0							
19			LEAN CLAY, CL, 10YR 4/3 (brown) to 10YR 5/1 (gray), medium plasticity, medium stiff to stiff, dry, laminated		SS13G	18.0 - 19.5	18.0 - 19.5	1.5	5-7-8
20					SS14G	19.5 - 21.0	19.5 - 21.0	1.4	4-6-11
21									
22					SS15G	21.0 - 22.5	21.0 - 22.5	1.3	11-16-14
23					SS16G	22.5 - 24.0	22.5 - 24.0	1.4	3-5-9
24									
25					SS17G	24.0 - 25.5	24.0 - 25.5	1.3	3-10-15
26	26.6	1079.7			SS18G	25.5 - 27.0	25.5 - 27.0	1.5	5-11-16
27			SANDY LEAN CLAY WITH GRAVEL, CL, 7.5YR 5/6 (strong brown), fine, low to medium plasticity, loose to stiff, moist, iron oxide staining, organics						
28					SS19G	27.0 - 28.5	27.0 - 28.5	1.5	4-8-10
29					SS20G	28.5 - 30.0	28.5 - 30.0	1.5	3-6-7
30									
31			Gravel at 30.8'		SS21G	30.0 - 31.5	30.0 - 31.5	1.3	2-7-16
32					SS22G	31.5 - 33.0	31.5 - 33.0	1.2	17-20-17

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-107**
Client Tennessee Valley Authority
Boring Location 733,849.62 N; 2,887,998.51 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1106.3 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
33			SANDY LEAN CLAY WITH GRAVEL, CL, 7.5YR 5/6 (strong brown), fine, low to medium plasticity, loose to stiff, moist, iron oxide staining, organics *(Continued)*		SS23G	33.0 - 34.5	33.0 - 34.5	1.0	3-8-17
34	34.3	1072.0	Wet at ~34'						
35			LEAN CLAY, CL, 10YR 4/3 (brown) to 10YR 7/1 (light gray), low to medium plasticity, stiff to very hard, dry to moist, iron oxide staining, laminated, residuum, Mn staining		SS24G	34.5 - 36.0	34.5 - 36.0	1.5	3-9-23
36	36.3	1070.0			SS25G	36.0 - 36.6	36.0 - 36.6	0.6	50-50/1"
	36.6	1069.7	Dry shale from 36.3' to 36.6'						

Refusal /
Bottom of Hole at 36.6 Ft.

Top of Rock = 36.3 Ft.
Top of Rock Elevation = 1070.0 Ft.

See installation log for permanent well JSF-107 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-108**
Client	Tennessee Valley Authority	Boring Location	733,309.62 N; 2,886,321.05 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1106.0 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	2/13/19
		Completed	2/14/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	40.5 ft
		Date/Time	2/13/19 15:02
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners,		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	48.4 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1106.0		Top of Hole						
0.9	1105.1		Rock Fill		SS01G	0.0 - 1.5	0.0 - 1.5	1.1	4-4-6
			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), medium plasticity, soft to medium stiff, dry to moist, mottled, fragments of gray shale, [FILL]		SS02G	1.5 - 3.0	1.5 - 3.0	1.2	3-4-6
					SS03G	3.0 - 4.5	3.0 - 4.5	0.8	3-2-14
					SS04G	4.5 - 6.0	4.5 - 6.0	1.5	3-5-7
					SS05G	6.0 - 7.5	6.0 - 7.5	1.3	6-8-9
					SS06G	7.5 - 9.0	7.5 - 9.0	1.2	3-5-9
					SS07G	9.0 - 10.5	9.0 - 10.5	1.5	3-5-8
					SS08G	10.5 - 12.0	10.5 - 12.0	1.5	4-4-10
					SS09G	12.0 - 13.5	12.0 - 13.5	1.5	4-6-10
					SS10G	13.5 - 15.0	13.5 - 15.0	1.4	3-4-8
					SS11G	15.0 - 16.5	15.0 - 16.5	1.5	3-6-9
					SS12G	16.5 - 18.0	16.5 - 18.0	1.5	7-11-18

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-108**
Client: Tennessee Valley Authority
Boring Location: 733,309.62 N; 2,886,321.05 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1106.0 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), medium plasticity, soft to medium stiff, dry to moist, mottled, fragments of gray shale, [FILL] *(Continued)*		SS13G	18.0 - 19.5	18.0 - 19.5	1.5	5-6-13
19									
20					SS14G	19.5 - 21.0	19.5 - 21.0	0.7	4-11-17
21									
22					SS15G	21.0 - 22.5	21.0 - 22.5	1.5	6-10-12
23					SS16G	22.5 - 24.0	22.5 - 24.0	1.3	4-11-17
24	24.4	1081.6							
25			LEAN CLAY, CL, 10YR 4/3 (brown) to 10YR 5/1 (gray), medium plasticity, medium stiff to stiff, dry to moist		SS17G	24.0 - 25.5	24.0 - 25.5	1.2	6-7-14
26					SS18G	25.5 - 27.0	25.5 - 27.0	1.5	9-10-14
27									
28					SS19G	27.0 - 28.5	27.0 - 28.5	1.5	6-9-15
29					SS20G	28.5 - 30.0	28.5 - 30.0	1.5	4-7-13
30									
31					SS21G	30.0 - 31.5	30.0 - 31.5	1.5	8-9-13
32					SS22G	31.5 - 33.0	31.5 - 33.0	1.4	11-15-16
33									
34	34.6	1071.4			SS23G	33.0 - 34.5	33.0 - 34.5	1.5	4-5-9
35			FAT CLAY, CH, 10YR 4/4 (dark yellowish brown) with 10YR 4/2 (dark grayish brown), medium to high plasticity, soft to medium stiff, moist, organics, root traces		SS24G	34.5 - 36.0	34.5 - 36.0	1.5	3-4-7
36									
37					SS25G	36.0 - 37.5	36.0 - 37.5	1.5	3-4-5
38					SS26G	37.5 - 39.0	37.5 - 39.0	1.5	4-2-3
39									
40 ▽					SS27G	39.0 - 40.5	39.0 - 40.5	1.5	1-4-7
41					SS28G	40.5 - 42.0	40.5 - 42.0	1.5	2-5-8
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-108**
Client Tennessee Valley Authority
Boring Location 733,309.62 N; 2,886,321.05 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1106.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			FAT CLAY, CH, 10YR 4/4 (dark yellowish brown) with 10YR 4/2 (dark grayish brown), medium to high plasticity, soft to medium stiff, moist, organics, root traces *(Continued)*		SS29G	42.0 - 43.5	42.0 - 43.5	1.5	3-5-7
44					SS30G	43.5 - 45.0	43.5 - 45.0	1.5	2-5-7
45	45.2	1060.8							
46			SANDY LEAN CLAY, CL, 10YR 4/4 (dark yellowish brown), medium plasticity, soft, moist		SS31G	45.0 - 46.5	45.0 - 46.5	1.5	3-3-5
47	47.3	1058.7			SS32aG	46.5 - 47.3	46.5 - 47.9	1.4	5-16-50+/5"
	47.8	1058.2	LEAN CLAY, CL, 10YR 4/3 (brown), iron oxide staining, residuum		SS32bG	47.3 - 47.9			
48	48.4	1057.6	Shale						

Refusal /
Bottom of Hole at 48.4 Ft.

Top of Rock = 47.8 Ft.
Top of Rock Elevation = 1058.2 Ft.

See installation log for permanent well JSF-108 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-109**
Client	Tennessee Valley Authority	Boring Location	732,983.25 N; 2,885,991.09 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1105.1 ft
Project Name	JSF TDEC Order	Date Started	2/6/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	17.5 ft
Inspector	C. Sexton	Logger	C. Sexton
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NGVD29 | Completed: 2/6/19 | Date/Time: 2/11/19 | Depth to Water: 6.6 ft | Date/Time: 2/7/19 13:43

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners,

Rock Drilling and Sampling Tools (Type and Size): N/A

Overdrill Tooling (Type and Size): N/A | Overdrill Depth: N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: N/A

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): N/A

Reviewed By: B. Evans | Approved By: P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1105.1		Top of Hole						
0.3	1104.8		Rock Fill						
			LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), low to medium plasticity, medium stiff to stiff, dry to moist, iron oxide staining, mottled, [FILL]		SS01G	0.0 - 1.5	0.0 - 1.5	1.2	3-7-7
					SS02G	1.5 - 3.0	1.5 - 3.0	1.4	2-2-3
					SS03G	3.0 - 4.5	3.0 - 4.5	0.4	3-6-7
					SS04G	4.5 - 6.0	4.5 - 6.0	1.2	3-4-7
					SS05G	6.0 - 7.5	6.0 - 7.5	1.5	11-14-13
					SS06G	7.5 - 9.0	7.5 - 9.0	1.5	4-7-9
9.7	1095.4				SS07G	9.0 - 10.5	9.0 - 10.5	1.2	6-5-9
			SANDY LEAN CLAY, CL, 10YR 7/1 (light gray) with 5YR 5/8 (yellowish red), low to medium plasticity, medium stiff to stiff, dry to moist, [FILL]						
11.0	1094.1				SS08G	10.5 - 12.0	10.5 - 12.0	1.3	4-5-8
			LEAN CLAY TRACE GRAVEL, CL, 10YR 5/4 (yellowish brown) to 10YR 5/3 (brown), medium plasticity, medium stiff to stiff, dry to moist, slightly blocky, organics, [FILL]		SS09G	12.0 - 13.5	12.0 - 13.5	1.2	2-5-12
					SS10G	13.5 - 15.0	13.5 - 15.0	0.5	3-7-10
15.7	1089.4				SS11G	15.0 - 16.5	15.0 - 16.5	1.5	4-15-23
			SILTY LEAN CLAY SOME SAND, CL, 7.5YR 2.5/2 (very dark brown), low plasticity, soft, moist, fine grained sand, [CCR]		SS12G	16.5 - 18.0	16.5 - 18.0	1.4	6-16-29

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/20/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-109**
Client: Tennessee Valley Authority
Boring Location: 732,983.25 N; 2,885,991.09 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1105.1 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18 19 20 21			SILTY LEAN CLAY SOME SAND, CL, 7.5YR 2.5/2 (very dark brown), low plasticity, soft, moist, fine grained sand, [CCR] *(Continued)*		SS13G	18.0 - 19.5	18.0 - 19.5	1.5	9-23-27
					SS14G	19.5 - 21.0	19.5 - 21.0	1.5	17-22-20
21.0	1084.1		No Refusal / Bottom of Hole at 21.0 Ft.						

Boring backfilled with 30% solids bentonite grout.

As-drilled boring location not surveyed. Horizontal coordinates shown based on field measurements. Vertical coordinates based on approximate survey data.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-109Alt**
Client	Tennessee Valley Authority	Boring Location	732,976.45 N; 2,885,989.99 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1105.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/7/19
Completed	2/11/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	13.7 ft
Date/Time	2/11/19 12:00		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1105.1		Top of Hole						
0			Overburden, no recovery		SS01	0.0 - 1.5	0.0 - 1.5	0.0	2-3-3
1									
2					SS02	1.5 - 3.0	1.5 - 3.0	0.7	3-5-6
3									
3.4	1101.7								
4			LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), low to medium plasticity, medium stiff to stiff, dry to moist, iron oxide staining, mottled, [FILL]		SS03G	3.0 - 4.5	3.0 - 4.5	1.1	6-6-5
5					SS04G	4.5 - 6.0	4.5 - 6.0	1.1	6-5-8
6									
7					SS05G	6.0 - 7.5	6.0 - 7.5	1.3	6-8-11
8					SS06G	7.5 - 9.0	7.5 - 9.0	1.5	4-7-9
9									
10					SS07G	9.0 - 10.5	9.0 - 10.5	1.4	3-5-7
11					SS08	10.5 - 12.0	10.5 - 12.0	0.0	5-7-8
12									
13					SS09G	12.0 - 13.5	12.0 - 13.5	1.4	4-5-11
14					SS10	13.5 - 15.0	13.5 - 15.0	0.2	8-9-10
15									
15.8	1089.3				SS11G	15.0 - 16.5	15.0 - 16.5	1.5	6-15-17
16			WELL GRADED SAND WITH SILT, SW-SM, 10YR 3/1 (very dark gray), medium dense, moist, [CCR]						
17					SS12G	16.5 - 18.0	16.5 - 18.0	0.8	4-5-11
18									

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-109Alt**

Client Tennessee Valley Authority | Boring Location 732,976.45 N; 2,885,989.99 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1105.1 ft | Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic			RQD %	Run Ft		Rec. Ft	Rec. %
			WELL GRADED SAND WITH SILT, SW-SM, 10YR 3/1 (very dark gray), medium dense, moist, [CCR] *(Continued)*		SS13G	18.0 - 19.5	18.0 - 19.5	1.5	2-13-21
					SS14G	19.5 - 21.0	19.5 - 21.0	1.5	6-14-12
20.8	1084.3		FAT CLAY LITTLE GRAVEL, CH, 10YR 5/8 (yellowish brown) and 10Y 8/1 (light greenish gray), medium stiff, wet, iron oxide staining, [FILL]		SS15G	21.0 - 22.5	21.0 - 22.5	1.0	6-6-9
					SS16G	22.5 - 24.0	22.5 - 24.0	1.3	4-5-7
23.8	1081.3		LEAN CLAY TRACE GRAVEL, CL, 7.5YR 6/6 (reddish yellow), medium to high plasticity, medium stiff to stiff, moist, slight chemical odor, organics		SS17G	24.0 - 25.5	24.0 - 25.5	1.5	3-3-5
					SS18G	25.5 - 27.0	25.5 - 27.0	1.0	3-8-4
					SS19G	27.0 - 28.5	27.0 - 28.5	0.5	4-9-9
					SS20G	28.5 - 30.0	28.5 - 30.0	1.2	4-6-11
30.8	1074.3				SS21G	30.0 - 31.5	30.0 - 31.5	1.5	5-9-13
			SILTY LEAN CLAY TRACE SAND AND GRAVEL, CL, 10YR 3/1 (very dark gray) and 10YR 4/6 (dark yellowish brown), medium plasticity, medium stiff to stiff, dry to moist		SS22G	31.5 - 33.0	31.5 - 33.0	1.1	5-12-14
					SS23	33.0 - 34.5	33.0 - 34.5	0.0	7-14-18
34.5	1070.6				SS24G	34.5 - 36.0	34.5 - 36.0	1.5	6-7-12
			LEAN CLAY, CL, 10YR 3/1 (very dark gray) to 10YR 3/2 (very dark grayish brown), medium to high plasticity, medium stiff to stiff, dry to moist		SS25G	36.0 - 37.5	36.0 - 37.5	0.5	6-9-16
					SS26	37.5 - 39.0	37.5 - 39.0	0.5	4-5-7
					SS27G	39.0 - 40.5	39.0 - 40.5	1.3	5-8-12
					SS28G	40.5 - 42.0	40.5 - 42.0	1.4	5-6-8

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-109Alt**
Client Tennessee Valley Authority
Boring Location 732,976.45 N; 2,885,989.99 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1105.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
42.3	1062.8								
43			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), fine to medium, medium to high plasticity, moist, iron oxide staining		SS29G	42.0 - 43.5	42.0 - 43.5	1.5	4-4-6
44					SS30G	43.5 - 45.0	43.5 - 45.0	1.4	4-8-11
45									
46	46.2	1058.9			SS31G	45.0 - 46.5	45.0 - 46.5	1.5	5-4-9
47	47.6	1057.5	LEAN CLAY, CL, 10YR 4/3 (brown), medium stiff to very hard, moist, laminated Shale residuum at 47.0'		SS32G	46.5 - 47.6	46.5 - 47.6	1.1	6-4-50/1"

Refusal /
Bottom of Hole at 47.6 Ft.

Top of Rock = 47.6 Ft.
Top of Rock Elevation = 1057.5 Ft.

Boring backfilled with 30% solids bentonite grout.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-109Alt2**
Client	Tennessee Valley Authority	Boring Location	732,996.05 N; 2,885,961.58 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1101.2 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	2/28/19
		Completed	3/4/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	31.7 ft
		Date/Time	3/4/19 16:05
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	42.5 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1101.2		Top of Hole						
			Rock Fill, no recovery						
4.0	1097.2		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), low to medium plasticity, medium stiff to stiff, dry to moist, iron oxide staining, mottled, [FILL]		SS01G	3.5 - 5.0	3.5 - 5.0	1.5	5-4-5
					SS02G	5.0 - 6.5	5.0 - 6.5	1.0	4-5-7
					SS03G	6.5 - 8.0	6.5 - 8.0	0.5	4-6-7
					SS04G	8.0 - 9.5	8.0 - 9.5	1.5	4-2-4
					SS05G	9.5 - 11.0	9.5 - 11.0	1.3	4-2-5
					SS06G	11.0 - 12.5	11.0 - 12.5	1.2	5-7-7
					SS07G	12.5 - 14.0	12.5 - 14.0	1.4	3-6-8
					SS08G	14.0 - 15.5	14.0 - 15.5	1.1	4-5-7
					SS09G	15.5 - 17.0	15.5 - 17.0	1.5	4-6-9
					SS10G	17.0 - 18.5	17.0 - 18.5	1.5	4-5-9

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-109Alt2**
Client Tennessee Valley Authority
Boring Location 732,996.05 N; 2,885,961.58 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1101.2 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 5/6 (yellowish brown) with 10Y 7/1 (light greenish gray), low to medium plasticity, medium stiff to stiff, dry to moist, iron oxide staining, mottled, [FILL] *(Continued)*						
19					SS11G	18.5 - 20.0	18.5 - 20.0	1.3	3-2-6
20									
21					SS12G	20.0 - 21.5	20.0 - 21.5	1.4	4-5-6
22					SS13G	21.5 - 23.0	21.5 - 23.0	1.3	5-10-11
23									
24					SS14G	23.0 - 24.5	23.0 - 24.5	1.5	4-4-7
25					SS15G	24.5 - 26.0	24.5 - 26.0	1.5	5-8-11
26									
27					SS16G	26.0 - 27.5	26.0 - 27.5	1.5	5-10-13
28	28.5	1072.7			SS17G	27.5 - 29.0	27.5 - 29.0	1.3	3-6-10
29			SILTY LEAN CLAY TRACE SAND AND GRAVEL, CL, 10YR 3/1 (very dark gray) and 10YR 4/6 (dark yellowish brown), medium plasticity, medium stiff to stiff, dry to moist						
30					SS18G	29.0 - 30.5	29.0 - 30.5	1.5	8-12-15
31					SS19G	30.5 - 32.0	30.5 - 32.0	1.5	6-9-10
32									
33					SS20G	32.0 - 33.5	32.0 - 33.5	1.5	5-7-9
34	34.0	1067.2			SS21G	33.5 - 35.0	33.5 - 35.0	1.4	4-6-5
35			LEAN CLAY, CL, 10YR 3/1 (very dark gray) to 10YR 3/2 (very dark grayish brown), medium to high plasticity, medium stiff to stiff, dry to moist						
36					SS22G	35.0 - 36.5	35.0 - 36.5	1.5	4-7-9
37					SS23G	36.5 - 38.0	36.5 - 38.0	1.5	4-6-7
38									
39	39.0	1062.2			SS24G	38.0 - 39.5	38.0 - 39.5	1.1	2-2-4
40			SANDY LEAN CLAY, CL, 10YR 4/6 (dark yellowish brown), fine to medium, medium to high plasticity, moist, iron oxide staining		SS25G	39.5 - 41.0	39.5 - 41.0	0.9	3-4-6
41	41.7	1059.5			SS26aG	41.0 - 41.7	41.0 - 42.5	1.5	12-9-11
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-109Alt2**
Client Tennessee Valley Authority
Boring Location 732,996.05 N; 2,885,961.58 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1101.2 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43	1057.3		LEAN CLAY, CL, 10YR 4/3 (brown), medium stiff to very hard, moist, laminated *(Continued)*		SS26bG SS27G	41.7 - 42.5 42.5 - 43.9	42.5 - 43.9	1.0	10-29-50/5"
43.9			Refusal / Bottom of Hole at 43.9 Ft.						

Top of Rock = 43.9 Ft.
Top of Rock Elevation = 1057.3 Ft.

See installation log for permanent well JSF-109 for backfill

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-110**
Client	Tennessee Valley Authority	Boring Location	732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.0 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	1/28/19
		Completed	1/30/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	10.2 ft
		Date/Time	1/29/19 11:28
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" and 3" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	17.2 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1139.0		Top of Hole						
0.8	1138.2		Topsoil		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	1-1-4
			SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, soft to medium stiff, dry to moist Color change to 10Y 6/4 (pale olive) and 10Y 7/1 (light greenish gray) low to medium plasticity, medium stiff to stiff, with trace gravel at 1.5'		SS02G	1.5 - 3.0	1.5 - 3.0	1.5	4-6-6
			Color change to 10YR 6/6 (brownish yellow), medium stiff at 3.0' Root blocking recovery in SS03		SS03G	3.0 - 4.5	3.0 - 4.5	1.0	3-5-8
			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light greenish gray), very stiff, with sand at 4.5' Color change to 10YR 6/6 (brownish yellow), soft to medium stiff, dry at 5.0' Stiff, dry to moist, with trace gravel at 6.0'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	4-6-10
					SS05G	6.0 - 7.5	6.0 - 7.5	0.5	2-2-7
			With trace gravel at 7.5' 3-inch SS used from 7.5' to refusal		SS06G	7.5 - 9.0	7.5 - 9.0	1.1	6-11-13
			Medium stiff with trace gravel at 9.0'		SS07aG	9.0 - 9.9	9.0 - 10.5	1.2	4-6-11
9.9	1129.1								
			CLAYEY SAND SOME GRAVEL, SC, 10YR 5/6 (yellowish brown), medium, loose, dry to moist Gravel is coarse to very coarse, rounded Loose to medium dense at 10.5'	9.9/12.0-20190129	SS07bE	9.9 - 10.5			
					SS08E	10.5 - 12.0	10.5 - 12.0	0.9	4-7-10
12.0	1127.0								
			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	10-7-12

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-110**
Client Tennessee Valley Authority
Boring Location 732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1139.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
14			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining *(Continued)*		SS10	13.5 - 15.0	13.5 - 15.0	0.0	4-7-10
15.0	1124.0		LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, stiff to very stiff, dry to moist, laminated, Mn staining		SS11G	15.0 - 16.5	15.0 - 16.5	1.5	9-9-18
16									
17			Color change to 10G 5/1 (greenish gray), low to medium plasticity, stiff with gravel at 16.5'		SS12G	16.5 - 18.0	16.5 - 18.0	0.2	6-50+-10
17.6	1121.4								
18.0	1121.0		Shale, dark gray						
18			Refusal / Bottom of Hole at 18.0 Ft.						

Top of Rock = 17.6 Ft.
Top of Rock Elevation = 1121.4 Ft.

See well installation log for permanent well JSF-110 for backfill information.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-111**
Client	Tennessee Valley Authority	Boring Location	733,186.14 N; 2,889,595.83 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1107.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/5/19
Completed	2/5/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1107.4		Top of Hole						
			Rock blocked auger; no sampling to 2.2'						
2.2	1105.2								
			LEAN CLAY, CL, 10YR 5/4 (yellowish brown), low to medium plasticity, medium stiff to stiff, dry to moist		SS01G	2.0 - 3.5	2.0 - 3.5	1.5	4-7-9
			Color change to 10YR 5/6 (yellowish brown) with 2.5YR 5/8 (red), medium plasticity, stiff, Mn staining, with organic matter at 3.5'		SS02G	3.5 - 5.0	3.5 - 5.0	1.2	4-7-7
			Color change to 10YR 5/8 (yellowish brown) with 5GY 8/1 (light greenish gray), laminated at 5.0'		SS03G	5.0 - 6.5	5.0 - 6.5	1.4	3-4-7
					SS04G	6.5 - 8.0	6.5 - 8.0	1.5	6-9-7
			Color change to 10YR 4/3 (brown) with 10YR 3/3 (dark brown), medium stiff to stiff, moist, with iron oxide staining at 7.6'		SS05G	8.0 - 9.5	8.0 - 9.5	1.5	3-3-6
					SS06G	9.5 - 11.0	9.5 - 11.0	NR	3-3-5
11.5	1095.9				SS07G	11.0 - 11.7	11.0 - 11.7	0.7	3-50/2"
11.7	1095.7		Shale						

Refusal /
Bottom of Hole at 11.7 Ft.

Top of Rock = 11.5 Ft.
Top of Rock Elevation = 1095.9 Ft.

Temporary 1" piezometer JSF-111ALT installed in boring JSF-111. Piezometer removed on 6/27/19 and JSF-111 boring overdrilled during installation of permanent bedrock monitoring well JSF-208.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-112Alt**
Client	Tennessee Valley Authority	Boring Location	733,197.04 N; 2,889,257.88 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1109.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	1/30/19
Completed	2/5/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	14.5 ft
Date/Time	1/31/19 08:39		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1109.1		Top of Hole						
0.5	1108.6		Topsoil						
			SILTY LEAN CLAY, CL, 7.5YR 7/8 (reddish yellow), medium plasticity, medium stiff, dry to moist		SS01G	0.0 - 1.5	0.0 - 1.5	1.1	1-2-3
			Color change to 7.5YR 6/8 (reddish yellow) with 10Y 7/1 (light greenish gray), low to medium plasticity, stiff, blocky, with organic matter at 1.5'		SS02G	1.5 - 3.0	1.5 - 3.0	1.2	3-5-7
			Color change to 7.5YR 6/8 (reddish yellow) with 10GY 7/1 (light greenish gray), medium plasticity, medium stiff, Mn staining at 3.0'		SS03G	3.0 - 4.5	3.0 - 4.5	1.2	4-4-6
			Color change to 7.5YR 6/8 (reddish yellow), low to medium plasticity, stiff to very stiff, laminated, at 4.5'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	4-5-7
			Color change to 10YR 6/8 (yellowish brown), medium stiff to stiff at 6.0'		SS05G	6.0 - 7.5	6.0 - 7.5	1.5	4-7-8
					SS06G	7.5 - 9.0	7.5 - 9.0	1.5	4-3-11
			Color change to 10YR 4/4 (dark yellowish brown), medium plasticity, soft to stiff at 9.0'		SS07G	9.0 - 10.5	9.0 - 10.5	1.5	3-7-9
					SS08G	10.5 - 12.0	10.5 - 12.0	1.5	6-9-12
			Wet from 12.9' to 13.3'		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	11-4-7
			Wet from 14.2' to 14.4'		SS10G	13.5 - 15.0	13.5 - 15.0	1.5	4-4-5

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-112Alt**
Client Tennessee Valley Authority
Boring Location 733,197.04 N; 2,889,257.88 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
15			SILTY LEAN CLAY, CL, 7.5YR 7/8 (reddish yellow), medium plasticity, medium stiff, dry to moist *(Continued)*		SS11G	15.0 - 16.5	15.0 - 16.5	1.2	5-11-7
16									
16.5	1092.6		Very stiff at 15.0'		SS12	16.5 - 16.7	16.5 - 16.7	0.2	50+/2"
16.7	1092.4		Weathered Shale						
			Refusal / Bottom of Hole at 16.7 Ft.						

Top of Rock = 16.5 Ft.
Top of Rock Elevation = 1092.6 Ft.

Temporary 1" piezometer JSF-112ALT installed in boring JSF-112ALT. Piezometer removed on 5/15/2019 and JSF-112ALT boring overdrilled during advancement of boring JSF-207.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-113Alt**
Client	Tennessee Valley Authority	Boring Location	732,777.44 N; 2,889,195.49 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1136.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	2/1/19
Completed	2/4/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1136.4		Top of Hole						
0.6	1135.8		Topsoil						
			LEAN CLAY, CL, 10YR 5/4 (yellowish brown), medium plasticity, soft, moist		SS01G	0.0 - 1.5	0.0 - 1.5	1.5	1-WH-WH
2.3	1134.1				SS02G	1.5 - 3.0	1.5 - 3.0	1.5	2-4-7
			SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light greenish gray), low to medium plasticity, medium stiff to stiff, dry to moist, iron oxide staining, mottled		SS03G	3.0 - 4.5	3.0 - 4.5	1.5	4-4-6
			Color change to 7.5YR 5/6 (strong brown), medium plasticity, medium stiff at 3.4'		SS04G	4.5 - 6.0	4.5 - 6.0	1.5	4-7-8
			Low to medium plasticity, medium stiff to stiff at 4.5'		SS05G	6.0 - 7.5	6.0 - 7.5	1.5	5-8-9
			Color change to 7.5YR 5/6 (strong brown) with 7.5YR 7/2 (pinkish gray), soft to medium stiff, organic staining, with trace sand and gravel at 6.0'		SS06G	7.5 - 9.0	7.5 - 9.0	1.5	3-3-6
			Color change to 10YR 5/6 (yellowish brown), with trace organics at 7.5'		SS07G	9.0 - 10.5	9.0 - 10.5	1.5	4-8-21
9.5	1126.9		Color change to 10YR 6/6 (brownish yellow to 10YR 7/4 (very pale brown), medium stiff, with organics at 9.0'		SS08G	10.5 - 12.0	10.5 - 12.0	1.5	10-22-11
			CLAYEY SAND, SC, 10YR 6/3 (pale brown), fine to medium, loose to medium dense, moist, gravel rounded and coarse to very coarse		SS09G	12.0 - 13.5	12.0 - 13.5	1.5	5-8-12
11.2	1125.2		Color change to 10YR 7/4 (very pale brown), medium plasticity at 10.5'		SS10G	13.5 - 15.0	13.5 - 15.0	1.5	8-12-15
			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low to medium plasticity, stiff to very stiff, dry to moist, trace organics		SS11G	15.0 - 16.5	15.0 - 16.5	1.5	9-14-21
			Color change to 10YR 5/6 (yellowish brown), Mn staining, at 12.0'		SS12G	16.5 - 18.0	16.5 - 18.0	1.5	9-18-27
			Color change to 10YR 5/6 (yellowish brown) with 10Y 8/1 (light greenish gray) at 13.5'						
			Color change to 10YR 5/4 (yellowish brown), laminated, at 15.0'						
			Color change to 10YR 5/4 (yellowish brown) and 10YR 4/2 (dark grayish brown) at 16.5'						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-113Alt**
Client: Tennessee Valley Authority
Boring Location: 732,777.44 N; 2,889,195.49 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1136.4 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18									
18.7	1117.7				SS13G	18.0 - 18.9	18.0 - 18.9	0.6	9-50/5"
18.9	1117.5		Shale						

Refusal /
Bottom of Hole at 18.9 Ft.

Top of Rock = 18.7 Ft.
Top of Rock Elevation = 1117.7 Ft.

Temporary 1" piezometer JSF-113ALT installed in boring JSF-113ALT. Piezometer removed on 6/24/19 and JSF-113ALT boring overdrilled during installation of permanent bedrock monitoring well JSF-209.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-200**
Client: Tennessee Valley Authority
Boring Location: N 733226.45, E 2892576.23, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1142.9 ft
Elevation Datum: NGVD29
Project Name: TVA-JSF Vacatur
Date Started: 8/24/18
Completed: 8/28/18
Project Location: Hawkins County, Rogersville, Tennessee
Depth to Water: N/A
Date/Time: N/A
Inspector: K. Carey
Logger: B. Evans
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 75
Driller: D. Jessie
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Surface Set Bit
Sampler Hammer Type: Automatic
Weight: 140 lbs
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description (Overburden: / Rock Core:)	Sample	Depth Ft Run Ft	Rec. Ft / Rec. %	Blows/PSI / RQD %	Remarks
0.0	1142.9	Top of Hole					
0		Topsoil					
0.7	1142.2						
		SANDY LEAN CLAY, CL, 2.5Y 4/4 (olive brown), low plasticity, soft to hard, moist, fine sand, trace gravel	SPT1	0.0 - 1.5	0.7	3-2-2	
1							
2			SPT2	1.5 - 3.0	0.7	3-3-13	
3		Color change to 2.5Y 5/4 (light olive brown), low to medium plasticity, at 3.0'					
			SPT3	3.0 - 4.5	1.1	6-4-4	
4							
4.2	1138.7						
		CLAYEY SAND, SC, 7.5YR 5/8 (strong brown), low plasticity, loose to medium dense, moist, poorly graded, fine sand, trace gravel	SPT4	4.5 - 6.0	1.1	9-6-6	
5							
6							
			SPT5	6.0 - 7.5	1.3	9-2-4	
7							
8			SPT6	7.5 - 9.0	1.3	2-4-5	
9.0	1133.9						
9		SANDY LEAN CLAY, CL, 7.5YR 5/8 (strong brown), low plasticity, firm, moist, poorly graded, fine sand, trace gravel					
			SPT7	9.0 - 10.5	1.2	3-2-3	
10							

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
10.5	1132.4							
		CLAYEY SAND, SC, 7.5YR 4/6 (strong brown), low plasticity, medium dense, moist, poorly graded		SPT8	10.5 - 12.0	1.5	3-7-17	
		GRAVELLY SAND, SP, 10YR 7/4 (very pale brown), dense, moist, fine sand, fine to course and subrounded to rounded gravel		SPT9	12.0 - 13.5	0.9	5-21-17	
13.0	1129.9							
		SILTY LEAN CLAY, CL-ML, 10YR 6/8 (brownish yellow), non-plastic to low plasticity, hard to very hard, moist, trace fine sand		SPT10	13.5 - 15.0	1.5	4-5-5	
		Color change to 10YR 5/4 (yellowish brown) at 15.0'		SPT11	15.0 - 16.5	1.4	4-6-9	
		Color change to 10 YR 4/4 (dark yellowish brown), at 16.5'		SPT12	16.5 - 18.0	1.5	3-7-7	
				SPT13	18.0 - 19.5	1.5	4-4-9	
		Change to some lamar structures, residuum of shale, at 19.5'		SPT14	19.5 - 21.0	1.5	10-15-18	
		Color change to 2.5Y 4/4 (olive brown), at 21.0'		SPT15	21.0 - 22.5	1.5	8-13-14	

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-200**
Client: Tennessee Valley Authority
Boring Location: N 733226.45, E 2892576.23, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1142.9 ft
Elevation Datum: NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
23		SILTY LEAN CLAY, CL-ML, 2.5Y 4/4 (olive brown), non-plastic to low plasticity, very hard, moist, trace fine sand, some lamar structures, residuum of shale		SPT16		22.5 - 24.0	1.5	12-10-50+	
23.9	1119.0								
24		Weathered Shale		SPT17		24.0 - 25.1	0.3	50/4"	
25									
25.3	1117.6			SPT18		25.1 - 25.3	0.2	50/2" Began Core	
26		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding Open fracture, clay filled, at 26.4'		66		25.3 - 27.5	2.2	100	Run 1
27									Breaks and Fractures present between 25.3 and 26.4
28		Open fracture, iron staining, at 27.7'							
29		Slightly open vertical fractures, between 29.0' and 29.2'							
30									
31		Open fracture, iron staining, possible zone of loss, between 30.5' and 30.7' Very broken, clay filled, possible zone of loss, between 31.0' and 31.2'							Breaks and Fractures present between 27.6 and 35.4. Very broken from 37.0 to 38.4 due to drilling issues
32				55		27.5 - 37.5	8.2	82	Run 2
33		Very broken, some clay fill, possible zone of loss, between 33.0' and 33.2'							
34		Clay filled void, possible wash out or loss, between 34.1' and 34.4'							
35									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
35			Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
36									
37									
38									
39									
40									
41			Slightly open fracture, at 41.0'						Breaks and Fractures present between 40.5 and 47.2
42					59	37.5 - 47.5	9.8	98	Run 3
43			Open fracture, iron staining, possible zone of loss, between 43.2' and 43.4'						
44			Near vertical, slightly open fracture, between 44.0' and 44.5'						
45									
46									
47			Slightly open fracture, at 47.2'						

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
48		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
49								
50								
51								
52		Open fracture, possible zone of loss, between 52.0' and 52.5'		96	47.5 - 57.5	10.1	101	Run 4
53								
54								Breaks and Fractures present between 52.0 and 56.2
55								
56								
57								
58								
59								
60								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
60		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
61								
62				98	57.5 - 67.5	10.0	100	Run 5
63		50° break on calcite filled fracture, open, between 63.3' and 63.6'						
64								Breaks and Fractures present between 62.4 and 66.8
65								
66								
67		Slightly open fracture, at 66.8'						
68								
69								
70								
71								
72								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
73		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*		100	67.5 - 77.5	10.0	100	Run 6
74								Breaks and Fractures present between 70.8 and 76.2
75								
76		Near vertical, slightly open fracture, between 75.7' and 76.2'						
77								
78								
79								
80								
81								
82								Breaks and Fractures present between 81.7 and 82.2
				100	77.5 - 87.5	10.0	100	Run 7
83		Possible open fracture, at 83.2'						
84								
85								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
85		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
86								
87								
88								
89								
90								
91		Slightly open break on calcite filled crack, at 90.7'						Breaks and Fractures present between 89.6 and 96.6
92				80	87.5 - 97.5	9.8	98	Run 8
93								
94		Very broken, soft shale, open, between 94.0' and 94.1'						
95								
96		Very broken, soft shale, open, between 95.6' and 95.7'						
97		Very broken, soft shale, partially open, between 96.5' and 96.6'						

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
98		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
99								
100								
101								Breaks and Fractures present between 98.5 and 105.8
102								
				99	97.5 - 107.5	9.9	99	Run 9
103								
104								
105								
106								
107								
108								
109		20° break on calcite filled crack, slightly open, at 108.7'						
110								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
110			Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
111			Very broken on calcite filled fracture, slightly open, between 110.6' and 110.7'						Breaks and Fractures present between 108.7 and 117.3
112					96	107.5 - 117.5	10.1	101	Run 10
113									
114									
115									
116									
117									
118									
119									
120									
121									
122									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
123		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)* Very broken, possibly open, between 123.5' and 123.7'		76	117.5 - 127.5	9.9	99	Run 11
124								Breaks and Fractures present between 118.2 and 125.4
125								
126								
127								
128								
129								
130								
131		Possible zone of loss (open or washed out), between 131.0' and 131.2'						Breaks and Fractures present between 128.0 and 137.2
132				54	127.5 - 137.5	9.3	93	Run 12
133		Possible zone of loss (open or washed out), between 132.8' and 133.0'						
134								
135								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-200**
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Surface Elevation 1142.9 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
135		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with clay, calcite, or have iron staining, multiple breaks on shale bedding *(Continued)* Very broken, clay seam washed out, possible zone of loss, between 136.0' and 136.4'						
136								
137		Broken, slightly open, at 137.6'						
138								
139								
140								
141								Breaks and Fractures present between 137.6 and 147.2
142				61	137.5 - 147.5	10.1	101	Run 13
143								
144								
145								
146								
147								
147.5	995.4							

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-200**
Client Tennessee Valley Authority
Boring Location N 733226.45, E 2892576.23, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1142.9 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
			Bottom of Hole at 147.5 Ft. Top of Rock = 25.3 Ft. Top of Rock Elevation = 1117.6 Ft. Begin Core = 25.3 Ft.						

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-201**
Client	Tennessee Valley Authority	Boring Location	N 734164.42, E 2891004.26, NAD 27 Plant Local
Project Number	175568225	Surface Elevation	1117.6 ft
Project Name	TVA-JSF Vacatur	Date Started	8/20/18
Project Location	Hawkins County, Rogersville, Tennessee	Depth to Water	N/A
Inspector	K. Carey	Logger	B. Evans
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig	CME 75

Elevation Datum: NGVD29 | Completed: 8/22/18 | Date/Time: N/A | Depth to Water: N/A | Date/Time: N/A | Driller: D. Jessie

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): HQ-3 Wireline, Split Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lbs | Drop: 30" | Efficiency: N/A

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description (Overburden: / Rock Core:)	Sample	Depth Ft Run Ft	Rec. Ft Rec. %	Blows/PSI RQD %	Remarks
0.0	1117.6	Top of Hole					
0.3	1117.3	TOPSOIL					
		SANDY LEAN CLAY, CL, 7.5YR 4/6 (strong brown), hard, slightly damp, trace of angular gravel	SPT01	0.0 - 1.5	1.4	3-5-4	
		Root hairs, at 1.0'					
		Color change to 10YR 6/4 (light yellowish brown), trace sand, non-plastic, crumbly, fissured, at 1.5'	SPT02	1.5 - 3.0	1.0	3-4-7	
2.8	1114.8						
		SANDY SILT, ML, 10YR 5/4 (yellowish brown), non-plastic, hard, slightly damp, very fine sand	SPT03	3.0 - 4.5	1.3	8-7-4	
4.4	1113.2						
		SANDY LEAN CLAY, CL, 10YR 5/8 (yellowish brown), low plasticity, hard, slightly damp, very fine sand	SPT04	4.5 - 6.0	1.5	5-5-6	
			SPT05	6.0 - 7.5	1.5	6-5-8	
		Color change to 10YR 5/6 (yellowish brown), trace rock fragments, trace course gravel, at 7.5'	SPT06	7.5 - 9.0	0.8	8-7-7	
9.8	1107.8		SPT07	9.0 - 10.5	1.5	6-4-5	
		LEAN CLAY, CL, 10YR 5/8 (yellowish brown) mottled with N/8 (white), medium plasticity, firm, damp					
		Color changes to N/8 (white) mottled with 10YR 5/8 (yellowish brown), at 11.0'	SPT08	10.5 - 12.0	1.4	4-2-7	
12.0	1105.6						

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Tennessee Valley Authority
Project Number: 175568225

Stantec Boring No.: **JSF-201**
Boring Location: N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation: 1117.6 ft
Elevation Datum: NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	RQD %	Depth Ft Run Ft	Rec. Ft	Rec. %	Blows/PSI	Remarks
12										
		SILTY LEAN CLAY, CL-ML, 10YR 5/8 (yellowish brown), low plasticity, hard, moist to wet, fissured		SPT09		12.0 - 13.5	1.4		5-5-7	
13										
14				SPT10		13.5 - 15.0	0.7		4-3-6	
14.5	1103.1									
		HIGHLY WEATHERED SHALE, 10YR 5/3 (brown), non-plastic, firm to very hard, wet								
15				SPT11		15.0 - 16.5	1.3		2-2-4	
16										
		WEATHERED SHALE, 2.5Y 3/1 (very dark grey), very soft, moist to wet, visible remnant bedding, friable, at 16.3'								
17				SPT12		16.5 - 18.0	1.0		3-5-11	
18										
				SPT13		18.0 - 19.5	1.0		5-8-8	
19										
20				SPT14		19.5 - 21.0	0.9		4-6-10	
21										
				SPT15		21.0 - 22.3	1.3		12-31-50/4"	
22										
22.9	1094.7			SPT16		22.5 - 22.9	0.3		50/5"	
23									Begin Core	
		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding								Breaks and Fractures present between 22.9 and 27.6
24										
25					17	22.9 - 27.6	4.2		89	Run 1
26		Open fracture, iron staining, at 25.9'								
		Broken, open fracture, iron staining, between 26.8' and 27.1'								
27										

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
27		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*						
28								
29		45 - 50° open fracture, clean, between 29.4' and 29.5'						
30								
31								
32				42	27.6 - 37.6	9.3	93	Run 2
33		Very soft black shale, 50% washed out, likely zone of loss, between 32.7' and 34.0'						
34								
35								Breaks and Fractures present between 27.6 and 37.6
36								
37		Soft shale, very broken or washed out, zone of loss, between 36.8' and 37.0'						
38								
39								
40								
41								
42								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
42		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*		54	37.6 - 47.6	8.3	83	Breaks and Fractures present between 37.6 and 45.6. Run 3
43								
44								
45								
46		Material loss from 45.9' to 47.6', likely soft shale that washed out						
47								
48								
49								
50								
51		Open fracture/void, iron staining, between 50.9' and 51.5'						
52		Open fracture at 51.6' Open fracture, iron staining, at 52.0'		72	47.6 - 57.6	9.3	93	Run 4
53								
54								Breaks and Fractures present between 48.5 and 57.5
55								
56								
57								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Tennessee Valley Authority
Project Number: 175568225

Stantec Boring No.: **JSF-201**
Boring Location: N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation: 1117.6 ft
Elevation Datum: NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
57		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*						
58								
59								
60		Very broken and weathered, iron staining, very soft drilling, likely zone of loss, between 59.6' and 62.3'. Much calcite at 60.0'						
61								
62								
63				49	57.6 - 67.6	9.0	90	Run 5
64								Breaks and Fractures present between 57.7 and 66.7
65								
66								
67								
68								
69								
70								
71								
72								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
72		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)* Possible void between 72.2' and 73.5'		41	67.6 - 77.6	8.9	89	Run 6
73								
74								Breaks and Fractures present between 68.3 and 77.3
75								
76								
77								
78								
79								
80		Possible void or highly fractured with no recovery, between 80.4' and 81.4'						
81								
82				63	77.6 - 87.6	9.2	92	Run 7
83								
84								Breaks and Fractures present between 77.6 and 84.2.
85								
86								
87								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
87		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*						
88								
89								
90								
91								
92		Open fracture, slightly weathered, at 92.0'		83	87.6 - 97.6	10.0	100	Run 8
93								
94								Breaks and Fractures present between 88.1 and 97.3
95								
96								
97								
98								
99								
100								
101								
102								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
102		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*			97.6 - 107.6	10.0	100	Run 9
103								
104								Breaks and Fractures present between 97.7 and 107.2
105								
106								
107								
108								
109								
110		Horizontal fracture, slightly open, between 109.7' and 109.8'						
111								
112				78	107.6 - 117.6	10.0	100	Run 10
113								
114								Breaks and Fractures present between 109.1 and 117.1
115		Horizontal fracture, slightly open, at 115.2'						
116								
117								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
117		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*						
118								
119								
120								
121								
122								
123				78	117.6 - 127.6	10.0	100	Run 11
124		Extremely fractured zone, horizontal to 60°, some open fractures, some calcite healed fractures, at 123.4' to 125.4'						Breaks and Fractures present between 118.3 and 126.4
125								
126								
127								
128								
129								
130								
131								
132								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
132		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*		90	127.6 - 137.6	9.8	98	Run 12
133								
134								Breaks and Fractures present between 129.0 and 137.1
135								
136								
137		Slightly open fracture, at 136.4' Calcite filled fracture, partially washed out, between 136.9' and 137.1'						
138								
139								
140		Slightly open fracture, at 140.1'						
141		Slightly open fractures, between 140.7' and 140.8' Calcite filled fracture, open, between 140.9' and 141.0'						
142				80	137.6 - 147.6	10.0	100	Run 13
143								
144								Breaks and Fractures present between 137.7 and 146.3
145								
146								
147								

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-201**
Boring Location N 734164.42, E 2891004.26, NAD 27 Plant Local
Surface Elevation 1117.6 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
147		Limestone With Interbedded Shale, very fine to fine crystalline, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite or have iron staining, multiple breaks on shale bedding *(Continued)*						
148								
149								Break at 149.0
150				98	147.6 - 152.6	4.9	98	Run 14
151								
152								
152.6	965.0							

Bottom of Hole at 152.6 Ft.

Top of Rock = 22.9 Ft.
Top of Rock Elevation = 1094.7 Ft.
Begin Core = 22.9 Ft.

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-202**
Client	Tennessee Valley Authority	Boring Location	N 734298.02, E 2892822.26, NAD 27 Plant Local
Project Number	175568225	Surface Elevation	1117.1 ft
Project Name	TVA-JSF Vacatur	Date Started	8/22/18
Project Location	Hawkins County, Rogersville, Tennessee	Depth to Water	N/A
Inspector	K. Carey	Logger	B. Evans
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig	CME 75

Elevation Datum: NGVD29 | Completed: 8/23/18 | Date/Time: N/A | Date/Time: N/A | Driller: D. Jessie

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): HQ-3 Wireline, Split Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lbs | Drop: 30" | Efficiency: N/A

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	1117.1	Top of Hole						
0		TOPSOIL						
0.8	1116.3			SPT01	0.0 - 1.5	0.8	2-2-4	
1		SANDY LEAN CLAY, CL, 7.5YR 4/6 (strong brown), low plasticity, firm to hard, moist, fine sand, trace gravel						
2				SPT02	1.5 - 3.0	0.2	7-4-6	
3		Color change to 7.5YR 5/6 (strong brown), some manganese staining in nodules, at 3.0'						
3.7	1113.4			SPT03	3.0 - 4.5	1.5	3-4-6	
4		SILTY LEAN CLAY, CL-ML, 2.5Y 7/4 (pale brown), non-plastic to low plasticity, hard to very hard, moist, trace fine sand, manganese staining						
5		Color change to 10YR 6/6 (brownish yellow), low plasticity, moist, at 4.5'		SPT04	4.5 - 6.0	1.3	6-8-12	
6								
7				SPT05	6.0 - 7.5	1.5	4-7-7	
8		Color change to 10YR 5/3 (brown) at 7.5'		SPT06	7.5 - 9.0	0.7	8-8-8	
9.0	1108.1							
9		LEAN CLAY, CL, 10YR 5/6 (yellowish brown), low to medium plasticity, hard to very hard, moist		SPT07	9.0 - 10.5	1.4	5-8-6	
10								
11				SPT08	10.5 - 12.0	1.5	7-18-30	
12.0	1105.1	Color change to 10YR 7/1 (light grey), laminated, non-plastic, dry, at 11.2'						
12								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
12								
		SILTY LEAN CLAY, CL-ML, 10YR 6/3 (pale brown), non-plastic, very hard, slightly moist, trace sand		SPT09	12.0 - 13.0	1.1	7-50	
13		Color change to 10YR 4/3 (brown), minor laminations, at 12.6'						
14	1102.9			SPT10	13.5 - 14.9	1.4	8-37-50/5"	
14.2		SILT, ML, 10YR 6/3 (pale brown), very hard, slightly moist, trace laminations						
15								
15.6	1101.5			SPT11	15.0 - 15.9	0.9	15-50/5"	
16		WEATHERED SHALE, very light grey, very dense, soft, laminated, fine crystalline						4" steel casing bit set and drove to 16.5'
16.5	1100.6						50+/4" Began Core	
17		Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding		36	16.5 - 17.6	1.1	100	Breaks and Fractures present between 16.9 and 17.6 Run 1
18								
19								
20								
21								
22								
23				77	17.6 - 27.6	10.0	100	Breaks and Fractures present between 17.6 and 24.4 Run 2
24								
25								
26								
27								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
27			Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)* Horizontal to 30° breaks, calcite filled fracture, open fracture, between 28.1' and 28.4'						
28									
29									
30									
31			Open breaks on shale bedding, between 30.8' and 30.9'						
32					97	27.6 - 37.6	10.0	100	Breaks and Fractures present between 28.1 and 36.2 Run 3
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
42			Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*		98	37.6 - 47.6	10.0	100	Breaks and Fractures present between 37.8 and 46.5 Run 4
43									
44									
45									
46			20° fracture, slightly open, at 46.1'						
47									
48									
49									
50									
51									
52					96	47.6 - 57.6	10.0	100	Breaks and Fractures present between 52.3 and 57.3 Run 5
53									
54									
55									
56									
57									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
57			Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
58									
59									
60									
61									
62									
63					98	57.6 - 67.6	9.8	98	Breaks and Fractures present between 57.6 and 67.6 Run 6
64									
65									
66									
67									
68									
69									
70									
71									
72									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
72		Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*		82	67.6 - 77.6	10.1	101	Breaks and Fractures present between 67.7 and 77.3 Run 7
73								
74								
75								
76								
77								
78								
79								
80								
81								
82				91	77.6 - 87.6	9.7	97	Break present at 77.8 Run 8
83								
84								
85								
86								
87								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
87			Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
88									
89									
90									
91									
92									
93			Slightly open fracture at calcite filled crack, between 93.1' and 93.3'		81	87.6 - 97.6	10.4	104	Breaks and Fractures present between 87.7 and 97.6 Run 9
94									
95									
96									
97									
98			50° slightly open fracture at calcite filled crack, between 98.1' and 98.2'						
99									
100									
101			Open fracture at 100.5' Slightly open fracture, calcite, at 101.9'						
102									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
102		Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*		80	97.6 - 107.6	9.6	96	Breaks and Fractures present between 97.6 and 105.5 Run 10
103								
104		Very broken zone, possible open fracture, between 103.8' and 104.0'						
105								
106								
107								
108								
109								
110								
111								
112				67	107.6 - 117.6	9.8	98	Breaks and Fractures present between 107.7 and 117.6 Run 11
113								
114		Very fractured and washed out possible, zone of loss, between 113.6' and 115.5'						
115								
116								
117								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
117			Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*						
118									
119									
120									
121									
122					72	117.6 - 127.6	9.7	97	Breaks and Fractures present between 117.6 and 126.7. Run 12
123									
124									
125									
126			Possible zone of loss between 126.1' and 126.5'						
127									
128									
129									
130									
131									
132									

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
132		Limestone With Interbedded Shale, moderately hard to very hard, thin bedded, 30° to 40° bedding angle, numerous breaks and fractures, fractures filled with calcite, or have iron staining, multiple breaks on shale bedding *(Continued)*		85	127.6 - 137.6	10.1	101	Breaks and Fractures present between 127.8 and 137.6 Run 13
133								
134								
135								
136								
137								
138								
139								
140								
141								
142				102	137.6 - 146.6	9.8	109	Breaks and Fractures present between 137.6 and 147.2 Run 14
143								
144								
145								
146								
147								

SUBSURFACE LOG

Client Borehole ID N/A
Client Tennessee Valley Authority
Project Number 175568225

Stantec Boring No. **JSF-202**
Boring Location N 734298.02, E 2892822.26, NAD 27 Plant Local
Surface Elevation 1117.1 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
147									
147.6	969.5		Bottom of Hole at 147.6 Ft.						
147.7	969.4		Top of Rock = 16.5 Ft. Top of Rock Elevation = 1100.6 Ft. Begin Core = 16.5 Ft.						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-203**
Client: Tennessee Valley Authority
Boring Location: N 734210.08, E 2891768.97, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1120.8 ft
Elevation Datum: NGVD29
Project Name: TVA-JSF Vacatur
Date Started: 12/4/18
Completed: 12/4/18
Project Location: Hawkins County, Rogersville, Tennessee
Depth to Water: 14.4 ft
Date/Time: 12/12/18
Inspector: K. Carey
Logger: K. Carey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: M&W Drilling, LLC
Drill Rig: Schramm T450WS Rotodrill
Driller: N/A
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, no sampling conducted
Rock Drilling and Sampling Tools (Type and Size): 8" Air Rotary, no sampling conducted
Sampler Hammer Type: N/A
Weight: 140 lbs
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
0.0	1120.8	Top of Hole						
		JSF-203 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted.						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-203**
Client: Tennessee Valley Authority
Boring Location: N 734210.08, E 2891768.97, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1120.8 ft
Elevation Datum: NGVD29

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
10		JSF-203 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted. *(Continued)*						
11								
12								
13								
14								
15								
16								
17								
18								
19								
20	1100.8	JSF-203 boring blind drilled from bedrock interface at 20 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging.						
21								
22								

20.0

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-203**
Client Tennessee Valley Authority
Boring Location N 734210.08, E 2891768.97, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1120.8 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
23			JSF-203 boring blind drilled from bedrock interface at 20 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging. *(Continued)*						
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-203**
Client Tennessee Valley Authority
Boring Location N 734210.08, E 2891768.97, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1120.8 ft
Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft	Elevation								
35			JSF-203 boring blind drilled from bedrock interface at 20 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging. *(Continued)*						
36									
37									
38	38.0	1082.8							

No Refusal /
Bottom of Hole at 38.0 Ft.

Top of Rock = 20.0 Ft.
Top of Rock Elevation = 1100.8 Ft.

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-204**
Client: Tennessee Valley Authority
Boring Location: N 734085.70, E 2890174.62, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1114.5 ft
Elevation Datum: NGVD29
Project Name: TVA-JSF Vacatur
Date Started: 12/6/18
Completed: 12/6/18
Project Location: Hawkins County, Rogersville, Tennessee
Depth to Water: 18.8 ft
Date/Time: 12/12/18
Inspector: K. Carey
Logger: K. Carey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: M&W Drilling, LLC
Drill Rig: Schramm T450WS Rotodrill
Driller: N/A
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, no sampling conducted
Rock Drilling and Sampling Tools (Type and Size): 8" Air Rotary, no sampling conducted
Sampler Hammer Type: N/A
Weight: 140 lbs
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
0.0	1114.5	Top of Hole						
		JSF-204 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted.						

0
1
2
3
4
5
6
7
8
9
10

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-204**
Client Tennessee Valley Authority
Boring Location N 734085.70, E 2890174.62, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1114.5 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
10			JSF-204 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted. *(Continued)*						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-204**
Client Tennessee Valley Authority
Boring Location N 734085.70, E 2890174.62, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1114.5 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
23.0	1091.5								
			JSF-204 boring blind drilled from bedrock interface at 23 ft. to 34 ft. using Air Rotary drilling methods. No samples were recovered for visual logging.						
34.0	1080.5								
			No Refusal / Bottom of Hole at 34.0 Ft.						
			Top of Rock = 23.0 Ft.						

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-204**
Client Tennessee Valley Authority
Boring Location N 734085.70, E 2890174.62, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1114.5 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	
Depth Ft	Elevation		Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	Remarks
			Top of Rock Elevation = 1091.5 Ft.						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-205**
Client: Tennessee Valley Authority
Boring Location: N 732651.34, E 2890410.48, NAD 27 Plant Local
Project Number: 175568225
Surface Elevation: 1132.7 ft
Elevation Datum: NGVD29
Project Name: TVA-JSF Vacatur
Date Started: 12/11/18
Completed: 12/11/18
Project Location: Hawkins County, Rogersville, Tennessee
Depth to Water: 7.5 ft
Date/Time: 12/12/18
Inspector: K. Carey
Logger: K. Carey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: M&W Drilling, LLC
Drill Rig: Schramm T450WS Rotodrill
Driller: N/A
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, no sampling conducted
Rock Drilling and Sampling Tools (Type and Size): 8" Air Rotary, no sampling conducted
Sampler Hammer Type: N/A
Weight: 140 lbs
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample RQD %	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
0.0	1132.7	Top of Hole						
		JSF-205 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted.						

0
1
2
3
4
5
6
7
8
9
10

STANTEC 1755 STD LOGS_COMBINED.GPJ BC 1755 STD DATAT R0.GDT 12/7/22

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-205**
Client Tennessee Valley Authority
Boring Location N 732651.34, E 2890410.48, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1132.7 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
10			JSF-205 boring advanced through overburden with 4 1/4" HSA to bedrock; no overburden sampling conducted. *(Continued)*						
11									
12	12.0	1120.7							
			JSF-205 boring blind drilled from bedrock interface at 12 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging.						
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-205**
Client Tennessee Valley Authority
Boring Location N 732651.34, E 2890410.48, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1132.7 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
23			JSF-205 boring blind drilled from bedrock interface at 12 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging. *(Continued)*						
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-205**
Client Tennessee Valley Authority
Boring Location N 732651.34, E 2890410.48, NAD 27 Plant Local
Project Number 175568225
Surface Elevation 1132.7 ft
Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
35			JSF-205 boring blind drilled from bedrock interface at 12 ft. to 38 ft. using Air Rotary drilling methods. No samples were recovered for visual logging. *(Continued)*						
36									
37									
38	38.0	1094.7							

No Refusal /
Bottom of Hole at 38.0 Ft.

Top of Rock = 12.0 Ft.
Top of Rock Elevation = 1120.7 Ft.

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-206**
Client	Tennessee Valley Authority	Boring Location	732,667.53 N; 2,889,831.36 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.0 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	5/21/19
Completed	5/22/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes		
Rock Drilling and Sampling Tools (Type and Size)	HQ-3 Wireline, Split Barrel, Surface Set Bit		
Overdrill Tooling (Type and Size)	8" Air Rotary	Overdrill Depth	50.0 ft
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
0.0	1139.0		Top of Hole						
0			SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown) to 2.5YR 6/4 (light reddish brown), medium plasticity, soft to medium stiff, moist		SS01	0.0 - 1.5	0.0 - 1.5	N/A	N/A
1									
2					SS02	1.5 - 3.0	1.5 - 3.0	N/A	N/A
3									
3.3	1135.7		SANDY LEAN CLAY WITH SILT, CL, 7.5YR 5/8 (strong brown), low plasticity, stiff, dry to moist		SS03	3.0 - 4.5	3.0 - 4.5	N/A	N/A
4									
5					SS04	4.5 - 6.0	4.5 - 6.0	N/A	N/A
6									
7					SS05	6.0 - 7.5	6.0 - 7.5	N/A	N/A
8									
8.3	1130.7		SILTY SAND SOME CLAY, SM, 7.5YR 5/6 (strong brown), medium to coarse, loose, moist, iron oxide staining		SS06	7.5 - 9.0	7.5 - 9.0	N/A	N/A
9									
10					SS07	9.0 - 10.5	9.0 - 10.5	N/A	N/A
11					SS08	10.5 - 12.0	10.5 - 12.0	N/A	N/A
12									
13					SS09	12.0 - 13.5	12.0 - 13.5	N/A	N/A
13.5	1125.5		SILTY LEAN CLAY, CL, 7.5YR 5/6 (strong brown), low to medium plasticity, medium stiff to stiff, moist		SS10	13.5 - 15.0	13.5 - 15.0	N/A	N/A
14									
15					SS11	15.0 - 16.5	15.0 - 16.5	N/A	N/A
16									
17					SS12	16.5 - 17.2	16.5 - 17.2	N/A	N/A
17.2	1121.8								Began Core
18									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-206**
Client Tennessee Valley Authority
Boring Location 732,667.53 N; 2,889,831.36 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1139.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			Shale, very finely crystalline, hard, massive bedded, 30° to 60° bedding angle *(Continued)* (First 0.2' of 17.2' - 21.6' core run was pulverized setting core bit; material not recoverable in core barrel)		94	17.2 - 26.1 8.9	17.2 - 26.1	8.6	97
19									
20									
21									
22									
23									
24									
25									
26									
27					100	26.1 - 31.0 4.9	26.1 - 31.0	4.9	100
28									
29									
30									
31					88	31.0 - 36.1 5.1	31.0 - 36.1	5.1	100
32									
33									
34									
35									
36									
37					94	36.1 - 46.1 10.0	36.1 - 46.1	10.0	100
38									
39									
40									
41									
42									

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-206**
Client Tennessee Valley Authority
Boring Location 732,667.53 N; 2,889,831.36 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1139.0 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
43			Shale, very finely crystalline, hard, massive bedded, 30° to 60° bedding angle *(Continued)*						
44									
45									
46									
47									
48									
49									
50					76	46.1 - 55.0	46.1 - 55.0	7.8	88
51						8.9			
52									
53									
54									
55	55.0	1084.0							

Bottom of Hole at 55.0 Ft.

Top of Rock = 17.2 Ft.
Top of Rock Elevation = 1121.8 Ft.
Begin Core = 17.2 Ft.

Monitoring Well JSF-210 was installed in boring JSF-206 on 6/25/19. Refer to the JSF-210 well installation detail for construction details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-206S**
Client	Tennessee Valley Authority	Boring Location	732,659.08 N; 2,889,831.52 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1138.6 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	6/26/19
		Completed	6/26/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
		Date/Time	N/A
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	M&W Drilling, LLC	Drill Rig Type and ID	Schramm T450WS Rotodrill
Overburden Drilling and Sampling Tools (Type and Size)	8" Air Rotary		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8" Air Rotary	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1138.6		Top of Hole					
			Boring blind drilled from surface to a targeted monitoring well (JSF-206) total depth of 32' bgs using air rotary drilling methods. No soil or bedrock samples recovered for visual logging; refer to adjacent soil boring JSF-206 for location lithology.					
17.0	1121.6		Approximate soil/bedrock interface					

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-206S**
Client Tennessee Valley Authority
Boring Location 732,659.08 N; 2,889,831.52 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1138.6 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
32.0	1106.6		No Refusal / Bottom of Hole at 32.0 Ft.					

Monitoring Well JSF-206 was installed in boring JSF-206S on 6/26/19. Refer to the JSF-206 well installation detail for construction details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-207**
Client	Tennessee Valley Authority	Boring Location	733,197.04 N; 2,889,257.88 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1109.1 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	5/15/19
Completed	5/21/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 850XR, #953
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA		
Rock Drilling and Sampling Tools (Type and Size)	HQ-3 Wireline, Split Barrel, Surface Set Bit		
Overdrill Tooling (Type and Size)	8" Air Rotary	Overdrill Depth	40.0 ft
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1109.1		Top of Hole					
			JSF-207 boring advanced into bedrock by removing temporary overburden piezometer JSF-112Alt via overdrilling with 4 1/4" HSA; advanced augers then used to facilitate placement of 4" temporary casing for bedrock coring. No overburden sampling conducted. See JSF-112Alt boring log for overburden soil descriptions at boring JSF-207.					
17.3	1091.8							Began Core

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **JSF-207**
Client Tennessee Valley Authority
Boring Location 733,197.04 N; 2,889,257.88 E NAD27 Plant Local
Project Number 175568225
Surface Elevation 1109.1 ft
Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
18			Shale, medium crystalline, hard, massive bedded, slightly weathered, iron oxide staining, 30° to 60° bedding angle *(Continued)*						
19									
20			Induced fracture, 30°, calcite coating, calcite infilling, planar, smooth, matte surface, at 20.0'						
21									
22					46	17.5 - 26.9 9.4	17.5 - 26.9	8.5	90
23									
24									
25									
26									
27									
28									
29									
30									
31									
32					42	26.9 - 36.7 9.8	26.9 - 36.7	6.4	65
33									
34									
35									
36									
37									
38									
39									
40									
41									
42					77	36.7 - 46.7	36.7 - 46.7	9.0	90

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/6/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-207**
Client: Tennessee Valley Authority
Boring Location: 733,197.04 N; 2,889,257.88 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1109.1 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]		Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft		Rec. Ft	Rec. %
			Shale, medium crystalline, hard, massive bedded, slightly weathered, iron oxide staining, 30° to 60° bedding angle *(Continued)*			10.0			
43									
44									
45									
46									
47									
48									
49									
50									
51									
52					72	46.7 - 56.7 10.0	46.7 - 56.7	9.5	95
53									
54									
55									
56									
56.7	1052.4								

Bottom of Hole at 56.7 Ft.
Begin Core = 17.5 Ft.

Monitoring Well JSF-207 was installed in boring JSF-207 on 6/27/19. Refer to the JSF-207 well installation detail for construction details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-208**
Client	Tennessee Valley Authority	Boring Location	733,186.14 N; 2,889,595.83 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1107.4 ft
Elevation Datum	NGVD29		
Project Name	JSF TDEC Order	Date Started	6/27/19
Completed	6/28/19		
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
Date/Time	N/A		
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	M&W Drilling, LLC	Drill Rig Type and ID	Schramm T450WS Rotodrill
Overburden Drilling and Sampling Tools (Type and Size)	See boring log for JSF-111 dated 2/5/19		
Rock Drilling and Sampling Tools (Type and Size)	8" Air Rotary; blind drill		
Overdrill Tooling (Type and Size)	8" Air Rotary	Overdrill Depth	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1107.4		Top of Hole					
			Boring JSF-208 was advanced by overdilling the JSF-111 boring. The JSF-111 boring was advanced to the bedrock contact and a temporary piezometer installed in the overburden. Refer to the JSF-111 boring log dated 02/05/2019 for overburden (soil) lithology and sample run details at this location. When insufficient groundwater was found in the overburden, the JSF-111 temporary piezometer was removed, the JSF-111 boring was overdrilled to bedrock, and the boring re-designated bedrock boring JSF-208.					
11.7	1095.7		Boring JSF-208 blind drilled from bedrock interface to 50.0' bgs on 06/27/2019 using 8-inch diameter, air-rotary drilling methods. No samples were recovered for visual logging.					

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-208**

Client Tennessee Valley Authority | Boring Location 733,186.14 N; 2,889,595.83 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1107.4 ft | Elevation Datum NGVD29

Lithology			Description	Overburden: / Rock Core:	Sample[1,2] / RQD %	Depth Ft[3] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %
Depth Ft[3]	Elevation	Graphic						
18			Boring JSF-208 blind drilled from bedrock interface to 50.0' bgs on 06/27/2019 using 8-inch diameter, air-rotary drilling methods. No samples were recovered for visual logging. *(Continued)*					
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								

SUBSURFACE LOG

Client Borehole ID N/A | Stantec Boring No. **JSF-208**

Client Tennessee Valley Authority | Boring Location 733,186.14 N; 2,889,595.83 E NAD27 Plant Local

Project Number 175568225 | Surface Elevation 1107.4 ft | Elevation Datum NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
43			Boring JSF-208 blind drilled from bedrock interface to 50.0' bgs on 06/27/2019 using 8-inch diameter, air-rotary drilling methods. No samples were recovered for visual logging. *(Continued)*					
44								
45								
46								
47								
48								
49								
50	50.0	1057.4						

Refusal /
Bottom of Hole at 50.0 Ft.

Top of Rock = 11.7 Ft.
Top of Rock Elevation = 1095.7 Ft.

Monitoring Well JSF-208 was installed in boring JSF-208 on 6/28/19. Refer to the JSF-208 well installation detail for construction details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**JSF-209**
Client	Tennessee Valley Authority	Boring Location	732,777.44 N; 2,889,195.49 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1136.4 ft
		Elevation Datum	NGVD29
Project Name	JSF TDEC Order	Date Started	6/24/19
		Completed	6/24/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A
		Date/Time	N/A
Inspector	C. Sexton	Logger	C. Sexton
Depth to Water	N/A	Date/Time	N/A
Drilling Contractor	M&W Drilling, LLC	Drill Rig Type and ID	Schramm T450WS Rotodrill
Overburden Drilling and Sampling Tools (Type and Size)	See boring log for JSF-113Alt dated 2/1/19		
Rock Drilling and Sampling Tools (Type and Size)	8" Air Rotary; blind drill		
Overdrill Tooling (Type and Size)	8" Air Hammer	Overdrill Depth	35.0 ft
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0.0	1136.4		Top of Hole					
			Boring JSF-209 was advanced by overdrilling boring JSF-113Alt. The temporary PZ was removed prior to over-drilling. See boring log for JSF-113Alt dated 02/01/2019 for soil descriptions from surface to bedrock interface.					

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/17/20

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **JSF-209**
Client: Tennessee Valley Authority
Boring Location: 732,777.44 N; 2,889,195.49 E NAD27 Plant Local
Project Number: 175568225
Surface Elevation: 1136.4 ft
Elevation Datum: NGVD29

Lithology				Overburden:	Sample[1,2]	Depth Ft[3]	Rec. Ft	Blows/PSI
Depth Ft[3]	Elevation	Graphic	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18.7	1117.7							
			Boring JSF-209 blind drilled from bedrock interface to 35.0' bgs on 06/24/2019 using air-rotary drilling methods. No samples were recovered for visual logging.					
35.0	1101.4							

No Refusal /
Bottom of Hole at 35.0 Ft.

Top of Rock = 18.7 Ft.
Top of Rock Elevation = 1117.7 Ft.

Monitoring Well JSF-209 was installed in boring JSF-209 on 6/24/19. Refer to the JSF-209 well installation detail for construction details.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
3: Depths are reported in feet below ground surface