

# LOG OF BORING NO. DH3-3

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.7 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.7 feet</b></p> <p> <input type="checkbox"/> Split Spoon  <input type="checkbox"/> Shelby Tube  <input type="checkbox"/> Rock Core                 </p>									
	X		Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, dense			32-24-22						
65	X		- boulder @ 65 ft.			50/3"						
70			70.0			50/2"						
			Gray <u>SANDSTONE</u> , fine to medium grained, medium hard to hard									
			- iron-stained vertical fracture (70.8' - 71.1')									
75				89	81							
80												
85				99	66							
			86.7									
			<u>COAL</u>									
90												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**  
 Date Boring Started: **12/6/00**  
 Date Boring Completed: **12/7/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 35 ft. during drilling operations.**

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# LOG OF BORING NO. DH3-3

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.7 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>☒ Split Spoon ☒ Shelby Tube ☐ Rock Core</p>									
			<p><u>COAL</u></p> <p>- unconfined compressive strength (93.0' - 93.3') - 3,600 psi</p> <p>- unconfined compressive strength (95.5' - 95.8') - 3,780 psi</p> <p style="text-align: right;">96.6</p>	100	22							
			<p>Gray <u>CLAY SHALE</u>, very soft to soft, becoming sandier and medium hard with depth</p> <p style="text-align: right;">101.8</p>									
			<p>Gray <u>SANDSTONE</u> with shale laminations, medium hard to hard, fine to medium grained</p> <p style="text-align: right;">105.1</p>	100	100							
			<p>Bottom of Test Boring @ 105.1 ft.</p>									

BORING C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**  
 Date Boring Started: **12/6/00**  
 Date Boring Completed: **12/7/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 35 ft. during drilling operations.**



# LOG OF BORING NO. DH3-4

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1053.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Legend:   Split Spoon   Shelby Tube   Rock Core</p>									
	X	•••••	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to dense			4-5-29						
35	X	•••••				31-21-11						
40	X	•••••				10-10-11						
			- SPOIL/FILL -									
45	X	•••••	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, very dense	45.0								
50	X	•••••				22-26-27						
						20-23-30						
55	X	•••••	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained, with occasional coal laminations	55.0								
			- iron-stained, moderately weathered (55.0' - 64.2')			50/5"						
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**  
 Date Boring Started: **12/7/00**  
 Date Boring Completed: **12/7/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 35 ft. during drilling operations.**

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# LOG OF BORING NO. DH3-4

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1053.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: flex-start;"> <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></div> Split Spoon  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div> Shelby Tube  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background-color: black;"></div> Rock Core                 </div> <p style="text-align: center; margin-top: 10px;"><b>MATERIAL DESCRIPTION</b></p>									
65			Gray <u>SANDSTONE</u> , medium hard to hard, medium grained, with occasional coal laminations  - diagonal fracture @ 62.5 ft.  - iron-stained diagonal fracture (66.6' - 66.8')	96	74	50/1"						
70				100	94							
75												
80				99	99							
85												
			87.6									
			VOID									
90												

BORING: C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**  
 Date Boring Started: **12/7/00**  
 Date Boring Completed: **12/7/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 35 ft. during drilling operations.**

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# LOG OF BORING NO. DH3-4

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1053.9 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>  <div style="text-align: center;">VOID</div> - void sample (87.6' - 97)' slurry and sand  1.1% gravel 78.9% sand 20.0% silt and clay	34	17							
95			97.0									
			Broken Coal and Mine Rubble									
			98.1									
100			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard increasing depth									
			102.8	100	42							
105			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained									
			105.1									
			Bottom of Test Boring @ 105.1 ft.									
110												
115												
120												

BORING C00553.GPJ 2/28/01

Completion Depth: **105.1 feet**  
 Date Boring Started: **12/7/00**  
 Date Boring Completed: **12/7/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 35 ft. during drilling operations.**

# LOG OF BORING NO. DH4-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>									
5		X	Coarse <u>COAL REFUSE</u>									
10		X										
15		X										
20		X										
25		X										
30		X										

BORING C00553.GPJ 2/27/01

Completion Depth: **111.2 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 43 ft. during drilling operations.**

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# LOG OF BORING NO. DH4-1

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1050.9 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p> <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-style: dashed; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-style: solid; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </p> </div> <div style="width: 65%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
35		X	Coarse <u>COAL REFUSE</u>										
40		X											
43.0		X	43.0										
45		O	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, medium dense to dense										
		O	- very sandy (43.0' - 51.0')			5-7-10-16							
		O				8-9-16-17							
50		X				10-18-22-12							
		X				7-10-10-10							
		X				5-6-9-10							
55		X				5-10-18-17							
		X				7-18-29-15							
		X	- SPOIL/FILL -			15-13-11-15							
60		X											

BORING: C00553.GPJ 2/27/01

Completion Depth: **111.2 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 43 ft. during drilling operations.**

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# LOG OF BORING NO. DH4-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 60%; text-align: center;"> <p><b>MATERIAL DESCRIPTION</b></p> </div> </div>									
65	⊠	o	<p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, medium dense to dense</p> <p>- root traces (61.0' - 63.0')</p> <p style="text-align: center;">- SPOIL/FILL -</p>			15-13-11-15						
			66.9			8-9-8-9						
						3-8-20-28						
70	⊠	o	<p>Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense</p> <p>- some gray mottling and trace coal fragments (67.0' - 69.0')</p>			8-30-48-75						
				71		28-52-37-43						
75	⊠	o	<p>- shelly tube (71.0' - 71.7') brown and gray clayey sand to sandy clay with some sandstone fragments</p>			15-10-18-19						
						50/3"						
80	⊠	o	<p>Brown <u>SANDSTONE</u>, soft, weathered, friable, fine grained</p>			20-34-29-20						
			80.0			4-40-59-60						
						42-65-74-56						
85	⊠	o	<p><u>COAL</u></p>			81-64/2"						
			85.2			36-50/2"						
90	⊠	o		95	0							

BORING C00553.GPJ 2/27/01

Completion Depth: **111.2 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 43 ft. during drilling operations.**

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# LOG OF BORING NO. DH4-1

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1050.9 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>COAL</b></p> <p style="text-align: right;">94.5</p>	100	24							
95			<p>Gray <b>CLAY SHALE</b>, very soft to soft, becoming sandier and medium hard with depth</p> <p style="text-align: right;">101.4</p>	100	92							
100			<p>Gray <b>SANDSTONE</b> with shale laminations, medium hard, fine to medium grained</p> <p>- iron-stained (107.5' - 108.0')</p> <p style="text-align: right;">111.2</p>	100	96							
105			<p>Bottom of Test Boring @ 111.2 ft.</p>									
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **111.2 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 43 ft. during drilling operations.**

# LOG OF BORING NO. DHP-1

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p> <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-style: dashed; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-style: solid; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 15px; height: 15px; background-color: black; margin-right: 5px;"></span> Rock Core                 </p> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> <div style="width: 55%;"> <p>Coarse <u>COAL REFUSE</u> <span style="float: right;">1.5</span></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense</p> <p style="text-align: center;">- trace slurry (15.0' - 16.5')</p> <p style="text-align: center;">- boulders (21.7' - 27.0')</p> <p style="text-align: center;">- SPOIL/FILL -</p> </div> </div>										
5													
10						9-8-4							
15						6-9-7							
20						3-5-6							
25						50/0"							
30													

BORING C00553.GPJ 2/27/01

Completion Depth: **107.0 feet**  
 Date Boring Started: **12/5/00**  
 Date Boring Completed: **12/6/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 75.5 ft. upon drilling completion.**

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# LOG OF BORING NO. DHP-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-style: dashed; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-style: solid; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </div> <p style="text-align: center; margin-top: 10px;"><b>MATERIAL DESCRIPTION</b></p>									
35	X	-	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, very dense			18-28-28						
39.5	X	-	Brown <u>SANDSTONE</u> , medium hard, medium grained, moderately weathered, friable	85	20	50/0"						
45		/	- gray, hard from 43 ft.	99	80							
55		/	- w/occasional carbonaceous laminations (43.0' - 53.8')	100	97							

BORING C00553.GPJ 2/27/01

Completion Depth: **107.0 feet**  
 Date Boring Started: **12/5/00**  
 Date Boring Completed: **12/6/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 75.5 ft. upon drilling completion.**

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# LOG OF BORING NO. DHP-1

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.0 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
65		[Symbol]	Gray <u>SANDSTONE</u> , hard, medium grained									
			- iron-stained (63.5' - 66.4')									
			- fractured (65.9' - 66.4')	99	87							
70			- iron-stained (70.0' - 72.8') and (76.4' - 76.6')									
			- iron-stained vertical fracture ((77.0' - 77.4')	99	93							
75												
80												
85												
				100	81							
88.7			Gray <u>SHALE</u> , soft to medium hard									
90												

BORING: C00553.GPJ 2/27/01

Completion Depth: **107.0 feet**  
 Date Boring Started: **12/5/00**  
 Date Boring Completed: **12/6/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 75.5 ft. upon drilling completion.**

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# LOG OF BORING NO. DHP-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
90.8		⊞	<b>COAL</b>										
			- unconfined compressive strength (91.3' - 91.5') - 3,970 psi										
95			- unconfined compressive strength (96.6' - 96.9') - 4,040 psi										
			- unconfined compressive strength (97.5' - 97.8') - 2,940 psi	99	24								
98.4													
100		⊞	Gray <b>CLAY SHALE</b> , very soft to soft, becoming sandier and medium hard with depth										
105		⊞		100	86								
105.6													
107.0		⊞	Gray <b>SANDSTONE</b> with shale laminations, medium hard, fine to medium grained.										
110			Bottom of Test Boring @ 107 ft.										
115													
120													

BORING C00553.GPJ 2/27/01

Completion Depth: **107.0 feet**  
 Date Boring Started: **12/5/00**  
 Date Boring Completed: **12/6/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 75.5 ft. upon drilling completion.**

# LOG OF BORING NO. DHP-2

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.7 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
5	●		AUGER WITHOUT SAMPLING									
10	●											
15	●											
20	●											
25	●											
30	●											

BORING C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **1/9/00**  
 Date Boring Completed: **1/9/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 45 ft. during drilling operations.**

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# LOG OF BORING NO. DHP-2

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.7 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>									
35			AUGER WITHOUT SAMPLING									
40												
45												
50				50.0								
55		[Diagonal Fracture Symbol]	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained - soft weathered zone @ 53.2 ft.  - iron-stained (53.2' - 54.0') and (56.7' - 57.5')  - diagonal fracture @ 51.3 ft. and 56.8 ft.	94	63							
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **1/9/00**  
 Date Boring Completed: **1/9/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 45 ft. during drilling operations.**

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# LOG OF BORING NO. DHP-2

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.7 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
65		✓	Gray SANDSTONE, medium hard to hard, medium grained  - low-angle fracture @ 62.3 ft.  - fractured (62.8' - 63.8')  - iron-stained, w/occasional vugs (62.8' - 67.8')  - clay seam (66.8' - 67.0')  - iron-stained (70.9' - 71.9')	100	67							
75		✓	- iron-stained vertical fracture (81.3' - 84.3') and (87.0' - 87.3')	100	100							
85		✓	- iron-stained (80.0' - 87.5')	80	29							
90		✓										

BORING C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **1/9/00**  
 Date Boring Completed: **1/9/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 45 ft. during drilling operations.**

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# LOG OF BORING NO. DHP-2

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.7 feet</b>									
			Split Spoon									
			Shelby Tube									
			Rock Core									
			<b>MATERIAL DESCRIPTION</b>									
			Dark gray <u>CARBONACEOUS SHALE</u> , medium hard	90.3								
			<u>COAL</u>	91.6								
95				100	10							
			Gray <u>CLAY SHALE</u> , very soft to soft	100.3								
100				95	58							
			Bottom of Test Boring @ 105 ft.	105.0								
105												
110												
115												
120												

BORING: C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **1/9/00**  
 Date Boring Completed: **1/9/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 45 ft. during drilling operations.**

# LOG OF BORING NO. DHX- 1

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
		<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>											
			<p>Coarse <u>COAL REFUSE</u> <span style="float: right;">0.5</span></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p>										
5													
10						10-16-14							
15			- boulder ( 15.0 - 16.5 ft. )			45-27-36							
			-boulder ( 20.0 - 22.0 ft. )										
			- boulder ( 25.0 - 26.0 ft. )										
20						50/2"							
25						47-50/4"							
			- SPOIL/FILL -										
30				30.0									

BORING C00553.GPJ 2/27/01

Completion Depth: **106.8 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.6 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Legend:   Split Spoon   Shelby Tube   Rock Core</p>									
35	X	•••••	<p>Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to very dense</p>			7-13-10						
38.0						15-48-50/3"						
40	X	/ / / / /	<p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- brown, weathered and friable (38.0' - 40.4')</p> <p>- with occasional carbonaceous laminations (42.1 - 48.6 ft.)</p> <p>- iron stained vertical fracture (49.7 - 50.0 ft.)</p>	93	0	50/3"						
45												
50				100	86							
55												
60				99	90							

BORING C00553.GPJ 2/28/01

Completion Depth: **106.8 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.6 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-1

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>⊠ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
65		⊠	<p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- fractured ( 68.0 - 68.3 ft. )</p> <p>- iron stained ( 70.2 - 71.8 ft. )</p> <p>- vertical iron stained fracture ( 76.6 - 76.9 ft. )</p> <p>- vertical iron stained fracture ( 77.8 - 78.4 ft. )</p>	100	93								
70		⊠											
75		⊠		95	77								
80		⊠											
85		⊠		100	100								
		⊠		87.4									
		⊠	<u>VOID</u>	89.4									
90		⊠		18	8								

BORING C00553.GPJ 2/27/01

Completion Depth: **106.8 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.6 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 1

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.8 feet</b></p> <p> <input type="checkbox"/> Split Spoon  <input type="checkbox"/> Shelby Tube  <input type="checkbox"/> Rock Core                 </p> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p>									
			<p>Gray <u>SANDSTONE</u>, iron stained, medium hard to hard, fine to medium grained</p> <p style="text-align: right;">90.7</p>									
			<p><u>VOID</u></p> <p>- void sample (89.4' - 91.9') brown silty sand with rock fragments</p> <p>17.9% gravel 55.0% sand 27.1% silt and clay</p> <p style="text-align: right;">96.9</p>	42	18							
-95			<p>Gray <u>SHALE</u>, soft to medium hard</p> <p>- with occasional siltstone lenses ( 96.9 - 98.2 ft. )</p> <p>- clayey, soft ( 98.2 - 99.6 ft. )</p> <p>- silty, medium hard ( 99.6 - 103.7 ft. )</p> <p style="text-align: right;">103.7</p>									
-100			<p>Gray <u>SANDSTONE</u> with occasional shale laminations, medium hard, fine grained</p> <p style="text-align: right;">106.8</p>	98	70							
-105			<p>Bottom of Test Boring @ 106.8 ft.</p>									
-110												
-115												
-120												

BORING C00553.GPJ 2/28/01

Completion Depth: **106.8 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.6 ft. upon drilling completion.**

# LOG OF BORING NO. DHX- 2

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.5 feet</b> Split Spoon Shelby Tube Rock Core									
			Coarse <u>COAL REFUSE</u> <span style="float: right;">0.7</span>									
			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
5			AUGER W/OUT SAMPLING									
10												
15												
20												
25												
30			- SPOIL/FILL -									

BORING C00553.GPJ 2/28/01

Completion Depth: **106.6 feet**  
 Date Boring Started: **12/12/00**  
 Date Boring Completed: **12/13/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 83.9 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 2

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </div> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p>									
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
40		○	AUGER W/OUT SAMPLING									
45		○	- SPOIL/FILL -									
50		○	52.0									
55		▧	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained									
60		▧	- brown, weathered and friable (52.0' - 56.4')	100	97							

BORING C00553.GPJ 3/2/01

Completion Depth: **106.6 feet**  
 Date Boring Started: **12/12/00**  
 Date Boring Completed: **12/13/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 83.9 ft. upon drilling completion.**

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# LOG OF BORING NO. DHX- 2

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>□ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
		⊠	Gray SANDSTONE, medium hard to hard, medium grained	100	100								
65		⊠	- weathered, iron stained, with occasional clayey shale lenses, soft	99	71								
		⊠	- iron stained ( 69.5 - 70.1 ft. )										
70		⊠	- iron stained vertical fracture ( 69.8 - 70.1 ft. )										
75		⊠		100	89								
80		⊠											
85		⊠											
88.5		⊠											
90		⊠	VOID	39	38								

BORING: C00553.GPJ 2/27/01

Completion Depth: **106.6 feet**  
 Date Boring Started: **12/12/00**  
 Date Boring Completed: **12/13/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 83.9 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 2

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.5 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </div> <p style="text-align: center; margin-top: 10px;"><b>MATERIAL DESCRIPTION</b></p>									
95			<p style="text-align: center;">VOID</p> <p>- void sample - coal slurry with sand and gravel</p> <p>3.2% gravel 26.7% sand 70.1% silt and clay</p>									
			98.5									
100		~	<p>Gray <u>SHALE</u>, soft to medium hard</p> <p>- clayey, soft ( 98.5 - 101.7 ft. )</p> <p>- silty, medium ( 101.7 - 104.3 ft. )</p>	89	60							
			104.3									
105		/	<p>Gray <u>SANDSTONE</u> with occasional shale laminations, medium hard, fine grained</p>									
			106.6									
110			<p style="text-align: center;">Bottom of Test Boring @ 106.6 ft.</p>									
115												
120												

BORING C00553.GPJ 3/27/01

Completion Depth: **106.6 feet**  
 Date Boring Started: **12/12/00**  
 Date Boring Completed: **12/13/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 83.9 ft. upon drilling completion.**

# LOG OF BORING NO. DHX- 3

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.3 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
5		⊗	Coarse <u>COAL REFUSE</u>										
5.0		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense										
10		○											
15		○											
20		○											
25		○											
30		○	- SPOIL/FILL -										

BORING: C00553.GPJ 2/27/01

Completion Depth: **105.4 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50.0 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 3

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.3 feet</b>												
		Split Spoon Shelby Tube Rock Core										
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
40		○										
45		○										
50		○										
55		○										
60		○	- SPOIL/FILL -	60.0								

BORING C00553.GPJ 2/28/01

Completion Depth: **105.4 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50.0 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 3

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.3 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>									
	X	•••••	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to very dense			12-21-28						
65	X	•••••				22-31-32						
70				70.0		50/1"						
		/ / / / /	Brown <u>SANDSTONE</u> , medium hard, medium to coarse grained, moderately weathered, friable - diagonal fracture at 72.1 ft.									
75				95	56							
			<u>COAL</u>  - unconfined compressive strength (89.5' - 89.8') - 4,770 psi  - unconfined compressive strength (91.6' - 91.9') - 3,100 psi									
80				82.5								
85				2	0							
90				100	86							

BORING C00553.GPJ 2/28/01

Completion Depth: **105.4 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50.0 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 3

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.3 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>☒ Split Spoon ☒ Shelby Tube ☐ Rock Core</p>									
		COAL	<p>- unconfined compressive strength (93.5' - 93.8') - 3,270 psi</p>									
95		Gray CLAY SHALE, very soft to soft	93.8	100	56							
100		Gray SANDSTONE with shale laminations, medium hard, fine grained	100.8	46	22							
105		Bottom of Test Boring @ 105.4 ft.	105.4									

BORING: C00553.GPJ 2/28/01

Completion Depth: **105.4 feet**  
 Date Boring Started: **12/11/00**  
 Date Boring Completed: **12/11/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50.0 ft. during drilling operations.**

# LOG OF BORING NO. DHX- 4

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. c00553-1</b> Surface El.: <b>1051.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
5		[X]	Coarse <u>COAL REFUSE</u>									
10		[X]										
15		[X]										
20		[X]										
25		[X]	- SPOIL/FILL -									
26.0		[X]										
30		[X]	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
BORING C00553.GPJ 2/27/01			Completion Depth: <b>104.8 feet</b> Date Boring Started: <b>12/14/00</b> Date Boring Completed: <b>12/15/00</b> Engineer/Geologist: <b>JEN/CEM</b> Project No.: <b>C00553</b>	Remarks: <b>Groundwater was first noted at a depth of 67 ft. during drilling operations.</b>								

*Continued Next Page*



# LOG OF BORING NO. DHX- 4

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. c00553-1</b> Surface El.: <b>1051.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			MATERIAL DESCRIPTION										
65	X	○	<p><b>Brown CLAYEY SAND</b> with sandstone fragments, damp, medium dense to very dense</p> <p>- with some plant roots at 69.0 ft.</p> <p>- less sand with trace of coal slurry (69.0 - 71.0 ft.)</p> <p>- with coal slurry and sandstone fragments (73.0 - 75.0 ft.)</p> <p>- with numerous sandstone fragments (77.0 - 79.0 ft.)</p> <p>- with trace slurry (85.0 - 91.0 ft.)</p> <p style="text-align: center;">- SPOIL/FILL -</p>			4-5-8-6							
	X	○		3-6-7-5									
70	X	○		1/12"-2-3									
	X	○		WOT/24"									
	X	○		WOT/12"-4-2									
75	X	○		11-12-10-16									
	X	○		15-10-6-6									
	X	○		WOT/24"									
	X	○		40-20-14-10									
	X	○		3-8-6-9									
85	X	○		WOT/12"-5-2									
	X	○		5-6-4-5									

BORING C00553.GPJ 2/28/01

Completion Depth: **104.8 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/15/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 67 ft. during drilling operations.**

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# LOG OF BORING NO. DHX- 4

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. c00553-1</b> Surface El.: <b>1051.8 feet</b>									
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20px;">  Split Spoon   Shelby Tube   Rock Core                 </div> <div> <b>MATERIAL DESCRIPTION</b> </div> </div>									
			Brown <b>CLAYEY SAND</b> with sandstone fragments, damp to wet, medium dense to very dense 91.0			WOT/18"-7 50/2"						
			<b>COAL</b> 93.0	92	28							
95			Gray <b>CLAY SHALE</b> , very soft to soft, becoming sandier and medium hard with depth									
100				98	94							
			103.9 Gray <b>SANDSTONE</b> with shale laminations, medium hard, fine to medium grained 104.8									
105			Bottom of Test Boring @ 104.8 ft.									
110												
115												
120												

BORING: C00553.GPJ 2/28/01

Completion Depth: **104.8 feet**  
 Date Boring Started: **12/14/00**  
 Date Boring Completed: **12/15/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 67 ft. during drilling operations.**

# LOG OF BORING NO. DHX- 5

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.2 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
5		X	Coarse <u>COAL REFUSE</u>									
10		X										
15		X										
20		O	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
25		O										
30		O	- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **104.8 feet**  
 Date Boring Started: **12/15/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 5

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; align-items: flex-start;"> <div style="width: 150px; border-right: 1px solid black; padding-right: 5px;"> </div> <div style="padding-left: 10px;"> <p><b>MATERIAL DESCRIPTION</b></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p> <p style="text-align: center; margin-top: 200px;">- SPOIL/FILL -</p> </div> </div>										

BORING C00553.GPJ 2/27/01

Completion Depth: **104.8 feet**  
 Date Boring Started: **12/15/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 5

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p>⊗ Split Spoon</p> <p>⊗ Shelby Tube</p> <p>▬ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
65	⊗	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense  - SPOIL/FILL -										
						27-50/5"							
						1.4							
70	⊗	○	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, very dense			17-28-35-50/6"							
						50/3"							
75	⊗	▬	Brown <u>SANDSTONE</u> , medium hard, medium to coarse grained, moderately weathered, friable	94	31								
77.1			VOID										
			- void sample (79.7' - 82.7') brown silty sand  0.1% gravel 93.9% sand 6.0% silt and clay										
85				33	23								
90													

BORING C00553.GPJ 2/27/01

Completion Depth: **104.8 feet**  
 Date Boring Started: **12/15/00**  
 Date Boring Completed: **12/18/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 5

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p> <input type="checkbox"/> Split Spoon  <input type="checkbox"/> Shelby Tube  <input type="checkbox"/> Rock Core                 </p> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> <div style="width: 55%;"> <p style="text-align: right;">90.8</p> <p>VOID</p> <p style="text-align: right;">92.0</p> <p>COAL</p> <p>Gray CLAY SHALE, very soft to soft, becoming sandier and medium hard with depth</p> <p style="text-align: right;">101.8</p> <p>Gray SANDSTONE with shale laminations, medium hard, fine to medium grained</p> <p style="text-align: right;">104.8</p> <p style="text-align: center;">Bottom of Test Boring @ 104.8 ft.</p> </div> </div>										
95													
100				98	85								
105													
110													
115													
120													

BORING\_C00553.GPJ 2/28/01

**Completion Depth: 104.8 feet**  
**Date Boring Started: 12/15/00**  
**Date Boring Completed: 12/18/00**  
**Engineer/Geologist: JEN/CEM**  
**Project No.: C00553**

**Remarks: Groundwater was first noted at a depth of 65 ft. during drilling operations.**

# LOG OF BORING NO. DHX- 6

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
5		⊗	Coarse <u>COAL REFUSE</u>										
5.0		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense										
10		○											
15		○											
20		○											
25		○											
30		○	- SPOIL/FILL -										

BORING C00553.GPJ 2/28/01

Completion Depth: **105.8 feet**  
 Date Boring Started: **12/18/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 6

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; align-items: flex-start;"> <div style="width: 150px; border-right: 1px solid black; padding-right: 5px;"> <p style="font-size: small;"> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </p> </div> <div style="flex-grow: 1;"> <p style="text-align: center; font-weight: bold; margin-top: 0;">MATERIAL DESCRIPTION</p> <p style="margin-top: 10px;">Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p> </div> </div>										
35													
40													
45													
50													
55													
60			- SPOIL/FILL -										

BORING C00553.GPJ 2/28/01

Completion Depth: **105.8 feet**  
 Date Boring Started: **12/18/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 6

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20px;">  Split Spoon   Shelby Tube   Rock Core                 </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
65		o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense  - SPOIL/FILL -										
	X		Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp, very dense - boulder at 67.9 ft.										
69.3				69	0								
70		/	Brown <u>SANDSTONE</u> , medium hard, medium to coarse grained, moderately weathered, friable										
75				97	59								
			- weathered, clayey, very soft ( 81.1 - 81.9 ft. )										
81.9													
			Gray <u>SHALE</u> , soft										
84.9													
			<u>COAL</u>	99	12								
90													

BORING C00553.GPJ 2/28/01

Completion Depth: **105.8 feet**  
 Date Boring Started: **12/18/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 6

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
		☒	<u>COAL</u>									
95		☒	Gray <u>CLAYEY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth  - core loss (100.8' - 105.8') due to core barrel malfunction	95	60							
100		☒										
105		☒	- sandstone @ 105.8 ft.	2	0							
		☒	Bottom of Test Boring @ 105.8 ft.									
110		☒										
115		☒										
120		☒										

BORING C00553.GPJ 2/28/01

Completion Depth: **105.8 feet**  
 Date Boring Started: **12/18/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

# LOG OF BORING NO. DHX-7

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
5		⊗	Coarse <u>COAL REFUSE</u>										
10		⊗											
15		⊗											
18.0		⊗											
20		⊗	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense										
25		⊗											
30		⊗	- SPOIL/FILL -										

BORING C00553.GPJ 2/27/01

Completion Depth: **101.4 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 77 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-7

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>⊠ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p> </div> </div>										
35													
40													
45													
50													
55													
60			- SPOIL/FILL -										

BORING C00553.GPJ 2/28/01

Completion Depth: **101.4 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 77 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-7

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: See Drawing No. C00553-1 Surface El.: 1052.4 feet Split Spoon Shelby Tube Rock Core <b>MATERIAL DESCRIPTION</b>									
			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense  - SPOIL/FILL -									
65			65.0									
			Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp, dense to very dense  - with some coal fragments and organics ( 69.0 - 71.5 ft. )  - boulder at 71.5 ft.  - with some gray mottling ( 73.0 - 75.0 ft. )  - wet ( 77.0 - 79.0 ft. )			19-32-24-27  14-27-30-31  10-24-25-30  30-50/2"  19-28-28-19  24-21-22-23  15-16-15-15  wot/18"						
70												
75												
			- sampler advanced from weight of tools ( 79.0 - 80.5 ft. )									
80			80.5									
			Brown <u>SANDSTONE</u> , medium hard, medium to coarse grained, moderately weathered, friable			2-33-48-38						
			<u>COAL</u>			25-50/6"-50/2"						
85												
			- clayey shale lens ( 88.7 - 89.3 ft. )	100	0							
90												

BORING C00553.GPJ 2/28/01

Completion Depth: **101.4 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 77 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-7

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>☒ Split Spoon                      ☒ Shelby Tube                      ☐ Rock Core</p>									
		COAL		91.6								
		Gray SHALE, soft to medium hard - clayey, soft ( 91.6 - 94.3 ft. )  - silty medium hard ( 94.3 - 95.5 ft. )										
95				95.5								
		Gray SANDSTONE with shale laminations, medium hard, fine to medium grained		100	87							
100				101.4								
			Bottom of Test Boring @ 101.4 ft.									
105												
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **101.4 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 77 ft. during drilling operations.**

# LOG OF BORING NO. DHX- 8

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
5		X	Coarse <u>COAL REFUSE</u>									
10		X										
15		X										
20		X										
25		X	25.0									
30		o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, very loose to medium dense  - SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 8

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 85%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, very soft to medium dense</p> </div> </div>										
35													
40													
45													
50													
55													
60			- FILL/SPOIL -										

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 8

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, very loose to medium dense</p>									
65						16-6-6-4						
			- with trace coal fragments ( 67.0 - 69.0 ft. )			wot/12"-4-4						
			- with trace root fragments ( 69.0 - 71.0 ft. )			2-3-2-2						
70						12-6-4-6						
						wot/12"-4-6						
75						5-5-5-7						
						27-50/2"						
80						17-12-10-11						
			- with some slurry and weathered coal fragments ( 81.0 - 83.0 ft. )			7-8-9-13						
						wot/18"-5						
85						4-6-7-6						
			- with numerous sandstone fragments ( 85.0 - 87.0 ft. )			wot/24"						
			- with some weathered coal and shale fragments at 88.5 ft.									
			- SPOIL/FILL -									
90												

BORING C00553.GPJ 2/28/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 65 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 8

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: flex-start;"> <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></div> Split Spoon  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div> Shelby Tube  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background-color: black;"></div> Rock Core                 </div> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p>									
			<u>COAL</u>			50/3"						
95		[Wavy lines symbol]	Gray <u>CLAYEY SHALE</u> , very soft to soft, becoming sandier with depth  - very sandy ( 99.0 - 100.0 ft. )	91	51							
100			Bottom of Test Boring @ 100.0 ft.									
105												
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **12/19/00**  
 Date Boring Completed: **12/19/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 65 ft. during drilling operations.**



# LOG OF BORING NO. DHX- 9

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.0 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <p>☒ Split Spoon</p> <p>☒ Shelby Tube</p> <p>☐ Rock Core</p> </div> <div> <p><b>MATERIAL DESCRIPTION</b></p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp</p> <p style="text-align: center;">- wet @ 60 ft.</p> <p style="text-align: center;">- SPOIL/FILL -</p> </div> </div>										

BORING C00553.GPJ 2/28/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 9

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.0 feet</b> Split Spoon Shelby Tube Rock Core									
65			Brown and gray <u>CLAYEY SAND</u> with some sandstone fragments, damp,  - SPOIL/FILL -	65.0								
			Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with little sandstone fragments, damp, very dense  - boulders @ 67 ft. and 69 ft.			20-30-50/5"						
						49-50/4"						
						50/6"						
70			Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and friable - diagonal fracture (71.3' - 71.7')	70.6								
			- vertical fracture (73.7' - 74.0') and 79.2' - 79.5')	89	43							
			- shale band (81.8' - 83.0')									
			<u>COAL</u>	96	18							
85												
90												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX- 9

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.0 feet</b>									
			Split Spoon									
			Shelby Tube									
			Rock Core									
			<b>COAL</b>									
			92.5									
			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with increasing depth	97	54							
95												
				100	96							
100												
			103.9									
			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained									
105			105.0									
			Bottom of Test Boring @ 105.0 ft.									
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.0 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

# LOG OF BORING NO. DHX-10

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1055.3 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
1.5		☒	Coarse <u>COAL REFUSE</u>									
5		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp									
10		○										
15		○										
20		○										
25		○										
30		○	- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **106.7 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-10

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.3 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp										
40		○											
45		○	- SPOIL/FILL -	45.0									
45		⊗	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to very dense			8-5-6-11							
50		⊗				23-14-30-41							
50		⊗		50.9		38-34-42-55/5"							
55		⊗	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and friable			30-65-60-69							
55		⊗	- medium hard ( 54.4 - 57.8 ft. )			23-33-50/5"							
55		■	- gray, medium hard to hard from approximately 56 ft.	100	91								
60		■											

BORING C00553.GPJ 2/27/01

Completion Depth: **106.7 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

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# LOG OF BORING NO. DHX-10

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.3 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>□ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
65		⊗	<p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- with occasional carbonaceous laminations ( 61.1 - 62.2 ft. )</p> <p>- iron stained, weathered, medium hard ( 62.2 - 62.4 ft. )</p> <p>- iron stained ( 62.9 - 65.5 ft. )</p> <p>- weathered, medium hard ( 66.7 - 67.5 ft. )</p> <p>- with occasional coal spars ( 76.2 - 77.3 ft. )</p> <p>- fractured ( 76.4 - 76.7 ft. )</p> <p>- iron stained ( 80.3 - 84.7 ft. )</p>	100	81								
70		⊗											
75		⊗		100	92								
80		⊗											
85		⊗	84.7										
85		⊗	VOID  (Partially Filled)	32	29								
90		⊗											

BORING C00553.GPJ 2/28/01

Completion Depth: **106.7 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-10

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1055.3 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>Location: <b>See Drawing No. C00553-1</b></p> <p>Surface El.: <b>1055.3 feet</b></p> <p> <input type="checkbox"/> Split Spoon  <input type="checkbox"/> Shelby Tube  <input type="checkbox"/> Rock Core                 </p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
			VOID  (Partially Filled)										
95		95.1	Gray <u>SHALE</u> , soft to medium hard - clayey, soft ( 95.1 - 97.6 ft. ) - silty, medium hard ( 97.6 - 98.1 ft. ) - sandstone lens, medium hard ( 98.1 - 98.7 ft. ) - silty, medium hard ( 98.7 - 102.4 ft. )	61	5								
100		102.4	Gray <u>SANDSTONE</u> , medium hard to hard, fine grained	98	98								
105		106.7	Bottom of Test Boring @ 106.7 ft.										
110													
115													
120													

BORING C00553.GPJ 2/28/01

Completion Depth: **106.7 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/20/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

# LOG OF BORING NO. DHX-11

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1054.5 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>□ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
5		○	<p>Brown <u>CLAYEY SAND TO SANDY CLAY</u> with sandstone fragments, damp</p>										
10		○											
15		○											
20		○											
25		○											
30		○											

BORING C00553.GPJ 2/27/01

Completion Depth: **106.3 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/21/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

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# LOG OF BORING NO. DHX-11

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1054.5 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
35		○	Brown <u>CLAYEY SAND TO SANDY CLAY</u> with sandstone fragments, damp									
40		○										
45		○										
50		○										
52.0		○										
55		▧	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and friable - soft to medium hard ( 52.0 - 56.5 ft. )  - with occasional clay lenses, soft ( 56.7 - 57.2 ft. )  - fractured ( 57.5 - 57.7 ft. )									
57.5		▧										
60		▧			81	50						

BORING C00553.GPJ 2/27/01

Completion Depth: **106.3 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/21/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

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# LOG OF BORING NO. DHX-11

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 60%; text-align: center;"> <p><b>MATERIAL DESCRIPTION</b></p> </div> </div>											
65		⊗	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and friable - gray ( 66.3 - 66.9 ft. )  - gray shale lens ( 66.1 - 66.3 ft. )  - gray, medium hard to hard from 69 ft.	99	89								
70		⊗	- with occasional coal spars ( 72.9 - 78.8 ft. )										
75		⊗		99	94								
80		⊗											
85		⊗		90	75								
		⊗	85.7										
		⊗	Gray <u>SHALE</u> , soft to medium hard	87.1									
		⊗	<u>COAL</u>	100	0								
90		⊗											

BORING: C00553.GPJ 2/28/01

Completion Depth: **106.3 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/21/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-11

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1054.5 feet</b> Split Spoon Shelby Tube Rock Core									
			<b>COAL</b> - poor recovery due to inner barrel malfunction ( 91.3 - 97.0 ft. )	100	0							
95				32	0							
			96.3									
			<b>Gray SHALE</b> , soft to medium hard - clayey, soft ( 96.3 - 98.5 ft. )  - silty, medium hard ( 98.5 - 105.5 ft. )	99	99							
100												
			105.5									
105			<b>Gray SANDSTONE</b> with shale laminations, medium hard, fine to medium grained									
			106.3									
			Bottom of Test Boring @ 106.3 ft.									
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **106.3 feet**  
 Date Boring Started: **12/20/00**  
 Date Boring Completed: **12/21/00**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

# LOG OF BORING NO. DHX-12

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.5 feet</b> Split Spoon Shelby Tube Rock Core									
5		X	Coarse <u>COAL REFUSE</u>									
10		X										
15		X										
20		X										
25		X										
30		X										

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **1/4/01**  
 Date Boring Completed: **1/4/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-12

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> Split Spoon  <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div> Shelby Tube  <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px; background-color: black;"></div> Rock Core                 </div> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p>									
35			Coarse <u>COAL REFUSE</u>									
40												
45												
50												
			51.0			11-27-16-10						
			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, very dense			woh/18"-5						
55						3-5-10-9						
						8-14-20-13						
			- SPOIL/FILL -			9-9-11-26						
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **1/4/01**  
 Date Boring Completed: **1/4/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

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# LOG OF BORING NO. DHX-12

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.5 feet</b> ☒ Split Spoon ☐ Shelby Tube ■ Rock Core									
65	☒	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, very dense  - SPOIL/FILL -  - shelly tube (66.0' - 67.0') - interface between fill material and natural ground	66.5	90	4-25-20-15 18-11-23-19 20-35-44-47						
70	☒	○	Brown <u>CLAYEY SAND TO SANDY CLAY</u> with some sandstone fragments, damp, very dense - shelly tube (68.0' - 69.0') brown clayey sand to sandy clay with some sandstone fragments  - shelly tube (72.0' - 72.8') brown clayey sand to sandy clay with sandstone fragments			11-17-27-42	13	45	42			
75	☒	○	- gray at 74.0 ft.  - brown at 78.0 ft.  - shelly tube (80.0' - 80.5')		100	29-41-48-50/5" 31-26-46-48 20-22-27-36						
80	☒	○	- weathered shale at 82.0 ft.		60							
82.5	☒	○				21-50/5"						
85	■	■	<u>COAL</u>									
90	☒	○			89							

BORING C00553.GPJ 3/2/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **1/4/01**  
 Date Boring Completed: **1/4/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-12

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**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></div> Split Spoon  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div> Shelby Tube  <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px; background-color: black;"></div> Rock Core                 </div> <p style="text-align: center; margin-top: 10px;"><b>MATERIAL DESCRIPTION</b></p>									
		COAL										
92.3		[Wavy Line Symbol]	Gray <u>CLAY SHALE</u> , very soft to soft -becomes sandier and medium hard with depth	100	65							
100.0		[Wavy Line Symbol]	Bottom of Test Boring @ 100.0 ft.									
105												
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **100.0 feet**  
 Date Boring Started: **1/4/01**  
 Date Boring Completed: **1/4/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 60 ft. during drilling operations.**



# LOG OF BORING NO. DHX-13

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.1 feet</b> Split Spoon Shelby Tube Rock Core									
35		X	Coarse <u>COAL REFUSE</u>									
40		X										
45		X										
50		X										
55		X										
60		X	60.0									

BORING C00553.GPJ 2/27/01

Completion Depth: **105.5 feet**  
 Date Boring Started: **12/21/00**  
 Date Boring Completed: **1/3/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

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# LOG OF BORING NO. DHX-13

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1051.1 feet</b>												
		Split Spoon Shelby Tube Rock Core										
65			Brown <u>CLAYEY SAND</u> with sandstone fragments, wet, medium dense to dense  - with less clay and numerous sandstone fragments ( 64.0 - 66.0 ft. )			17-17-9-12						
						4-11-11-11						
						10-10-11-9						
						13-14-17-13						
70			- very wet at 70.0 ft.  - SPOIL/FILL -			10-8-8-11						
						WOH/18"-14-18						
						19-20-15-31						
75			Brown <u>CLAYEY SAND TO SANDY CLAY</u> with some sandstone fragments, damp, very dense - shelby tube (74.0' - 75.0') and (76.0' - 77.3')									
80						21-38-50/2"						
						38-41-43-48						
						31-32-30-50/6"						
85			- shelby tube (84.0' - 86.0') gray clayey sand with sandstone fragments									
						22-56-34-30						
						27-57-50/3"						
90			- sandstone boulder at 89.0 ft.									

BORING: C00553.GPJ 2/28/01

Completion Depth: **105.5 feet**  
 Date Boring Started: **12/21/00**  
 Date Boring Completed: **1/3/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

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# LOG OF BORING NO. DHX-13

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Legend:   Split Spoon   Shelby Tube   Rock Core</p>									
95	X	X	Brown <u>CLAYEY SAND TO SANDY CLAY</u> with some sandstone fragments, damp, very dense - sandstone boulder at 89.0 ft.	39	12	50-62-55-60 60/5"						
95.6												
100		W	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth	100	94							
102.0												
105		W	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained									
105.5												
110			Bottom of Test Boring @ 105.5 ft.									
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.5 feet**  
 Date Boring Started: **12/21/00**  
 Date Boring Completed: **1/3/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

# LOG OF BORING NO. DHX-14

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1054.4 feet</b> Split Spoon Shelby Tube Rock Core									
0.5			Coarse <u>COAL REFUSE</u>									
5			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp									
10			AUGER W/OUT SAMPLING									
15												
20												
25												
30												

BORING\_C00553.GPJ 2/28/01

Completion Depth: **102.4 feet**  
 Date Boring Started: **1/14/01**  
 Date Boring Completed: **1/14/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-14

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp										
40		○	AUGER W/OUT SAMPLING										
45		○											
50		○											
55		○											
56.0		○											
60		▣	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and friable										

BORING: C00553.GPJ 2/28/01

Completion Depth: **102.4 feet**  
 Date Boring Started: **1/14/01**  
 Date Boring Completed: **1/14/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-14

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Split Spoon  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Shelby Tube  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Rock Core                 </div> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p>									
		✓	Brown SANDSTONE, medium hard, medium grained, weathered and friable	100	30							
65		✓	- gray, medium hard to hard from 65 ft.	100	92							
70		✓										
75		✓	- with occasional coal spars ( 75.2 - 76.0 ft. )									
		✓	- iron-stained ( 77.8 - 80.2 ft. )	99	95							
80		✓										
		✓	84.3									
85		✓	<u>COAL</u>	98	44							
		✓	- gray shale lens, soft ( 84.3 - 85.3 ft. )									
90		✓										

BORING\_C00553.GPJ 2/28/01

Completion Depth: **102.4 feet**  
 Date Boring Started: **1/14/01**  
 Date Boring Completed: **1/14/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-14

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1054.4 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>COAL</b></p> <p>- gray shale lens, soft ( 91.9 - 92.4 ft. )</p>	100	0							
94.3			<p>Gray <b>SHALE</b>, soft to medium hard</p> <p>- clayey, soft ( 94.3 - 98.1 ft. )</p> <p>- silty, medium hard ( 98.1 - 101.1 ft. )</p>	98	65							
101.1			<p>Gray <b>SANDSTONE</b>, medium hard to hard, fine grained</p>	102.4								
			<p>Bottom of Test Boring @ 102.4 ft.</p>									

Completion Depth: **102.4 feet**  
 Date Boring Started: **1/14/01**  
 Date Boring Completed: **1/14/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

BORING\_C00553.GPJ 2/28/01

# LOG OF BORING NO. DHX-15

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1053.1 feet</b>												
			AUGER W/OUT SAMPLING									
5												
10												
15												
20												
25												
30												

BORING: C00553.GPJ 2/28/01

Completion Depth: **100.2 feet**  
 Date Boring Started: **1/9/01**  
 Date Boring Completed: **1/9/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Water was noted at a depth of 85 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-15

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1053.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;"><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
35		⊠	AUGER W/OUT SAMPLING										
40		⊠											
45		⊠											
50		⊠											
55		⊠											
60		⊠											

BORING\_C00553.GPJ 2/28/01

Completion Depth: **100.2 feet**  
 Date Boring Started: **1/9/01**  
 Date Boring Completed: **1/9/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-15



**Project Description:** Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: See Drawing No. C00553-1 Surface El.: 1053.1 feet									
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>☒ Split Spoon</p> <p>☒ Shelby Tube</p> <p>☐ Rock Core</p> </div> <div style="width: 80%;"> <p><b>MATERIAL DESCRIPTION</b></p> </div> </div>									
65			AUGER W/OUT SAMPLING									
70												
75			75.0									
			Gray <u>SANDSTONE</u> , hard, medium grained	98	98							
80												
85												
			87.1									
			<u>VOID</u>	46	44							
90												

BORING C00553.GPJ 2/28/01

Completion Depth: **100.2 feet**  
 Date Boring Started: **1/9/01**  
 Date Boring Completed: **1/9/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-15

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1053.1 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<u>VOID</u>									
95			- coal and mine rubble ( 96.1 - 97.1 ft. )									
		[Wavy Line Symbol]	Gray <u>CLAY SHALE</u> , very soft to soft	98	46							
100			Bottom of Test Boring @ 100.2 ft.									
105												
110												
115												
120												

BORING: C00553.GPJ 2/27/01

Completion Depth: **100.2 feet**  
 Date Boring Started: **1/9/01**  
 Date Boring Completed: **1/9/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85 ft. upon drilling completion.**

# LOG OF BORING NO. DHX-16

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1052.9 feet</b> Split Spoon Shelby Tube Rock Core									
5		X	AUGER W/OUT SAMPLING									
10		X										
15		X										
20		X										
25		X										
30		X										

BORING C00553.GPJ 2/28/01

Completion Depth: **95.1 feet**  
 Date Boring Started: **1/10/01**  
 Date Boring Completed: **1/10/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-16

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 80%;"> <p><b>MATERIAL DESCRIPTION</b></p> </div> </div>										
35		⊞	AUGER W/OUT SAMPLING										
40		⊞											
45		⊞											
50		⊞											
55		⊞											
60		⊞											

BORING C00553.GPJ 2/28/01

Completion Depth: **95.1 feet**  
 Date Boring Started: **1/10/01**  
 Date Boring Completed: **1/10/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-16

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>									
			AUGER W/OUT SAMPLING									
65				65.0								
			Gray SANDSTONE, medium hard to hard, medium grained									
			- brown, weathered and friable (65.0' - 69.9')	98	49							
70												
				100	99							
75												
				98	90							
80												
			Gray SHALE, soft	83.2								
85				84.9								
			COAL									
90												

BORING: C00553.GPJ 2/28/01

Completion Depth: **95.1 feet**  
 Date Boring Started: **1/10/01**  
 Date Boring Completed: **1/10/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 60 ft. during drilling operations.**

*Continued Next Page*

# LOG OF BORING NO. DHX-16

**Project Description: Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

triadeng.com



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit		
			<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"> <div style="border: 1px solid black; width: 10px; height: 10px; margin: 2px;"></div> </div> <div>Split Spoon</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"> <div style="border: 1px solid black; width: 10px; height: 10px; margin: 2px;"></div> </div> <div>Shelby Tube</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"> <div style="background-color: black; width: 10px; height: 10px; margin: 2px;"></div> </div> <div>Rock Core</div> </div>											
			<u>COAL</u>	100	1									
95.1														
95		▨	Gray <u>CLAY SHALE</u> , very soft	95.1										
			Bottom of Test Boring @ 95.1 ft.											
100														
105														
110														
115														
120														

BORING C00553.GPJ 2/27/01

Completion Depth: **95.1 feet**  
 Date Boring Started: **1/10/01**  
 Date Boring Completed: **1/10/01**  
 Engineer/Geologist: **JEN/CEM**  
 Project No.: **C00553**

**Remarks: Groundwater was first noted at a depth of 60 ft. during drilling operations.**

# LOG OF BORING NO. DHX-17

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.7 feet</b> Split Spoon Shelby Tube Rock Core									
			Coarse <u>COAL REFUSE</u> <span style="float: right;">0.5</span>									
5			Brown <u>CLAYEY SAND TO SANDY CLAY</u> with little sandstone fragments, damp, very dense  AUGER W/OUT SAMPLING									
10												
15												
20												
25												
30												

BORING C00553.GPJ 2/28/01

Completion Depth: **101.1 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/22/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-17

Project Description: **Big Branch Slurry Impoundment Investigation**  
**Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.7 feet</b> Split Spoon Shelby Tube Rock Core									
35		○	Brown <b>CLAYEY SAND TO SANDY CLAY</b> with little sandstone fragments, damp, very dense  AUGER W/OUT SAMPLING									
40												
43.0												
45		▧	Gray <b>SANDSTONE</b> , hard, fine to medium grained									
50			- with numerous carbonaceous laminations ( 50.4 - 51.3 ft. )  - iron stained, medium hard to hard ( 51.5 - 52.0 ft. )	75	53							
55				100	100							
60												

BORING C00553.GPJ 2/28/01

Completion Depth: **101.1 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/22/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-17

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.7 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p><b>MATERIAL DESCRIPTION</b></p> <p>Gray <u>SANDSTONE</u>, hard, fine to medium grained</p> <p>- iron-stained, medium hard to hard ( 61.4 - 66.4 ft. )</p> <p>- clayey shale lens, soft ( 62.6 - 62.7 ft. )</p> <p>- diagonal fracture ( 62.7 - 62.9 ft. )</p> <p>- diagonal fracture ( 63.1 - 63.6 ft. )</p> <p>- clayey shale lens, soft ( 63.3 - 63.5 ft. )</p> <p>- clayey shale lens, soft ( 65.3 - 66.1 ft. )</p>									
65				100	56							
70												
75				100	100							
80												
85				100	100							
90												

BORING C00553.GPJ 2/28/01

Completion Depth: **101.1 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/22/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

*Continued Next Page*

# LOG OF BORING NO. DHX-17

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.7 feet</b>			☒ Split Spoon ☒ Shelby Tube ☐ Rock Core									
			Gray SANDSTONE, hard, fine to medium grained	91.1	86	57						
-95			VOID - void sample (91.6' - 99.0') coal slurry with sand  0.7% gravel 22.2% sand 77.1% silt and clay									
-100				101.1								
			Bottom of Test Boring @ 101.1 ft.									
-105												
-110												
-115												
-120												

Completion Depth: **101.1 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/22/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks:

BORING C00553.GPJ 2/28/01

# LOG OF BORING NO. DHX-18

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.8 feet</b> Split Spoon Shelby Tube Rock Core									
			Coarse <u>COAL REFUSE</u> <span style="float: right;">0.5</span> Brown <u>CLAYEY SAND</u> with sandstone fragments  CASING ADVANCE W/OUT SAMPLING  Gray <u>SANDSTONE</u> , medium hard to hard <span style="float: right;">29.2</span>									

BORING C00553.GPJ 2/28/01

Completion Depth: **97.6 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/23/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85.2 ft. upon drilling completion.**

*Continued Next Page*



# LOG OF BORING NO. DHX-18

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**

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Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="display: flex; align-items: flex-start;"> <div style="width: 15%; text-align: center;">  Split Spoon   Shelby Tube   Rock Core                 </div> <div style="margin-left: 10px;"> <p><b>MATERIAL DESCRIPTION</b></p> <p>Gray <u>SANDSTONE</u>, medium hard to hard</p> </div> </div>										
65													
70													
75													
80													
85													
87.9			87.9										
90			VOID										

BORING C00553.GPJ 2/28/01

Completion Depth: **97.6 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/23/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85.2 ft. upon drilling completion.**

*Continued Next Page*

# LOG OF BORING NO. DHX-18

Project Description: **Big Branch Slurry Impoundment Investigation  
Martin County, Kentucky**



Depth, feet	Sample Type	Symbol / USCS	Location: <b>See Drawing No. C00553-1</b> Surface El.: <b>1056.8 feet</b>	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<b>MATERIAL DESCRIPTION</b>									
95	X		VOID - no recovery (88.3' - 90.3')  - silty sand and gravel (90.3' - 92.3')  - silty sand w/trace gravel (92.3' - 94.3')  - silty sand w/trace gravel (94.3' - 96.3')  - gravel (96.3' - 97.6')									
			Bottom of Test Boring @ 97.6 ft.	97.6								

BORING C00553.GPJ 2/28/01

Completion Depth: **97.6 feet**  
 Date Boring Started: **1/22/01**  
 Date Boring Completed: **1/23/01**  
 Engineer/Geologist: **JEN/JTS**  
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 85.2 ft. upon drilling completion.**

***APPENDIX A***

***LABORATORY TESTING***

**GRAIN SIZE DISTRIBUTION**

**TRIAXIAL SHEAR STRENGTH**

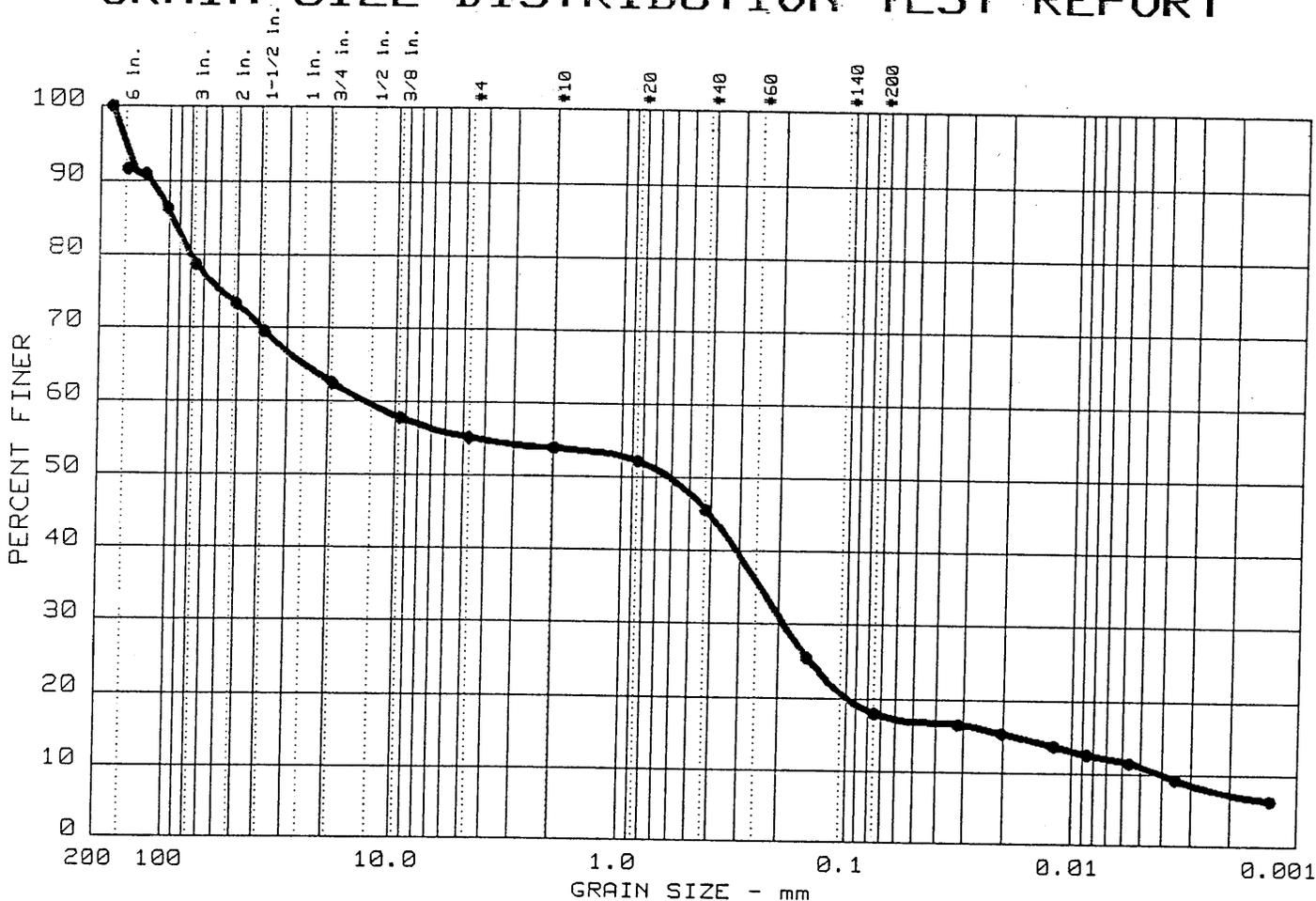
**PERMEABILITY**

**UNIAXIAL COMPRESSIVE STRENGTH**

**MODULUS OF RUPTURE**

***GRAIN SIZE DISTRIBUTION***

# GRAIN SIZE DISTRIBUTION TEST REPORT



	% +75 <sub>mm</sub>	% GRAVEL	% SAND	% SILT	% CLAY
●	21.3	23.5	37.1	6.9	11.2

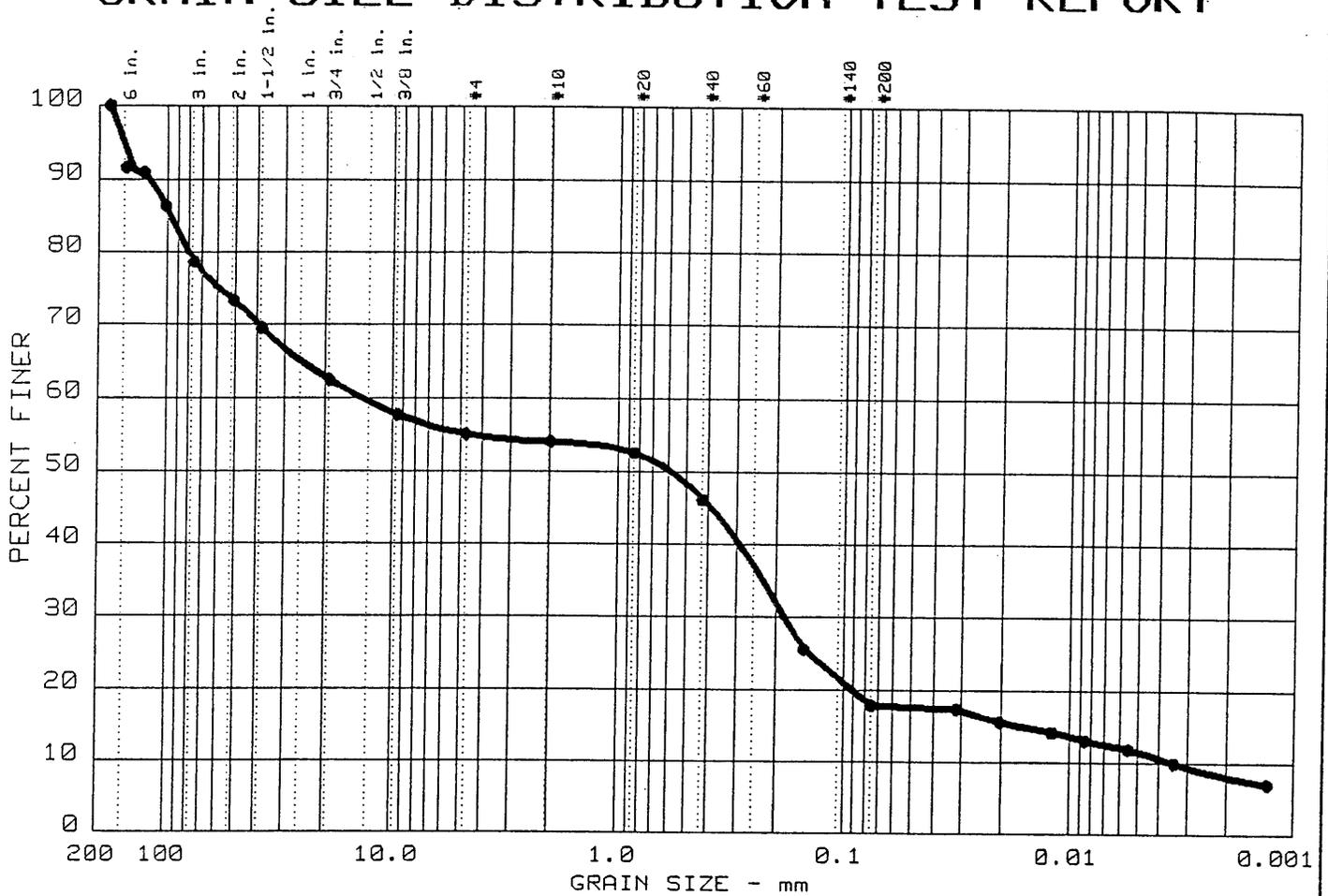
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NP	NP	96.61	13.34	0.60	0.191	0.0162	0.0039	0.69	3388.4

MATERIAL DESCRIPTION	USCS	AASHTO
● LT. BROWN SILTY SAND WITH ROCK FRAGMENTS	GM	A-1-b

Project No.: C00553  
 Project: BIG BRANCH SLURRY IMPOUNDMENT  
 ● Location: TP-1, S-1  
 Date: 03/01/01

Remarks:  
 Specific Gravity = 2.7  
 Figure No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +75 mm	% GRAVEL	% SAND	% SILT	% CLAY
21.3	23.5	37.2	6.3	11.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NP	NP	96.61	13.34	0.58	0.184	0.0144	0.0034	0.75	3944.6

MATERIAL DESCRIPTION	USCS	AASHTO
● LT. BROWN SILTY SAND WITH ROCK FRAGMENTS	GM	A-1-b

Project No.: C00553  
 Project: BIG BRANCH SLURRY IMPOUNDMENT  
 ● Location: TP-1, S-2  
 Date: 03/01/01

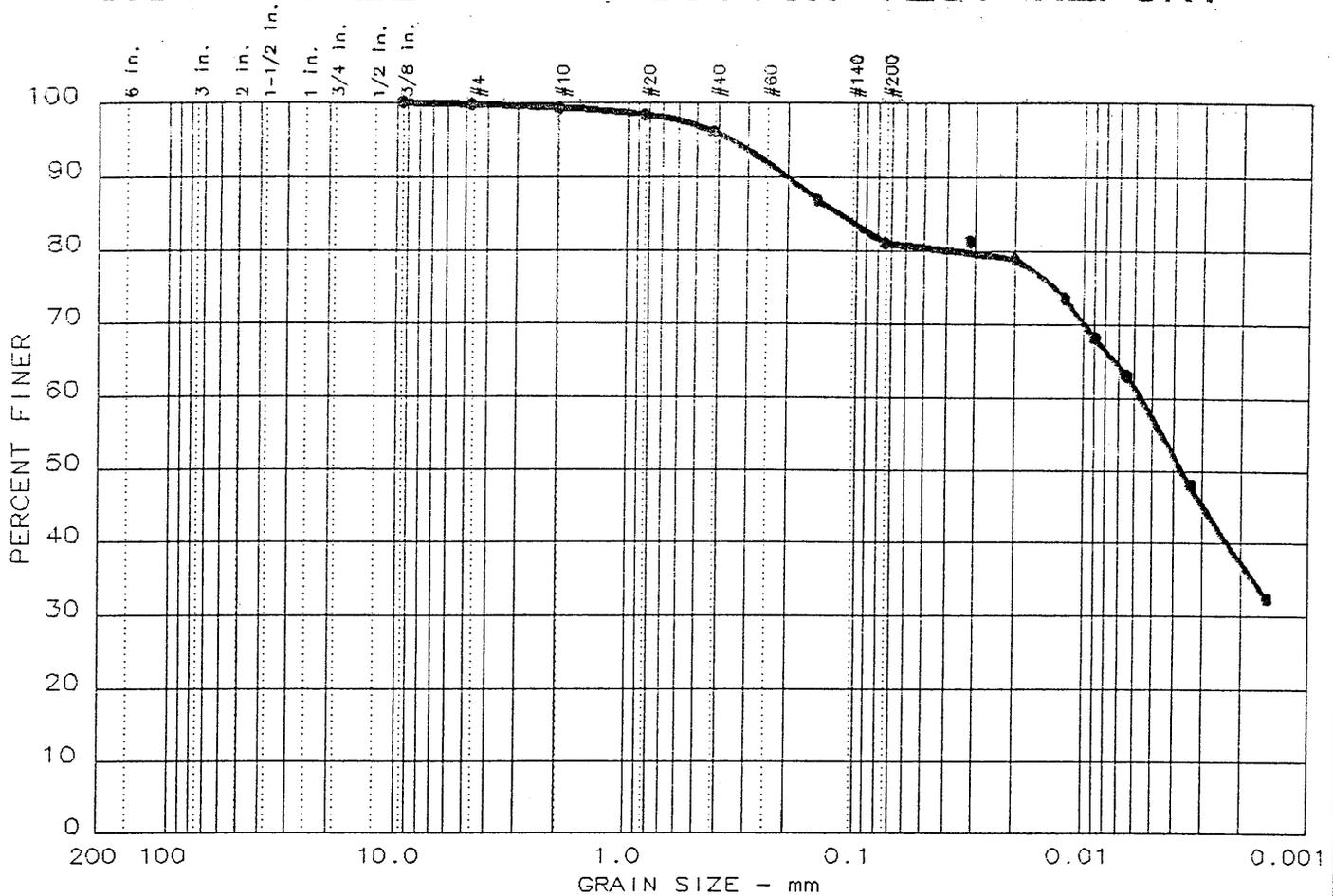
Remarks:  
 Specific Gravity = 2.7

GRAIN SIZE DISTRIBUTION TEST REPORT  
**TRIAD ENGINEERING, INC.**

Figure No. \_\_\_\_\_

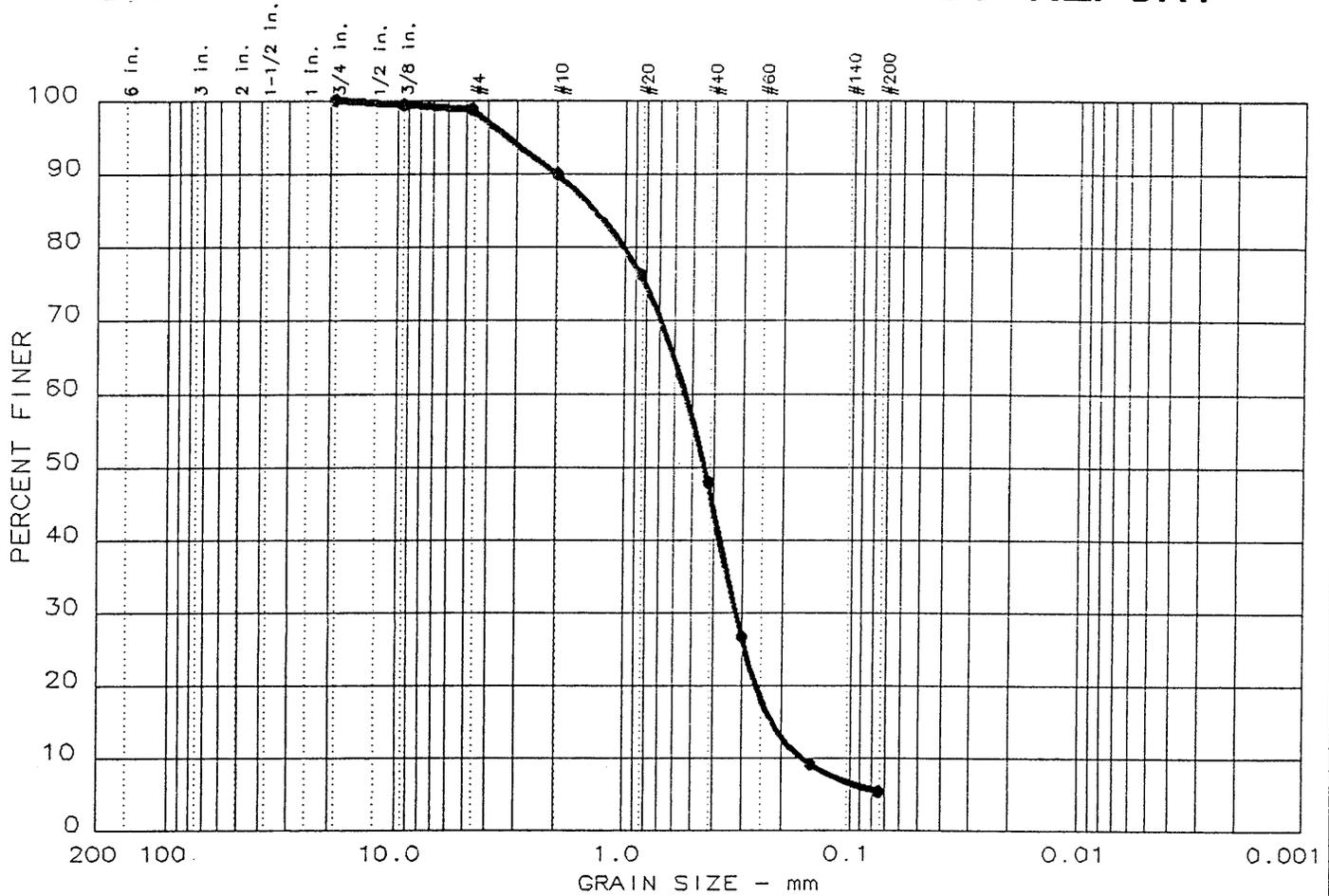


# GRAIN SIZE DISTRIBUTION TEST REPORT





# GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.3	93.3	5.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.35	0.53	0.44	0.318	0.2195	0.1627	1.16	3.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND WITH ROCK FRAGMENTS	SP-SM	A-1-b

Project No.: C00553  
 Project: BIG BRANCH SLURRY IMPOUNDMENT  
 ● Location: DH1-11, DEPTH: 92.6' - 96.2'

Date: 02/19/2001

GRAIN SIZE DISTRIBUTION TEST REPORT  
**TRIAD ENGINEERING, INC.**

Remarks:

Figure No. \_\_\_\_\_



# GRAIN SIZE DISTRIBUTION TEST REPORT

