

FIGURES

LOG OF BORING NO. DH1- 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.: 1052.4 feet	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				4-3-3						
15	●	X										
20	●	X	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense			7-4-3						
25	●	X	- more clayey (25.0' - 26.5')			3-5-9						
30	●	X	- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **96.8 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1- 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.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, loose to medium dense - w/few coal fragments (30.0' - 31.5')			5-6-15						
35	X	○	- wet @ 35 ft., w/some sub-angular sandstone and shale fragments (35.0' - 36.5')			5-5-6						
40	X	○				10-12-9						
45	X	○	- numerous sandstone fragments and some root traces			11-9-8						
50	X	○				2-3-3						
55	X	○	- brown sand lens (55.0' - 55.5')			10-9-7						
			- gray sandstone boulder (57.0' - 60.5')									
			- SPOIL/FILL -									
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **96.8 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1- 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.: 1052.4 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;">MATERIAL DESCRIPTION</p> </div> </div>										
			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, loose to medium dense - SPOIL/FILL -			50/2"							
65			65.0			10-14-19							
			Brown and gray <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp, dense to very dense										
70						19-21-21							
75						11-34-39							
80			81.0	50	0	50/1"							
			Brown <u>SANDSTONE</u> , medium hard, weathered, friable gray, fractured (82.5' - 83.6')										
			83.6										
			VOID (Partially Filled)										
				17	4								
90													

BORING C00553.GPJ 2/27/01

Completion Depth: **96.8 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1- 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.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
			VOID	91.5								
			<u>COAL</u> , broken	92.9								
95			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth	100	70							
			96.8									
			Bottom of Test Boring @ 96.8 ft.									
100												
105												
110												
115												
120												

BORING: C00553.GPJ 2/27/01

Completion Depth: **96.8 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

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

LOG OF BORING NO. DH1- 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.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: 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;">MATERIAL DESCRIPTION</p>									
		X	Coarse <u>COAL REFUSE</u>									
5		o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to very dense									
10		X				4-5-5						
15		X	- boulder (17.0' - 18.0')			4-4-4						
20		X				6-5-6						
25		X	- more clayey, with plant root traces (25.0' - 26.5')			3-5-5						
			- SPOIL/FILL -									
30			- boulder (29.5' - 30.5')									

BORING C00553.GPJ 2/27/01

Completion Depth: **101.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 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.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	○	Brown <u>CLAYEY SAND</u> with some sandstone fragments, damp, loose to very dense			29-5-4						
35	X	○	- boulder (35.0' - 36.0')			50/5"						
			- boulder (38.5' - 39.2')									
40	X	○	- very clayey, w/possible slurry laminations (40.0' - 41.5')			7-10-40						
			- possible slurry laminations (46.0' - 46.5')									
45	X	○				21-25-38						
			- wet, w/possible slurry fines @ 50.0 ft.									
			- SPOIL/FILL -									
50	X	○				16-12-11						
55	X	○				24-12-28						
			Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, wet, very dense									
			55.0									
60												

BORING C00553.GPJ 2/28/01

Completion Depth: **101.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 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.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	□	Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, wet, very dense			12-25-39						
65	X	□				30-50/4"						
			Brown <u>SANDSTONE</u> , medium hard, fine to medium grained, weathered, friable									
70	X	□		75	48	50/3"						
			- gray and brown with occasional carbonaceous laminations (74.1' - 83.4')									
75				100	78							
80												
85			VOID (Partially Filled)									
90				26	23							

BORING C00553.GPJ 2/28/01

Completion Depth: **101.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 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.: 1052.4 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: 30%;"> <p> Split Spoon Shelby Tube Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 65%; text-align: center;"> <p>VOID</p> <p>(Partially Filled)</p> </div> </div>										
95			<p>Gray CLAY SHALE, very soft to soft, becoming sandier and medium hard with depth</p>	94.4									
100			<p>Gray SANDSTONE with shale laminations, medium hard to hard, fine grained</p>	97.5	98	98							
101.9			<p>Bottom of Test Boring @ 101.9 ft.</p>										

BORING C00553.GPJ 2/27/01

Completion Depth: **101.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

LOG OF BORING NO. DH1-3

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.: 1055.6 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> X Split Spoon X Shelby Tube █ Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 65%;"> <p>Coarse <u>COAL REFUSE</u></p> <p style="text-align: right;">2.0</p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense</p> <p style="text-align: center;">- trace coal fragments (15.0' - 16.5')</p> <p style="text-align: center;">-SPOIL/FILL-</p> </div> </div>										
5													
10						6-6-9							
15						5-4-2							
20						3-5-6							
25						6-4-4							
30													

BORING C00553.GPJ 2/27/01

Completion Depth: **106.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/5/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 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.: 1055.6 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;">MATERIAL DESCRIPTION</p> </div> </div>										
	⊗	o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense - SPOIL/FILL -			12-5-15							
35	⊗	o	Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, moist, medium dense	35.0		16-24-23							
40	⊗	o	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered, friable	40.5		17-50/5"							
45	▬	▬	- gray, medium hard to hard from 43.4 ft. - occasional carbonaceous laminations (46.9' - 54.6')	95	71	50/0"							
50	▬	▬	- occasional iron stains ((53.8' - 55.7'))										
55	▬	▬		100	94								
60	▬	▬											

BORING: C00553.GPJ 2/27/01

Completion Depth: **106.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/5/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 3

**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.: 1055.6 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;">MATERIAL DESCRIPTION</p> </div> </div>										
65		/	<p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- iron-stained horizontal fracture @ 66.0 ft.</p> <p>- brown w/some iron-staining (68.9' - 70.1') and (70.6' - 71.1')</p>	99	85								
70		/											
75		/		100	95								
80		/	<p>- modulus of rupture (84.2' - 85.0') - 485 psi (85.4' - 86.0') - 346 psi</p> <p>- unconfined compressive strength (83.9' - 84.2') - 6,100 psi (85.0' - 85.4') - 5,464 psi</p> <p>- iron-stained @ 87.5 ft.</p>										
85		/		55	50								
87.6		/	VOID										
90		/											

BORING_C00553.GPJ 3/2/01

Completion Depth: **106.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/5/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: Groundwater was first noted at a depth of 40.0 ft. during drilling operations.

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LOG OF BORING NO. DH1- 3

**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.: 1055.6 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%; text-align: center;"> <p>MATERIAL DESCRIPTION</p> </div> </div>									
			VOID									
		⊠	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained, iron-stained	91.5								
95				95.4	70	56						
			VOID									
				97.4								
100		⊠	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth		76	64						
				103.5								
105		⊠	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained		100	100						
				106.9								
			Bottom of Test Boring @ 106.9 ft.									
110												
115												
120												

BORING: C00553.GPJ 2/27/01

Completion Depth: **106.9 feet**
 Date Boring Started: **12/4/00**
 Date Boring Completed: **12/5/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

LOG OF BORING NO. DH1-4

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.9 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 Shelby Tube Rock Core </p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
		XXXXXX	Coarse <u>COAL REFUSE</u>										
2.0			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense										
5													
10		XXXXXX	- trace coal and organic fragments (10.0' - 11.5')			6-5-8							
15		XXXXXX	- mostly sandstone fragments (15.0' - 16.5')			14-12-6							
20		XXXXXX				4-3-4							
25		XXXXXX				4-5-5							
30			- SPOIL/FILL - - brown and gray, with trace coal, wood fragments, possible slurry fines (30.0' - 31.5')										

BORING C00553.GPJ 2/27/01

Completion Depth: **106.7 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 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. DH1- 4

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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.: 1054.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense			13-8-7						
35	X	○	- few wood fragments (35.0' - 36.5')			6-7-7						
40	X	○	- brown and gray w/trace wood fragments (40.0' - 41.5')			5-6-6						
			- SPOIL/FILL -									
45	X	○		45.0								
	X	○	Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, damp, very dense			31-38-42						
50	X	○		50.3		50/4"						
	█	▨	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained	100	0							
			- coal band (50.3' - 50.7')									
55			- iron-stained, w/occasional carbonaceous laminations (50.7' - 51.0')	99	84							
			- iron-stained (53.2' - 53.5') and (54.0' - 57.0')									
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **106.7 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 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. DH1- 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.: 1054.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- iron-stained, w/occasional carbonaceous inclusions (63.4' - 68.0')</p> <p>- weathered, w/numerous diagonal fractures (65.8' - 67.4')</p> <p>- unconfined compressive strength (78.9' - 79.3') - 4,950 psi (83.2' - 83.8') - 3,291 psi</p> <p>- modulus of rupture (78.0' - 78.7') - 280 psi (84.0' - 84.5') - 388 psi</p> <p>- vertical fracture w/iron stain (81.7' - 83.2') and (84.5' - 85.5')</p>									
65				100	69							
70												
75				100	100							
80												
85			85.5									
			VOID (Partially Filled)	47	21							

BORING: C00553.GPJ 3/7/01

Completion Depth: **106.7 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 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. DH1- 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.: 1054.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
			VOID									
		☒	Gray <u>SHALEY SANDSTONE</u>	91.1								
				91.8								
			VOID (Partially Filled)									
95				12	0							
				96.2								
		☒	Gray <u>SANDSTONE</u>	96.7								
				0	0							
			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth									
100				93	89							
				103.9								
		☒	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine grained									
105				100	100							
				106.7								
			Bottom of Test Boring @ 106.7 ft.									
110												
115												
120												

BORING C00553.GPJ 3/7/01

Completion Depth: **106.7 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 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. DH1- 5

**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="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;">MATERIAL DESCRIPTION</p> </div> </div>										
		⊗	Coarse <u>COAL REFUSE</u>										
		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to dense										
5		○											
10		⊗				6-5-7							
15		⊗	- mostly sandstone fragments (15.0' - 16.5')			5-7-6							
20		⊗	- more clayey (20.0' - 26.5')			4-4-4							
25		⊗	- root and plant traces (25.0' - 26.5')			11-8-4							
30		○	- wet @ 30.0 ft.										
			- SPOIL/FILL										

BORING C00553.GPJ 2/27/01

Completion Depth: **109.3 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 31.5 ft. during drilling operations.**

Continued Next Page

LOG OF BORING NO. DH1- 5

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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.: 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: 40%;"> <p>⊗ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 55%; text-align: center;"> <p>MATERIAL DESCRIPTION</p> </div> </div>										
35	⊗	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to dense - boulder (31.5' - 33.0')			16-13-36							
40	⊗	○	- trace coal fragments (40.0' - 41.0') - boulder (41.0' - 43.5')			6-5-25							
45	⊗	○	- SPOIL/FILL -			1-11-50/5"							
45.0			45.0			11-50/3"							
50	⊗	○	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense			17-20-21							
55	⊗	○	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered, friable			50/3"							
55.0			55.0										
60													

BORING C00553.GPJ 2/27/01

Completion Depth: **109.3 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: Groundwater was first noted at a depth of 31.5 ft. during drilling operations.

Continued Next Page

LOG OF BORING NO. DH1- 5

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;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center;">MATERIAL DESCRIPTION</p>									
		✓	Brown SANDSTONE, medium hard, medium grained, weathered, friable	100	100	50/3"						
		✓	- gray, medium hard to hard from 60.6 ft.									
65		✓	- diagonal fracture @ 65.2 ft.									
		✓	- vertical fracture (66.6' - 66.9')	99	74							
70		✓	- occasional carbonaceous inclusions (67.5' - 86.1')									
		✓										
75		✓										
		✓										
80		✓	- modulus of rupture (82.0' - 82.5') - 249 psi (84.0' - 84.6') - 275 psi									
		✓										
85		✓	- unconfined compressive strength (83.2' - 83.7') - 5,920 psi (84.6' - 85.1') - 4,230 psi									
		✓	- sandy shale band (85.4' - 86.1')									
			VOID									
			- void sample (87.3' - 90.6') brown sand and gravel	31	30							

BORING C00553.GPJ 3/2/01

Completion Depth: **109.3 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: Groundwater was first noted at a depth of 31.5 ft. during drilling operations.

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LOG OF BORING NO. DH1-5

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.: 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 Shelby Tube Rock Core </p> </div> <div style="width: 75%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
95			VOID (Partially Filled)										
		[Wavy pattern]	96.4										
100		[Wavy pattern]	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth	50	34								
		[Wavy pattern]	103.6										
105		[Diagonal lines]	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained	100	100								
		[Diagonal lines]	109.3										
110			Bottom of Test Boring @ 109.3 ft.										
115													
120													

BORING C00553.GPJ 2/27/01

Completion Depth: **109.3 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 31.5 ft. during drilling operations.**

LOG OF BORING NO. DH1- 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.: 1051.4 feet	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										
30		X										

BORING C00553.GPJ 2/27/01

Completion Depth: **99.8 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

Continued Next Page

LOG OF BORING NO. DH1- 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.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>☒ Split Spoon ☒ Shelby Tube ☐ Rock Core</p>									
			Coarse <u>COAL REFUSE</u>									
35				35.0								
			Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to dense			8-8-11						
40			- wet @ 40.0 ft.									
			- shelly tube (40.0' - 42.0') brown and gray silty to clayey sand with sandstone fragments	75			17	46	37			
45												
			- shelly tube (45.0' - 46.0') large sandstone fragment with some silty sand	80								
50												
			- mostly sandstone fragments (50.0' - 61.5')			8-8-10						
55												
						11-25-24						
60			- SPOIL/FILL -									

BORING C00553.GPJ 3/2/01

Completion Depth: **99.8 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

Continued Next Page

LOG OF BORING NO. DH1- 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.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	○	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, loose to medium dense			9-10-11						
65	X	○	- trace coal fragments (60.0' - 61.5')			12-18-14						
			- SPOIL/FILL -									
70	X	○										
			70.0									
	X	○	Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, damp, dense to very dense			19-25-26						
75	X	○				24-49-50/6"						
80	X	○				35-36-24						
85	X	○				9-15-19-27						
			88.3			20-40-50/3"						
90	■	■	<u>COAL SLURRY</u>									

BORING C00553.GPJ 3/2/01

Completion Depth: **99.8 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

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LOG OF BORING NO. DH1- 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.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></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; border-style: dashed; margin-right: 5px;"></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> <div>Rock Core</div> </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
90.2		[Symbol]	<u>COAL</u>	98	45							
90.9		[Symbol]	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth									
95		[Symbol]										
98.1		[Symbol]		100	42							
99.8		[Symbol]	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained									
100		[Symbol]	Bottom of Test Boring @ 99.8 ft.									
105		[Symbol]										
110		[Symbol]										
115		[Symbol]										
120		[Symbol]										

BORING C00553.GPJ 2/27/01

Completion Depth: **99.8 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/8/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40.0 ft. during drilling operations.**

LOG OF BORING NO. DH1-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 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>MATERIAL DESCRIPTION</p> </div> </div>										
5			Coarse <u>COAL REFUSE</u>										
10													
15													
20													
25													
30													

BORING C00553.GPJ 2/27/01

Completion Depth: **100.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Coarse <u>COAL REFUSE</u></p> <p style="text-align: right;">32.0</p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to very dense</p>									
35	X					14-8-5						
40	X					8-7-6						
45	X		- very clayey (45.0 - 51.5 ft.)			4-4-4						
50	X		- with some plant roots (50.0 - 51.5 ft.)			4-4-5						
55	X		- wet @ 55.0 ft.			14-24-26						
			- mostly sandstone fragments (55.0 - 56.5 ft.)									
			- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **100.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 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;">MATERIAL DESCRIPTION</p> </div> </div>										
		o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to very dense			5-13-11							
			- SPOIL/FILL -										
65		o	Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, damp, dense to very dense			8-15-16							
			- boulder @ 73.7 ft.										
70		o				19-22-27-40							
						21-26-64-50/2"							
75		■		21	0								
80		■		14	0								
85		■											
			<u>COAL</u>	94	0								
90													

Completion Depth: **100.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH1-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
		☒	Split Spoon									
		☒	Shelby Tube									
		☐	Rock Core									
			<u>COAL</u>									
			92.0									
95		☒	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth	100	68							
			99.5									
100		☒	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine grained									
			100.4									
			Bottom of Test Boring @ 100.4 ft.									
105												
110												
115												
120												

BORING C00553.GPJ 2/28/01

Completion Depth: **100.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 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. DH1- 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.: 1053.2 feet	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>									
		o	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, dense to very dense									
5.0												
30			- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**
 Date Boring Started: **12/11/00**
 Date Boring Completed: **12/11/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 82.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 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.: 1053.2 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: 20%;"> <p> X Split Spoon X Shelby Tube Rock Core </p> </div> <div style="width: 80%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, dense to very dense										
40		○											
45		○											
50	X	○				17-15-23							
55	X	○	- SPOIL/FILL -										
55		○	55.0			26-50/1"							
60		○	Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp, very dense										

BORING C00553.GPJ 2/27/01

Completion Depth: **105.1 feet**
 Date Boring Started: **12/11/00**
 Date Boring Completed: **12/11/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 82.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 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.: 1053.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
	X	□	Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, damp, very dense MATERIAL DESCRIPTION			28-26-32							
65				65.0			50/2"						
		□	Brown <u>SANDSTONE</u> , medium hard, medium to coarse grained, weathered, friable - high angle fracture (67.0 - 67.6 ft.) - with occasional diagonal fractures (67.6 - 68.7 ft.) - gray (67.6 - 84.2 ft.) - modulus of rupture (79.5' - 80.1') - 344 psi (83.0' - 83.8') - 398 psi - unconfined compressive strength (81.2' - 81.7') - 5,700 psi (82.6' - 83.0') - 4,125 psi - void (84.0 - 84.2 ft.) - gray shale (84.2 - 85.0 ft.)	92	73								
70				102	89								
75													
80				85.0									
			VOID										
			- void sample (85.0' - 91.4') brown sand and gravel										
85													
90													

BORING_C00553.GPJ 3/2/01

Completion Depth: **105.1 feet**
 Date Boring Started: **12/11/00**
 Date Boring Completed: **12/11/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 82.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 8

**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.: 1053.2 feet Split Spoon Shelby Tube Rock Core												
95			VOID (filled w/sand and gravel)	100	90							
		95.3										
100			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth									
		104.3		100	94							
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 2/27/01

Completion Depth: **105.1 feet**
 Date Boring Started: **12/11/00**
 Date Boring Completed: **12/11/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 82.0 ft. upon drilling completion.**

LOG OF BORING NO. DH1- 9

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.: 1051.1 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; margin-right: 5px;"> </div> <div> <p>MATERIAL DESCRIPTION</p> <p style="margin-top: 20px;">Coarse <u>COAL REFUSE</u></p> </div> </div>									
5												
10												
15												
20												
25												
30												

BORING C00553.GPJ 2/27/01

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

Remarks: **Water was noted at a depth of 29.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 9

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> Split Spoon Shelby Tube Rock Core </p> <p align="center">MATERIAL DESCRIPTION</p>									
35			Coarse <u>COAL REFUSE</u>									
40												
45												
50			- wet @ 50.0 ft.									
55												
55.0			Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, medium dense to very dense									
			- SPOIL/FILL -									
60												

BORING C00553.GPJ 2/27/01

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

Remarks: **Water was noted at a depth of 29.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 9

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	
			<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p> X Split Spoon X Shelby Tube █ Rock Core </p> </div> <div style="width: 80%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
65	X	○	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, medium dense to very dense - boulder @ 66.0 ft. - mostly brown @ 68 ft., w/trace coal fragments			15-11-16-18 14-21-18-16 16-15-14-15 50/3"							
70	X	○	- w/trace wood fragments (70.0' - 74.0') - SPOIL/FILL -			37-15-47-24 9-18-14-37 10-17-28-50/3"							
74.0			74.0										
75	X	○	Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp, very dense			35-39-46-42 24-38-39-50/5"							
80	X	○	- boulder @ 82 ft.			16-27-44-42 31-36-55-54 50-82/6"							
85	█	█		10	0								

BORING C00553.GPJ 2/27/01

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

Remarks: **Water was noted at a depth of 29.0 ft. upon drilling completion.**

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LOG OF BORING NO. DH1- 9

**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.: 1051.1 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="margin-right: 10px;"> <p>☒ Split Spoon</p> <p>☒ Shelby Tube</p> <p>☐ Rock Core</p> </div> <p>MATERIAL DESCRIPTION</p> </div>									
92.5		92.5	Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments, damp to wet, very dense - trace coal fragments @ 92 ft.	56	0							
95		95	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth									
100		100		101	91							
101.0		101.0	Gray <u>SANDSTONE</u> with shale laminations, medium hard to hard, fine to medium grained									
104.8		104.8	Bottom of Test Boring @ 104.8 ft.									

BORING C00553.GPJ 2/27/01

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

Remarks: **Water was noted at a depth of 29.0 ft. upon drilling completion.**

LOG OF BORING NO. DH1-10

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.: 1052.1 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: 30%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>⊠ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
5		⊠	Coarse <u>COAL REFUSE</u>										
10		⊠											
15		⊠											
17.0		○											
20		○	Brown and gray <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: **109.9 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/13/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1-10

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p>									
35												
40												
45						29-13-12						
50			- wet @ 50.0 ft.			6-7-7						
55						15-13-13						
60			- SPOIL/FILL -									

BORING C00553.GPJ 2/28/01

Completion Depth: **109.9 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/13/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1-10

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
	X	o	Brown and gray <u>CLAYEY SAND</u> with some sandstone fragments, damp to wet, medium dense to dense - SPOIL/FILL -			18-19-25						
65	X	o	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to very dense	65.0		13-20-31						
70	X	o				23-36-47-28						
75	X	o				18-15-10-11						
77	X	o				12-17-9-9						
77.0	X	o				20-16-50/4"						
80	X	o	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered, friable			50/1"						
80.6	X	o		88	33							
			VOID									
85			- void sample (80.6' - 85.7') brown silty sand with rock fragments 7.2% gravel 82.6% sand 10.2% silt and clay	15	0							
90												

BORING C00553.GPJ 2/27/01

Completion Depth: **109.9 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/13/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH1-10

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.: 1052.1 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
		Split Spoon Shelby Tube Rock Core	MATERIAL DESCRIPTION									
			SANDSTONE BOULDER	90.3 91.3	37	7						
			VOID	94.4								
95			Gray CLAY SHALE , very soft to soft, becoming sandier and medium hard with depth									
100				100	80							
105			Gray SANDSTONE with shale laminations, medium hard, fine grained	104.9								
				100	94							
110			Bottom of Test Boring @ 109.9 ft.	109.9								
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **109.9 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/13/00**
 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. DH1-11

**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.: 1057.8 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: 40%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>■ Rock Core</p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 55%;"> <p>Coarse <u>COAL REFUSE</u> 0.5</p> <p>Brown <u>CLAYEY SAND</u> with some sandstone fragments, damp</p> <p style="text-align: center;">AUGER W/OUT SAMPLING</p> </div> </div>										
5													
10													
15													
20													
25													
30			26.0										
			Gray <u>SANDSTONE</u> , medium hard to hard, medium grained										

BORING C00553.GPJ 2/28/01

Completion Depth: **111.0 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/14/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 86.5 ft. upon drilling completion.**

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LOG OF BORING NO. DH1-11

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.: 1057.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- weathered, soft to medium hard (26.0' - 32.0')</p> <p>- occasional coal laminations (34.8' - 38.4')</p> <p>- occasional shale clasts (35.5' - 39.0')</p> <p>- iron-stained (48.2' - 51.1')</p> <p>- vertical fracture (50.3' - 51.0')</p> <p>- occasional carbonaceous laminations (52.1' - 59.1')</p>									
35				100	68							
40												
45				97	90							
50												
55				97	87							
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **111.0 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/14/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 86.5 ft. upon drilling completion.**

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LOG OF BORING NO. DH1-11

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.: 1057.8 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: 40%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 55%; text-align: center;"> <p>MATERIAL DESCRIPTION</p> </div> </div>										
65		⊠	<p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- fractured (66.1' - 66.5')</p>	100	91								
70		⊠	<p>- occasional carbonaceous laminations (69.1' - 90.4')</p>										
75		⊠		100	92								
80		⊠											
85		⊠	<p>- iron-stained (83.6' - 86.0')</p>	89	89								
90		⊠											

BORING C00553.GPJ 2/27/01

Completion Depth: **111.0 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/14/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 86.5 ft. upon drilling completion.**

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LOG OF BORING NO. DH1-11

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1057.8 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
90.4		▽	VOID									
95			- void sample (92.6' - 96.2') brown silty sand with rock fragments	0	0							
			1.3% gravel 93.3% sand 5.4% silt and clay									
100			- void sample (96.1' - 97.1') gray silty sand with rock fragments									
			15.8% gravel 55.0% sand 29.2% silt and clay									
100.5		/ / / / /	Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth	0	0							
105				100	92							
106.3		/ / / / /	Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained									
110				100	60							
111.0			Bottom of Test Boring @ 111.0 ft.									

BORING_C00553.GPJ 2/28/01

Completion Depth: **111.0 feet**
 Date Boring Started: **12/13/00**
 Date Boring Completed: **12/14/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 86.5 ft. upon drilling completion.**

LOG OF BORING NO. DH1-12

**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: See Drawing No. C00553-1 Surface El.: 1056.2 feet Split Spoon Shelby Tube Rock Core									
			Coarse <u>COAL REFUSE</u> 1.0									
			Brown <u>CLAYEY SAND</u> with some sandstone fragments, damp									
5			AUGER W/OUT SAMPLING									
10												
15												
20												
25												
30												

BORING C00553.GPJ 2/28/01

Completion Depth: **99.4 feet**
 Date Boring Started: **1/4/01**
 Date Boring Completed: **1/4/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

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LOG OF BORING NO. DH1-12

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
		o	Brown <u>CLAYEY SAND</u> with some sandstone fragments, damp		32.0							
35		/	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered and iron-stained	100	28							
			- gray, medium hard to hard from approx. 37 ft.									
40			- clay lens @ 37.8 ft.	100	68							
45				100	86							
50			- numerous carbonaceous laminations (49.7' - 54.0')									
55				98	92							
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **99.4 feet**
 Date Boring Started: **1/4/01**
 Date Boring Completed: **1/4/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

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LOG OF BORING NO. DH1-12

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.: 1056.2 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>Location: See Drawing No. C00553-1 Surface El.: 1056.2 feet</p> <p> Split Spoon Shelby Tube Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 55%;"> <p>Gray <u>SANDSTONE</u>, medium hard to hard, medium grained</p> <p>- iron-stained vertical fracture @ 65.3 ft.</p> <p>- fractured, w/occasional shale clasts (66.6' - 67.6')</p> <p>- carbonaceous laminations (68.1' - 69.1')</p> <p>- vertical fracture (72.3' - 72.7')</p> </div> </div>										
65				100	56								
70													
75				100	96								
80													
85				93	93								
89.1													

BORING C00553.GPJ 2/27/01

Completion Depth: **99.4 feet**
 Date Boring Started: **1/4/01**
 Date Boring Completed: **1/4/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

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LOG OF BORING NO. DH1-12

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1056.2 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: 30%;"> <p> Split Spoon</p> <p> Shelby Tube</p> <p> Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>											
-95			VOID										
			- void sample (89.4' - 99.4') brown silty sand with rock fragments, trace coal slurry 39.3% gravel; 35.8% sand; 24.9% silt and clay	13	0								
			- void sample (93.7' - 96.0') - brown silty sand with rock fragments 42.7% gravel; 37.2% sand; 20.1% silt and clay										
			99.2										
-100			Gray CLAY SHALE , very soft										
			99.4										
			Bottom of Test Boring @ 99.4 ft.										
-105													
-110													
-115													
-120													

BORING C00553.GPJ 2/28/01

Completion Depth: **99.4 feet**
 Date Boring Started: **1/4/01**
 Date Boring Completed: **1/4/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

LOG OF BORING NO. DH1-13

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.: 1054.0 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; margin-right: 5px;"> Split Spoon Shelby Tube Rock Core </div> <div> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
		X	Coarse <u>COAL REFUSE</u>	0.0									
5		O	Brown <u>CLAYEY SAND</u> with sandstone fragments	5.0									
10		O	CASING ADVANCE W/OUT SAMPLING										
15		O											
20		O											
25		O											
30		O	- SPOIL/FILL -										

BORING C00553.GPJ 2/27/01

Completion Depth: **96.0 feet**
 Date Boring Started: **1/10/01**
 Date Boring Completed: **1/11/01**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 78.4 ft. upon drilling completion.**

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LOG OF BORING NO. DH1-13

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	
		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>Location: See Drawing No. C00553-1</p> <p>Surface El.: 1054.0 feet</p> <p> Split Spoon Shelby Tube Rock Core </p> </div> <div style="width: 55%; text-align: center;"> <p>MATERIAL DESCRIPTION</p> </div> </div>											
35		○	Brown <u>CLAYEY SAND</u> with sandstone fragments										
40		○	CASING ADVANCE W/OUT SAMPLING										
45		○	- SPOIL/FILL -										
50		○	Brown <u>CLAYEY SAND to SANDY CLAY</u> with some sandstone fragments										
55		○											
60		○											

BORING C00553.GPJ 2/27/01

Completion Depth: **96.0 feet**
 Date Boring Started: **1/10/01**
 Date Boring Completed: **1/11/01**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 78.4 ft. upon drilling completion.**

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LOG OF BORING NO. DH1-13

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: See Drawing No. C00553-1 Surface El.: 1054.0 feet Legend: ☒ Split Spoon ⊠ Shelby Tube ◻ Rock Core									
			Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with sandstone fragments <div style="text-align: right;">63.0</div>									
65			Gray <u>SANDSTONE</u> , hard, medium grained CASING ADVANCE W/OUT SAMPLING									
70												
75												
80												
85			VOID <div style="text-align: right;">85.5</div>	0		WOT/1.5' - 4'						
			- trace sand recovered (85.7' - 87.7') - brown and gray silty sand with some gravel, trace roots (87.7' - 89.7')	30		94/2'	34	43	24			
90												
Completion Depth: 96.0 feet Date Boring Started: 1/10/01 Date Boring Completed: 1/11/01 Engineer/Geologist: JEN/CEM Project No.: C00553				Remarks: Water was noted at a depth of 78.4 ft. upon drilling completion.								

BORING C00553.GPJ 2/28/01

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LOG OF BORING NO. DH1-13

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
	X		VOID	25		160/2'	29	61	10			
	X		- less clayey, w/ cobble size sandstone fragments (89.7' - 91.7')	15		18/2'	47	35	18			
	X		- sand, gravel, and cobbles (91.7' - 95.6')	52		67/2.3'	43	37	20			
95	X	M	95.6 Gray <u>CLAY SHALE</u> , very soft to soft									
			96.0 Bottom of Test Boring @ 96.0 ft.									
100												
105												
110												
115												
120												

BORING: C00553.GPJ 3/2/01

Completion Depth: **96.0 feet**
 Date Boring Started: **1/10/01**
 Date Boring Completed: **1/11/01**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 78.4 ft. upon drilling completion.**

LOG OF BORING NO. DH2-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.4 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>Location: See Drawing No. C00553-1</p> <p>Surface El.: 1052.4 feet</p> <p> Split Spoon Shelby Tube Rock Core </p> </div> <div style="width: 80%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
		X	Coarse <u>COAL REFUSE</u>										
5		O	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, very loose to very dense										
10		X				5-3-5							
15		X				2-6-3							
20		X				3-3-4							
25		X				4-4-6							
30			- SPOIL/FILL -										

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/28/00**
 Date Boring Completed: **11/28/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 39.0 ft. during drilling operations.**

Continued Next Page

LOG OF BORING NO. DH2-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit	
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>										
35	X	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, very loose to very dense - wet @ 39.0 ft. - SPOIL/FILL -			3-4-6							
							2-15-9-8						
							4-4-9-7						
40	X	○					4-7-11-13						
							18-1-1-1						
45	X	○					4-6-6-7						
							7-7-9-9						
50	X	○					2-5-8-10						
							4-4-12-11						
55	X	○		55.0			12-30-28-23						
			Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense			8-24-25-29							
							15-26-27-37						
							16-28-28-28						
60	X	○											

BORING: C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/28/00**
 Date Boring Completed: **11/28/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 39.0 ft. during drilling operations.**

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LOG OF BORING NO. DH2-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.4 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: 30%;"> <p>⊠ Split Spoon</p> <p>⊠ Shelby Tube</p> <p>⊠ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
65	X	•••••	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense			26-26-30-33							
							11-24-18-31						
							19-21-23-25						
							18-18-29-37						
							16-24-25-38						
70	X	•••••	70.5			11-60/6"							
		⊠	Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered, friable										
75			- very soft and weathered @ 73.2 ft. and 74.5 ft.	95	91								
80													
85													
			- tool drop (86.5' - 88.0')										
			88.0										
			<u>COAL</u>										
90													

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/28/00**
 Date Boring Completed: **11/28/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 39.0 ft. during drilling operations.**

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LOG OF BORING NO. DH2-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p><u>COAL</u></p> <p>- unconfined compressive strength (91.5' - 91.7') - 1,290 psi</p> <p>- unconfined compressive strength (95.0' - 95.3') - 3,690 psi</p>									
95		[Symbol: Split Spoon]	96.0	100	27							
100		[Symbol: Shelby Tube]	100.5									
			<p>Gray <u>CLAY SHALE</u>, very soft to soft</p>									
			<p>Bottom of Test Boring @ 100.5 ft.</p>									
105												
110												
115												
120												

Completion Depth: **100.5 feet**
 Date Boring Started: **11/28/00**
 Date Boring Completed: **11/28/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 39.0 ft. during drilling operations.**

BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-2

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1053.4 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>Location: See Drawing No. C00553-1</p> <p>Surface El.: 1053.4 feet</p> <ul style="list-style-type: none"> Split Spoon Shelby Tube Rock Core <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 75%;"> <p>Coarse <u>COAL REFUSE</u></p> <hr style="border: 0.5px solid black;"/> <p>4.0</p> <p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense</p> </div> </div>										
5													
10						3-4-7							
15						4-2-5							
20						2-3-4							
25						4-4-5							
30			- SPOIL/FILL -										

BORING: C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/29/00**
 Date Boring Completed: **11/30/00**
 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. DH2-2

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1053.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
35	X	○	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense - wet, w/mostly sandstone fragments @ 35.0 ft.			4-9-9						
40	X	○				8-7-9						
45	X	○				5-5-9						
50	X	○	- SPOIL/FILL -			9-8-10						
55	X	○				13-16-27						
60	X	○	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense			13-15-26						

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/29/00**
 Date Boring Completed: **11/30/00**
 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. DH2-2

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.: 1053.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	•••••	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense			28-19-18						
65	X	•••••	65.5			16-50/5"						
		/ / / / /	Brown <u>SANDSTONE</u> , medium hard, medium grained	89	76							
70			- weathered and iron-stained (65.6' - 69.2')									
			- gray, hard from 69.2 ft.									
75				100	100							
80												
85			- shaley (86.3' - 86.7')									
			86.7									
			VOID									
			(Partilly Filled)									
90												

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/29/00**
 Date Boring Completed: **11/30/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

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LOG OF BORING NO. DH2-2

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.: 1053.4 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 Shelby Tube Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 75%;"> <p style="text-align: center; font-size: 1.2em;">VOID</p> <p style="text-align: center;">(Partially Filled)</p> <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin-right: 10px;">96.8</p> <p style="text-align: center;">Gray <u>CLAY SHALE</u>, very soft to soft</p> <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin-right: 10px;">100.5</p> <p style="text-align: center;">Bottom of Test Boring @ 100.5 ft.</p> </div> </div>	49	40								
95													
100													
105													
110													
115													
120													

BORING C00553.GPJ 3/2/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/29/00**
 Date Boring Completed: **11/30/00**
 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. DH2-3

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.: 1054.9 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: 15%; text-align: center;"> <p>5</p> <p>10</p> <p>15</p> <p>20</p> <p>25</p> <p>30</p> </div> <div style="width: 85%;"> <p>Coarse <u>COAL REFUSE</u></p> <hr style="border: 0.5px solid black;"/> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense</p> <p style="text-align: right; margin-right: 10px;">5.0</p> <p style="text-align: center; margin-top: 10px;">- mostly sandstone fragments (30.0' - 31.5')</p> <p style="text-align: center; margin-top: 10px;">- SPOIL/FILL -</p> </div> </div>										
						7-4-5							
						5-9-14							
						6-50/5"							
						6-4-6							

BORING C00553.GPJ 3/14/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **11/30/00**
 Engineer/Geologist: **JEN/CEM**
 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. DH2-3

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.9 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense			10-8-12						
35	X	○	- sandstone boulder @ 35.0 ft.			50/5"						
40	X	○	- mostly sandstone fragments (40.0' - 41.5')			14-18-7						
			- SPOIL/FILL -									
45	X	○		45.0								
	X	○	Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, dense			22-22-23						
50	X	○				16-21-22						
55	X	○				17-18-19						
60	X	○	Brown <u>SANDSTONE</u> , medium hard									
				59.0								

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **11/30/00**
 Engineer/Geologist: **JEN/CEM**
 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. DH2-3

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.9 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: 15%;"> <p>☒ Split Spoon</p> <p>☒ Shelby Tube</p> <p>☐ Rock Core</p> </div> <div style="width: 85%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>											
			Brown <u>SANDSTONE</u> , medium hard, medium grained - diagonal fracture @ 64.6 ft. - clay seam @ 65.6 ft. - gray, hard, with occasional carbonaceous inclusions from 67.6 ft.	98	66	50/1"							
65													
70													
75				100	85								
80													
85													
88.4			VOID										
90													

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **11/30/00**
 Engineer/Geologist: **JEN/CEM**
 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. DH2-3

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1054.9 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>Location: See Drawing No. C00553-1</p> <p>Surface El.: 1054.9 feet</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;">MATERIAL DESCRIPTION</p> </div> </div>										
95			VOID (Partially Filled)	40	33								
98.9													
100			Gray <u>CLAY SHALE</u> , very soft to soft										
			Bottom of Test Boring @ 100.5 ft.										
105													
110													
115													
120													

BORING C00553.GPJ 2/27/01

Completion Depth: **100.5 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **11/30/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

LOG OF BORING NO. DH2-4

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1049.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
0 5 10 15 20 25 30			Coarse <u>COAL REFUSE</u>									

Completion Depth: **120.1 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **12/1/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

Continued Next Page

BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-4

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1049.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Coarse <u>COAL REFUSE</u></p> <p>- wet @ 33.0 ft., w/some possible slurry</p>									
35												
40				40.0		8-9-8						
			<p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p>									
45						4-8-8						
50						7-7-10						
55						10-7-8						
			- SPOIL/FILL -									
60												

Completion Depth: **120.1 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **12/1/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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BORING: C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-4

**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.: 1049.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense</p> <p>- mostly sandstone fragments with some clay (60.0' - 71.5')</p> <p>- w/some possible coal fines (65.0' - 66.5')</p> <p>- very sandy (75.0' - 76.5')</p> <p>- filter cake (80.0' - 81.5')</p> <p style="text-align: center;">- SPOIL/FILL -</p>			4-10-4						
65						13-15-16						
70						10-13-9						
75						25-20-33						
80						5-7-8						
85			85.0			27-29-38						
			Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense			20-21-20						
90												

BORING: C00553.GPJ 2/28/01

Completion Depth: **120.1 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **12/1/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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LOG OF BORING NO. DH2-4

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1049.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
95	X	X	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense			53-62/6"						
				24-29-29-29								
				14-25-20-25								
				23-36-33								
100			Brown <u>SHALE</u> , soft, weathered	100.0		50/2"						
			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained - iron-stained to 102.1 ft. - vertical fracture @ 103.6 ft. and 108.5 ft.	101.0								
105				93	71							
110												
115			- coal/shale band (116.0' - 116.5')	100	75							
			117.1									
			118.2									
120			<u>COAL</u> Gray <u>CLAY SHALE</u> , soft									

BORING: C00553.GPJ 2/28/01

Completion Depth: **120.1 feet**
 Date Boring Started: **11/30/00**
 Date Boring Completed: **12/1/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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LOG OF BORING NO. DH2-4

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1049.5 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
		<div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; width: 15px; height: 10px; display: flex; align-items: center; justify-content: center;"><div style="border-left: 1px solid black; border-right: 1px solid black; width: 10px;"></div></div> Split Spoon <div style="border: 1px solid black; width: 15px; height: 10px; display: flex; align-items: center; justify-content: center;"><div style="border-left: 1px solid black; border-right: 1px solid black; width: 10px;"></div></div> Shelby Tube <div style="border: 1px solid black; width: 15px; height: 10px; display: flex; align-items: center; justify-content: center;"><div style="border-left: 1px solid black; border-right: 1px solid black; width: 10px;"></div></div> Rock Core </div> <p style="text-align: center; margin-top: 5px;">MATERIAL DESCRIPTION</p>										
125			Bottom of Test Boring @ 120.1 ft.	120.1								
130												
135												
140												
145												
150												
Completion Depth: 120.1 feet Date Boring Started: 11/30/00 Date Boring Completed: 12/1/00 Engineer/Geologist: JEN/CEM Project No.: C00553				Remarks: Groundwater was first noted at a depth of 40 ft. during drilling operations.								

BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-5

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
5			Coarse <u>COAL REFUSE</u>									
10												
15												
20												
25												
30												
			30.0									

BORING C00553.GPJ 2/27/01

Completion Depth: **110.0 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 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. DH2-5

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, very loose to medium dense</p>			3-2-2						
35						5-8-12						
40			- trace coal fragments @ 40.0 ft.			8-11-19						
45			- wet @ 45 ft., w/mostly sandstone fragments			10-8-16						
50			- gray sandstone fragments (50.0' - 51.5')			6-5-7						
55			- mostly sand w/some sandstone fragments (55.0' - 56.5')			7-8-13						
60			- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **110.0 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

Continued Next Page

LOG OF BORING NO. DH2-5

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp to wet, very loose to medium dense</p> <p>- mostly gravel-size sandstone fragments (60.0' - 61.5')</p>			12-6-7						
65						10-15-13						
70						5-6-9						
75			- SPOIL/FILL -									
			76.0			10-16-24						
			Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, very dense									
80						22-27-28						
85						20-50/5"						
90												

Completion Depth: **110.0 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

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

Continued Next Page

BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-5

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.2 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: 30%;"> <p>⊠ Split Spoon</p> <p>⊡ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 65%; text-align: center;"> <p>MATERIAL DESCRIPTION</p> </div> </div>											
	⊠		Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, very dense			16-24-30							
	⊠		- very clayey @ 92.5 ft., w/some coal fragments			20-26-27							
95	■		Gray <u>CLAY SHALE</u> , very soft to soft	95.0		50/1"							
100				84	39								
			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained										
105													
				98	90								
110													
			Bottom of Test Boring @ 110.0 ft.										
115													
120													

BORING C00553.GPJ 2/27/01

Completion Depth: **110.0 feet**
 Date Boring Started: **12/1/00**
 Date Boring Completed: **12/2/00**
 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. DH2-6

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense</p>			6-5-7						
35						5-7-8						
40			- very sandy, with numerous gray sandstone fragments (45.0' - 46.5')			20-15-13						
45						4-3-18						
50			- wet @ 50.0 ft.			11-8-8						
55			- brown and gray, very sandy, w/some coal fragments (55.0' - 56.5')			7-7-10						
			- SPOIL/FILL -									
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **105.2 feet**
 Date Boring Started: **12/2/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Goundwater was first noted at a depth of 50 ft. during drilling operations.**

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LOG OF BORING NO. DH2-6

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense</p> <p>- w/small wood fragments @ 60 ft.</p>			5-7-6						
65			- SPOIL/FILL -			11-11-19						
70			70.0			17-25-31						
75			<p>Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense</p> <p>w/gray mottling from 75 ft.</p>			17-25-31						
80						21-32-31						
85						13-23-18						
90			90.0									

BORING C00553.GPJ 2/27/01

Completion Depth: **105.2 feet**
 Date Boring Started: **12/2/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

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LOG OF BORING NO. DH2-6

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1052.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X	X	<u>COAL</u>			22-27-37						
	X	X		93.5		15-18-37						
95		W	Gray <u>CLAY SHALE</u> , very soft to soft			50/2"						
100		W		100.7	100	90						
		W	Gray <u>SANDSTONE</u> with shale laminations, medium hard to hard, fine to medium grained									
105		W		105.2								
			Bottom of Test Boring @ 105.2 ft.									
110												
115												
120												

Completion Depth: **105.2 feet**
 Date Boring Started: **12/2/00**
 Date Boring Completed: **12/4/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 50 ft. during drilling operations.**

BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.7 feet	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										
23.0		X										
25		O	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
30		O	- SPOIL/FILL -									

BORING C00553.GPJ 2/27/01

Completion Depth: **105.5 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 45 ft. during drilling operations.**

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LOG OF BORING NO. DH2-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.7 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
35	●	○	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
40	●	○										
45	X	○	- wet, w/sandstone boulder @ 45 ft.			50-17-14						
50	X	○				5-7-9						
55	X	○	- mostly sandstone fragments (55.0' - 56.5')			11-9-14						
60	-	○	- SPOIL/FILL -									

Completion Depth: **105.5 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 45 ft. during drilling operations.**

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BORING C00553.GPJ 2/27/01

LOG OF BORING NO. DH2-7

**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.: 1051.7 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;">MATERIAL DESCRIPTION</p> </div> </div>										
			Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense - SPOIL/FILL -			50/2"							
65	⊠		Brown and gray <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to very dense			11-11-17							
70	⊠					25-25-28							
75	⊠					50/4"							
80	■			37	0								
			Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered										
			81.3										
			Gray <u>SHALE</u> , soft - interbedded sandstone (84.3' - 84.8')	88	42								
			83.5										
85													
			86.0										
			<u>COAL</u>										
90													

BORING: C00553.GPJ 2/28/01

Completion Depth: **105.5 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 45 ft. during drilling operations.

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LOG OF BORING NO. DH2-7

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.7 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-around;"> <div style="border: 1px solid black; width: 15px; height: 10px; position: relative;"> X </div> <div style="border: 1px solid black; width: 15px; height: 10px; position: relative;"> X </div> <div style="border: 1px solid black; width: 15px; height: 10px; position: relative;"> ■ </div> </div> <p style="font-size: small;"> Split Spoon Shelby Tube Rock Core </p>	MATERIAL DESCRIPTION										
		■	<u>COAL</u>	93	9								
95		~	94.1										
			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard w/depth										
100		~	101.6	99	86								
			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained										
105		~	105.5										
			Bottom of Test Boring @ 105.5 ft.										
110													
115													
120													

BORING C00553.GPJ 2/27/01

Completion Depth: **105.5 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 45 ft. during drilling operations.**

LOG OF BORING NO. DH2-8

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.: 1057.0 feet									
			Coarse <u>COAL REFUSE</u>									
			Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense									
5												
10						4-4-12						
15						7-8-10						
20						5-44-50/4"						
25			- SPOIL/FILL -									
26.0						13-24-24						
			Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense to very dense									
30												

BORING C00553.GPJ 2/27/01

Completion Depth: **84.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

Continued Next Page

LOG OF BORING NO. DH2-8

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1057.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p>MATERIAL DESCRIPTION</p> <p>⊗ Split Spoon ⊠ Shelby Tube ■ Rock Core</p>									
			Brown SANDY CLAY to CLAYEY SAND with some sandstone fragments, damp, dense to very dense			16-37-35						
35						13-24-24						
			37.0									
40			Gray SANDSTONE , medium hard to hard, medium grained - iron-stained (37.0' - 39.5')			50/2"						
			- occasional carbonaceous laminations (39.5' - 44.1')	100	75							
45												
			- numerous carbonaceous laminations (47.0' - 52.4')	100	84							
50												
			- iron-stained vertical fracture (59.9' - 60.4')									
55												
60												

BORING C00553.GPJ 2/27/01

Completion Depth: **84.4 feet**
 Date Boring Started: **12/8/00**
 Date Boring Completed: **12/9/00**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks:

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LOG OF BORING NO. DH2-8

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1057.0 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: 30%;"> <p>⊠ Split Spoon</p> <p>⊡ Shelby Tube</p> <p>■ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>											
65		⊠	Gray <u>SANDSTONE</u> , medium hard to hard, medium grained - iron-stained (59.9' - 63.9')	99	79								
70		⊠		100	100								
75		⊠											
80		⊠	- clay seam (79.1' - 80.0') - Boring abandoned @ 84.4 ft. after drilling rods became stuck in hole	40	6								
85		⊠	Bottom of Test Boring @ 84.4 ft.										

BORING C00553.GPJ 2/27/01

Completion Depth: 84.4 feet
Date Boring Started: 12/8/00
Date Boring Completed: 12/9/00
Engineer/Geologist: JEN/JTS
Project No.: C00553

Remarks:

LOG OF BORING NO. DH2-9

**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: 20%;"> <p>⊗ Split Spoon</p> <p>⊗ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 80%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
		⊗	Coarse <u>COAL REFUSE</u>										
		○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to very dense										
5			CASING ADVANCE W/OUT SAMPLING										
10													
15													
20		⊗				12-12-10-54							
25		⊗				39-20-14-9							
25		⊗				34-35-26-20							
25		⊗				16-23-50/2"							
25		⊗				50/1"							
30			- SPOIL/FILL -										

BORING C00553.GPJ 2/28/01

Completion Depth: **100.1 feet**
 Date Boring Started: **1/17/01**
 Date Boring Completed: **1/18/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.7 ft. upon drilling completion.**

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LOG OF BORING NO. DH2-9

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: See Drawing No. C00553-1 Surface El.: 1056.0 feet												
		Split Spoon Shelby Tube Rock Core										
			Brown <u>CLAYEY SAND</u> sandstone fragments, damp, medium dense to very dense - SPOIL/FILL -			50/1"						
			34.0			5-14-18-17						
35			Brown <u>CLAYEY SAND</u> to <u>SANDY CLAY</u> with some sandstone fragments, damp to wet, dense to very dense			18-30-36-41						
						32-75/5"						
						29-57-50/1"						
40						28-42-42-40						
						21-27-30-32						
45			CASING ADVANCE W/OUT SAMPLING (46.0' - 51.6')			27-24-27-29						
			49.5									
50			Brown <u>SANDSTONE</u> , medium hard, medium grained, weathered, friable									
55			- occasional diagonal fractures (56.1' - 61.4')	98	46							
60												

BORING C00553.GPJ 2/28/01

Completion Depth: **100.1 feet**
 Date Boring Started: **1/17/01**
 Date Boring Completed: **1/18/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.7 ft. upon drilling completion.**

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LOG OF BORING NO. DH2-9

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: 30%;"> <p>⊠ Split Spoon</p> <p>⊞ Shelby Tube</p> <p>▣ Rock Core</p> </div> <div style="width: 65%;"> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> </div>										
65			Brown SANDSTONE, medium hard, medium grained, weathered, friable	98	52								
70			- gray, medium hard to hard from 66.9 ft.										
75				100	100								
80													
85				100	95								
89.5			- resume casing advance @ 88.0 ft.										

BORING C00553.GPJ 2/28/01

Completion Depth: **100.1 feet**
 Date Boring Started: **1/17/01**
 Date Boring Completed: **1/18/01**
 Engineer/Geologist: **JEN/JTS**
 Project No.: **C00553**

Remarks: **Water was noted at a depth of 84.7 ft. upon drilling completion.**

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LOG OF BORING NO. DH2-9

**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
			MATERIAL DESCRIPTION <div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div>									
	X		VOID			wot/2'						
	X		- slurry w/sand and gravel (89.8' - 93.1')			21/2'	27	32	41			
	X		- gray sandstone cobble (93.1' - 93.8')			40/2'	34	24	42		27	21
95	X		- slurry, sand, and gravel (93.8' - 95.8')			37/2'	47	42	11			
	X		- silty sand with rock fragments (95.8' - 97.8')			wot/2.1'	21	31	48		33	26
	X		- slurry with sand and gravel (97.8' - 99.9')			20/2"						
100	X		- gray clay shale (mine floor) @ 99.9 ft.	100.1								
			Bottom of Test Boring @ 100.1 ft.									
105												
110												
115												
120												

BORING C00553.GPJ 3/2/01

Completion Depth: 100.1 feet
Date Boring Started: 1/17/01
Date Boring Completed: 1/18/01
Engineer/Geologist: JEN/JTS
Project No.: C00553

Remarks: Water was noted at a depth of 84.7 ft. upon drilling completion.

LOG OF BORING NO. DH3-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.0 feet	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]										
30		[X]										

BORING: C00553.GPJ 2/27/01

Completion Depth: **120.1 feet**
 Date Boring Started: **12/5/00**
 Date Boring Completed: **12/5/00**
 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. DH3-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.0 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%; border-right: 1px solid black; padding-right: 5px;"> <p style="font-size: small;">☒ Split Spoon</p> <p style="font-size: small;">☒ Shelby Tube</p> <p style="font-size: small;">☐ Rock Core</p> </div> <div style="width: 85%; padding-left: 5px;"> <p style="text-align: center; font-weight: bold; font-size: small;">MATERIAL DESCRIPTION</p> </div> </div>										
35		☒	Coarse <u>COAL REFUSE</u>										
40		☒											
45		☒	- wet @ 45 ft.			6-6-6							
50		☒	50.5			4-18-30							
55		☒	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to dense										
60		☒	- SPOIL/FILL -			5-4-7							

BORING C00553.GPJ 2/27/01

Completion Depth: **120.1 feet**
 Date Boring Started: **12/5/00**
 Date Boring Completed: **12/5/00**
 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. DH3-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<p> Split Spoon Shelby Tube Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p>									
65	X	○	Brown <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to dense			6-10-11						
							12-19-16					
70	X	○				9-9-8						
			- SPOIL/FILL -									
75	X	○		75.0		5-10-39						
			Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, very dense			16-26-32-29						
80	X	○				20-50/3"						
						50/1"						
85	X	○			20	0						

BORING C00553.GPJ 2/27/01

Completion Depth: 120.1 feet
Date Boring Started: 12/5/00
Date Boring Completed: 12/5/00
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. DH3-1

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1050.0 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
95			Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, very dense	48	14							
100				8	8							
			101.8									
105			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained	88	81							
110												
115					100	98						
120												

BORING: C00553.GPJ 2/27/01

Completion Depth: **120.1 feet**
 Date Boring Started: **12/5/00**
 Date Boring Completed: **12/5/00**
 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. DH3-1

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.: 1050.0 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: 60%;"> <p> Split Spoon Shelby Tube Rock Core </p> <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 35%; text-align: right;"> <p>120.1</p> </div> </div>										
125			Bottom of Test Boring @ 120.1 ft.										
130													
135													
140													
145													
150													

BORING C00553.GPJ 2/27/01

Completion Depth: **120.1 feet**
 Date Boring Started: **12/5/00**
 Date Boring Completed: **12/5/00**
 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. DH3-2

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.4 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: 30%;"> <p>Location: See Drawing No. C00553-1</p> <p>Surface El.: 1051.4 feet</p> <ul style="list-style-type: none"> Split Spoon Shelby Tube Rock Core <p style="text-align: center;">MATERIAL DESCRIPTION</p> </div> <div style="width: 65%;"> <p>Coarse COAL REFUSE</p> <p style="text-align: right;">32.0</p> <hr/> <p>Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, medium dense to dense</p> <p style="text-align: center;">- wet @ 40 ft.</p> <p style="text-align: center;">- boulder @ 51 ft.</p> <p style="text-align: center;">- SPOIL/FILL -</p> <p style="text-align: right;">60.0</p> </div> </div>										
35						5-8-7							
40						7-6-21							
45						5-9-6							
50						8-15-13							
55						7-20-50/1"							
60													

BORING C00553.GPJ 2/27/01

Completion Depth: **110.5 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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LOG OF BORING NO. DH3-2

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			MATERIAL DESCRIPTION									
	X		Brown <u>SANDY CLAY to CLAYEY SAND</u> with some sandstone fragments, damp, medium dense to dense			20-26-33						
65	X		- boulder @ 65 ft.			50/6"						
70	X		- trace coal fragments @ 70 ft.			17-19-20						
75	X					17-19-17						
80	X					6-5-10						
85	X					38-18-22-28						
	X		- SPOIL/FILL -			14-30-50/2"						
			87.8									
			<u>COAL</u>									
90												

BORING C00553.GPJ 2/27/01

Completion Depth: **110.5 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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LOG OF BORING NO. DH3-2

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



Depth, feet	Sample Type	Symbol / USCS	Location: See Drawing No. C00553-1 Surface El.: 1051.4 feet	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
		COAL		73	0							
95		[Wavy Pattern]	95.0	100	40							
			Gray <u>CLAY SHALE</u> , very soft to soft, becoming sandier and medium hard with depth.									
100		[Diagonal Line Pattern]	103.0									
			Gray <u>SANDSTONE</u> with shale laminations, medium hard, fine to medium grained	100	96							
105			110.5									
			Bottom of Test Boring @ 110.5 ft.									
110												
115												
120												

BORING C00553.GPJ 2/27/01

Completion Depth: **110.5 feet**
 Date Boring Started: **12/6/00**
 Date Boring Completed: **12/6/00**
 Engineer/Geologist: **JEN/CEM**
 Project No.: **C00553**

Remarks: **Groundwater was first noted at a depth of 40 ft. during drilling operations.**

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
			<div style="display: flex; align-items: flex-start;"> <div style="width: 20px; height: 100%; border-left: 1px solid black; margin-right: 5px;"></div> <div style="width: 100%; height: 100%; border-left: 1px solid black; border-right: 1px solid black; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; height: 100%; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div> </div> </div> <p style="margin-top: 10px;">Coarse <u>COAL REFUSE</u></p>									
5												
10												
15												
20												
25												
30			30.0									

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
			<div style="font-size: small;"> Split Spoon Shelby Tube Rock Core </div> <p style="text-align: center; font-weight: bold; margin-top: 10px;">MATERIAL DESCRIPTION</p>									
35	X	○	Brown and gray <u>CLAYEY SAND</u> with sandstone fragments, damp, loose to medium dense - wet @ 35 ft.			5-3-6						
40	X	○	- Unable to push shelly tube @ 40 ft. due to rock fragments			3-3-6						
45	X	○				31-28-9						
50	X	○	- SPOIL/FILL			3-6-21						
55	X	○				23-26-28						
60	X	○	Brown <u>SANDY CLAY</u> to <u>CLAYEY SAND</u> with some sandstone fragments, damp, dense			18-25-26						

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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