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PRIMARY DOCUMENT

Remedial Investigation Report for Waste Area Grouping 27 at the Paducah Gaseous Diffusion Plant Paducah, Kentucky

Volume 2 of 4. Appendices A through F

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Prepared by
CH2M HILL, Inc.
Paducah, Kentucky
under General Order 18B-99345C

for the
U.S. Department of Energy
Office of Environmental Management

Environmental Management Activities at the
PADUCAH GASEOUS DIFFUSION PLANT
Paducah, Kentucky 42002
managed by
BECHTEL JACOBS COMPANY LLC
for the
U.S. DEPARTMENT OF ENERGY
Under contract DE-AC05-98OR22700

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APPENDIX A

SYMBOL KEY

Boring SYMBOL KEY

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist:
Started at *on*	Surface Elevation: *feet msl*
Completed at *on*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method:	Groundwater Elevation: *NA feet msl*
Drilling Company:	Total Depth: *80.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								LITHOLOGIC SAMPLE SYMBOLS	
								Lithologic	
5								ANALYTICAL SAMPLE SYMBOLS	
								Soil	
10									
								Water	
15									
								GRAPHIC LOG SYMBOLS	
20									
								Gravel	
25									
								Sandy Gravel	
30									
								Silty Gravel	
35									
								Clayey Gravel	
40									

Boring SYMBOL KEY

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist:
Started at *on*	Surface Elevation: *feet msl*
Completed at *on*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method:	Groundwater Elevation: *NA feet msl*
Drilling Company:	Total Depth: *80.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravelly Sand	
45								Sand	
50								Silty Sand	
55								Silt	
60								Clay	
65									
								OTHER	
70				-	-	-/-		Data not available	
75									
80									

APPENDIX A

SWMU 001

Boring 001-101

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6524.69 E, -1700.05 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-24-98*	Surface Elevation: *371.35 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			369.4
						0/0			
			75.0	0	476	0/0			
5						0/0			
						0/0		Clay, silty, yellowish brown (10YR5/8), mottled light gray (10YR7/2) moist, stiff (Natural Soil)	
						0/0			
			100.0	0	525	0/0			
						0/0		VOA Screen Collected from 9.5 - 10.0 ft. interval	
10								Boring terminated at 10.0 ft.	361.4
								Background in CPM is: alpha-0, beta-440	
15									

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Boring 001-102

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6575.20 E, -1699.67 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-24-98*	Surface Elevation: *371.67 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
									369.7
			100.0	0	474	0/0			
						0/0			
						0/0			
5									
						0/0			
								Clay, silty, yellowish brown (10YR5/8), mottled light gray (10YR7/2), with minor black (10YR2/1), moist, stiff (Natural Soil)	
						0/0			
						0/0			
						0/0			
			100.0	0	515				
						0/0			
								VOA Screen Collected from 9.5 - 10.0 ft. interval	
						0/0			
10									361.7
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-440	
15									

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Boring 001-103

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6625.08 E, -1699.50 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-24-98*	Surface Elevation: *372.16 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									370.2
						3/0			
						0/0			
			100.0	0	438				
						0/0			
5									
						0/0			
								Clay, silty, yellowish brown (10YR5/8) and very dark brown (10YR2/2), moist, stiff, (Natural Soil)	
						0/0			
				0	496				
						0/0			
			100.0						
						0/0			
						0/0			
10									362.2
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-440	
15									

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Boring 001-104

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6675.05 E, -1699.72 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *372.33 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									370.3
						0/6			
						0/9			
			100.0	0	474			Silt, clayey, pale brown (10YR6/3), mottled yellowish brown (10YR5/8) and black (10YR2/1), moist, firm	
5						0/6			
						0/7			
									366.3
						0/0			
				0	460				
						0/0			
			100.0					Clay, silty, yellowish brown (10YR5/6), moist, stiff	
						0/0			
						0/0			
10									362.3
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-105

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6724.85 E, -1700.05 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *372.48 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									370.5
						0/0			
						0/0			
			100.0	0	460			Silt, some clay, light brownish gray (10YR6/2) grading to yellowish brown (10YR5/6), moist, stiff (Fill)	
						0/0			
5									
						0/0			
						0/0			
						0/0			
			100.0	0	470			Silt, clayey, yellowish brown (10YR5/4), moist, stiff (Fill)	
						0/0			
								VOAs Collected from 9.5 - 10.0 ft. interval	
						0/0			
10									362.5
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-106

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6774.46 E, -1700.18 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *372.03 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, grayish brown (10YR5/2) with dark yellowish brown (10YR4/4) and very dark gray (10YR3/1) mottles, siltier with depth, firm, slightly moist	370
						0/2			
			100.0	1	213	0/3			
5						0/4			
						0/2.5		Clay, some silt, yellowish brown (10YR5/6) with brownish yellow (10YR6/6) mottles, firm to soft, slightly moist	
						0/2			
			100.0	1	213	0/1			
						0/2			
10								Boring terminated at 10.0 ft.	362
								Background in CPM is: alpha-1, beta-213	
15									

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Boring 001-107

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6826.11 E, -1699.74 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-25-98*	Surface Elevation: *371.83 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, yellowish brown (10YR5/4), heavily mottled dark yellowish brown (10YR4/4) and very dark gray (10YR3/2), brittle	369.8
						0/0			
			100.0	3	388	0/0			
5						0/0		Clay, trace silt, light brownish gray (10YR6/2) with yellowish brown mottles (10YR5/6), firm, slightly moist	
						0/0			
						0/0		Clay, some silt, dark yellowish brown (10YR4/6) with very dark gray (10YR3/1) mottles, firm, slightly moist	
			100.0	3	388	1/0			
						2/1			
10								Boring terminated at 10.0 ft.	361.8
								Background in CPM is: alpha-3, beta-388	
15									

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Boring 001-108

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6874.41 E, -1698.82 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-25-98*	Surface Elevation: *371.38 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, pale brown (10YR6/3) with dark yellowish brown (10YR4/6) mottles, firm, slightly moist	369.4
						0/0			
			100.0	3	388	0/0		Silt, clayey, yellowish brown (10YR5/6), crumbly, slightly moist	367.4
5						0/0			
						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6), some occasional very dark gray (10YR3/1) mottles	364.4
			100.0	3	388	0/0			
						0/0		Color change to yellowish brown (10YR5/4)	
10								Boring terminated at 10.0 ft.	361.4
								Background in CPM is: alpha-3, beta 388	
15									

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Boring 001-109

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6925.48 E, -1699.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *371.48 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, some silt, light yellowish brown (2.5Y6/3), firm, slightly moist	369.5
						0/0			
			100.0	5	317	0/0		Clay, silty, dark yellowish brown (10YR4/4) with yellowish brown (10YR5/6) and light yellowish brown (2.5Y6/3) mottles, firm, slightly moist	
5						0/0			
						0/0		Clay, brown (10YR5/3), firm, cohesive, slightly moist	
						0/0			
			100.0	5	317	0/0		Clay, silty, dark yellowish brown (10YR4/4) with yellowish brown (10YR5/6) and light yellowish brown (2.5Y6/3) mottles, firm, slightly moist	
						0/0			
10								Boring terminated at 10.0 ft.	361.5
								Background in CPM is: alpha-5, beta-317	
15									

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Boring 001-110

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6975.72 E, -1699.74 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *371.87 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, light yellowish brown (10YR5/6), some yellowish brown (10YR5/6) and very dark gray (10YR3/1) mottles, firm, moist	369.9
			100.0	5	317	0/0			
						0/0			
5						0/0		Becomes siltier	
						0/0			
			100.0	5	317	0/0		Clay, trace silt, yellowish brown (10YR5/6), brownish yellow (10YR6/6) mottles, some manganese staining, firm, slightly moist	
						0/0			
						0/0			
10								Boring terminated at 10.0 ft.	361.9
								Background in CPM is: alpha-5, beta-317	
15									

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Boring 001-111

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7025.49 E, -1699.83 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-23-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Silt, very fine grained, moderately sorted, with clay, firm, cohesive, crumbly upon rolling, (10YR5/6), yellowish brown, slight moist	367.9
						0/0			
			100.0	-	430	0/0			
								Clay, cohesive, slightly moist, (10YR5/6), yellowish brown, mottled (10YR6/1), gray, slightly moist	365.4
5						0/0			
						0/0		Same as 4.5 - 6.0 ft. interval	
						0/0			
			100.0	-	430	0/0		Clay, cohesive, firm, with silt, very fine grained, (10YR5/6) yellowish brown, mottled (10YR3/1), very dark gray (occasionally) and some (10YR4/6) dark yellowish brown staining mottles	
						0/0			
10								Boring terminated at 10.0 ft.	359.9
								Background in CPM is: not available	
15									

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Boring 001-112

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7025.02 E, -1749.71 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *367.30 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, slightly silty, dark yellowish brown (10YR4/4) with grayish brown (10YR5/2) mottles, firm, slightly moist	365.3
			100.0	5	317	0/0			
						0/0			
5						0/0			
						0/0		Clay, trace silt, dark yellowish brown (10YR4/6) with yellowish brown (10YR5/6) and very dark gray (10YR3/1) mottles, firm, slightly moist	
						0/0			
			100.0	5	317	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	357.3
								Background in CPM is: alpha-5, beta-317	
15									

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Boring 001-113

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6974.81 E, -1750.68 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2/23/98*	Surface Elevation: *372.36 feet msl*
Completed at *on 2/23/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Silt, with very fine grained sand, cherty, trace gravel, fine to medium, subrounded to rounded, cherty, yellowish brown (10YR5/4)	370.4
						0/0		Gravel, fine to medium, moderate sorting, subrounded to rounded, cherty, with sand, fine to coarse, poorly sorted, cherty, subrounded to rounded, and clay and silt, yellowish brown (10YR5/4), slightly moist to damp	369.4
			100.0	3	430	0/0		Silt, with clay, crumbly, slightly moist yellowish brown (10YR5/4)	368.4
5						0/0		Silt, with clay, yellowish brown (10YR5/4), mottled, black (10YR2/1), firm	
						0/0			
						0/0			
			100.0	3	430	0/0		Clay with silt, very fine grained, dark yellowish brown (10YR4/4), mottled light gray (10YR7/1) and black (10YR2/1), firm, cohesive	364.4
						0/0			
10								Boring terminated at 10.0 ft.	362.4
								Background in CPM is: alpha-3, beta-430	
15									

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Boring 001-114

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6925.30 E, -1749.21 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *372.37 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Silt, clayey, light yellowish brown (10YR6/4), crumbly, slightly moist	370.4
						0/0		Gravel (60%), fine to medium grained, subangular to subrounded, poorly sorted, cherty; sand (30%), fine to coarse grained, angular to subrounded, poorly sorted, trace clay, dark yellowish brown (10YR3/4)	369.4
			100.0	5	317	0/0			
5						0/0		Silt, clayey, pale brown (10YR6/3), crumbly, slightly moist	367.4
						0/0			
						0/0		Clay, slightly silty, dark yellowish brown (10YR4/6) with yellowish brown (10YR5/6) and very dark gray (10YR3/1) mottles, firm, slightly moist	365.4
			100.0	5	317	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	362.4
								Background in CPM is: alpha-5, beta-317	
15									

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Boring 001-115

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.49 E, -1750.80 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-25-98*	Surface Elevation: *373.13 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, yellowish brown (10YR5/4) with brown (10YR4/3) mottles, firm, slightly moist	371.1
						0/0			
			100.0	3	388	0/0			
								Clay, trace silt, light olive brown (2.5YR5/3), soft, slightly moist	
5						4/6			
						8/10		Clay, some silt, yellowish brown (10YR4/6) with very dark gray (10YR3/1) mottles, trace gravel, slightly moist	
						26/30			
						36/60			
			100.0	3	388	40/70			
								Clay, some silt, yellowish brown (10YR5/4), firm, slightly moist	
						70/105			
						00/150			
10								Boring terminated at 10.0 ft.	363.1
								Background in CPM is: alpha-3, beta-388	
15									

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Boring 001-116

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6824.73 E, -1749.82 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-27-98*	Surface Elevation: *373.49 feet msl*
Completed at *on 2-27-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, hard, crumbly, and silt, fine, (10YR4/4) dark yellowish brown mottled (10YR6/2) light brownish gray	371.5
						0/0			
			100.0	0	286	0/0		Clay, crumbly, with silt, (10YR6/6) light yellowish brown; some (10YR6/8) brownish yellow mottles and occasional (10YR3/1) very dark gray mottles	
5						0/0			
						0/0		Same as 3.5 ~ 6.0 ft. interval	
						0/0		Clay, firm to slightly soft, with silt, (10YR5/6) yellowish brown, with (10YR6/6) brownish yellow mottles, occasional (10YR3/1) very dark gray manganese stains	
			100.0	0	286	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	363.5
								Background in CPM is: alpha-0, beta-286	
15									

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Boring 001-117

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6775.32 E, -1749.75 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-25-98*	Surface Elevation: *374.00 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel, limestone, fill	372
								Clay, trace silt, dark yellowish brown (10YR4/4), some yellowish brown (10YR5/6) mottles, firm, slightly moist	371.5
			100.0	3	388	0/0		Clay, silty, light yellowish brown (10YR6/3), yellowish brown (10YR5/6) mottles, firm, slightly crumbly, slightly moist	
						0/0			
5						0/0			
						0/0			
			100.0	3	388	0/0		Clay, some silt, light yellowish brown (10YR6/3), occasional yellowish brown (10YR5/6) mottles, firm, slightly moist	
						0/0			
						0/0			
10								Boring terminated at 10.0 ft.	364
								Background in CPM is: alpha-3, beta-388	
15									

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Boring 001-118

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6724.76 E, -1749.92 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *375.03 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									373
			100.0	0	425	0/0		Silt, some clay, light brownish gray (10YR6/2), moist, stiff	
						0/0			
						0/0			
5									
						0/0			
									369
			100.0	0	415	0/0		Clay, silty, yellowish brown (10YR5/6) and pale brown (10YR6/3), moist, stiff.	
						0/0			
						0/0		VOAs collected from 9.5 ft. to 10.0 ft. interval	
						0/0			
10									365
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-119

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6675.13 E, -1750.30 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *374.06 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
								Silt, some clay, light brownish gray (10YR6/2), moist, stiff (Fill)	372.1
						0/0			
						0/0			
			100.0	0	465				
						0/0			
5									
						0/0			
						0/0			
						0/0			
			100.0	0	417			Silt, some clay, light gray (10YR7/2) to yellowish brown (10YR5/8), mottled light gray (10YR7/1), moist, firm	
						0/0		VOA's collected from 9.5 ft. to 10.0 ft. interval	
						0/0			
10								Boring terminated at 10.0 ft.	364.1
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-120

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6624.84 E, -1749.57 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *373.67 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									371.7
						0/0			
						0/0			
			100.0	0	430			Silt, traces of clay, light gray (10YR7/2), moist, firm	
						0/0			
5									
						0/0			
						0/0			
						0/0			
			100.0	0	423				365.7
						0/0		Clay, silty, yellowish brown (10YR5/6), moist, stiff	
								VOA Screen Collected from 9.5 - 10.0 ft. interval	
						0/0			
10								Boring terminated at 10.0 ft.	363.7
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-121

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6574.81 E, -1749.91 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-25-98*	Surface Elevation: *373.56 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									371.6
						3/6			
						0/0			
			100.0	0	425			Silt traces of clay, pale brown mottling (10YR6/3), moist, stiff	
						0/0			
5									
						0/0			
									367.6
						0/0			
						0/0			
			100.0	0	440			Clay, silty, yellowish brown (10YR5/8) with pale brown (10YR6/3) mottling, moist, stiff	
						0/0		VOA Screen Collected from 9.5 - 10.0 ft.	
						0/0			
10									363.6
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-420	
15									

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Boring 001-122

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6525.72 E, -1749.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-25-98*	Surface Elevation: *372.21 feet msl*
Completed at *on 2-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel; limestone fill	370.2
								Clay, silty, light yellowish brown (10YR6/4), very dark gray (10YR3/1) mottles, firm, slightly moist	369.7
						0/0			
			100.0	3	388	0/0			
5						0/0		Color change to (10YR5/6) yellowish brown with light yellowish brown (10YR6/4) mottles	
						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6), occasional gray (10YR6/1) mottles	
			100.0	3	388	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	362.2
								Background in CPM is: alpha-3, beta-388	
15									

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Boring 001-123

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6574.83 E, -1796.58 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *371.87 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *.Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
						0/0			369.9
						0/0			
			100.0	0	375	0/0		Clay, silty, yellowish brown (10YR5/8), mottled light gray (10YR7/2), traces of black (10YR2/1), moist, stiff	
5						0/0			
						0/0			
						0/0			
			100.0	0	380	0/0		Same as 2.0 to 6.0 ft. above	
						0/0		VOA Screen Collected from 9.5 - 10.0 ft.	
10								Boring terminated at 10.0 ft.	361.9
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-124

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6625.04 E, -1796.90 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *373.82 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
									371.8
						0/0			
						0/0			
			100.0	0	378			Silt, traces of clay, very pale brown (10YR8/2), some yellowish brown (10YR5/8) mottling, moist, stiff	
						0/0			
5									
						0/0			
									367.8
						0/0			
						0/0			
			100.0	0	385			Clay, silty, brownish yellow (10YR6/6), moist, stiff	
						0/0			
								VOA Screen Collected from 9.5 - 10.0 ft.	
						0/0			
10									363.8
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-125

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6675.35 E, -1796.10 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *374.12 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
						0/0			372.1
						0/0			
			100.0	0	400	0/0		Silt, clayey, light gray (10YR7/2) with brownish yellow (10YR5/6), moist, stiff	
5						0/0			
						0/0			
						0/0			
			100.0	0	415	0/0			366.1
								Clay, silty, yellowish brown (10YR5/4), moist, stiff	
						0/0		VOA Screen Collected from 9.5 - 10.0 ft.	
10								Boring terminated at 10.0 ft.	364.1
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-126

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6725.61 E, -1797.13 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *374.75 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									372.7
						0/0			
						0/0			
			100.0	0	415			Silt, traces of clay, pale brown (10YR6/3), moist, stiff	
						0/0			
5									
						0/0			
									368.7
						0/0			
						0/0			
			100.0	0	395			Clay, silty, yellowish brown (10YR5/4), moist, stiff	
						0/0			
								VOA Screen Collected from 9.5 - 10.0 ft.	
						0/0			
10									364.7
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-127

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6773.55 E, -1796.47 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *374.30 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel, limestone, fill	372.3
								Clay, silty, brown (10YR4/3) with yellowish brown (10YR5/8) and dark grayish brown (10YR4/2) mottles, crumbly, slightly moist	371.8
						0/0			
			100.0	1	213	0/0			
5						0/0		Clay, some silt, brown (10YR5/3), firm, moist	
						0/0		Clay, yellowish brown (10YR5/4), firm, slightly moist	
								Gravel (80%),clayey, fine to coarse, angular, limestone (fill)	367.8
						0/0		Clay, some silt, yellowish brown (10YR5/6) with brownish yellow (10YR6/6) mottles, very moist	367.3
			100.0	1	213	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	364.3
								Background in CPM is: alpha-1, beta-213	
15									

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Boring 001-128

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6824.71 E, -1800.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *373.06 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, silty, dark yellowish brown (10YR3/4), crumbly, slightly moist Color change to light yellowish brown (10YR6/6)	371.1
						0/0			
			100.0	1	213	0/0			
5						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6) with brownish yellow (10YR6/6) mottles and occasional very dark gray (10YR3/1) mottles, slightly moist	
						0/0			
			100.0	1	213	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	363.1
								Background in CPM is: alpha-0, beta-213	
15									

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Boring 001-129

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.88 E, -1798.38 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *374.41 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Silt, brownish yellow (10YR6/6) with light brownish gray (10YR6/2) and very dark gray (10YR3/1) mottles, brittle, slightly moist	372.4
						0/0			
			100.0	5	317	0/0			
5						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6) with brownish yellow (10YR6/6) mottles, firm, slightly moist	368.4
						0/0			
			100.0	5	317	0/0			
						0/0		Clay, silty, yellowish brown (10YR5/4), crumbly, slightly moist	
10								Boring terminated at 10.0 ft.	364.4
								Background in CPM is: alpha-5, beta-317	
15									

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Boring 001-130

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6924.89 E, -1800.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-23-98*	Surface Elevation: *371.58 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel, fine to medium grained, poorly sorted, angular, cherty, some clay, brown (10YR4/3), slightly moist	369.6
						0/0		Silt with clay, (10YR3/4), dark yellowish brown, somewhat firm and crumbly	368.6
			100.0	3	430	0/0			
								Clay, brown (10YR4/3), firm, cohesive	367.1
5						0/0			
						0/0			
						0/0		Clay, brown (10YR5/3), slightly mottled (10YR5/6) yellowish brown, firm, slightly moist	
			100.0	3	430	0/0			
						0/0		Clay with silt, mottled yellowish brown (10YR5/6) with dark grayish brown (10YR4/2), firm, crumbly, slightly moist	
10								Boring terminated at 10.0 ft.	361.6
								Background in CPM is: alpha-0, beta-430	
15									

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Boring 00 -131

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6973.05 E, -1800.41 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-23-98*	Surface Elevation: *371.62 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay with silt, yellowish brown (10YR5/4), mottled dark yellowish brown (10YR4/4), firm, cohesive, slightly moist	369.6
						0/0			
			100.0	0	229	0/0		Silt with clay, light yellowish brown (10YR6/4), crumbly, dry	368.1
								Clay, light yellowish brown (10YR6/4) to yellowish brown (10YR5/6), occasional dark yellowish brown (10YR4/6) mottles, firm	367.1
5						0/0			
						0/0			
						0/0			
			100.0	0	229	0/0		Clay with silt, yellowish brown (10YR5/6) with gray (10YR5/1) and very dark gray (10YR3/1) mottles. frim	
						0/0			
10								Boring terminated at 10.0 ft.	361.6
								Background in CPM is: alpha-0, beta-229	
15									

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Boring 001-132

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6975.21 E, -1851.13 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-23-98*	Surface Elevation: *369.27 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			367.3
						0/0			
			100.0	0	229	0/0		Clay, very moist, yellowish brown (10YR5/4), soft becoming firmer, less moist with depth	
5						0/0			
						0/0			
						0/0		Clay with silt, mottled yellowish brown (10YR5/6) and gray (10YR6/1), firm	
			100.0	0	229	0/0			361.3
								Sand, very fine grained, quartzitic, moderately sorted, with silt, very fine grained, gray (10YR6/1)	
						0/0			360.3
								Silt and clay, yellowish brown (10YR5/6) to gray (10YR6/1), some black (10YR2/10 manganese staining, firm, slightly moist	
10									359.3
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-229	
15									

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Boring 001-133

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6924.97 E, -1849.99 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-23-98*	Surface Elevation: *370.76 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel fill, limestone	368.8
									368.3
						0/0			
			100.0	0	229	0/0		Clay with silt, yellowish brown (10YR5/4) with gray (10YR6/1) mottling, rare black streaks, firm, slightly moist	
5						0/0		Clay, gray (5YR5/1), soft, slightly moist	
						0/0			
						0/0		Clay with silt, yellowish brown (10YR5/6) with gray (10YR6/1), firm, crumbly, slightly moist	
			100.0	0	229	0/0		Clay, gray (5YR6/1),moderately firm, slightly moist	
						0/0			
10								Boring terminated at 10.0 ft.	360.8
								Background in CPM is alpha-0, beta-229	
15									

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Boring 001-134

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6874.77 E, -1849.42 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-24-98*	Surface Elevation: *372.06 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Gravel (50%), fine to medium grained, angular to subangular, poorly sorted, cherty; sand (30%) fine to coarse, subangular to subrounded, poorly sorted; silt and clay (20%), dark yellowish brown (10YR4/4), slightly moist	370.1
			100.0	5	317	0/0		Clay, silty, light yellowish brown (10YR6/4) with brownish yellow (10YR6/6) and very dark gray (10YR3/1) mottles, somewhat brittle, crumbly, slightly moist	369.1
						0/0			
5						0/0			
						0/0		Same as above except color change to dark yellowish brown (10YR4/6)	
			100.0	5	317	0/0			
						0/0			
						0/0		Clay, some silt, brown (10YR5/3) with yellowish brown (10YR5/4) and very dark gray (10YR3/1) mottles, firm, slightly moist	
10								Boring terminated at 10.0 ft.	362.1
								Background in CPM is: alpha-0, beta-317	
15									

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Boring 001-135

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6827.52 E, -1813.76 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *373.50 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, very silty, dark yellowish brown (10YR4/4), light brownish gray mottles (10YR6/2), trace cherty gravel, crumbly	371.5
						0/0		Clay, silty, light yellowish brown (10YR6/6) with brownish yellow (10YR6/8) and rare very dark gray mottles (10YR3/1) firm, slightly moist	
			100.0	1	213	0/0			
5						0/0			
						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6), brownish yellow (10YR6/6) mottles, some very dark gray (10YR3/1) mottles	
			100.0	1	213	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	363.5
								Background in CPM is: alpha-1, beta-213	
15									

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Boring 001-136

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6774.38 E, -1849.60 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *374.40 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, very silty, dark yellowish brown (10YR4/4) with light brownish gray (10YR6/2) mottles, crumbly, slightly moist	372.4
						0/0			
			100.0	1	213	0/0		Clay, silty, light yellowish brown (10YR6/4) with brownish yellow (10YR6/8) mottles	
5						0/0			
						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6) with brownish yellow (10YR6/6) mottles, occasional very dark gray (10YR3/1) mottles, slightly moist	
			100.0	1	213	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	364.4
								Background in CPM is: alpha-1, beta-213	
15									

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Boring 001-137

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6723.69 E, -1851.56 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-26-98*	Surface Elevation: *374.13 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, very silty, yellowish brown (10YR5/6), trace gravel (limestone), brittle	372.1
						0/0			
			100.0	1	213	0/0		Clay, silty, light brownish gray (10YR6/2) with very dark gray (10YR3/1) mottles, crumbly	
5						0/0			
						0/0			
						0/0		Clay, some silt, yellowish brown (10YR5/6), occasional very dark gray (10YR3/1) and pale brown (10YR6/3) mottles	
			100.0	1	213	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	364.1
								Background in CPM is: alpha-1, beta-213	
15									

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Boring 001-138

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6674.83 E, -1819.54 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *374.07 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
									372.1
						0/0			
						0/0			
			100.0	0	450				
						0/0			
5									
						0/0			
								Clay, silty, yellowish brown (10YR5/4), moist, stiff	
						0/1			
						0/4			
			100.0	0	445				
						0/1			
								VOA Screen Collected from 9.5 - 10.0 ft.	
						0/0			
10									364.1
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-139

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6724.00 E, -1885.17 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-26-98*	Surface Elevation: *373.55 feet msl*
Completed at *on 2-26-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			371.5
						0/0			
			100.0	0	425	0/0		Silt, clayey, yellowish brown (10YR5/6), mottled light gray (10YR7/2), moist, stiff	
5						0/0			
						0/0			
						0/0			
			100.0	0	415	0/0			
						0/0		VOA Screen Collected from 9.5 - 10.0 ft.	
10								Boring terminated at 10.0 ft.	363.5
								Background in CPM is: alpha-0, beta-382	
15									

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Boring 001-140

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6776.77 E, -1898.86 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-20-98*	Surface Elevation: *372.84 feet msl*
Completed at *on 2-20-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			370.8
						0/0		Clay with silt, brown (10YR5/3) with brownish yellow (10YR6/6) mottling, fairly hard, slightly moist	
			100.0	1	212	0/0			
									368.3
5						0/0		Silt with clay and sand, very fine grained, pale brown (10YR6/3), dense, somewhat crumbly	
									367.3
						0/0		Clay with silt, yellowish brown (10YR5/4), slightly mottled brownish yellow (10YR6/6), firm	
						0/-			
			100.0	1	212	0/0			364.8
								Silt with clay, brown (10YR5/3) to dark yellowish brown (10YR4/6), firm	
						0/0			363.8
								Clay with silt, dark yellowish brown (10YR4/6), firm	
10									362.8
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-1, beta-212	
15									

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Boring 001-141

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6825.72 E, -1898.05 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-19-98*	Surface Elevation: *372.04 feet msl*
Completed at *on 2-19-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			370
						0/0			
			83.0	0	327	0/0		Clay, trace silt, mottled, brownish yellow (10YR6/6), soft	
								Clay, very dark grayish brown (10YR3/2) to light brownish gray (10YR6/2) with brownish yellow (10YR6/6) mottles, crumbly	
5						0/0			
						0/0			366
								Silt with clay, brownish yellow (10YR6/6), slightly mottled, moderatley firm, slightly moist	
						0/0			365
								Clay, gray (10YR6/1), moderatley firm	
			100.0	0	327	0/0			
						0/0			
								Clay with silt, brownish yellow (10YR6/6), mottled with (10YR3/1), very thin laminae, moderately firm, slightly moist	
10									362
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-327	
15									

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Boring 001-142

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6876.77 E, -1888.02 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-19-98*	Surface Elevation: *370.45 feet msl*
Completed at *on 2-19-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0		Clay, trace silt, dark yellowish brown (10YR4/4), soft, slightly moist	368.5
			83.0	0	327	0/0		Silt with clay, light yellowish brown (10YR6/4), crumbly, slightly moist	367.5
						0/0			
5						0/0			
						0/0			
						0/0		Silt, trace fine to very fine sand and clay, yellowish brown (10YR5/6) crumbly	
			100.0	0	327	0/0		Clay with silt, yellowish brown (10YR5/6), moderatley firm, slightly moist	362.5
						0/0		Silt with clay, trace fine grained sand, yellowish brown (10YR5/6), crumbly, slightly moist	361.5
10								Boring terminated at 10.0 ft.	360.5
								Background in CPM is: alpha-0, beta-327	
15									

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Boring 001-143

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6925.28 E, -1900.44 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-20-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 2-20-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						0/0			367.9
						0/0		Clay with silt, dark yellowish brown (10YR4/4) and occasional limonite streaking, firm, slightly moist and damp	
			100.0	0	330	0/0			365.4
5						0/0		Silt (to very fine sand) with clay, brown (10YR5/3), firm to crumbly	364.4
						0/0		Clay with silt, predominately pale brown (10YR6/3) with brownish yellow (10YR6/6) mottles, firm	
						0/0			
			100.0	0	330	0/0		Silt with clay, predominatley pale brown (10YR 6/3) with persistent black (10YR2/1) stains (manganese), crumbly, slightly damp	361.9
						0/0			
10								Boring terminated at 10.0 ft.	359.9
								Background in CPM is: alpha-0, beta-330	
15									

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Boring 001-144

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6975.40 E, -1900.21 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 2-20-98*	Surface Elevation: *367.94 feet msl*
Completed at *on 2-20-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
						2/0			365.9
						0/0		Clay, with silt, rooty zone at 3 ft., brown (10YR5/3) with some very dark gray (10YR3/1) staining at 3 ft., hard	
			100.0	1	212	0/0			363.4
5						0/0		Silt with clay, yellowish brown (10YR5/4) with rare very dark gray (10YR3/1) mottles, somewhat crumbly	
						0/0		Silt with clay, dark yellowish brown (10YR4/6), very soft saturated	
						0/0			
			100.0	1	212	0/0			
						0/0			358.9
								Sand, very fine grained, trace quartzitic clay, and very fine grained cherty gravel, slightly moist	
10									357.9
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-1, beta-212	
15									

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Boring 001-152

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6894.12 E, -1767.09 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-5-98*	Surface Elevation: *372.65 feet msl*
Completed at *on 3-5-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	1	208	0/1		Clay, silty, trace gravel, abundant roots in upper 4 inches, dark yellowish brown (10YR4/4) mottled dark yellowish brown (10YR3/4), rare red (10R4/6) stains, slightly moist	
	X					0/6		Clay, some silt, trace gravel, dark yellowish brown (10YR4/6) mottled yellowish red (5YR4/6), some very dark gray (5YR3/1) stains, oxidized, somewhat brittle to hard	
	X					0/2			
	X		100.0	1	208	2/4		Silt, very clayey, gray (10YR5/1) with dark yellowish brown (10YR4/4) mottles, firm	369.1
5	X	X				5/5		Clay, trace silt, gray (10YR5/1), some dark yellowish brown (10YR4/4) mottles, soft	367.6
	X					4/6			
	X	X				6/4		Clay, silty, trace very fine grained sand, dark yellowish brown, mottled gray (10YR5/1), firm	
	X	X	100.0	1	208	3/3			
	X	X				5/1			
10	X	X				2/1		Boring terminated at 10.0 ft.	362.6
								Background in CPM is: alpha-1, beta-208	
15									

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Boring 001-153

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.23 E, -1766.75 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-5-98*	Surface Elevation: *372.51 feet msl*
Completed at *on 3-5-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand (60%), coarse, cherty with limestone, trace gravel, clay (40%) very loose, yellowish brown (10YR5/4), abundant roots	
			100.0	1	208	0/0		Clay, very silty, gray (10YR5/1), mottled dark yellowish brown (10YR4/6), trace roots, firm	371.5
						0/0			
						0/0		Gravel (90%) very coarse, up to 1.5 inch length, limestone trace silt and clay, wet	370
			100.0	1	208	16/3		Clay, firm, silty, gray (10YR5/1), color change to greenish gray (2GLEY5/5BG), mottled dark yellowish brown (10YR4/4)	369
5						60		Clay, some silt, firm, dense, light brownish gray mottled dark yellowish brown (10YR4/4)	
						3/15		Gravel (100%), coarse, up to 1 inch length, angular, limestone trace clay, wet	366.5
						128/58		Clay, some silt, light brownish gray (10YR6/2) mottled (10YR4/4) dark yellowish brown, slightly moist becoming, yellowish brown (10YR5/6) with depth and occasional light brownish yellow mottles (10YR6/2), firm	365.5
			100.0	1	208	40/23			
						64/34			
10						23/12		Boring terminated at 10.0 ft.	362.5
								Background in CPM is: alpha-1, beta-208	
15									

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Boring 001-154

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.46 E, -1773.71 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-5-98*	Surface Elevation: *372.51 feet msl*
Completed at *on 3-5-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	1	208			Clay, silty, trace gravel, rooty at top 4 inches, dark yellowish brown (10YR4/4) with dark yellowish brown (10YR3/4) mottles, firm, slightly damp	
	X					0/0		Clay, some silt, light brownish gray (10YR6/2) with dark yellowish brown mottles (10YR4/6), damp	
	X					0/0			
	X		100.0	1	208	0/0			
5	X	X				0/0			
	X					0/0		Clay, silty, yellowish brown (10YR5/6), mottled light brownish gray (10YR6/2) and dark yellowish brown (10YR3/4)	
	X					0/0		Clay, some silt, trace fine grained sand, yellowish brown (10YR5/6) with brownish yellow (10YR6/8)	
	X	X	100.0	1	208	0/0			
	X	X				0/0			
10	X	X						Boring terminated at 10.0 ft.	362.5
								Background in CPM is: alpha-1, beta-208	
15									

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Boring 001-155

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6876.61 E, -1732.00 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-6-98*	Surface Elevation: *373.07 feet msl*
Completed at *on 3-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	0	286	0/0		Clay, yellowish brown (10YR5/4), somewhat firm, abundant roots Clay (60%), gravel (40%) medium grained, chert and limestone up to 3/4 inch, dark grayish brown (10YR4/2), firm	370.6
	X	X	12	0	286	0/0 0/0 0/0		Gravel, coarse grained (up to 1.5 inch length) angular to subangular, limestone fill	367.1
5									
	X	X	100.0	0	286	0/0 0/0 0/0		Clay, soft, very moist to slightly wet, gray (5YR6/1)	366.1
								Gravel, (as above)	365.6
								Clay, some silt, predoinantly dark yellowish brown (10YR4/6) with grayish brown (10YR5/2) mottles, firm to moderately soft	363.1
10								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-286	
15									

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Boring 001-156

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6877.01 E, -1720.76 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-6-98*	Surface Elevation: *372.68 feet msl*
Completed at *on 3-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	0	286	0		Clay, some silt, firm, abundant roots, trace gravel, grayish brown (10YR5/2)	371.7
	X					4/2		Silt, with clay, crumbly, light grayish brown (10YR6/2), mottled yellowish brown (10YR5/6)	369.7
	X					5/5		Clay, some silt, firm, dark, yellowish brown (10YR4/4), heavily mottled yellowish brown (10YR5/6) and some (10YR3/1) very dark gray	
	X		100.0	0	286	40/35			
5	X	X				14/6		Clay, very soft, moist, gray (10YR6/1) with dark yellowish brown (10YR4/4) mottles	
	X					259/112			
	X					118/85		Clay, very silty, trace very fine grained sand, firm to slightly crumbly, predominantly dark yellowish brown (10YR4/6) with very dark gray mottles (10YR3/1) and gray (10YR6/1) mottles	
	X	X	100.0	0	286	457/230			
	X	X				184/90			
	X	X						Clay, very soft, very moist, gray (10YR5/1), strong hydrocarbon-like odor	
10	X	X				1000/1000		Boring terminated at 10.0 ft.	362.7
								Background in CPM is: alpha-0, beta-286	
15									

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Boring 001-157

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6835.76 E, -1720.79 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-6-98*	Surface Elevation: *372.76 feet msl*
Completed at *on 3-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X							Clay, trace silt, and sand, dark yellowish brown (10YR3/6), firm	
	X		100.0	0	232			Clay, trace silt, light brownish yellow (10YR6/2) mottled, yellowish brown (10YR5/6), some very dark gray (10YR3/1) mottles, firm	
	X					33/4		Clay (60%); gravel (40%) limestone, medium grained, up to 1 inch, gray (10YR5/1), fill	
	X					14/0		Clay, gray (5YR5/1), soft, very moist	
	X		100.0	0	232	9/0		Clay, silty, predominantly light brownish gray (10YR6/2), some dark yellowish brown (10YR4/4) mottles with yellowish brown (10YR5/6) staining, firm	
	X					45/11			
5	X	X				25/10			
	X					233/100		Clay, somewhat silty, yellowish brown (10YR5/8)	
	X					202/100		Clay, gray (10YR5/1), occasional yellowish brown (10YR5/6) mottles, very soft, very moist	
	X		100.0	0	232	102/53		Clay, silty, dark yellowish brown (10YR4/6) with brownish yellow (10YR6/6) mottles, firm to moderately crumbly	
	X					133/78			
10	X	X						Boring terminated at 10.0 ft.	362.8
								Background in CPM is: alpha-0, beta-232	
15									

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Boring 001-158

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6835.65 E, -1730.98 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-6-98*	Surface Elevation: *372.89 feet msl*
Completed at *on 3-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	0	598	5/0		Clay, some silt, abundant roots, trace gravel (limestone) grayish brown (10YR5/2), with red (10R4/8) sandy, crystalline-like substance at 0.5 ft., firm Clay, silty, trace fine to coarse grained sand, dark yellowish brown (10YR4/4) becoming gray (10YR5/1) with depth and softer	
	X					106/0 23/0 10/0		Gravel (70%) fine to medium grained (up to 1 inch long) limestone with iron, stained grains, clay (20%) soft, very moist, gray (5Y5/1)	370.9
	X		100.0	0	286	5/0		Clay, silt, tace very fine sand, pale brown (10YR6/3), mottled dark yellowish brown (10YR4/4) and very dark gray (10YR3/1), firm to slightly crumbly	369.4
5	X	X				6/0			
	X					46/0		Clay, silty, brownish yellow (10YR6/6) with yellowish brown (10YR5/6) mottles, some very dark gray (10YR3/1) oxidized zones	
	X	X				14/0			
	X	X	100.0	0	286	46/0			
	X	X				82/0			
10	X	X				29/0		Boring terminated at 10.0 ft.	362.9
15								Background in CPM is: alpha-0, beta-286	

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Boring 001-159

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6835.46 E, -1757.53 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3/6/98*	Surface Elevation: *373.41 feet msl*
Completed at *on 3/6/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X							Clay, gravelly, limestone gravel fill up to 1 inch long, grain, some silt, dark yellowish brown (10YR3/6), firm	
	X		100.0	0	232	0/0		"Trap Mix" pellets (60%), up to 1/8 inch diameter, clayey dark yellowish brown (10YR3/6), capped by approximately 2 inch of charcoal-like, coarse to fine grained, angular, grains, some chert	
	X					0/0			
	X					NR			
	X		25.0	0	232	NR		(Rcvd 1 ft.) Top 3/4 ft. "Trap Mix" in clay matrix. Bottom 1/4 ft. limestone gravel fill, iron coated grains up to 1 inch in length	
5	X					NR			
	X					10/0		"Trap Mix" in clayey matrix, dark yellowish brown (10YR3/6)	
								Clay, moderately firm, gray (5Y5/1) with some brownish yellow (10YR6/6) mottling	
						6/0			366.4
								Gravel, limestone fill, grains up to 1.5 inch in length, gray (5Y5/1)	365.9
			100.0	0	232	4/0			
						3/0		Clay, very silty, yellowish brown (10YR5/8) with light brownish gray (10YR6/2) mottling, occasional very dark gray (10YR3/1) manganese and limestone stains, moderately firm to slightly crumbly	
10						22/0			363.4
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-232	
15									

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Boring 001-160

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6789.53 E, -1757.46 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-9-98*	Surface Elevation: *373.84 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	1	676			Clay, silty, trace limestone gravel, brown (10YR4/3) with some dark grayish brown (10YR4/2) mottles, abundant roots, moderately firm	
	X					0/0		Clay, gravelly, limestone, up to 1 inch long, trace silt and very fine sand, dark gray (10YR4/1) to gray (10YR5/1), some dark yellowish brown (10YR4/4) mottles, slightly moist	
	X					0/0		Clay, some silt, light yellowish gray (10YR6/2) with dark yellowish brown (10YR4/4) mottles, rare very dark gray (10YR3/1) mottles, firm	
	X		100.0	0	233	0/0			
5	X	X				0/0			
	X					0/0			
	X	X				0/0		Clay, silty, dark yellowish brown (10YR4/4) with light brownish gray (10YR6/2) mottles, trace fine grained sand, firm, slightly moist	
	X	X	100.0	0	233	0/0			
	X	X				0/0			
10	X	X						Boring terminated at 10.0 ft.	363.8
								Background in CPM is: alpha-0, beta-233	
15									

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Boring 001-161

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6791.35 E, -1729.42 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-6-98*	Surface Elevation: *373.61 feet msl*
Completed at *on 3-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	0	232			Clay, silty, slightly gravelly, dark yellowish brown, (10YR4/4), abundant roots from (0 - 1.0 ft.), dark red (10R3/6) clay at 1.0 - 1.25 ft., crumbly overlain by chert gravel	
	X					0/0		Clay, very silty, trace fine grained sand, yellowish brown (10YR5/4) with some light yellowish brown (10YR6/4) mottles, rare brownish yellow (10YR6/6) mottles, crumbly	
	X					0/0			
	X		100.0	0	232	0/0		Clay, some silt, light yellowish brown (10YR6/4) with very dark gray (10YR3/1) mottles, cohesive	
5	X	X				0/0			
	X					0/0			
	X					0/0		Clay, silty, yellowish brown (10YR5/8), rare very dark gray (10YR3/1) mottles, hard but crumbly	
	X	X	100.0	0	232	0/0			
	X	X				0/0			
10	X	X						Boring terminated at 10.0 ft.	363.6
								Background in CPM is: alpha-0, beta-232	
15									

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Boring 001-162

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6933.63 E, -1816.16 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-9-98*	Surface Elevation: *371.43 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Limestone, gravel, some clay, road base	
	X		100.0	0	233			Clay, silty, some roots, brown (10YR4/3), some dark grayish brown (10YR4/2) mottles, rare very dark gray (10YR3/1) mottles	
	X					0/0		Clay, silty, light brownish gray (10YR6/2) with dark yellowish brown (10YR4/4) mottles, occasional very dark gray (10YR3/1) stains, slightly moist, firm	
						0/0			
			100.0	0	233	0/0			
5		X				0/0			
	X					0/0		Clay, trace silt, gray (10YR6/1) with occasional dark yellowish brown (10YR4/4) mottles	
						0/0		Clay, silty, dark yellowish brown (10YR4/4) with some light brownish gray (10YR6/2) mottles, trace very fine grained, sand, rare very dark gray (10YR3/1) stains, firm to slightly crumbly, slightly moist	
			100.0	0	233	0/0			
						0/0			
10								Boring terminated at 10.0 ft.	361.4
								Background in CPM is: alpha-0, beta-233	
15									

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Boring 001-165

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6878.94 E, -1720.68 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-16-98*	Surface Elevation: *372.68 feet msl*
Completed at *on 3-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5								0.0 - 14.0 ft. Not Logged See 001-056 for 0.0-10.0 ft. interval	
10									
	X	X						Clay (95%) trace silt, yellowish brown (10YR5/6) with light brownish gray (10YR6/2) mottles, moderately firm, moist	358.7
15			100.0	0	252	*			

Boring 001-165

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6878.94 E, -1720.68 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-16-98*	Surface Elevation: *372.68 feet msl*
Completed at *on 3-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								* PID >1000 units, unable to obtain FID reading due to instrument alarm that turned off concentration display	
			100.0	0	252	41/-		Sand (60%) moderately sorted, medium to coarse grained, subangular to subrounded, cherty; gravel (30%) fine to medium grained, trace silt (10%) dark yellowish brown (10YR4/4), very strong diesel-like odor in 14.0 - 17.0 ft. interval	356.7
								Gravel (60%) poorly sorted, subangular to subrounded, medium to coarse grained, cherty; sand (30%) coarse grained, subangular to subrounded, cherty and quartzitic, trace clay (10%) yellowish brown (10YR5/6) to dark yellowish brown (10YR4/4), slightly moist to damp, diesel-like odor	355.7
			100.0	0	299	42/-			
						80/-			
20									
						2096/-			
			100.0	0	299	175/-			
						79/-			350.2
								Clay, light gray (10YR7/2) with yellowish brown (10YR5/8) mottles, very firm, stiff	
						22/-		Clay (90%), trace silt (10%), yellowish brown (10YR5/6) with occasional light gray (10YR7/2) mottles and some very dark gray staining (10YR3/2), stiff	
			100.0	0	299	22/-			
25									
						73/-		Clay (90%), trace silt and fine sand, strong brown (7.5YR5/8) with yellowish brown (10YR5/8) mottles, occasional light gray (10YR7/2) mottles, stiff	
			100.0	0	299	56/-			
						23/-			
						64/-			
30			67.0	0	299	5/-			

Boring 001-165

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6878.94 E, -1720.68 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-16-98*	Surface Elevation: *372.68 feet msl*
Completed at *on 3-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						9/-			
						205/-		Clay (80%) little silt (20%), brownish yellow (10YR6/8), trace light brownish gray (10YR6/2) mottles, stiff	
						12/-			
			100.0	0	299	47/-		Clay (90%) trace silt (10%), yellowish brown (10YR5/6) with some red (10R5/8) mottles, rare light brownish gray (10YR6/2) mottles, stiff	
35						113/-			
			100.0	0	299	59/-			
						154/-		Clay (70%); silt (20%); trace fine grain sand (10%) and gravel strong brown (7.5YR5/8) with gray (10YR6/1) mottles, stiff, slightly moist Color change to yellowish-brown (10YR5/8) with gray (10YR6/1) mottles and rare strong brown (7.5YR5/8) stringers	
						317/-			
						81/-			
			100.0	0	299	93/-			
40						55/-			
						95/-		Clay (90%) trace silt and very fine sand, light gray (10YR7/2) with yellowish brown (10YR5/6) mottling, stiff	
			100.0	0	299	75/-			
						20/-		Trace fine grained (cherty and quartzitic) from 43.0 - 44.0 ft.	
								Clay (100%) yellowish brown (10YR5/6), heavily mottled with gray (10YR6/1), light red (10R6/6), stiff	
45			100.0	0	299	27/-			

Boring 001-165

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6878.94 E, -1720.68 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-16-98*	Surface Elevation: *372.68 feet msl*
Completed at *on 3-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						61/-		Becoming silty (20%) with trace fine sand	
						26/-		Clay (80%); silt and fine grained sand (20%), dark yellowish brown (10YR4/4) and light brownish gray (10YR6/2), stiff, slightly moist, heavily mottled black (10YR2.5/1) from 48.0 - 48.5 ft.	
						9/-			
			100.0	0	299	16/-			
						16/-			
50								Boring terminated at 50.0 ft.	322.7
55									
								Background in CPM is: alpha-0, beta-299	
60									

Boring 001-166

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6900.39 E, -1720.33 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-18-98*	Surface Elevation: *372.45 feet msl*
Completed at *on 3-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
									369.5
						3/0		Clay (70%); silty (30%), pale brown (10YR6/3) with yellowish brown mottling (10YR5/8) and very dark gray blotches (10YR3/1), stiff to slightly crumbly, damp	
5				3	274	4/0			
						12/20		Clay (90%); trace silt (10%), grayish brown (10YR5/2) mottled yellowish brown (10YR5/6)	
						14/57			
			100.0	3	274	13/39			
						18/47		Clay (70%); silt and fine grained sand (30%), yellowish brown with grayish brown (10YR5/2) and very dark gray (10YR3/1) mottles, some light brownish gray mottles (10YR6/2), moderately firm to somewhat brittle, slightly moist	
						4/14			
						2/5			
10						10/30			
			100.0	3	274	9/24			
						14/38			
						22/55			
						23/53			
			100.0	3	274	43/95			
15						20/41			357.5

Boring 001-166

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6900.39 E, -1720.33 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-18-98*	Surface Elevation: *372.45 feet msl*
Completed at *on 3-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						12/23		Sand (80%), moderately sorted, subangular to subrounded, coarse grained;, gravelly (20%), fine to medium grained, subangular to subrounded, cherty, dark yellowish brown (10YR4/4) to yellowish brown (10YR5/6)	357.5
			100.0	3	274	19/26		Clay (80%), silt (20%), yellowish brown (10YR5/4)	356.5
						9/16		Sand (90%), moderately sorted, very fine grained, guartzitic; trace silt (10%) and gravel, light gray (10YR7/1) with some light brownish gray (10YR6/2) mottles	355.5
						21/40			
20			100.0	3	274	48/88		Gravel (40%), poorly sorted, subangular to subrounded, fine to medium grained, cherty; clay (40%), little silt and sand (20%), yellowish brown (10YR5/8) with light brownish gray mottles (10YR6/2), firm	353.5
						19/33			
						16/17			
			100.0	3	274	21/23		Clay (80-90%) little to some silt (10-20%), trace fine grained gravel, light brownish gray (10YR6/2) with brownish yellow (10YR6/6) and very dark gray (10YR3/1) mottles, moderately firm to somewhat soft, slightly moist	350.5
						26/38			
						2/4		Becoming firm to slightly brittle and brownish yellow (10YR6/8) with light brownish gray (10YR6/2) and rare very dark gray (10YR3/1) and red (10R4/8) mottles near base of interval	
25			100.0	3	274	40/57			
						10/14			
						24/35		Clay (90%) little gravel, trace sand (fine grained), dark yellowish brown (10YR4/6) with yellowish brown (10YR5/8) yellowish brown mottling	
			100.0	3	274	55/119		Clay (90%) trace gravel (10%), very fine, strong brown (7.5YR5/8) with some gray (7.5YR5/1) mottling	
						5/8			
30									

Boring 001-166

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6900.39 E, -1720.33 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-18-98*	Surface Elevation: *372.45 feet msl*
Completed at *on 3-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						34/66		Clay (95%) trace silt, trace cherty gravel, brownish yellow (10YR6/8), firm to somewhat soft, some strong brown mottles at 30.0 - 31.0 ft.	
			100.0	3	274	51/100			
						12/19			
						9/14		Clay (95%) trace silt and fine grained sand, strong brown (7.5YR4/6) with light gray (7.5YR7/1) mottling, firm to moderately firm	
			100.0	3	274	38/78			
35						28/77			
						5/6		Mottling decreases, strong brown (7.5YR4/6) dominant, with some light gray (7.5YR7/1) mottles	
			100.0	3	274	2/3			
						12/29			
						6/8		Clay (95%), trace silt and fine sand, light brownish gray with brownish yellow (10YR6/8) mottles, moderately firm to slightly soft	
40			100.0	3	274				
						0/0			
			100.0	3	274	0/0		Clay (95%) trace silt, heavily mottled light yellowish brown (10YR6/4) to brownish yellow (10YR6/6) with rare red (10R4/8) and (10YR3/1) streaking	
45									

Boring 001-166

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6900.39 E, -1720.33 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-18-98*	Surface Elevation: *372.45 feet msl*
Completed at *on 3-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	3	274	0/0		Clay (70%), some silt (30%), strong brown (7.5YR5/6) with gray (7.5YR6/1) mottles, moderately firm	
			100.0	3	274	0/0		Clay (90%) trace silt, dark yellowish brown (10YR4/6) with light gray (10YR7/1) mottles, rare very dark gray (10YR3/1) streaking, stiff	
50								Boring terminated at 50.0 ft.	322.5
55									
60								Background in CPM is: alpha-3, beta-299	

Boring 001-168

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6790.63 E, -172123 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-21-98*	Surface Elevation: *373.22 feet msl*
Completed at *on 3-21-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not Sampled	
5		X				0/0		Clay (90%), trace silt, yellowish brown (10YR5/6) with light gray (10YR7/2) and very dark gray (10YR3/1) mottles, firm	368.2
						0/0			
			100.0	0	248	0/0			
						0/0			
								Clay (80%) some silt, dark yellowish brown (10YR4/6)	
						0/0		Clay (80%), some silt, dark yellowish brown (10YR4/4) with rare very dark gray (10YR3/1) streaking, moderately firm to slightly crumbly, trace fine grain sand	
10						0/0			
			100.0	0	248	0/0			
						0/0			
						0/0			
						0/0		Clay (60%), silt (20%), sand (20%) fine to medium grained, poorly sorted, quartzitic; trace fine to medium grained cherty gravel, yellowish brown (10YR5/6) with gray (10YR6/1) mottling	
15						0/0			

Boring 001-168

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6790.63 E, -17213 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-21-98*	Surface Elevation: *373.22 feet msl*
Completed at *on 3-21-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	0	248	0/0		Clay, same as above	
						0/0		Gravel (70%) fine to coarse, poorly sorted, subangular to subrounded, cherty, clay (30%) yellowish brown (10YR5/8) to dark yellowish brown (10YR3/6) with some red (10R4/8) and very dark gray (10YR3/1) staining	356.2
						7/4			
			100.0	0	248	6/3			
20						4/1			
						45/62			
			100.0	0	248	15/22			
						12/14		Clay (90%) trace silt, pale brown (10YR7/4) mottled yellowish brown (10YR5/4) and light brownish gray (10YR/6/2) with some very gray (10YR3/1) mottling from 23.5 to 24.0 ft.	350.2
						10/12			
25			100.0	0	248	5/6		Trace fine sand from 25.5 - 26.5 ft.	
						7/7			
						21/32		Gravel (60%), fine to medium grained, poorly sorted, subangular to subrounded, cherty, clay (40%) firm, yellowish brown (10YR5/8) with some dark gray (10YR5/1) mottles	346.7
			100.0	0	248	9/11		Gravel (90%) medium grained, moderately sorted, angular, cherty, sand (10%), medium grained, dark brown (7.5YR3/4) with very dark gray (10YR3/1) coatings on grains	344.7
						7/10		Clay (90%) trace silt, yellowish brown (10YR5/6) with light brownish gray (10YR6/2) mottles, trace very fine grained gravel, firm	
30						10/20			

Boring 001-168

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6790.63 E, -172123 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-21-98*	Surface Elevation: *373.22 feet msl*
Completed at *on 3-21-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	0	248	0/0		Clay (70%), sandy (30%) fine grained, yellowish brown (10YR5/8) with light gray (10YR7/1) mottling, trace yellowish red (5YR4/6) mottling	
						0/0			
						0/0			340.2
			100.0	0	248	0/0		Sand (90%) fine to medium grained, poorly sorted, subangular to subrounded, cherty and quartzitic, trace silt and clay, yellowish brown (10YR5/8) with trace gray (10YR6/1) mottling, slightly moist	
35						36/32			
			100.0	0	248	-/-		Sand (70%) fine to medium grained, poorly sorted, subangular to subrounded, quartzitic, silt (20%), clay (10%) light gray (10YR7/1) with some brownish yellow (10YR6/6) mottles	
						0/0			
40			100.0	0	248	0/0		Silt (60%) fine grained, clayey (20%) and sandy (20%) light gray (10YR7/1) with some brownish yellow (10YR6/6) mottling	333.2
						0/0			
						0/0			
			100.0	0	248	0/0			
						0/0			
45						0/0			328.2

Boring 001-168

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6790.63 E, -172123 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-21-98*	Surface Elevation: *373.22 feet msl*
Completed at *on 3-21-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									328.2
			100.0	0	248	0/0		Sand (70%) fine to medium grained, poorly sorted, subangular to subrounded, quartzitic, silty (20%) and clayey (10%) light gray (10YR7/1) with some brownish yellow (10YR6/6) mottles	
						0/0			
						0/0			325.2
			100.0	0	248	0/0		Clay (60%), sandy (20%) and gravelly (20%), sand is medium grained, quartzitic, moderately sorted, subangular to subrounded, gravel is fine to medium grained, cherty, subangular to subrounded, poorly sorted, dark yellowish brown (10YR4/6)	
50						0/0			323.2
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-248	
60									

Boring 001-169

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6855.42 E, -1695.54 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-23-98*	Surface Elevation: *371.07 feet msl*
Completed at *on 3-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5									
								No samples taken, boring started at 15 ft.	
10									
15						0/0			356.1

Boring 001-169

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6855.42 E, -1695.54 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-23-98*	Surface Elevation: *371.07 feet msl*
Completed at *on 3-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									356.1
			100.0	0	475	0/0		Clay (75%), silty (25%) heavily mottled, yellowish brown (10YR5/4), brown (10YR4/3), light brownish gray (10YR6/2) with trace very dark gray (10YR3/1) streaks, firm	
						0/0			
									353.6
						0/0		Sand (90%) medium grained, moderately sorted, angular to subrounded, cherty, quartzitic, trace gravel, silt, clay, strong brown (7.5YR5/6), mottled brown (7.5YR5/4)	353.1
			100.0	0	475	0/0		Gravel (70%) fine to coarse grained, poorly sorted, angular to subangular, cherty; clayey (30%) dark yellowish brown (10YR4/4), moist	352.1
20						0/0		Gravel (50%) fine to coarse gravel, poorly sorted, angular to subangular, cherty, sandy (40%) medium to coarse grained, poorly sorted, subangular to subrounded, trace clay and silt, strong brown (7.5 YR4/6) with rare red (10YR5/8) staining	
						0/0			
			100.0	0	475	0/0			
									348.6
						0/0		Clay (90%), silty (10%), trace fine grained gravel, yellowish brown (10YR5/4), mottled light yellowish brown (10YR6/4), very dark gray (10YR3/1) and gray (10YR6/1)	
						0/0			347.1
								Sand (80%) fine to medium grained, poorly sorted, angular to subrounded, quartzitic and cherty, silty (20%) yellowish brown (10YR5/8)	
25			100.0	0	475	0/0			346.1
								Same as 22.5 - 24.0 ft. interval	
						0/0			
						0/0			344.1
								Sand (60%) fine to medium grained, poorly sorted, quartzitic, subangular to subrounded, clayey (40%), strong brown (7.5YR5/8) with gray (7.5YR6/1) mottles	
			100.0	0	475	0/0			
						0/0			
30						20/5			

Boring 001-169

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6855.42 E, -1695.54 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-23-98*	Surface Elevation: *371.07 feet msl*
Completed at *on 3-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	0	475	0/0		Sand (90%) medium to coarse grained, moderately sorted, subangular to subrounded, quartzitic, silty and clayey (10%) strong brown (7.5YR5/6)	
						8/8			
						12/5			
			100.0	0	475	5/0			
35						0/0			
									335.6
						7/7		Clay (80%), silty (20%), trace fine sand and gravel, yellowish brown (10YR5/6) with gray (10YR6/1) mottles	335.1
			100.0	0	475	20/18		Sand (90%), medium to coarse grained, moderately sorted, angular to subrounded, quartz and cherty, silt and clay (10%) yellowish brown (10YR5/6) very moist to wet	334.6
						5/7		Clay (80%), sandy (20%) fine to coarse grained, poorly sorted, yellowish brown (10YR5/6) to brownish yellow (10YR6/6) with gray mottles (10YR6/1), trace gravel, slightly moist	
						9/8		Clay (70%), silty (30%) trace fine grained sand and gravel (cherty) light gray (10YR7/1) with yellowish brown mottles (10YR5/8)	
						11/11			
40			100.0	0	475	8/11			
						10/15			
			100.0	0	475	0/0			
						7/9			
45						15/22			326.1

Boring 001-169

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6855.42 E, -1695.54 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-23-98*	Surface Elevation: *371.07 feet msl*
Completed at *on 3-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									329.1
			100.0	0	475	54/90		Sand (70%) fine to medium grained, poorly sorted, subangular to subrounded, quartzitic, silty and clayey (30%), light gray (10YR7/1) with brownish yellow (10YR6/6) mottling, rare red (10R5/6) staining, slightly moist	
						57/138			323.1
			100.0	0	475	20/28		Sand (50%) very fine to fine grained, poorly sorted, quartzitic, clayey to silty (50%), brownish yellow with light gray (10YR7/1)	
50									321.1
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-475	
60									

Boring 001-171

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6741.03 E, -1727.83 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-2-98*	Surface Elevation: *373.94 feet msl*
Completed at *on 4-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started at 5 ft.	
5						0/0			368.9
			100.0	0	340	0/0		Clay (80%), silty (20%), brown (10YR5/3) with dark yellowish brown mottling (10YR4/6), some very dark gray mottling (10YR3/1), firm to slightly crumbly, slightly moist	
						0/0			
						0/0			365.9
								Interval not sampled	
10						0/0			363.9
			100.0	0	340	0/0		Clay (90%) trace silty (10%) dark yellowish brown (10YR4/6) light gray (10YR7/1) to very dark gray (10YR3/1) mottles firm, slightly moist	
						0/0			
						0/0			360.9
								Interval not sampled	
15						0/0			358.9

Boring 001-171

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6741.03 E, -1727.83 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-2-98*	Surface Elevation: *373.94 feet msl*
Completed at *on 4-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									358.9
			100.0	0	340	0/0		Same as 10 - 13 ft. interval	
									357.4
						0/0		Sand (60%) poorly sorted, fine to medium grained, subangular to subrounded, quartz to cherty, silt and clay (40%) dark yellowish brown (10YR4/6), mottled light gray (10YR7/1), slightly moist	356.9
						0/0		Clay (80%), silty (20%) trace fine to medium sand, strong brown (7.5YR4/6) mottled light gray (10YR7/1) firm to slightly crumbly	355.9
								Interval not sampled	
20						0/0			353.9
			100.0	0	340	0/0		gravel (60%) poorly sorted, fine to coarse grained, subangular to subrounded, cherty, sand (20%) poorly sorted, fine to coarse grained, angular to subrounded, clay (20%), dark yellowish brown (10YR4/4) with gray (10YR7/1) mottling, rare (10YR3/1) very dark gary streaking, slightly moist	
						0/0			
						0/0			350.9
								Interval not sampled	
25						0/0			348.9
								Same as 20 - 23 ft. interval	348.7
			100.0	0	340	0/0		Clay (90%) trace silt, light yellowish brown (10YR6/4) with light gray (10YR7/1) mottling, some red (10R4/8) streaking	
						0/0			
						0/0			345.9
								Interval not sampled	
30						0/0			343.9

Boring 001-171

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6741.03 E, -1727.83 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-2-98*	Surface Elevation: *373.94 feet msl*
Completed at *on 4-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									343.9
			100.0	0	340	0/0		Clay (60%), silty (40%), trace fine grained sand, yellowish brown (10YR5/6), mottled light gray (10YR7/1) and occasional dark yellowish brown (10YR4/4), moderately soft to slightly firm	
						0/0			
						0/0			340.9
								Interval not sampled	
35						0/0			338.9
			100.0	0	340	0/0		Sand (80%) poorly sorted, medium to coarse grained subangular to subrounded, quartzitic and cherty, clay and silt (20%) yellowish brown (10YR5/6) with rare light gray (10YR7/1)	
						0/0			
						0/0			335.9
								Interval not sampled	
40						0/0			333.9
			100.0	0	340	0/0		Same as 35 - 38 ft. interval but with 20-30% fine to medium cherty gravel at expense of sand	
						0/0			
						0/0			330.9
								Interval not sampled	
45						0/0			328.9

Boring 001-171

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6741.03 E, -1727.83 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-2-98*	Surface Elevation: *373.94 feet msl*
Completed at *on 4-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									328.9
			100.0	0	340	0/0		Clay (60%), silt (20%) trace sand (10%) and gravel (10%), sand is fine to medium grained, cherty; light yellowish brown (2.5Y6/4) with light gray (10YR7/1) mottles, slightly moist	
						0/0			
						0/0			
			100.0	0	340	0/0		Sand (50%), poorly sorted, fine to medium grained, quartzitic, silt and clay (50%) yellowish brown (10YR5/6) very soft, very moist	325.4
									324.4
50						0/0		Clay (70%), fine sand (30%) brownish yellow (10YR6/6) with pale brown (10YR6/3) mottling, moderately firm	323.9
								Boring terminated at 50.0 ft.	
55									
60									

Background in CPM is: alpha-0, beta-340

Boring 001-172

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.11 E, -1765.15 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-3-98*	Surface Elevation: *372.54 feet msl*
Completed at *on 4-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5									
10									
15						17/11		Boring started at 15 ft.	357.5

Boring 001-172

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.11 E, -1765.15 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-3-98*	Surface Elevation: *372.54 feet msl*
Completed at *on 4-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									357.5
			100.0	0	309	6/6 4/7 0/0		Gravel (60%) poorly sorted, fine to medium grained, subangular to subrounded, cherty, sand (20%) poorly sorted, medium to coarse grained angular to subrounded, cherty and quartzitic, clay (20%) dark yellowish brown (10YR4/6), some yellowish brown (10YR5/8) mottling	
									354.5
								Interval not sampled	
20						4/4			352.5
			100.0	0	309	4/4 5/5		Gravel (80%) poorly sorted, fine to medium grained, subangular to subrounded, cherty, sand (20%) poorly sorted, medium to coarse grained, angular to subrounded, cherty and quartzitic, strong brown (7.5YR5/6) to light gray (7.5YR7/1)	
									349.8
								Clay (100%), strong brown (7.5 YR5/6) mottled gray (7.5YR6/1) and brown (7.5YR4/4)	349.5
								Interval not sampled	
						-/2			
25						-/4			347.5
			100.0	0	309	-/8		Same as 22.75 - 23.0 ft. trace fine grained gravel	
						-/5			345.5
								Silt (50%) and clay (50%) brownish yellow (10YR6/8) with light gray mottling (10YR7/1) trace red streaking (10R4/8)	
									344.5
								Interval not sampled	
30									

Boring 001-172

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.11 E, -1765.15 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-3-98*	Surface Elevation: *372.54 feet msl*
Completed at *on 4-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Interval not sampled	
	X	X	100.0	0	452	7/8 0/0 2/2		Clay (80%), silty (20%) brownish yellow (10YR5/8) trace gravel, some light gray (10YR7/1) mottling, moderately firm	341.5
								Interval not sampled	338.5
35	X	X	100.0	0	452	2/1 0/0 3/1		Sand (90%), moderately sorted, medium to coarse gravel, subangular to subrounded, quartzitic and cherty, trace silt and clay (10%), strong brown (7.5YR5/6) changing to brownish yellow (10YR6/6) at 36.5 ft., some (10YR7/6) mottling, moist	337.5
								Interval not sampled	334.5
40	X	X	100.0	0	452	0/0 0/0 0/0		Clay (80%), silty (20%) trace fine sand, pale brown (10YR6/3) with abundant gray (10YR6/1) mottling, firm to somewhat soft	332.5
								Interval not sampled	329.5
45						0/0			327.5

Boring 001-172

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.11 E, -1765.15 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-3-98*	Surface Elevation: *372.54 feet msl*
Completed at *on 4-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									327.5
			100.0	0	452	0/0		Clay (80%), silty (10%), trace fine gravel (10%), gray (10YR6/1), mottled yellowish brown (10YR5/6), very dark gray (10YR3/1) and pale red (10R6/4), moderately firm, slightly moist	
						0/0			
						5/2		Clay (50%), silty and sand (50%) yellowish brown (10YR5/4) moderately firm, slightly moist	324.5
			100.0	0	452	0/0		Same as 45 - 48 ft. interval	
50									322.5
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-309	
60									

Boring 001-173

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6950.58 E, -1719.97 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-6-98*	Surface Elevation: *372.11 feet msl*
Completed at *on 4-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5						0/0		Boring started at 5 ft.	367.1
			100.0	0	500	0/0		Clay (80%), silty (20%), dark yellowish brown (10YR4/4)with light gray (10YR7/1) and very dark gray (10YR3/1) mottling, firm, slightly moist	
						0/0			
								Interval not sampled	364.1
10						0/0		Clay (80%), silty, yellowish brown (10YR5/6) with light gray (10YR7/1) mottles, firm to moderately firm, slightly moist	362.1
			100.0	0	500	0/0			
						0/0			
								Interval not sampled	359.1
15						0/0			357.1

Boring 001-173

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6950.58 E, -1719.97 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-6-98*	Surface Elevation: *372.11 feet msl*
Completed at *on 4-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									357.1
			100.0			0/0		Sand (90%), moderately sorted, fine to coarse gravel, subangular to subrounded, quartzitic and cherty, trace silt (10%), fine gravel, yellowish brown (10YR5/4), moist, Sand coarsens with depth	
						0/0			355.1
								Clay, same as 10 -13 ft. interval	354.6
								Sand (50%) medium to coarse, poorly sorted, subangular to subrounded, cherty and quartzitic, gravel (50%) poorly sorted, subangular to subrounded, trace clay, dark yellowish brown (10YR4/4), slightly moist	354.1
								Not sampled	
20						0/0			352.1
			100.0			0/0		Gravel (70%) poorly sorted, fine to medium grained, angular to subrounded, cherty, sand (30%) medium to coarse grained, poorly sorted, subangular to subrounded, quartzitic and cherty, trace silt and clay, dark yellowish brown (10YR4/4)	
						0/0			
						0/0			349.1
								Sand (50%) poorly sorted, fine to medium grained, subangular to subrounded, quartzitic cherty clay and silt (50%), dark yellowish brown (10YR4/4)	348.6
			100.0			0/0		Clay (90-100%), trace silt (0-10%), yellowish brown (10YR5/6) with some dark yellowish brown mottling (10YR4/6)	
25						0/0		Not sampled	347.1
			100.0			0/0			
						0/0			
									344.6
								Clay (100%) yellowish red (5YR4/6) with yellowish red (5YR5/8) mottling, very firm, slightly damp	344.1
								Not sampled	
30						0/0			342.1

Boring 001-173

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6950.58 E, -1719.97 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-6-98*	Surface Elevation: *372.11 feet msl*
Completed at *on 4-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									342.1
	X	X	100.0	0	500	0/0		Clay (50%) and silt (50%) trace fine sand, yellowish brown (10YR5/6) mottled pale brown (10YR6/3)	
									340.6
						0/0		Clay (80%), silty (20%) light yellowish brown (10YR6/4) with brownish yellow (10YR6/6) mottles	
									339.1
								Interval not sampled	
35						0/0			337.1
	X	X	100.0	0	500	0/0		Clay (90%), trace silt (10%), yellowish brown (10YR5/6) with gray (10YR6/1) mottling, firm, slightly moist	
						0/0		Clay (90%), trace silt (10%) gray (10YR6/1) with rare very dark gray (10YR3/1) and yellowish brown (10YR5/6) mottles, firm, slightly damp	
									334.1
								Interval not sampled	
40						0/0			332.1
	X	X	100.0	0	500	0/0		Same as 35 - 37 ft. interval, trace fine to medium grained gravel	
						0/0			
									329.1
								Interval not sampled	
45						0/0			327.1

Boring 001-173

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6950.58 E, -1719.97 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-6-98*	Surface Elevation: *372.11 feet msl*
Completed at *on 4-6-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									327.1
			100.0	0	500	0/0		Same as 40 -43 ft. Clay (80%), silty (20%) gray (10YR6/1) with yellowish brown (10YR5/6) mottling, occasional very dark gray (10YR3/1) mottles, firm, slightly damp	
						0/0			
						0/0			
			100.0	0	500	0/0			
50									322.1
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0 , beta-500	
60									

Boring 001-174

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.14 E, -1796.66 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-8-98*	Surface Elevation: *372.47 feet msl*
Completed at *on 4-8-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5									
10									
								Boring started at 15 feet	
15						0/0			357.5

Boring 001-174

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.14 E, -1796.66 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-8-98*	Surface Elevation: *372.47 feet msl*
Completed at *on 4-8-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									357.5
	X	X	100.0	0	354	0/0		Sand (60%) poorly sorted, medium to coarse grained, subangular to subrounded, cherty and quartzitic, gravel (30%) poorly sorted, fine to medium grained, angular to subrounded, cherty, clay and silt (10%) brownish yellow (10YR6/6), very moist	
						0/0		Gravel (50%) poorly sorted, fine to medium grained, angular to subrounded, cherty; clay (30%) sand (20%) poorly sorted, medium to coars grained, subangular to subrounded, cherty, quartzitic, brownish yellow (10YR6/6) with some gray mottling (10YR6/1)	355.5
									354.5
								Interval not sampled	
20	X	X	100.0	0	354	0/0		Same as 17 - 18 ft. interval	352.5
						0/0		Sand (60%) poorly sorted, medium to coarse grained, subangular to subrounded, cherty and quartzitic, gravel (30%) poorly sorted, medium to coarse grained, cherty, clay (10%), strong brown (7.5YR4/6) with very dark gray (7.5YR3/1) staining on chert grains	351.5
						0/0			
								Interval not sampled	349.5
25	X	X	100.0	0	354	0/0		Clay (80%), silty (10%) and sandy (10%) brownish yellow (10YR6/6) to red (2.5YR4/6) (in top foot) to brownish yellow with yellowish brown (10YR5/6) and gray (10YR6/1) mottling from 27 - 28 ft.	347.5
						0/0			
						0/0			
								Interval not sampled	344.5
30						0/0			342.5

Boring 001-174

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.14 E, -1796.66 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-8-98*	Surface Elevation: *372.47 feet msl*
Completed at *on 4-8-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									342.5
	X	X	100.0	0	354	0/0		Clay (90%); trace silt (10%) and fine to medium sand, yellowish brown (10YR5/6) with some gray (10YR6/1) mottling, moderately firm, slightly moist to damp	
						0/0			
									339.5
								Interval not sampled	
35						0/0			337.5
	X	X	100.0	0	354	0/0		Same as 30 - 33 ft. interval	
						0/0			
									334.5
								Interval not sampled	
40						0/0			332.5
	X	X	100.0	0	354	0/0		Clay (90%); trace silt (10%), brownish yellow (10YR6/8) with light yellowish brown (10YR6/4) mottling, somewhat firm, slightly moist to damp	
						0/0			
									329.5
								Interval not sampled	
45						0/0			327.5

Boring 001-174

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6875.14 E, -1796.66 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-8-98*	Surface Elevation: *372.47 feet msl*
Completed at *on 4-8-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									327.5
			100.0	0	354	0/0		Clay (90%), trace silt (10%) light brownish gray (10YR6/2) with light yellowish brown (10YR6/4) and light red (10R6/8) mottling, heavily mottled (10YR3/1) very dark gray at 47.5 - 48.0 ft., trace fine to medium grained sand	
						0/0			
						0/0			
									324
			100.0	0	354	0/0		Sand (70%) poorly sorted, medium to coarse grained, subangular to subrounded, quartzitic; silt and clay (30%) brownish yellow (10YR6/6) with yellowish-brown (10YR5/6) mottling, slightly moist	
50									322.5
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-354	
60									

Boring 001-175

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7197.13 E, -1681.69 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *371.22 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, some silt, yellowish brown (10YR5/6)	
5				-	-	-/-			
10								Gravel, with some clay, cherty, angular, yellowish brown (10YR5/6)	361.2
15									
20				-	-	-/-			
25								Clay, some silt and gravel, firm to soft, yellowish brown (10YR5/6)	346.2
30									
35									
40				-	-	-/-			

Boring 001-175

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7197.13 E, -1681.69 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *371.22 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
50				-	-	-/-			
55		X							316.2
								Sand, fine to coarse grained, yellowish brown (10YR5/4)	314.2
60								Gravel (60-70%), poorly sorted, fine to coarse grained, angular to subrounded, cherty with some quartz; sand (30-40%) poorly sorted, medium to course grained, cherty, quartzitic, angular to subrounded brownish yellow (10YR6/8)	
65									
70									
75		X							
				-	-	-/-			
80									

Boring 001-175

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7197.13 E, -1681.69 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *371.22 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
85				-	-	-/-			
90									
95									
100									
105									
110									
								Clay, stiff, some silt and sand, micaceous, lignitic & pyritic dark bluish gray (10B3/1)	259.2
115									
120				-	-	-/-			

Boring 001-175

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7197.13 E, -1681.69 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *371.22 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
125				-	-	-/-		Clay, same as above	
130									
135									
140								Gravel, fine grained, angular to subangular, cherty, trace quartz, some very fine grained sand, lignitic and pyritic Yellowish brown (10YR5/6)	231.2
145									
150									219.2
155				-	-	-/-		Clay, stiff, pyritic, micaceous, gray	214.2
160								Boring terminated at 157.0 ft. Background in CPM is: not available	

Boring 001-176

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/28/98*	Surface Elevation: *371.81 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *82.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5								For lithology see 001-176b	
10									
15									
20									
25									
30									
35									
40									

Boring 001-176

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/28/98*	Surface Elevation: *371.81 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *82.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								For lithology see 001-176b	
50									
55									
60									
65									
70									
75									
80									

Boring 001-176

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/28/98*	Surface Elevation: *371.81 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *82.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								For lithology see 001-176b	
								Boring terminated at 82 feet	
85									
90									
95									
100									
105									
110									
115									
120									

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Boring 001-176b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6-16-98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, some silt and sand, trace gravel, yellowish brown (10YR5/6)	
5									
10				-	-	-/-			
15									
20									350.6
								Gravel, cherty, angular to subangular, minor clay, silt yellowish brown (10YR5/6)	
25									
30				-	-	-/-			339.6
								Clay, some gravel (15-20%) trace sand, fine to medium grained, gravel is cherty, fine to medium grained angular to subangular, yellowish brown (10YR5/6)	
35									
40									

Boring 001-176b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6-16-98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
									324.6
50				-	-	-/-		Clay, some gravel, trace sand medium to coarse grained, gravel is cherty, some quartzite yellowish brown (10YR5/6)	
55									
									313.6
60								Gravel (60%) poorly sorted, fine to coarse grained, angular to subangular, cherty trace quartz; sand (40%) fine to coarse grained, poorly sorted, angular to rounded, cherty with some quartz, trace silt, clay yellowish brown (10YR5/6)	
								Same as above, gravel up to 2 inches	
65									
70				-	-	-/-			
75									
80									

Boring 001-176b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6-16-98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
								Sand (70%) medium to coarse grained, poorly sorted angular to rounded cherty with some quartz; gravel (30%) fine to medium grained poorly sorted angular to rounded, cherty with some quartz brownish yellow (10YR6/8)	289.6
85									
								Same as 82-87 foot interval, gravel (50%) and sand (50%)	284.6
90				-	-	-/-			
95									
								Base of RGA, Top of McNairy Formation	272.6
100								Sand (100%), fine grained, very clean, well sorted, micaceous, quartzite light yellowish brown (10YR6/4)	
								Same as 99-102 foot interval, add trace firm micaceous clay, gray (10YR6/1)	
105									
110				-	-	-/-			
115									
								Same as 99-102 foot interval	
120									

Boring 001-176b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6594.89 E, -1699.48 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6-16-98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand, fine grained, moderately sorted, micaceous, pyritic, heavy metals, trace clay, very dark gray (10YR3/1)	
125				-	-	-/-			
									244.6
								Clay, firm, micaceus, trace silt, pyritic, very dark gray (10YR3/1)	
130									
135									
									235.6
								Sand, very fine grained, pyritic, micaceous, very dark gray (10YR3/1)	
140									
									230.6
								Clay, firm, micaceous, slightly pyritic, very dark gray (10YR3/1), trace fine sand, some clay gray (10YR6/1)	
145				-	-	-/-			
150									
									219.6
								Boring terminated at 152.0 feet	
155									
								Background in CPM is: not available	
160									

Boring 001-177

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *87.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5								For lithology see 001-177b	
10									
15									
20									
25									
30									
35									
40									

Boring 001-177

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *87.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								For lithology see 001-177b	
50									
55									
60									
65									
70									
75									
80									

Boring 001-177

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *87.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								For lithology see 001-177b	
85									
								Boring terminated at 87 feet	
90									
95									
100									
105									
110									
115									
120									

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Boring 001-177b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, some silt, firm, dark yellowish brown (10YR4/6)	
5									
10									
15									
20				-	-	-/-			354.5
								Gravel, fine to coarse grained, cherty, angular to subround; sandy and clayey yellowish brown (10YR5/6)	
25									
30									
									342.5
								Clay, trace gravel to silt, yellowish brown (10YR5/6)	
35									
				-	-	-/-			
40									

Boring 001-177b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
50				-	-	-/-			
55								Gravel (50%) poorly sorted, cherty; sand 50%, light brownish yellow (10YR6/4)	319.5
60								Gravel (70%) poorly sorted, fine to coarse grained, angular to round, cherty with some quartz; sand (30%) medium to coarse grained, angular to round, cherty with some quartz, yellowish brown (10YR5/6)	314.5
65									
70				-	-	-/-			
75									
80									

Boring 001-177b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
85								Gravel and sand, same as above	
90									
95				-	-	-/-			
									276.5
100								Sand (95%) moderately sorted, fine to very fine grained, quartzitic, micaceous; clay (5%), moderately frim, gray (10YR6/1), to very dark gray (10YR3/1)	
105									
110									
115									
120				-	-	-/-			

Boring 001-177b

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6719.08 E, -1856.93 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 5/21/98*	Surface Elevation: *374.49 feet msl*
Completed at *on 6/17/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand, same as above	
125				-	-	-/-		Clay, (100%) firm, micaceous, pyritic, trace silt, very dark gray (10YR3/1)	249.5
130									
135								Sand, (100%) very fine grained, micaceous, moderate to well sorted, very dark gray (10YR3/1)	239.5
140								Clay, firm, micaceous, pyritic, sand trace, very dark gray (10YR3/1) to gray (10YR6/1)	234.5
145									
150				-	-	-/-			
								Boring terminated at 152 ft.	222.5
155									
160								Background in CPM is: not available	

Boring 001-178

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7139.25 E, -1956.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *365.43 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay with some gravel, brownish yellow (10YR6/8)	
5								Gravel, with clay, silty and sandy, dark yellowish brown (10YR4/6)	360.4
10				-	-	-/-			
15								Sand, fine to very fine grained, clayey and silty brownish yellow (10YR6/6)	349.4
20									
25									
30				-	-	-/-			
35								Clay, trace gravel and sand yellow (10YR7/6) with (10YR6/1) mottling, moderately firm	333.4
40									

Boring 001-178

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7139.25 E, -1956.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *365.43 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
50				-	-	-/-			
55								Gravel (60-70%), poorly sorted, fine to coarse grained, angular to round, cherty with some quartz; sand (30-40%) medium to coarse grained, cherty, quartzitic, angular to subround, poorly sorted, brownish yellow (10YR6/8)	310.4
60									
65									
70				-	-	-/-			
75									
80									

Boring 001-178

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7139.25 E, -1956.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *365.43 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel and sand, same as above	
85									
90				-	-	-/-			
95									
100									
105								Clay, with some interbedded sand, micaceous, stiff, pyritic, lignitic, trace gravel (pyritic), dark bluish gray (2gray3 5/B) becoming very dark gray (10YR3/1) e 133'	260.4
110				-	-	-/-			
115									
120									

Boring 001-178

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7139.25 E, -1956.07 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/12/98*	Surface Elevation: *365.43 feet msl*
Completed at *on 5/14/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, same as above	
125									
130				-	-	-/-			
135									
140									
145				-	-	-/-			
150									
								Boring terminated at 152 feet	213.4
155									
								Background in CPM is: not available	
160									

Boring 001-179

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7020.53 E, -1700.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-23-98*	Surface Elevation: *371.23 feet msl*
Completed at *on 4-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5									
10									
								Boring started at 15 feet	
15						0/0			356.2

Boring 001-179

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7020.53 E, -1700.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-23-98*	Surface Elevation: *371.23 feet msl*
Completed at *on 4-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						0/0		Sand (40%) poorly sorted, fine to medium grained, angular to subrounded, cherty and quartzitic; clay (40%); silt (20%) firm, dark yellowish brown (10YR4/6) mottled light brown gray (10YR6/2), moist	356.2
			100.0	0	705	0/0		Sand (60%) poorly sorted, medium to coarse grained, angular to subrounded quartzitic and cherty; gravel (30%) poorly sorted, fine to medium grained, angular, cherty, clay silt (10%), strong brown (7.5YR4/6)	354.7
						0/0		Gravel (60%) poorly sorted, fine to coarse grained, angular to subangular, cherty; sand (30%) poorly sorted, fine to coarse grained, angular to subrounded, cherty and quartzitic, clay (10%) strong brown (7.5YR4/6), damp	353.2
			100.0	0	705	0/0			
20						0/0			
						0/0		Clay (90%); silt (10%), trace fine cherty gravel light gray (10YR7/1) mottled strong brown (7.5YR4/6) with some very dark gray (10YR3/1) streaking, becoming predominately strong brown (7.5YR4/6) at 22 ft.	350.2
			100.0	0	705	0/0			
						0/0			
								Interval not sampled	348.2
25						0/0		Clay (90%); trace silt (10%) dark yellowish brown (10YR4/6) mottled light brownish gray (10YR6/2), brownish yellow (10YR6/6) from 27.0 - 28.0 ft.	346.2
						0/0			
			100.0	0	705	0/0			
						0/0			
30						0/0			

Boring 001-179

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7020.53 E, -1700.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-23-98*	Surface Elevation: *371.23 feet msl*
Completed at *on 4-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	0	705	0/0 0/0 0/0		Clay (90%); trace silt (10%), yellowish brown (10YR5/8) with gray (10YR6/1) mottling, firm, trace sand	
								Interval not sampled	338.2
35	X	X	100.0	0	705	0/0 0/0 0/0 0/0		Clay (60%); gravel (30%) poorly sorted, fine to coarse grained, angular to subrounded, cherty, sand (10%) fine to medium grained, strong brown (7.5YR5/6) mottled gray (7.5YR6/1) and reddish yellow (7.5YR6/6) Clay (100%) yellowish brown (10YR5/6) mottled gray (10YR6/1) very firm	336.2
								Interval not sampled	333.2
40	X	X	100.0	0	705	0/0 0/0 0/0 0/0		Clay (90%); trace silt and fine sand (10%), strong brown (7.5YR4/6) mottled gray (7.5YR6/1)	331.2
								Interval not sampled	328.2
45						0/0			326.2

Boring 001-179

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-7020.53 E, -1700.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-23-98*	Surface Elevation: *371.23 feet msl*
Completed at *on 4-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						0/0		Clay (80%); silt (20%), gray (7.5YR6/1) and strong brown (7.5YR4/6), firm, damp	326.2
			100.0	0	705	0/0		Sand (80%) poorly sorted, fine to medium grained, angular to subrounded, quartzitic; silt (20%) strong brown (7.5YR4/6), some light gray (7.5YR7/1) mottling, damp	324.7
						0/0			
						0/0		Clay (80%); silt (10%), yellowish brown (10YR5/8) mottled gray (10YR6/1) with trace very dark gray streaking (10YR3/1), firm, damp	323.2
			100.0	0	705				
50			100.0	0	705			Boring terminated at 50.0 ft.	321.2
55									
								Background in CPM is: alpha-0, beta-705	
60									

Boring 001-180

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/2/98*	Surface Elevation: *373.50 feet msl*
Completed at *on 6/9/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *106.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, some silt, gray (10YR5/1) to yellowish brown (10YR5/4) with depth, moderately firm	
5									
10				-	-	-/-			
15								Clay, gravelly, fine to medium grained chert, angular to subround, yellowish brown (10YR5/4), sandy	
20									
25									
30				-	-	-/-			
								Clay, trace cherty gravel and sand, brownish yellow (10YR6/8)	
35									
40									

Boring 001-180

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/2/98*	Surface Elevation: *373.50 feet msl*
Completed at *on 6/9/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *106.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
50				-	-	-/-			
55									
									316.5
60								Gravel (70%) poorly sorted, fine to coarse grained angular to round, cherty with some quartz; sand (30%), medium to coarse grained, angular to round, cherty with some quartz, brownish yellow (10YR6/8)	
65									
70				-	-	-/-			
75									
80									

Boring 001-180

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/2/98*	Surface Elevation: *373.50 feet msl*
Completed at *on 6/9/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *106.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (50%), sand (50%)	
85				-	-	-/-			
								Gravel (60%), sand (40%)	
90									
95									
100				-	-	-/-			273.5
								Clay, micaceous, gray (10YR6/1), soft	
105									
								Boring terminated at 106.5 feet	267
110									
115									
								Background in CPM is: not available	
120									

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Boring 001-181

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/17/98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6/19/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sod/Topsoil	
5				-	-	-/-		Silt, clayey, grayish brown (10YR5/2)	
10									
									359.6
15								Sand, silty, brownish yellow (10YR6/8)	
									354.1
								Gravel, silty to sandy, brownish yellow (10YR6/8)	
20				-	-	-/-			351.6
								Sand, medium to coarse grained, silty, brownish yellow (7.5YR6/8)	
25									346.6
								Clay, silty, reddish yellow (7.5YR6/8)	
30									341.6
								Sand, silty, trace fine gravel, brownish yellow (10YR6/6)	
35				-	-	-/-			336.6
								Silt, sandy, trace clay, yellow (2.5Y7/8)	
40									

Boring 001-181

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/17/98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6/19/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45				-	-	-/-		Silt, same as above	
50									
								Sand, medium to fine grain, some silt, olive yellow (2.5Y6/6)	318.6
55									
								Gravel (60%) medium to fine; sand (35%) fine grain; silt (5%) yellowish brown (2.5Y6/4)	314.6
60				-	-	-/-			
								Gravel (70%) medium to coarse, subangular; sand (25%) medium grain; silt (5%), yellowish brown (10YR5/6)	
65									
70									
75				-	-	-/-			
80									

Boring 001-181

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/17/98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6/19/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		X						Gravel, same as above	
85				-	-	-/-			
									284.6
								Same as above grading to sand (65%) medium to fine; gravel (20-25%); silt (10-20%), brownish yellow (10YR6/8)	
90									
									279.6
								Gravel (45%); silt and fine sand (55%), strong brown (10YR5/8)	
95									
100				-	-	-/-			
								McNairy at 106 feet	
105									266.6
								Silt with some very fine sand and clay, dark grayish brown (2.5Y4/2)	
								Silt and clay, trace to little very fine sand, very dark gray (5Y3/1)	
110									
115				-	-	-/-			
120									

Boring 001-181

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/17/98*	Surface Elevation: *371.62 feet msl*
Completed at *on 6/19/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
125				-	-	-/-		Silt and clay, same as above	
									244.6
130								Clay, silty, dark gray (5Y4/1) grading to silt with very fine sand trace to some clay.	
135									
140									
145				-	-	-/-			
									224.6
150								Silt and very fine sand, olive gray (5Y4/2) with lignitic	
									219.6
155								Boring terminated at 152 feet	
160								Background in CPM is: not available	

Boring 001-182

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/11/98*	Surface Elevation: *372.09 feet msl*
Completed at *on 6/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, trace silt and gravel, yellowish brown (10YR5/6) with gray (10YR6/1) mottling	
5									
10				-	-	-/-			
15								Gravel, clayey, cherty, fine to medium grained, yellowish brown (10YR5/6)	357.1
20									
								Clay, silty to slightly gravely, brownish yellow (10YR6/6), firm	350.1
25									
30				-	-	-/-			
35								Sandy from 36 to 37 feet	
40									

Boring 001-182

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/11/98*	Surface Elevation: *372.09 feet msl*
Completed at *on 6/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Clay, same as above	
50				-	-	-/-			
								Sand, very fine to fine grained, trace silt and clay, yellowish brown (10YR5/8)	319.1
55									
								Gravel (70%), poorly sorted, fine to coarse, angular to round; sand (30%) medium to coarse, angular to round, cherty with some quartz, brownish yellow (10YR6/8)	314.1
60									
								Sand (80%) poorly sorted, medium to coarse grained, angular to round, cherty, trace quartz; gravel (20%) medium sorted, chert with some quartz, yellowish brown (10YR5/8)	310.1
65									
70				-	-	-/-			302.1
								Gravel (70%) poorly sorted, fine to coarse grained, angular to round, cherty with some quartz; sand (30%) medium to coarse grained, angular to round, cherty with some quartz, brownish yellow (10YR6/8)	
75									
80									

Boring 001-182

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/11/98*	Surface Elevation: *372.09 feet msl*
Completed at *on 6/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		X						Gravel and sand, same as above	
85									
90				-	-	-/-			
95		X							
									274.1
								Sand (80%) very fine to fine grained, micaceous, quartzitic; clay (20%) medium firm; sand is yellowish (10YR7/6), clay is light gray (10YR7/2)	
100									
105									
110				-	-	-/-			
115									
									254.1
								Clay, trace fine silt, micaceous, dark gray (10YR3/1), moderately firm	
120									252.1

Boring 001-182

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/11/98*	Surface Elevation: *372.09 feet msl*
Completed at *on 6/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *157.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand (70%) fine to very fine grained; silt (30%) micaceous, pyritic, some heavy (black) minerals, gray (10YR6/1) to very dark gray (10YR3/1)	
125									
130				-	-	-/-			
135									
140								Clay, micaceous with ore, gravelly pyritic nodules, trace plant material, gray (10YR6/1) to very dark gray (10YR3/1), firm	232.1
145									
150				-	-	-/-		Fine sand from 150 to 152 feet	
155									
								Boring terminated at 157 feet	215.1
								Background in CPM is: not available	
160									

Boring 001-183

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/12/98*	Surface Elevation: *373.20 feet msl*
Completed at *on 6/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *102.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Grass surface/topsoil	372.2
								Silt, clayey, yellowish brown (10YR5/4)	
5									
10				-	-	-/-			
15									
								Silt with trace to little coarse sand and trace fine gravel, very pale brown (10YR7/4)	
20								Silt with coarse sand and fine gravel, very pale brown (10YR7/4)	
25								Sand (60%), very fine grain; silt (40%) brownish yellow (10YR6/6)	348.2
30				-	-	-/-		Silt with very fine sand and trace gravel, pale yellow (2.5Y7/4)	343.2
35								Silt, clayey to sandy, light gray (10YR7/1)	
								Silt and clay with some sand, medium to fine gravel yellow (10YR7/6)	334.2
40									

Boring 001-183

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/12/98*	Surface Elevation: *373.20 feet msl*
Completed at *on 6/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *102.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt and clay, same as above	
45									328.2
								45 to 62 feet No recovery (possible sand)	
50				-	-	-/-			
55									
60									
									311.2
								62 to 72 feet No recovery (possible sand and gravel)	
65									
70				-	-	-/-			
									301.2
75								Sand (50%) coarse to fine grained; gravel (45%) subangular to subround; silt (5%), dark yellowish brown (10YR4/6)	
80									

Boring 001-183

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 6/12/98*	Surface Elevation: *373.20 feet msl*
Completed at *on 6/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *102.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand and gravel, same as above	291.2
								Gravel (65%) subround to subangular; sand (30%); silt (5%), dark brown (7/5YR3/4)	
85				-	-	-/-			286.2
								Gravel (55%) subround to subangular; sand (35%) coarse to fine grained; silt (10%), strong brown (7.5YR 5/8)	
90									
95				-	-	-/-		McNairy at 98 feet	275.2
								Sand (95%) very fine grained, well sorted; silt (5%), pale yellow (2.5Y7/4)	
100									271.2
								Boring terminated at 102 feet	
105									
110									
115									
120								Background in CPM is: not available	

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Boring 001-184

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J.Albert/R.McComb*
Started at *on 6/22/98*	Surface Elevation: *372.88 feet msl*
Completed at *on 6/24/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface grass/topsoil	
								Clay, silty yellowish brown (10YR5/8)	
5									
10				-	-	-/-			
15									
									354.9
								Sand, silty, with 15-25% medium to fine gravel, yellowish brown (10YR5/6)	
20									
									347.9
25								Silt and sand, trace fine gravel, reddish yellow (7.5YR6/8)	
									342.9
30				-	-	-/-		Silt with some fine sand, brownish yellow (10YR5/8) to strong brown (7.5YR5/8)	
35									
									332.9
40									

Boring 001-184

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J.Albert/R.McComb*
Started at *on 6/22/98*	Surface Elevation: *372.88 feet msl*
Completed at *on 6/24/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, silty, brownish yellow (10YR6/8)	332.9
45									
50				-	-	-/-		Silt, sandy, yellowish brown (10YR5/8)	322.9
55									
								Sand, fine grained, silty with 15-20% medium to fine subangular to subrounded gravel, olive yellow (2.5Y6/6)	315.9
60									
								Gravel (40%), medium to fine, subangular to subround; sand (40%) medium to fine grained; silt (20%) olive yellow (2.5Y6/6)	310.9
65									
								Gravel (60-65%), subround to subangular; sand (25-30%) medium to fine; silt (5-10%), yellowish brown (10YR5/8)	305.9
70				-	-	-/-			
75									
80									

Boring 001-184

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J.Albert/R.McComb*
Started at *on 6/22/98*	Surface Elevation: *372.88 feet msl*
Completed at *on 6/24/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		X						Gravel and sand, same as above	
85									
90				-	-	-/-			
95		X							
100									
								Sand (90%), fine grained, moderately sorted, micaceous, quartzitic; clay (10%), gray (10YR6/1)	269.9
105									
110				-	-	-/-			
115									
								Clay, micaceous, pyritic, with trace fine sand, very dark gray (10YR3/1)	256.9
120									

Boring 001-184

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *J.Albert/R.McComb*
Started at *on 6/22/98*	Surface Elevation: *372.88 feet msl*
Completed at *on 6/24/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *152.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, same as above	
125									
									245.9
								Sand, fine grained, moderately sorted, micaceous, dark gray (10YR6/1)	
130				-	-	-/-			
									240.9
								Clay, trace fine sand, micaceous, pyritic, very dark gray (10YR3/1)	
135									
140									
								Clay, silty, micaceous, pyritic, gray (10YR5/1), trace fine sand at base	
145									
				-	-	-/-			
150									
									220.9
								Boring terminated at 152 feet	
155									
								Background in CPM is: not available	
160									

APPENDIX A

SWMU 091

Boring 091-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6899.08 E, -1048.26 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 3-25-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay silty, dark yellowish brown (10YR4/4), stiff, Slightly moist	
5								Clay, silty, light yellowish brown (2.5Y6/3), stiff, trace <10% very coarse sand - 1/4 inch gravel	
10				-	-	-/-			
15									
20									351.9
								Gravel (chert) approximately 40% 1/8 - 2 inch, poorly sorted, rounded, approximately 40% firm silt and clay, approximately 20% sand very fine to very coarse, subrounded, poorly sorted light yellowish brown (2.5Y6/3)	
25				-	-	-/-			347.9
								Clay silty, with approximately 30% sand and gravel, subrounded, poorly sorted, very fine to 1/4 inch firm, light yellowish brown (2.5Y6/3) Note: some 1 - 2 ft. zones with approximately 70% 1/8 - 1/4 inch angular chert gravel poorly sorted	
30									
									339.9
								Silt clayey with approximately 20% very fine to medium sand, light yellowish brown (2.5Y6/4), firm	
35									
40				-	-	-/-			

Boring 091-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6899.08 E, -1048.26 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 3-25-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
45								Same as 33.0 - 45.0 ft. but occasional gravel lenses	
50									
55				-	-	-/-			
60									
								Gravel (chert) 1/8 - 2 inch subrounded poorly sorted, approximately 10% clay, silt and sand	310.9
65		■	N/A	-	-	-/27			
70		■	N/A	Bkgd	Bkgd	-/5		Gravel (chert) 1/8 - 1/4 inch angular, moderately sorted with approximately 30% silt and very fine sand becomes darker at 90 ft. and silt content decreased	
75		■	N/A	-	-	-/3			
80									

Boring 091-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6899.08 E, -1048.26 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 3-25-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			N/A	-	-	-/1		Gravel, same as above	
85			N/A	-	-	-/3			
90			N/A	-	-	-/3			
95			N/A	-	-	-/4			
100			N/A	-	-	-/3			
105			N/A	-	-	-/2			
									263.9
110								Silt with approximately 10-20% 1/8 - 1 inch chert gravel, rounded, moderately sorted, yellowish brown (10YR5/4)	
									259.9
115								Clay with approximately 20% sand and silt, very dark gray (10YR3/1), firm, moist	
120									

Boring 091-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6899.08 E, -1048.26 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 3-25-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		N/A	-	-	-/0			
125									
130									
135								Same as 113.0 - 134.0 ft. with approximately 5% micaceous	
140				-	-	-/-			
145				-	-	-/-		Clay, silty, stiff, dark gray (10YR4/1)	
								Boring terminated at 148.0 ft.	224.9
150									
155									
160								Background in CPM is: not available	

Boring 091-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6939.90 E, -907.39 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 4-14-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 4-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt clayey, light yellowish brown, firm, moist (10YR6/4)	
5									
10									
15									
20				-	-	-/-		Silt and gravel (chert) 1/8 - 1 inch subangular moderately sorted, brownish yellow (10YR6/6), firm, slightly moist	
25								Silt, brownish yellow (10YR6/6), firm	
30									
35				-	-	-/-			
40									

Boring 091-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6939.90 E, -907.39 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 4-14-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 4-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
45									
50									
55									
60								Chert gravel, 1/8 - 1 inch subangular poorly sorted, approximately 20% silt dense, saturated	309.9
			N/A	-	-	-/0			
65									
			N/A	-	-	-/1			
70									
			N/A	-	-	-/2			
75									
80									

Boring 091-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6939.90 E, -907.39 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 4-14-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 4-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
			N/A	-	-	-/2.5			
85									
			N/A	-	-	-/17			
90									
			N/A	-	-	-/2			
95									
									271.9
								Silt and sand, very fine to fine, subangular, moderately sorted, strong brown (7.5YR5/8), soft and loose, saturated	
100									
			N/A	-	-	-/2			
105									264.9
								Clay sandy, very fine to medium, moderately sorted subangular, very dark gray (10YR3/1), firm, saturated	
110									
115								Clay slightly silty, very dark gray (10YR3/1), soft, saturated	
120									

Boring 091-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-6939.90 E, -907.39 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 4-14-98*	Surface Elevation: *369.89 feet msl*
Completed at *on 4-18-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, same as above	
		■	N/A	-	-	-/11			
125									
130									
135									
		■	N/A	-	-	-/8		Clay with approximately 10% sand fine to medium grained, subangular, moderately sorted, very dark gray (5YR3/1), stiff to very stiff, saturated	231.9
								Boring terminated at 138.0 ft.	
140									
145									
150									
155									
								Background in CPM is: not available	
160									

APPENDIX A

SWMU 196

Boring 196-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5613.12 E, 346.20 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-23-98*	Surface Elevation: *371.94 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								0.0 - 0.2 ft. Crushed limestone	
			25.0	0	302			Silt, some clay, dark gray (5YR4/1), and yellowish red (5YR4/6), moist, firm to soft (fill)	370.9
						0/0			
			30.0	0	374			Silt, clayey, with 20% fine sand and trace gravel, brown (7.5YR4/3), moist, firm (fill)	367.9
5			0.0	0	302			No Recovery	
						0/0			
			100.0	0	303	0/0		Clay, some silt, light olive brown (2.5Y5/4), moist, firm (natural soil)	364.9
						5/0			
			100.0	0	274	5/0		Clay, silty, yellowish brown (10YR5/6) mottled light gray (10YR7/1), moist, firm	
10								Boring terminated at 10.0 ft.	361.9
								Background in CPM is: alpha-0, beta-302	
15									

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Boring 196-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5629.27 E, 346.11 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-23-98*	Surface Elevation: *371.46 feet msl*
Completed at *on 2-23-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (50%) limestone, subangular to subrounded, silt and clay (50%) dark grayish brown (10YR4/2) (fill)	
			33.0	0	261	0/0			369.5
								No Recovery	
									367.5
5			20.0	0	307	170/55		Silt, greenish gray (10Y6/1) stained with free product	
			10.0	0	278	17/6			
			20.0	0	208	105/28			362.5
								Sand (80%), gravel (20%) subrounded, greenish black (10Y2.5/1) some to heavy odor and presence of free product	
10								Boring terminated at 10.0 ft.	361.5
								Background in CPM is: alpha-0, beta-242	
15									

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Boring 196-003

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5787.65 E, 329.03 N*
Location: *Paducah, KY*	Geologist: *D. Doyle*
Started at *on 4/1/98*	Surface Elevation: *371.16 feet msl*
Completed at *on 4/1/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *8.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		X		-	-	-/-		Clay, silty, gray (2.5Y6/1), firm, moist	
		X							
5		X		-	-	-/-			
		X							
								Boring terminated at 8 feet	363.2
10									
								Background in CPM is: not available	
15									

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Boring 196-004

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5654.37 E, 255.97 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 2-24-98*	Surface Elevation: *370.18 feet msl*
Completed at *on 2-24-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			20.0	0	360	0/0		Gravel (70%), subrounded, Sand (15%), Clay (15%), reddish-brown (5YR4/3), moist, firm (fill)	
						0/0			367.7
			80.0	0	443	0/0		Clay, silty, greenish gray (10Y6/1) moist, firm, (natural soil)	
						0/0			
5			100.0	0	452	0/1			
						0/1			
			100.0	0	443	0/0		Clay, silty, yellowish brown (10YR5/6) mottled light brownish gray (10YR6/2) moist, stiff	
						0/0			
			100.0	0	428	0/1			
10								Boring terminated at 10.0 ft.	360.2
								Background in CPM is: alpha-0, beta-358	
15									

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Boring 196-008

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5039.16 E, 358.24 N*
Location: *Paducah, KY*	Geologist: *T. Streufert*
Started at *on 2-19-98*	Surface Elevation: *371.86 feet msl*
Completed at *on 2-19-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt (50%); gravel (50%) angular to subrounded chert, dark yellowish brown (10YR4/4), moist	
			50.0	0	251	0/0		Gravel (50%) subrounded chert; sand (30%) medium to fine grained silt (20%) red (2.5YR4/8)	371.1 370.9
								Silt, clay, yellowish brown (10YR5/8) quite soft, moist (natural soil)	
			50.0	0	218	0/0			
								Silt some clay, greenish gray (10YR6/1)	
5			100.0	0	327	0/0			
								Silt, some clay, yellowish brown (10YR5/6) mottled, light greenish gray (10Y7/1) manganese mineralization, soft, quite moist	
			100.0	0	284	0/0			
			65.0	0	244	0/0			
10								Boring terminated at 10.0 ft.	361.9
								Background in CPM is: alpha-0, beta-205	
15									

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Boring 196-009

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5040.99 E, 358.47 N*
Location: *Paducah, KY*	Geologist: *T. Streufert*
Started at *on 2-19-98*	Surface Elevation: *371.90 feet msl*
Completed at *on 2-19-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	0	348	0/0		Silt (50%); gravel (50%) angular to subangular chert, dark yellowish brown (10YR4/4), moist (fill)	370.9
								Silt, clay (70%) gravel (30%) subrounded chert, brown (10YR5/3)	369.9
			75.0	0	323	0/0		Silt, some clay, yellowish brown (10YR5/8) mottled to pale brown (10YR6/3)	
								Silt, slightly clayey, greenish gray (10Y6/1)	
5			50.0	0	252	0/0			
								Silt, slightly clayey, yellowish brown (10YR5/8) mottled greenish gray (10Y6/1) moist, firm	
			100.0	0	275	0/0			
								Silt, slightly clayey, yellowish brown (10YR5/6) mottled light brownish gray (10YR6/2)	
			100.0	0	253	0/0			
10								Boring terminated at 10.0 ft.	361.9
								Background in CPM is: alpha-0, beta-205	
15									

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Boring 196-010

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5024.51 E, 372.84 N*
Location: *Paducah, KY*	Geologist: *T. Streufert*
Started at *on 2-20-98*	Surface Elevation: *371.39 feet msl*
Completed at *on 2-20-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt (60%); gravel (40%) angular to subrounded limestone (fill)	
			80.0	0	278	0/0		Silt, light brownish gray (10YR6/2) mottled yellowish brown (10YR5/4) minor manganese mineralization, firm, moist	
			80.0	0	266	0/0			
								Same as above, extensive manganese mineralization 5.5 - 6.0 ft.	
5			100.0	0	319	0/0			
								Same as above, no mineralization	
			100.0	0	311	0/0			
			65.0	0	243	0/0			
10									361.4
								Boring terminated at 10.0 ft.	
								Background in CPM is: alpha-0, beta-205	
15									

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Boring 196-011

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5084.86 E, 370.55 N*
Location: *Paducah, KY*	Geologist: *T. Streufert*
Started at *on 2-20-98*	Surface Elevation: *371.57 feet msl*
Completed at *on 2-20-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *10.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (90%); silt (10%) (fill)	370.9
			100.0	0	252	22/0		Silt (90%); gravel (10%) chert subrounded to subangular, 10mm max, yellowish brown (10YR5/6), firm, dry	
								Silt, minor manganese mineralization, greenish gray (5GY5/1), firm, semi-moist	
			100.0	0	223	6/0			
5			100.0	0	268	1/0			
								Silt, yellowish brown (10YR5/8) minor mottling, greenish gray (10Y6/1) heavy manganese mineralizaiton	
								Silt, slightly clayey, brownish yellow (10YR6/8), firm, moist	
			50.0	0	275	1/0			
								Same as above, slightly gray (10YR6/1) mottling	
			100.0	0	222	0/0			
10								Boring terminated at 10.0 ft.	361.6
								Background in CPM is: alpha-0, beta-205	
15									

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Boring 196-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5044.54 E, 375.85 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.34 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			67	1	169	0/0		Silt (40%) and Gravel (40%), coarse grained, angular gravel (limestone), some fine sand (20%)	369.3
			67	1	169	0/0		Silt (100%), soft, moist, brown, mottled, bluish gray	
5			100	1	169	0/0		Silt (100%), soft, moist, brown, mottled, bluish gray	
			100	1	169	0/0			
			100	1	169	0/0		Silt (100%), soft, moist, brown, mottled, gray, limestone cobble at 11 feet	
10			100	1	169	0/0			
			100	1	169	0/0		Silt (100%), reddish brown mottled gray, soft, moist	
15			100	1	169	0/0			

Boring 196-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5044.54 E, 375.85 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.34 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt (100%), reddish brown mottled gray, soft, moist	
			83	1	169	0/0			354.3
								Silt (75%), little very fine grained sand (15%), trace clay (5%), trace limestone cobbles (5%), soft, moist, red-brown mottled gray	
			83	1	169	0/0			
20									351.3
								Boring terminated at 20 feet	
25									
								Background in CPM is: alpha-0, beta-169	
30									

Boring 196-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5096.16 E, 356.49 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.78 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (50%), subangular to subround limestone and chert, some fine grained sand (25%) some silt (25%), bluish gray to gray brown, dry	
			75	1	169	0/0		Silt (100%), bluish gray, firm, dry	370.8
			75	1	169	0/0			
								Silt (80%), some clay (20%), bluish gray, firm, damp	
5			100	1	169	0/0			
								Silt (80%), some clay (20%), bluish gray mottled reddish brown	
			100	1	169	10/0			
								Silt (100%), tan mottled brown mottled reddish brown, firm, damp	
			100	1	169	0/0			
10									
			100	1	169	0/0			
								Silt (85%), little clay (10%), trace very fine sand, reddish brown mottled gray, soft, moist	
			100	1	169	0/0			
15			100	1	169	0/0			

Boring 196-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5096.16 E, 356.49 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.78 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									358.3
			100	1	169	0/0		Clay (50%) and silt (50%), bluish gray, very soft, very moist Clay (50%) and silt (50%), bluish gray mottled reddish brown, very soft, very moist	354.3
								Sand (60%), fine grained, some silt (20%), some clay (20%), brown wet	353.3
			100	1	169	0/0		Silt (60%), clayey (40%), reddish brown mottled gray, damp, firm	351.8
20								Boring terminated at 20 feet	
25									
								Background in CPM is: alpha-1, beta-169	
30									

Boring 196-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5078.62 E, 390.44 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.50 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (75%), angular to subrounded chert and limestone, some silt (25%), dark brown, dry	
			92	1	169	0/0		Silt (85%); little very fine sand (15%), brown mottled gray, damp.	
			92	1	169	0/0			
									367.5
5			92	1	169	0/0		Silt (60%); clay (30%), little fine grained, sand (10%), reddish brown mottled bluish gray, very soft, moist	
			92	1	169	0/0			
									363.5
			100	1	169	0/0		Silt (90%); little clay (10%), reddish brown mottled bluish gray, very soft to soft, moist	
10			100	1	169	0/0			
			100	1	169	0/0		Silt (100%), reddish brown mottled gray mottled brown, soft to very soft, moist	
15			100	1	169	0/0			

Boring 196-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5078.62 E, 390.44 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/20/98*	Surface Elevation: *371.50 feet msl*
Completed at *on 5/20/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X						Silt (100%), little fine grained sand, reddish brown mottled gray mottled brown, soft to very soft, moist	
	X	X	100	1	169	0/0			
	X	X	100	1	169	0/0			
								Gravel (40%) and sand (40%), fine to coarse grained, subangular to subrounded, fine grained sand, little silt (20%), brown, very moist	352.5
								Silt (90%), little fine grained sand (10%), red brown mottled gray mottled brown, soft to very soft, moist	352
20								Boring terminated at 20 feet	351.5
25									
								Background in CPM: alpha-1, beta-169	
30									

Boring 196-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5611.44 E, 369.57 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/21/98*	Surface Elevation: *371.47 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt (50%) and gravel (45%), trace very fine grained sand (5%), tan dry	
			92	54/-	219	0		Silt (50%) and clay (50%), bluish gray, soft, moist	370.5
			92	0/-	219	0			
								Silt (90%), little clay (10%), reddish brown mottled gray, soft, moist	367.5
5			100	0/-	219	0			
			100	0/-	219	0			
								Silt (90%), little clay (10%), reddish brown mottled gray, soft, moist	
			100	0/-	219	0			
10									
			100	0/-	219	0			
								Silt (90%), little clay (10%), reddish brown mottled gray, soft, moist	
			100	0/-	219	0			
15			100	0/-	219	0			

Boring 196-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-561.44 E, 369.57 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/21/98*	Surface Elevation: *371.47 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									355.5
			100	-/0	219	0		Silt (75%), some clay (25%), reddish brown mottled gray mottled brown, soft, moist	
			100	-/0	219	0			
20									351.5
								Boring terminated at 20 feet	
25									
								Background in CPM is: alpha-0, beta-219	
30									

Boring 196-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5654.69 E, 230.99 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/21/98*	Surface Elevation: *370.76 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			92	0	214	0/0		Silt (90%); little clay (10%), tan mottled grayish brown, mottled reddish brown, firm, moist	
			92	0	214	0/0			
5			100	0	214	0/0		Silt (90%); little clay (10%), tan mottled grayish brown, mottled reddish brown, firm, moist	
			100	0	214	0/0			
			100	0	214	0/0		Silt (90%); little clay (10%), gray mottled reddish brown, firm, moist	
10			100	0	214	0/0			
			100	0	214	0/0		Silt (75%); some clay (25%), gray mottled reddish brown, moderately soft, moist	358.8
15			100	0	214	0/0			

Boring 196-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5654.69 E, 230.99 N*
Location: *Paducah, KY*	Geologist: *B.N. Bergeron*
Started at *on 5/21/98*	Surface Elevation: *370.76 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *20.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									354.8
			100	0	214	0/0		Silt (75%); some clay (25%), gray mottled reddis brown, moderatley soft, moist	
			100	0	214	0/0			
20									350.8
								Boring terminated at 20 feet	
25									
								Background in CPM is alpha-0, beta-214	
30									

APPENDIX A

Building C-720

Boring 720-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5040.00 E, -2605.02 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 3-3-98*	Surface Elevation: *372.08 feet msl*
Completed at *on 3-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5								No Sampling 0 - 12.0 ft.	
10									
						0/0		Clay, silty, trace very fine sand, brownish yellow (10YR6/6) with light brownish gray (10YR6/2) mottles, moderately malleable	360.1
						0/0			
						0/0			
									357.6
15						0/0			

Boring 720-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5040.00 E, -2605.02 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 3-3-98*	Surface Elevation: *372.08 feet msl*
Completed at *on 3-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X							
	X		100.0					Unable to log or screen, sample stuck in the sampler	
20	X		0.0					No Recovery	
	X	X		0	135	0/0		Clay (60%), gravel (30%), fine to medium grained angular to subrounded, chert, sand (10%) medium to coarse grained, chert and quartzite, poorly sorted, yellowish brown (10YR5/6) mottled light brownish gray (10YR6/2), slightly moist, firm to hard	350.1
	X		100.0			0/0			
25	X	X		0	135	0/0		Clay (80%) firm, hard, malleable; silt (20%) coarse to very fine grain sand, poorly sorted, trace fine gravel, yellowish brown (10YR5/6) with light brownish gray mottles (10YR6/2)	
	X			0	135	0/0		Clay (40%) firm to somewhat brittle; gravel (40%) fine to coarse grained, subangular to subrounded, cherty, poorly sorted; sand (20%) medium to coarse grained, chert, to quartzitic, yellowish brown (10YR5/6) to yellowish brown (10YR5/8), slightly moist	346.1
	X		100.0			0/0			
30	X			0	135	0/0			342.1

Boring 720-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5040.00 E, -2605.02 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 3-3-98*	Surface Elevation: *372.08 feet msl*
Completed at *on 3-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No Recovery	34.1
			0.0						
						0/0			338.1
35				0	135	0/0		Silt, clayey with 20% fine sand, grading to silt, sandy, strong brown, (7.5YR5/8) mottled light yellowish brown (10YR6/4) grading to pale yellow (2.5Y7/3), moist, stiff to firm	
			88.0			0/0			
				0	135	0/0			
						0/0		Silt, clayey, yellowish brown (10YR5/8) mottled light gray (10YR7/1) moist, stiff	
				0	135	0/0			
40			95.0			0/0			
				0	135	0/0			
						0/0			330.1
				0	135	0/0		Clay, silty, traces fine sand, yellowish brown (10YR5/8) mottled light gray (10YR7/1), moist, stiff	
			100.0			0/0			
45				0	135	0/0			

Boring 720-001

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5040.00 E, -2605.02 N*
Location: *Paducah, KY*	Geologist: *R. McComb/J. Albert*
Started at *on 3-3-98*	Surface Elevation: *372.08 feet msl*
Completed at *on 3-4-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (p,m)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X							
									326.1
								No Recovery	
			0.0						
50									322.1
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-135	
60									

Boring 720-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.90 E, -2607.94 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-4-98*	Surface Elevation: *371.80 feet msl*
Completed at *on 3-5-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *28.2 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No Sampling 0 - 5.0 ft.	
5						50/6		Silt, clayey, greenish gray (10YR6/1), moist, stiff (poor recovery)	366.8
				0	135	135/4			
			50.0						
						14/12		Silt, clayey, gray (10YR5/1) to yellowish brown (10YR5/4) to yellowish brown (10YR5/8) moist, stiff (noted wet zone from approximately 9.5 - 9.7 ft.)	
10			100.0	0	135	21/25			
						35/29			
						6/5		Silt, clayey, yellowish brown (10YR5/6) moist, stiff	
				0	135	6/3			
			63.0			6/9			
15				0	135	63/23			

Boring 720-002

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.90 E, -2607.94 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-4-98*	Surface Elevation: *371.80 feet msl*
Completed at *on 3-5-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *28.2 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									355.8
			0.0					Sample stuck in sampler, sample not logged or screened	
20						400/300			351.8
								Silt, clayey (with 15 - 20% fine sand), light gray (7.5YR7/1) moist, stiff	351
			100.0	0	135	80/150		Sand (55%), medium grain, gravel (35%) subrounded to subangular, silt and clay (10%), strong brown (7.5YR5/8), moist, dense	
						250/200			
						14/12			
			100.0	0	135	12/12			347.8
								Clay, silty, trace sand and gravel, brownish yellow (10YR6/8) mottled light gray (10YR7/1), moist, stiff	
25						36/25			
						240/150			345.8
								Sand (50%) fine grain, silt (45%) trace clay, brownish yellow (10YR6/8) mottled light gray (10YR7/1) moist, stiff	
			100.0	0	135	80/125			
								Sand (65%), gravel (30%) trace silt, brownish yellow (10YR6/8), moist, dense	344.3
									343.6
								Boring terminated at 28.2 ft.	
								Background in CPM is: alpha-0, beta-135	
30									

Boring 720-003

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5375.03 E, -2606.98 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-6-98*	Surface Elevation: *371.77 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No Sampling 0 - 6.0 ft.	
5									
						0/0		Silt, some clay, light gray (10YR7/1) with minor yellowish brown mottling (10YR5/8) moist, firm to stiff	365.8
				5	280	32/0			
			100.0			25/0			
				5	280	32/0			
10						0/0		Sand (50%) fine to very fine grained, silt and clay (50%) brownish yellow (10YR6/6) mottled light gray (10YR7/2), moist, firm	361.8
				5	280	0/0			
			100.0			0/0			
				5	280	2/0			
						0/0			
15				5	280	0/0			356.8

Boring 720-003

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5375.03 E, -2606.98 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-6-98*	Surface Elevation: *371.77 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									356.8
			100.0			2/0		Sand (55%) medium grained, gravel (25%) subangular to subrounded, silt and clay (20%) poorly sorted, yellowish brown (10YR5/8) with minor light gray (10YR7/1) mottling, very moist, dense	
				5	280	2/0			
						0/0			
						0/0			
20			100.0	5	280	0/0			
						0/0			
									349.8
								No Recovery	
25						0/0			346.8
			100.0			0/0		Sand (50%) medium grained, gravel (40%) subangular to subrounded, silt (10%) yellowish brown (10YR5/8), moist, dense	
				5	280	0/0			
									343.8
								No Recovery	
30						0/0			341.8

Boring 720-003

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5375.03 E, -2606.98 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-6-98*	Surface Elevation: *371.77 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									341.8
	X	X	100.0			0/0		Sand (60%) medium to coarse grained, gravel (30%) subangular to subrounded, silt and clay (10%), yellowish brown (10YR5/8) and light gray, stratified, wet, dense	
				5	280	0/0			
									338.8
								No Recovery Collected groundwater sample from approximately 30 - 35 ft. interval	
35						0/0			336.8
	X	X	100.0	5	280	0/0		Silt, clayey, light gray (10YR7/2) to light gray with yellowish brown (10YR5/8) mottling, very moist, firm	
						0/0			
									333.8
								No Recovery	
40						0/0			331.8
	X	X	100.0	5	280	0/0		Clay, some silt, yellowish brown (10YR5/8) with light gray (10YR7/1) mottling, moist, stiff	
						0/0			
									328.8
								No Recovery	
45						0/0			326.8

Boring 720-003

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5375.03 E, -2606.98 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-6-98*	Surface Elevation: *371.77 feet msl*
Completed at *on 3-9-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	5	280	0/0		Clay, silty, yellowish brown (10YR5/8) with light gray (10YR7/1) mottling, moist, stiff	328.8
						0/0			
								Boring terminated at 48.0 ft.	323.8
50									
55									
								Background in CPM is: alpha-5, beta-280	
60									

Boring 720-004

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5515.00 E, -2607.98 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-24-98*	Surface Elevation: *371.90 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No samples collected, boring started at 7 ft.	
5									
									364.9
						0/0		Clay (90%) trace silt, grayish brown (10YR5/2) with brownish yellow (10YR6/6) mottles	
			100.0	0	189	0/0			
						0/0			
10									361.9
								Not sampled	
						0/0			359.9
								Same as 7.0 - 10.0 ft. interval	
						0/0		Clay (60%); gravely (20%) and sandy; silt (20%) gravel medium to fine grained, poorly sorted, subangular to subrounded, sand and silt fine grained, cherty, quartzitic, trace coarse grains, strong brown (7.5YR5/6) with light gray (7.5YR7/1) mottling, slightly moist	
				0	189				
						0/0			
15						0/0			356.9

Boring 720-004

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5515.00 E, -2607.98 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-24-98*	Surface Elevation: *371.90 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	356.9
						0/0		Same as 13.0 - 15.0 ft.	354.9
			100.0	0	189	0/0			
						0/0			
20						0/0		Gravel (60%) fine to medium grained, poorly sorted, subangular to subrounded, cherty, sandy (20%) medium to coarse grained, poorly sorted, cherty to quartzitic, subangular to subrounded, clay (20%), dark yellowish brown (10YR4/6)	351.9
			100.0	0	189	0/0			
						0/0			
						0/0		Sand (90%) fine to medium grained, moderately sorted, quartzitic, trace silt, yellowish brown (10YR4/6)	350.1
						6/7			
						7/8			
25						6/7		Not sampled	346.9
						9/10		Gravel (60%) poorly sorted, fine to medium grained, angular to subrounded, cherty; sand (20%) poorly sorted, medium to coarse grained, subangular to subrounded, cherty and quartzitic, clay (20%), yellowish brown (10YR5/6)	344.9
						5/0			
						0/0			
30						0/0			341.9

Boring 720-004

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5515.00 E, -2607.98 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-24-98*	Surface Elevation: *371.90 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	341.0
	X	X	100.0	0	189	0/0 0/0 0/0		Same as 27.0 - 30.0 ft. interval	339.9
35						0/0		Clay (90%), trace silt, light gray (10YR7/1) with some yellowish brown (10YR5/6) mottles, moderately firm, slightly moist	337.1 336.9
								Not sampled	
	X	X	100.0	0	189	0/0 0/0		Gravel (60%) poorly sorted, fine to coarse grained, angular to rounded, cherty with trace quartz, sand (30%) medium to coarse grained, poorly sorted, subangular to subrounded, cherty and quartzitic, clay (10%) yellowish brown (10YR5/8), moist	334.9
						0/0		Silt (60%) to fine and very fine sand, clay (40%), light gray (10YR7/1) with trace brownish yellow (10YR6/6) mottles, slightly moist, moderately firm to soft	333.1
40						0/0		Not sampled	331.9
	X	X	100.0	0	189	0/0 0/0 0/0		Clay (95%), trace silt, olive yellow (2.5YR6/6) mottled olive yellow (2.5YR6/8), moderately soft, slightly moist	329.9
45						0/0			326.9

Boring 720-004

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5515.00 E, -2607.98 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-24-98*	Surface Elevation: *371.90 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	326.0
	X	X	100.0	0	189	0/0		Clay (90%), trace silt (10%) light gray (10YR7/1), some yellowish brown (10YR5/6) and gray (10YR5/1) mottling, moderately firm to slightly soft, slightly moist, becoming more mottled with depth	324.9
						0/0			
						0/0			
50						0/0		Boring terminated at 50.0 ft.	321.9
55									
								Background in CPM is: alpha-0, beta-189	
60									

Boring 720-005

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5620.01 E, -2608.01 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-25-98*	Surface Elevation: *371.79 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *32.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	
								Boring started at 7.0 ft.	
5									
						0/0		Clay (90%) light gray (10YR7/1) with browish yellow mottling (10YR6/6), some silt, slightly moist	364.8
			100.0	0	189	0/0			
						0/0			
10						0/0		Interval not sampled	361.8
						0/0		Clay (80%), silty (20%) dark yellowish brown (10YR4/6) with gray (10YR6/1) mottles	359.8
			100.0	0	189	0/0			
						22/25		Sand (60%) poorly sorted, medium to coarse grained, subangular to subrounded, cherty and quartzitic; silt (30%), gravel (10%), strong brown (7.5YR5/8), slightly moist	357.8
15						18/31			356.8

Boring 720-005

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5620.01 E, -2608.01 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-25-98*	Surface Elevation: *371.79 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *32.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Interval not sampled	356.8
			100.0	0	189	45/60 90/134 11/19		Clay (50%); gravel (40%) fine to coarse grained, poorly sorted, angular to subrounded, cherty; sand (10%) fine to coarse grained, subangular to subrounded, quartzitic cherty, predominately strong brown (7.5YR4/6) from 17.0 - 18.0 ft. - changing to gray (10YR5/1) with dark yellowish brown (10YR4/6) mottles from 18.0 - 20.0 ft.	354.8
20			100.0	0	189	7/11 24/37 12/18 26/42 9/11 37/42		Gravel (60%) poorly sorted, fine to medium grained, subangular to subrounded, cherty; sand (20%) poorly sorted, medium to coarse grained, quartzitic and cherty, subangular to subrounded; clay (20%), yellowish brown (10YR5/4) changing to strong brown (7.5YR4/6) with some dark red (10R4/8) coated grains, slightly moist.	351.8
			100.0	0	189	11/16 13/19		Clay (60%), silty (40%), trace medium sand, gray (10YR6/1) with light yellowish brown (10YR6/4) mottling, stiff to crumbly	347.8
25								Interval not sampled	346.8
						0/0		Same as 20.0 - 24.0 ft. interval	343.8
			100.0	0	189	26/42 0/0		Clay (60%); gravel (20%) fine to coarse gravel, poorly sorted, subangular to subrounded, cherty; sand (20%) yellowish brown (10YR5/6) with gray (10YR6/1) mottles	342.8
30									

Boring 720-005

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5620.01 E, -2608.01 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-25-98*	Surface Elevation: *371.79 feet msl*
Completed at *on 3-25-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *32.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X				0/0		Some as 28.0 - 29.0 ft. and 20.0 - 24.0 ft. intervals	
						0/0			339.8
								Refusal at 32.0 ft. Boring terminated at 32.0 ft.	
35									
40									
								Background in CPM is: alpha-0, beta-189	
45									

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Boring 720-006

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5810.29 E, -2517.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-31-98*	Surface Elevation: *371.85 feet msl*
Completed at *on 4-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Interval not sampled	
5			100.0	0	134	0/0 0/0 0/0 0/0		Clay (80%), silty (20%) light brownish gray (10YR6/2) with yellowish brown (10YR5/6) mottles, firm, slightly moist	366.9 363.9
								Interval not sampled	
10			100.0	0	134	0/0 0/0 2/6 1/7		Clay (70%); silty to sandy (very fine grained) (30%) light gray (10YR7/1) mottled yellowish brown (10YR5/6) firm	361.9 358.9
								Interval not sampled	
15						0/0			356.9

Boring 720-006

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5810.29 E, -2517.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-31-98*	Surface Elevation: *371.85 feet msl*
Completed at *on 4-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						0/2	Sand (60%) poorly sorted, fine to very fine grained, quartzitic; clayey (30%), trace gravel (10%), light gray (10YR7/2), slightly moist	356.9
			100.0	0	134	0/0	Gravel (50%) poorly sorted, fine to medium grained, angular to rounded, cherty; clay (50%), trace fine grained sand, dark yellowish brown (10YR4/6) to grayish brown (10YR5/2), slightly moist	355.9
						0/0	Interval not sampled	353.9
20						0/0	Same as 16.0 - 18.0 ft. interval	351.9
			100.0	0	134	0/0	Clay (70%), silty (30%), trace fine sand, brownish yellow (10YR6/8) with light gray (10YR7/1) mottles, slightly moist	350.9
						0/0	Interval not sampled	348.9
25						0/0	Sand (60%) poorly sorted, fine to medium grained, subangular to subrounded, quartzitic, clayey (40%) light gray (10YR7/2) with yellow (10YR7/6) mottling	346.9
			100.0	0	134	0/0	Clay (80%) silty (20%), trace gravel, brownish yellow (10YR6/6) with light gray (10YR7/1) mottling, becoming more gravely at base of interval	345.9
						0/0	Interval not sampled	343.9
30						0/0		341.9

Boring 720-006

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5810.29 E, -2517.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-31-98*	Surface Elevation: *371.85 feet msl*
Completed at *on 4-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									340.9
						0/0		Gravel (70%) poorly sorted, fine to coarse grained, subangular to subrounded, cherty, sand (20%) poorly sorted, fine to coarse grained, angular to subrounded, cherty and quartzitic, clay (10%) yellowish brown (10YR5/6)	
			100.0	0	134	0/0		Sand (60%) poorly sorted, fine to medium grained, subangular to subrounded, cherty and quartzitic, silt/clay (40%) yellowish brown (10YR5/6) with light gray (10YR7/1) mottling	
						0/0			338.9
			100.0	0	134	0/0		Clay (80%) silty (20%), trace fine grained sand, yellowish brown (10YR5/6) mottled light gray (10YR7/1) and gray (10YR5/1), firm, slightly moist	
35						0/0			
						0/0			
			100.0	0	134	0/0			
						0/0			333.9
								Interval not sampled	
40									331.9
								Clay (90%), trace silt (10%) heavily mottled yellowish brown (10YR5/8), gray (10YR6/1), dark yellowish brown (10YR4/4) and some pale red staining (10R7/4) firm, slightly moist	
									328.9
								Interval not sampled	
45						0/0			326.9

Boring 720-006

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5810.29 E, -2517.37 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 3-31-98*	Surface Elevation: *371.85 feet msl*
Completed at *on 4-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Same as 40.0 43.0 ft interval	326.9
						0/0			
			100.0	0	134				
						0/0			
						0/0		Clay (50%), sandy (30%) poorly sorted, medium to coarse grained, subangular to subrounded, cherty and quartzitic, gravely (20%) poorly sorted, subangular to subrounded cherty, dark yellowish brown (10YR4/4)	
			100.0	0	134	0/0		Clay (90%), trace silt (10%) yellowish brown (10YR5/6) mottled gray (10YR6/1)	
50						0/0			321.9
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-134	
60									

Boring 720-007

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5626.46 E, -2118.9 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-30-98*	Surface Elevation: *374.89 feet msl*
Completed at *on 3-30-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No sampling 0 - 5.0 ft.	
								Begin sampling at 5.0 ft.	
5									369.9
			100.0	0	116	0/0 10/5 20/5		Clay, some silt, light gray (10YR7/2) mottled yellowish brown (10YR5/8) moist, stiff	
									366.9
								No Recovery	
10									364.9
			100.0	0	116	0/0 3/1 0/0		Silt, some clay, light gray (10YR7/1) mottled yellowish brown (10YR5/6), moist, stiff	
									361.9
								No Recovery	
15									359.9

Boring 720-007

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5626.46 E, -2118.9 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-30-98*	Surface Elevation: *374.89 feet msl*
Completed at *on 3-30-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									359.9
			100.0	0	116	7/0 7/0 6/0		Silt, with traces very fine sand, light gray (10YR7/1) mottled yellowish brown (10YR5/6), moist, stiff	
									356.9
								No Recovery	
20									354.9
			100.0	0	116	16/0 5/0		Silt, clayey, with 30-40% fine to very fine sand, light gray (10YR7/2), moist, firm	
						20/0			352.4
								Gravel (55%), clay matrix, some sand, yellowish brown (10YR5/8), moist, dense (subangular to subrounded)	351.9
								No Recovery	
25									349.9
			100.0	0	116	20/0 21/0 35/14		Alternating 0.5 - 1.0 ft. thick strata of gravel (60%) subrounded to subangular, sand (25%), silt (15%), dark yellowish brown (10YR4/4) moist, dense and sand (50%) silt (35%) clay (15%), very pale brown (10YR7/4) and white (10YR8/1), moist, medium dense	
									346.9
								No Recovery	
30									344.9

Boring 720-007

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5626.46 E, -2118.9 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-30-98*	Surface Elevation: *374.89 feet msl*
Completed at *on 3-30-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									344.9
			100.0	0	116	38/10 24/25 156/35		Clay, silt, with 20-30% fine to very fine sand, yellowish-brown (10YR5/3) with light gray mottling (10YR7/1), moist, stiff (sand content increases with depth)	341.9
								No Recovery	339.9
35			100.0	0	116	72/9 60/20 56/38 20/29		Silt, clayey, with 25% fine sand grading to sand (60%), medium to coarse grained, with gravel (35-45%) medium to fine grained, with 5-10% silt and clay, yellowish brown (10YR5/3) to gray (10YR6/1) moist, stiff to dense	336.9
								No Recovery	334.9
40			100.0	0	116	0/6 0/0 0/0		Clay, silty, light yellowish brown (2.5Y6/4) mottled light gray (2.5Y7/1), moist, stiff	331.9
								No Recovery	
45									329.9

Boring 720-007

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5626.46 E, -2118.9 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-30-98*	Surface Elevation: *374.89 feet msl*
Completed at *on 3-30-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	0	116	0/0 0/0 0/0		Same as above grading to sand (65%) fine to very fine with 35%, silt and clay light gray (10YR7/1), moist, firm	326.9
								Boring terminated at 48.0 ft.	326.9
50									
55									
60								Background in CPM is: alpha-0, beta-116	

Boring 720-008

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5385.04 E, -2124.84 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-11-98*	Surface Elevation: *374.91 feet msl*
Completed at *on 3-12-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *34.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5								No Sampling 0 - 10 ft.	
10						0/0		Silt, some clay, light gray (2.5Y7/1) mottled light yellowish brown (2.5Y6/4) moist, stiff (Natural Soil)	364.9
			100.0	0	153	0/0			
						0/0			
						0/0			
								No Recovery	360.9
15						0/0			359.9

Boring 720-008

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5385.04 E, -2124.84 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-11-98*	Surface Elevation: *374.91 feet msl*
Completed at *on 3-12-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *34.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, trace very fine sand, grading to clay at approximately 17.5 ft., light gray (10YR7/1) mottled yellowish brown (10YR5/6), firm to hard, moist	368.9
			100.0	0	153	0/0			
						0/0			
									356.9
								No Recovery	
20						0/0			354.9
						0/0		Alternating 0.5 - 1.0 ft. thick strata of silty clay (35%) gravelly sand (35%), and sandy silt (30%), light gray (10YR7/1), yellowish brown (10YR5/8), and light yellowish brown (2.5Y6/4), moist, dense	
			100.0	0	153	0/0			
						0/0			
									350.9
								No Recovery	
25						0/0			349.9
			100.0	0	153	0/0		Sand (60%), medium to coarse grained, gravel (40%) subrounded to subangular, yellowish brown (10YR5/8) moist, dense	
						0/0			
									346.9
								No Recovery	
30						25/10			344.9

Boring 720-008

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5385.04 E, -2124.84 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-11-98*	Surface Elevation: *374.91 feet msl*
Completed at *on 3-12-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *34.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									374.9
			100.0	0	153	30/30		Sand (60%); silt (40%) with occasional (.3 - .4 ft.) zones of gravel (60%) with sand, clay matrix, brownish yellow (10YR6/6) and very pale brown (10YR7/3) moist, dense, with occasional light gray mottling and gravel zones	
						20/40			
									340.9
								Boring terminated at 34.0 ft.	
35									
40									
								Background in CPM is: alpha-0, beta-153	
45									

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Boring 720-009

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5119.92 E, -2195.12 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-10-98*	Surface Elevation: *375.01 feet msl*
Completed at *on 3-11-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No Sampling 0 - 5 ft.	
5						0/0			370
						0/0		Silt, clayey, light gray (10YR7/2), mottled yellowish brown (10YR5/8), moist, stiff (Natural Soil)	
			100.0	2	181	0/0			
						0/0			366
10								Not Sampled	
15						0/0			360

Boring 720-009

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5119.92 E, -2195.12 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-10-98*	Surface Elevation: *375.01 feet msl*
Completed at *on 3-11-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									360
			100.0	2	181	0/0 0/0 0/0		Silt, clayey to clay, silty, olive yellow (2.5Y6/6) and yellowish brown (10YR5/6), moist, stiff	
									356
								Not Sampled	
20			100.0	2	181	0/0 0/0 0/0		Sand (40%), medium to fine, gravel (30%), subrounded to subangular, silt and clay (30%), yellowish brown (10YR5/3), moist, dense (poorly sorted)	355
									352
								Not Sampled	
25			100.0	2	181	0/0 0/0 0/0		Sand (75%), medium to fine grain, gravel (20%) subrounded to subangular, trace silt, yellowish brown (10YR5/8), moist, dense, (grades from sand to sand with gravel)	350
								Clay, silty, traces sand/gravel, yellowish brown (10YR5/8), mottled yellow (2.5Y7/6), moist, stiff	348
									347
								Not Sampled	
30						0/0			345

Boring 720-009

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5119.92 E, -2195.12 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-10-98*	Surface Elevation: *375.01 feet msl*
Completed at *on 3-11-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	2	181	0/0 0/0		Silt, clayey, grading to clay, silty (with 25% subround gravel in lower 0.5 ft. [32.5 - 33.7 ft.]), yellowish brown (10YR5/6), mottled light gray (10YR7/1), moist, stiff	343 342
								Not Sampled	340
35	X							Clay, silty, yellowish brown (10YR5/6), moist, stiff (poor recovery due to sample being stuck in sampler)	337
								Not Sampled	335
40	X	X	100.0	2	181	0/0 0/0 0/0		Silt, clayey, grading to silt with 20 - 25% fine sand, light yellowish brown (10YR6/4), mottled yellowish brown (10YR5/6) moist, firm to stiff	332
								Not Sampled	330
45						0/0			

Boring 720-009

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5119.92 E, -2195.12 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 3-10-98*	Surface Elevation: *375.01 feet msl*
Completed at *on 3-11-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	2	181	0/0 0/0		Silt, sandy, pale yellow (2.5Y7/3), trace black (2.5/1), moist, firm (sampler was full 4 ft. material was soft, silty clay that appeared to be slough)	330
								Boring terminated at 48.0 ft.	327
50									
55									
								Background in CPM is: alpha-2, beta-181	
60									

Boring 720-010

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4900.72 E, -2229.59 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/11/98*	Surface Elevation: *374.35 feet msl*
Completed at *on 5/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *151.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Concrete SLab	373.4
								Crushed limestone gravel (fill)	369.4
5								Silt, clayey, some medium grain sand, dark yellowish brown (10YR4/6)	
10				-	-	-/-		Silt, some fine sand, trace gravel, yellowish brown (10YR5/8)	
15									
20								Gravel (50%), medium to fine subangular to subrounded, sand (35%) medium grained, silt (15%) yellowish brown (10YR5/8)	354.4
25									
								Sand (65%) medium to fine grained, gravel (20%), silt (15%) light yellowish brown (10YR6/4)	346.4
30				-	-	-/-			
35								Sand very fine grained silty, yellow (2.5Y7/6)	339.4
40									334.4

Boring 720-010

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4900.72 E, -2229.59 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/11/98*	Surface Elevation: *374.35 feet msl*
Completed at *on 5/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *151.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, with some very fine sand, pale yellow (2.5Y7/4)	334.4
45									
50				-	-	-/-			
55									
								Poor recovery-traces of clay, light gray (7.5YR7/2) recovered (silt and clay with some fine sand?)	318.4
60									
								No recovery (silt and clay with some sand?)	313.4
65									
								Gravel (65-70%) subangular to subrounded; sand (25-30%); silt (5-10%) yellowish brown (20YR5/6)	308.4
70				-	-	-/-			
75									
80									

Boring 720-010

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4900.72 E, -2229.59 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/11/98*	Surface Elevation: *374.35 feet msl*
Completed at *on 5/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *151.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
85								Gravel (65-70%) subangular to subround; sand (25-30%) medium to fine grained; silt (5%) yellowish brown (10YR5/6)	
90				-	-	-/-			
									279.4
95								Poor recovery-trace of silt and clay, light yellowish brown (10YR6/4) McNairy at 95 feet	278.4
								Sand (95%), fine grained; silt (5%) grayish green (2.5Y5/2) to pale yellow (2.5Y7/3) with traces of lignitic	
100									273.4
								Sand (85%) fine grained; silt (15%) brownish yellow (10YR6/8)	
105									268.4
								Sand (95%) fine grained; silt (10%) yellowish red (5YR5/6)	
110				-	-	-/-			
									262.4
								Clay, silty with some very fine sand, yellowish brown (10YR5/8) grading to dark gray (10YR4/1)	
115									258.4
								Silt with some very fine sand and clay, dark gray (N4/), micaceous	
120									

Boring 720-010

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4900.72 E, -2229.59 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/11/98*	Surface Elevation: *374.35 feet msl*
Completed at *on 5/12/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *151.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									253.4
								Sand, very fine grained; silt with traces of clay, dark gray (N4/), micaceous	
125									
130				-	-	-/-			
								Same as above with occasional cemented lenses and traces of pyrite and lignite	
135									
									238.4
								Clay, some silt, trace very fine sand, dark greenish gray (10Y3/1), stiff	
140									
									233.4
								Sand, very fine grained with some silt and clay, dark greenish gray (10Y3/1)	
145				-	-	-/-			
150									
									223.4
								Boring terminated at 151 feet	
155									
								Background in CPM is: not available	
160									

Boring 720-011

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4991.11 E, -2298.46 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/15/98*	Surface Elevation: *374.97 feet msl*
Completed at *on 5/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *142.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Concrete slab	374
5								Silt, clayey, with 5-10% fine to very fine sand, very pale brown (10YR7/4)	
10				-	-	-/-		Sand (40%) and gravel (40%) with silt (20%), very pale brown (10YR7/4)	365
15								Silt, some clay with trace sand and fine gravel, brownish yellow (10YR6/8)	360
20								Silt, trace to some fine sand and trace gravel, brownish yellow (10YR6/6)	
25									
30				-	-	-/-		Gravel (50%); sand (25%); silt (25%), brownish yellow (10YR6/8)	345
35									339
								No recovery - possibly silt and sand	
40									

Boring 720-011

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-499111 E, -2298.46 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/15/98*	Surface Elevation: *374.97 feet msl*
Completed at *on 5/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *142.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No recovery, same as above	
45									
50				-	-	-/-			
55									
									315
60								No recovery - possibly clay	
									312.5
								Clay, sandy, pale yellow (2.5Y7/4) (poor recovery)	
65									310
								Sand, some silt, trace fine gravel, pale yellow (2.5Y7/4) to grayish brown (2.5Y4/2) (poor recovery)	
									307.5
								Gravel (65-70%) medium grain subround to subangular, sand (25-30%) silt (5%), brownish yellow (10YR6/6)	
70				-	-	-/-			
								Gravel (70%) subround to subangular, sand (25%), medium grained, silt (5%), yellowish brown (10YR5/8)	
75									
80									

Boring 720-011

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4991.11 E, -2298.46 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/15/98*	Surface Elevation: *374.97 feet msl*
Completed at *on 5/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *142.5 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel and sand, same as above	
								Gravel (65-70%) subround to subangular, sand (25-30%) medium grained, silt (5%), yellowish brown (10YR5/8)	
85									
90				-	-	-/-			
95									
									276.5
								McNairy at 98.5 feet	
100								Sand, fine grained, some silt and clay, yellow (2.5Y7/6)	
								Sand, medium to fine grained, brownish yellow (10YR6/6)	
105									
								Sand, medium to fine grained, brownish yellow (10YR6/6) to yellowish red (5YR5/8)	
110				-	-	-/-			
115									
									259
								Silt, some very fine sand, dark gray (2.5YR4/1), micaceous	
									257.5
								Clay, silty, trace to some very fine sand, dark gray (2.5Y4/1)	
120									255

Boring 720-011

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4991.11 E, -2298.46 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/15/98*	Surface Elevation: *374.97 feet msl*
Completed at *on 5/16/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *142.5 feet*

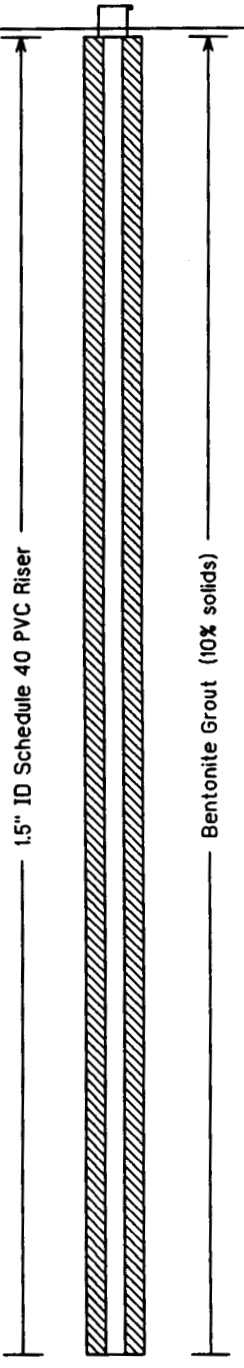
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand, fine to very fine grained, some silt, grayish brown (2.5Y5/2)	255
125				-	-	-/-		Silt and sand, fine to very fine grained, trace clay, dark grayish brown (2.5Y4/2), with trace cemented laminae, pyritic, lignitic, and micaceous	250
130									
135								Clay, silty, dark greenish gray (10Y3/1) (possilbe levens mbr)	240.5
140				-	-	-/-			
								Boring terminated at 142.5 feet	232.5
145									
150									
155									
								Background in CPM is: not available	
160									

Piezometer 720-012

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5152.50 E, -2730.98 N*
Location: *Paducah, KY*	Surface Elevation: *373.53 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *145.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay and silt, approximately 10% sand, fine to medium subangular moderately sorted, soft, brownish yellow (10YR6/6)	
5									
10				-	-	-/-			
15								Same as 0 - 15.0 ft. but approximately 10-20% 1/8-3/4 inch chert gravel, subrounded moderately sorted	
									355.5
20								Silt and clay with approximately 10-30% medium to very coarse sand, angular, poorly sorted and approximately 10-20% 1/8-1/2 chert gravel angular, poorly sorted, soft, brownish yellow (10YR6/6)	
25									
30				-	-	-/-		Silt and sand fine to medium subangular to moderately sorted, soft yellow (10YR7/6) approximately 5-10% 1/8-1/2 inch chert gravel	
35									
40									

WELL DIAGRAM

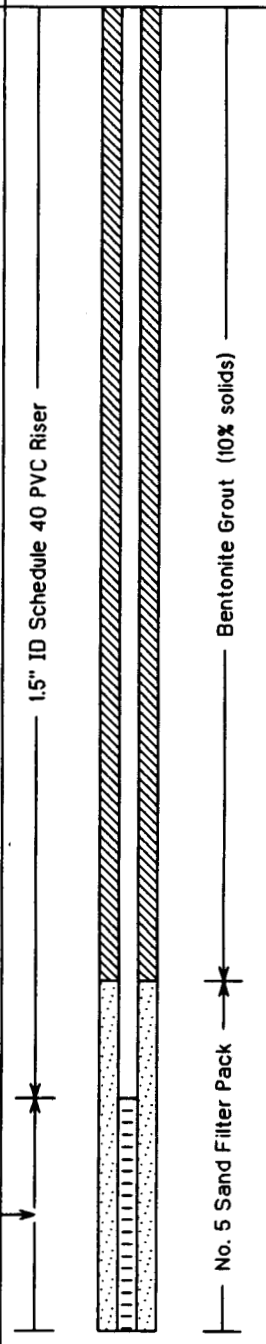


Piezometer 720-012

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5152.50 E, -2730.98 N*
Location: *Paducah, KY*	Surface Elevation: *373.53 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *145.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
45									
50				-	-	-/-			
55								Same as 28.0 - 55.0 ft. but gravel at approximately 10-20%	
60									
65									
70				-	-	-/-			
								Silt and sand fine to medium, subangular moderately sorted light gray (10YR7/1) soft	
75									
80									293.5

WELL DIAGRAM

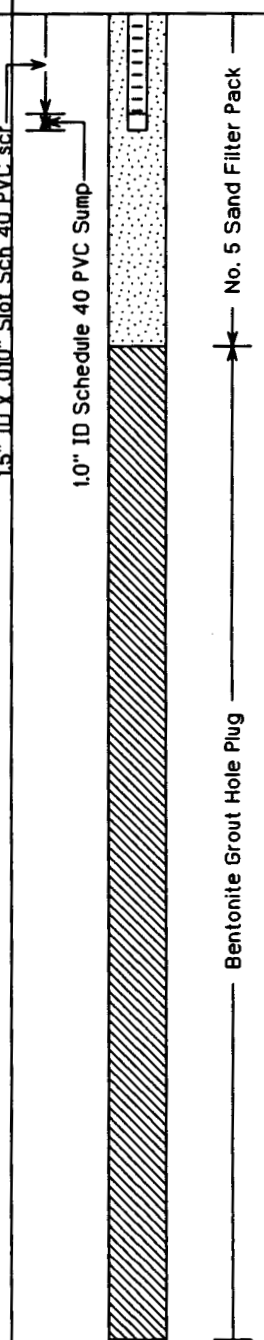


Piezometer 720-012

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5152.50 E, -2730.98 N*
Location: *Paducah, KY*	Surface Elevation: *373.53 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *145.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel chert 1/8-1/4 inch subrounded subangular, moderately sorted approximately 30% silt and clay dark brown (10YR3/3) brown (10YR5/3)	293.5
85								large clean gravel	
90				-	-	-/-		Very coarse sand, angular, sorted approximately 10-20% chert gravel subangular moderately sorted, approximately 10-20% silt and clay	283.5
95								Clay with approximately 5% micaceous, stiff, very dark gray (10YR3/1)	278.5
100									
105								Clay with approximately 10% medium sand, subangular moderately sorted stiff dark greenish gray (10YR3/1)	265.5
110				-	-	-/-		Silt and sand, fine, well sorted, subangular soft, very dark gray (5YR3/1)	
115									
120									

WELL DIAGRAM



Piezometer 720-012

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5152.50 E, -2730.98 N*
Location: *Paducah, KY*	Surface Elevation: *373.53 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *145.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

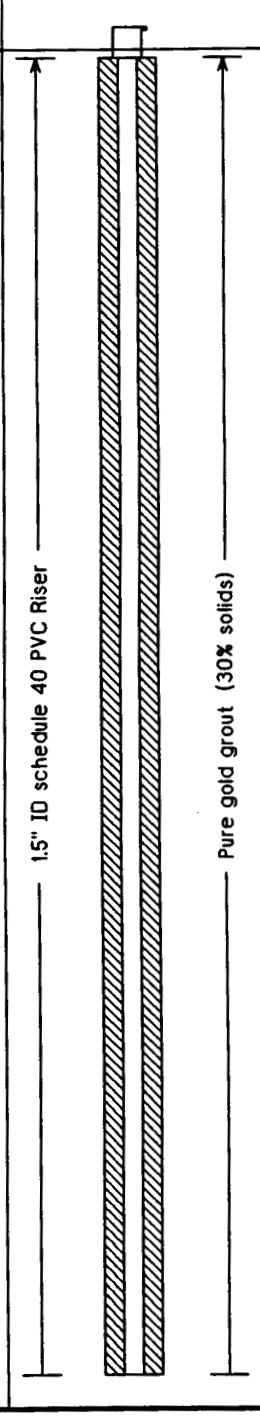
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Silt, same as above		Bentonite Grout Hole Plug
125				-	-	-/-				
130										
135										
140				-	-	-/-				
								Clay with approximately 10% micaceous, stiff, very dark gray (10RY3/1)	231.5	
145								Boring terminated at 145.0 ft.	228.5	
150										
155										
160								Background in CPM is: not available		

Piezometer 720-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5931.03 E, -2417.82 N*
Location: *Paducah, KY*	Surface Elevation: *372.51 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-30-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *137.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
5, 10				-	-	-/-		Clay, silty, yellow (10YR7/6)	
									360.5
15, 20								Silt with sand and medium to fine gravel (20-30%), strong brown (7.5YR5/8)	
									350.5
25, 30				-	-	-/-		Clay, silty to sandy, brownish yellow (10YR6/8) to yellow (10YR7/6)	
									340.5
35								Sand, silty and gravelly, strong brown (10YR5/8)	
									335.5
40								Silt and fine to very fine sand trace gravel, brownish yellow (10YR5/6)	

WELL DIAGRAM

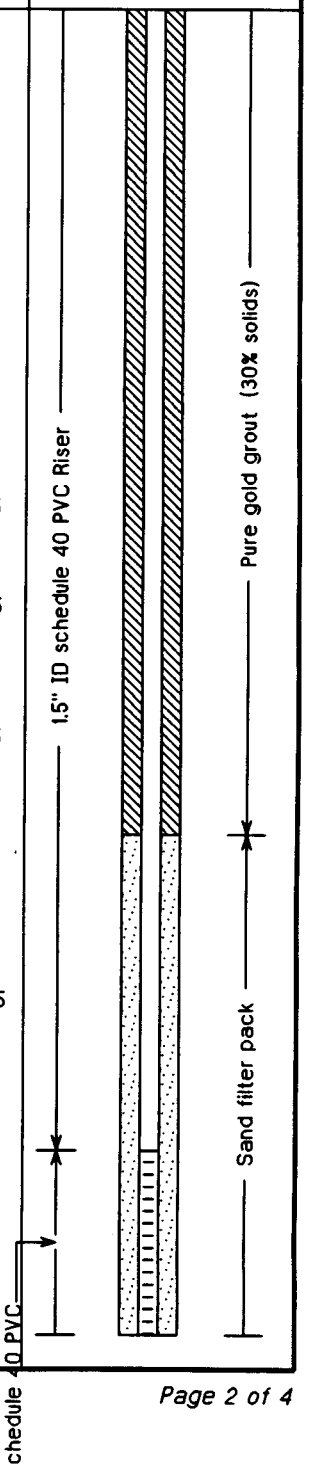


Piezometer 720-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5931.03 E, -2417.82 N*
Location: *Paducah, KY*	Surface Elevation: *372.51 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-30-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *137.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
45									
50				-	-	-/-			
55								Clay, silty, strong brown (7.5YR5/8)	317.5
								Silt, some clay and fine sand, very pale brown (10YR7/4)	314.5
60									
								Sand, fine to very fine, silty, very pale brown (10YR7/3) to brown (10YR5/3) Note: Groundwater sample from 62.0 - 67.0 ft. interval consisted of grab sample collected with bailes for VOA screen only	310.5
65									
70				-	-	-/-		Gravel (65%) subangular to subrounded, sand (30%) medium to fine grained, silt (5%) yellowish brown (10YR5/8)	302.5
75								Gravel (75%) subrounded to subangular, sand (20%) (medium to fine), silt (5%) strong brown (7.5YR5/8)	
80									

WELL DIAGRAM

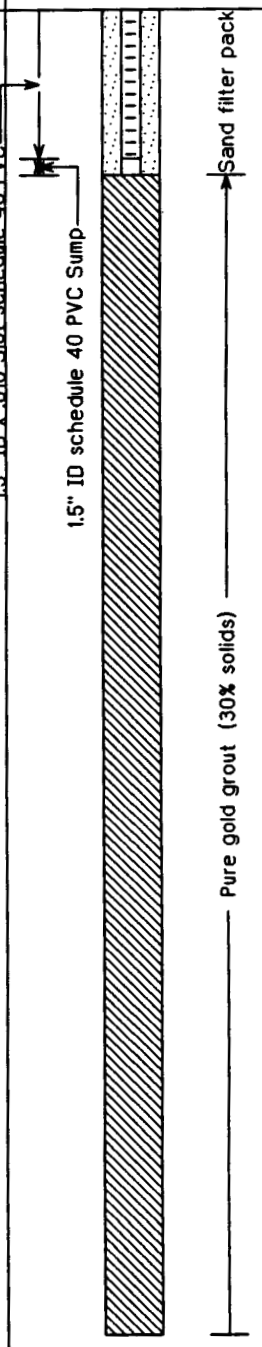


Piezometer 720-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-593103 E, -2417.82 N*
Location: *Paducah, KY*	Surface Elevation: *372.51 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-30-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *137.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
85									
90				-	-	-/-			
95								Clay, some silt, traces very fine sand, dark gray (10YR4/1) Mc Nairy formation at 95.0 feet	277.5
100								Silt, some very fine sand, dark gray (10YR4/1), micaceous	273.5
105								Sand (fine to very fine), silty, yellowish brown (10YR5/8)	268.5
								Clay, some silt, traces very fine sand dark gray (10YR4/1)	265.5
110				-	-	-/-		Silt, some very fine sand, dark gray (10YR4/1) micaceous (with traces pyrite)	262.5
115								Silt with some very fine sand and clay laminae, micaceous, dark gray (10YR4/1)	
120									

WELL DIAGRAM

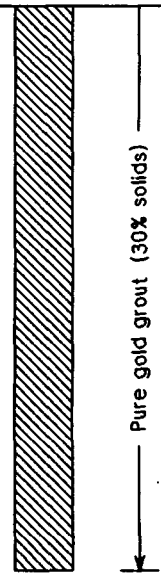


Piezometer 720-013

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-593103 E, -2417.82 N*
Location: *Paducah, KY*	Surface Elevation: *372.51 feet msl*
Started at *on 4-29-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-30-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *137.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
									250.5
125				-	-	-/-		Sand, fine to very fine, silty, micaceous, with cemented lenses of sandstone, dark gray (5YR4/1) and light gray (5YR7/2)	
130								Sand, fine to very fine, silty, dark gray (10YR4/1) with traces pyrite and lignite	
									240.5
								Silt, sandy (very fine), olive gray (5YR5/2)	
135				-	-	-/-		Possible levens MW at 136 ft.	
									235.5
								Boring terminated at 137.0 ft.	
140									
145									
150									
155									
160								Background in CPM is: not available	

WELL DIAGRAM



Boring 720-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5930.34 E, -2265.73 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-14-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *147.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Note: analytical samples are groundwater	
5								Silt, clay, yellowish brown (10YR5/6), stiff (poor recovery)	
10				-	-	-/-			
15									
								Silt with 25-40% medium to fine gravel, some sand, yellowish brown (10YR5/6) medium dense	356.9
20									
								Silt, sandy, reddish yellow (7.5YR6/8), firm to stiff	350.9
25									
30				-	-	-/-			
								Sand, medium to fine, silty, brownish yellow (10YR6/6), medium dense, (with traces gravel)	342.9
35									
40									

Boring 720-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5930.34 E, -2265.73 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-14-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *147.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									330.9
								Clay, silty, brownish yellow (10YR6/8), stiff (with some fine sand)	
45									
50				-	-	-/-			322.9
								Sand (medium to fine), silty, traces gravel, brownish yellow (10YR6/8)	
55									
60								Sand, fine, silty, traces gravel, pale yellow (2.5Y7/3), dense	
65								Sand, gravelly, pale yellow (2.5Y7/3), dense, (poor recovery)	
									304.9
70				-	-	-/-		Gravel (65%) subrounded to subangular, sand (30%) medium to fine grained, silt (approximately 5%), pale yellow (2.5Y7/4), dense	
75									
80									

Boring 720-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5930.34 E, -2265.73 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-14-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *147.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (65%) subangular to subrounded, chert, sand (30%) medium grained, silt (<5%), yellowish brown (10YR5/8) dense	
85									
								McNairy formation at approximately 90.0 feet	
90				-	-	-/-		Clay, silty, dark gray (10YR4/1), stiff, (poor recovery)	282.9
95									
								No cuttings recovered assume clay and fine sand	274.9
100									
105									
110				-	-	-/-			
115									
								Clay, silty with fine grained sand, dark gray (10YR4/1), micaceous, firm	254.9
120									

Boring 720-014

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5930.34 E, -2265.73 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-14-98*	Surface Elevation: *372.85 feet msl*
Completed at *on 4-17-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *147.0 feet*

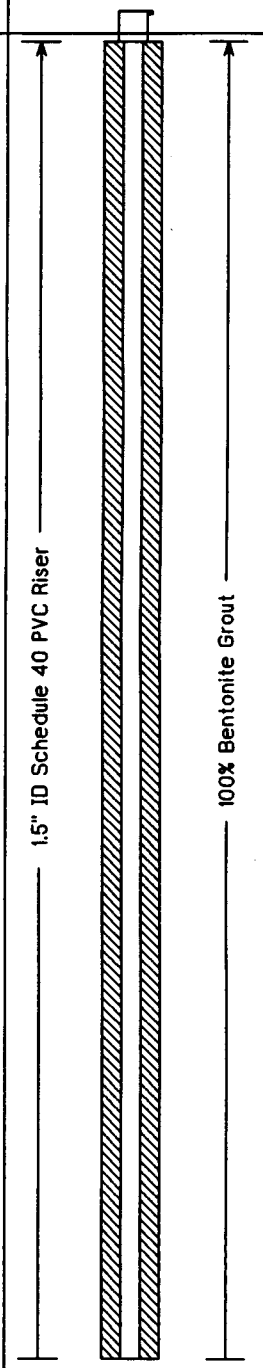
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
125				-	-	-/-			
								Sand, fine grained, cemented, grayish brown (10YR5/2), dense (sandstone)	244.9
130									
								Sand (75%) fine grained, silt (25%) dark gray (10YR4/1) (with carbonized organics) (poor recovery)	239.9
135									
140				-	-	-/-			
								Silt, clayey with traces very fine sand dark grayish brown (10YR4/2) levens mbr at approximately 143.0 ft., stiff (poor recovery)	229.9
145									
								Boring terminated at 147.0 ft.	225.9
150									
155									
160								Background in CPM is: not available	

Piezometer 720-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5939.88 E, -2056.41 N*
Location: *Paducah, KY*	Surface Elevation: *373.78 feet msl*
Started at *on 4-18-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt clayey, firm, light yellowish brown (2.5Y6/4)	
5									
10				-	-	-/-		Silt with 10% fine to medium sand angualr, moderately sorted, firm, light gray (2.5Y7/1) Note: sand continually increased with depth to approximately 20%	
15									
20									
25									
30				-	-	-/-			
35									
40									

WELL DIAGRAM

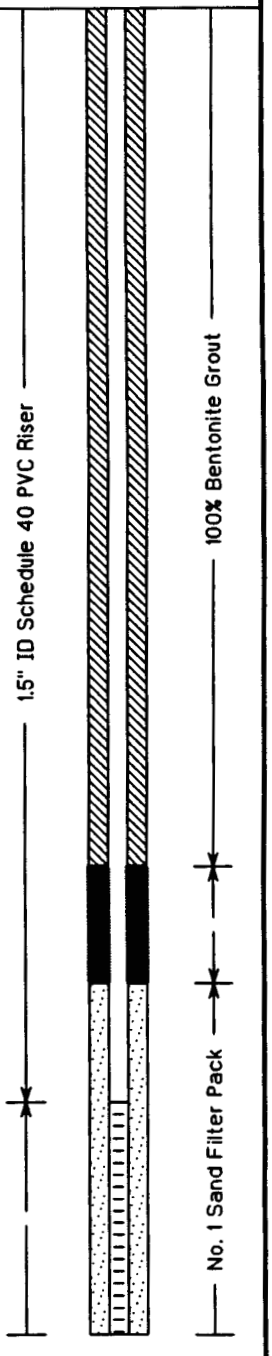


Piezometer 720-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5939.88 E, -2056.41 N*
Location: *Paducah, KY*	Surface Elevation: *373.78 feet msl*
Started at *on 4-18-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Silt, same as above	
50									
55								Sand and silt, sand fine to medium, subangular moderately sorted, pale yellow (2.5Y7/4)	318.8
60									311.8
65		■		-	-	1/-		Chert gravel 1/8-1 inch poorly sorted, subrounded approximately 20% sand very fine to very coarse poorly sorted subangular approximately 20% silts and clay yellowish brown (10YR5/8)	
70		■		-	-	2/-			
75		■		-	-	3/-			
80									

WELL DIAGRAM

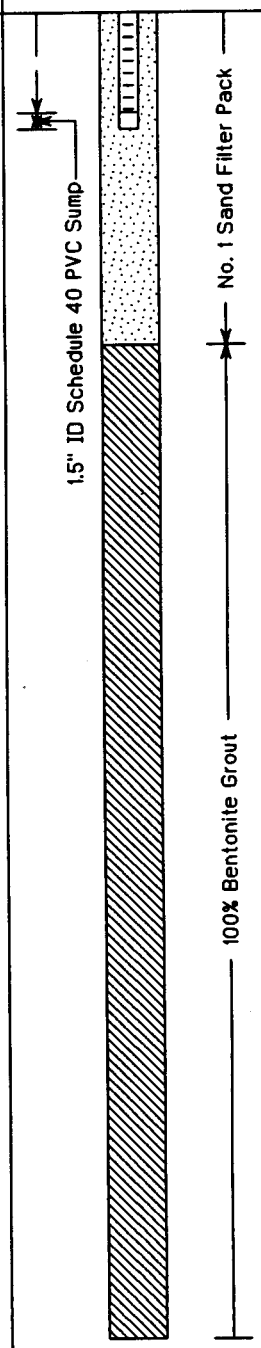


Piezometer 720-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5939.88 E, -2056.41 N*
Location: *Paducah, KY*	Surface Elevation: *373.78 feet msl*
Started at *on 4-18-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel, same as above	
		■		-	-	2/-			
85									
		■		-	-	3/-			
90									
		■		-	-	7/-			
95								Clay sandy, fine to medium, subangular, moderately sorted, firm to stiff, dark bluish gray (5B/1)	278.8
100									
105									
110				-	-	-/-			
115									
120									

WELL DIAGRAM

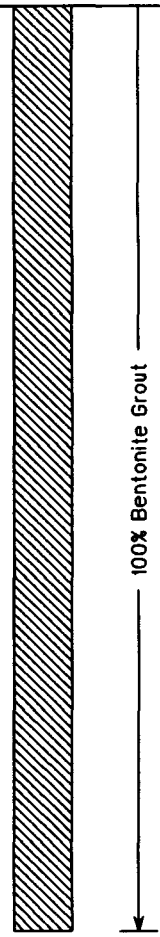


Piezometer 720-015

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5939.88 E, -2056.41 N*
Location: *Paducah, KY*	Surface Elevation: *373.78 feet msl*
Started at *on 4-18-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *148.0 feet*
Geologist: *D. Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		■		-	-	8/-		Clay, same as above	
125									
130									
135								Same as 95.0 - 134.0 ft. but with approximately 5% micaceous also sand continue increased with depth to approximately 40%	
140				-	-	-/-			
145								Clay silty, stiff, dark gray (10YR4/1) Note: Driller said it become harder to drill here	
									225.8
150								Boring terminated at 148.0 ft.	
155									
160								Background in CPM is: not available	

WELL DIAGRAM



Piezometer 720-016

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5698.82 E, -1977.44 N*
Location: *Paducah, KY*	Surface Elevation: *373.63 feet msl*
Started at *on 3-17-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-7-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *95.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
				-	-	0/0		Note: analytical samples are water Silt, clayey, gray (10YR6/1) to yellowish brown (10YR5/6), moist		
5									365.6	
								Clay, silty, yellowish brown (10YR5/6), moist		
10				-	-	0/0				
15										
20								Clay, some gravel, yellowish brown (poor recovery)	353.1	
								Gravel (50%) sand (40%) silt (10%) yellowish brown (10YR5/6), dense	350.6	
25								Silt, some clay and sand, traces gravel, brownish yellow, (10YR6/8)		
30				-	-	-/-		Sand, silty, some gravel, brownish yellow (10YR6/8) with occasional clayey zones	344.6	
35								Silt and clay trace to some sand, dark yellowish brown (10YR4/6) to brownish yellow	339.6	
40										

Piezometer 720-016

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5698.82 E, -1977.44 N*
Location: *Paducah, KY*	Surface Elevation: *373.63 feet msl*
Started at *on 3-17-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-7-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *95.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45								Silt and clay, gray to light brownish gray (10YR6/1) to (10YR6/2) (hard drilling)		
									327.6	
								No recovery		
									325.1	
50				-	-	-/-		Silt and fine to very fine sand, brownish yellow (10YR6/6)	323.6	
								Sand, medium to fine with silt and some gravel, subrounded to subangular, brownish yellow (10YR6/6)		
55								Sand, medium to fine, silty, yellow (2.5Y7/6)		
								Sand, gravely, some silt, yellow (2.5Y7/6)		
									314.6	
60								Gravel (60%) chert, subrounded to subangular; sand (35%) quartzitic, traces silt, yellowish brown (10YR5/6), dense		
65										
								Gravel (60%), medium to coarse subangular to subrounded; sand (35%); silt (5%), yellowish brown (10YR5/6) dense		
70				-	-	-/-				
75										
80										

Piezometer 720-016

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5698.82 E, -1977.44 N*
Location: *Paducah, KY*	Surface Elevation: *373.63 feet msl*
Started at *on 3-17-98*	TOC Elevation: *NA feet msl*
Completed at *on 4-7-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *95.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Gravel (50%) medium grained, subrounded to subangular, sand (30%) medium to coarse, silt (20%), dark yellowish brown (10YR4/6), very dense		
85								Gravel (65%) subrounded to subangular sand (25-30%) medium to coarse, silt (5-10%) yellowish brown (10YR5/8), dense		
90				-	-	-/-				
95								Boring terminated at 95.0 ft.	278.6	
100										
105										
110										
115										
120								Background in CPM is: not available		

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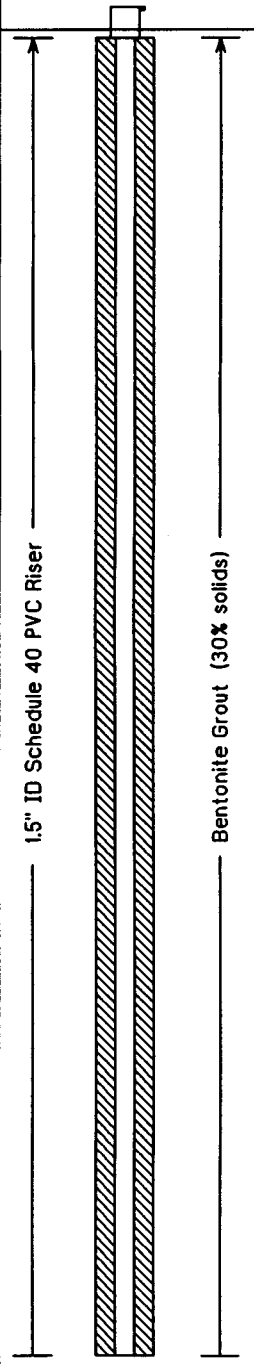
Piezometer 720-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5429.73 E, -2065.63 N*
Location: *Paducah, KY*	Surface Elevation: *374.56 feet msl*
Started at *on 5-2-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-4-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *136.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Concrete slab	373.6
								Gravel, clayey, yellowish red (5YR4/6) (fill)	369.6
5								Clay, silty, light yellowish brown (10YR6/4)	
10				-	-	-/-			
15									
20								Silt with 25% medium to fine subangular to subrounded gravel and 20% medium to fine sand, brownish yellow (10YR6/8)	354.6
25								Silt, with traces of sand and gravel light yellowish brown (10YR6/4)	
30				-	-	-/-		Gravel (50%) subround to subangular, sand (25%), silt (25%) yellowish brown (10YR5/8)	344.6
35								Clay with traces sand and gravel, yellowish brown (10YR6/8)	339.6
40									

WELL DIAGRAM

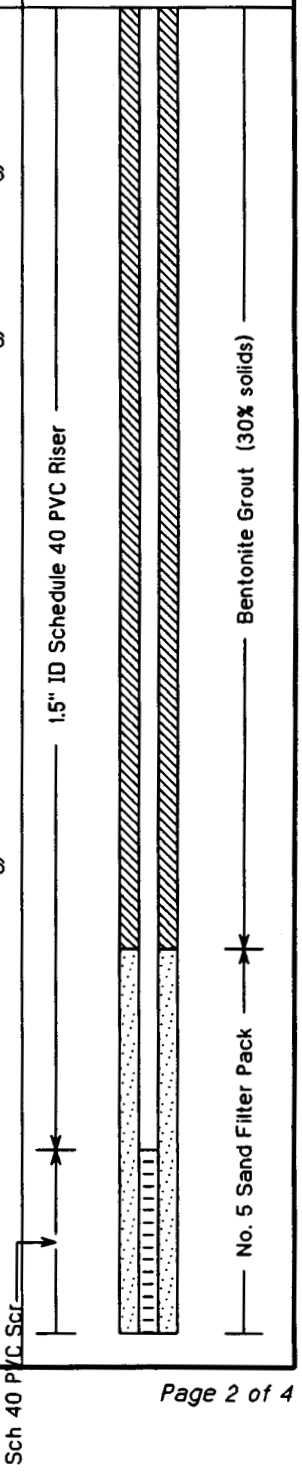


Piezometer 720-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5429.73 E, -2065.63 N*
Location: *Paducah, KY*	Surface Elevation: *374.56 feet msl*
Started at *on 5-2-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-4-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *136.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, silty, brownish yellow (10YR6/6)	
45								Sand, fine to very fine grained, silty, yellow (10YR7/6)	329.6
50				-	-	-/-		Sand, medium grained with 25-30% medium to fine gravel, light yellowish brown (2.5Y6/3)	324.6
55									
60									
								Sand, (100%) medium to coarse grain, grading to gravel (65%), subrounded to subangular; sand (30%); silt (5%) subangular brown (7.5YR5/8)	313.6
65								Gravel (65%); sand (30%); silt (5%) strong brown (7.5YR5/8)	308.6
70				-	-	-/-			
75								Gravel (65%) subangular to subrounded, sand (30%) medium grained, silt (5%), strong brown (7.5YR5/8)	
80									

WELL DIAGRAM

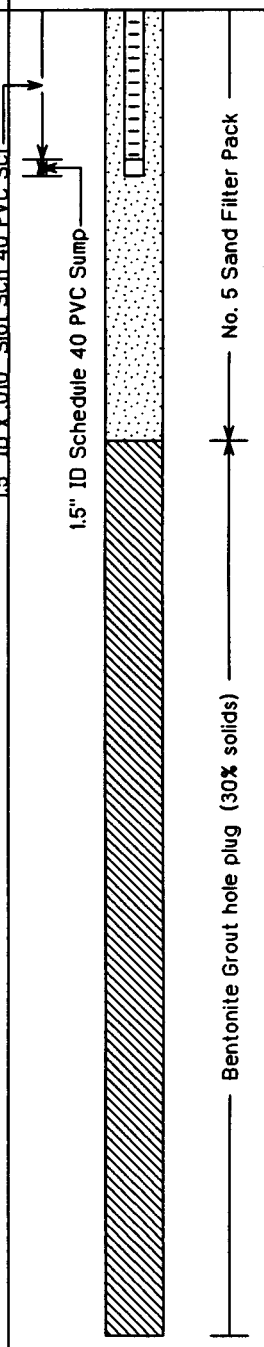


Piezometer 720-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5429.73 E, -2065.63 N*
Location: *Paducah, KY*	Surface Elevation: *374.56 feet msl*
Started at *on 5-2-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-4-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *136.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel and sand, same as above	
85									
90				-	-	-/-			
								Silt, with medium to fine sand, brownish yellow (10YR5/8) to dark yellowish brown (10YR4/6)	282.1
								Clay, silty, traces fine sand, dark greenish gray (10Y3/1), stiff	280.6
95								Silt, some fine to very fine sand, trace clay, dark greenish gray (10Y3/1)	278.6
100								Silt (70%) with 15% clay and 15% very fine sand, very dark gray (N3/1)	
105								Silt, some fine to very fine sand, traces clay, dark greenish gray (10Y3/1)	
110				-	-	-/-			
115									
120									

WELL DIAGRAM



Piezometer 720-017

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5429.73 E, -2065.63 N*
Location: *Paducah, KY*	Surface Elevation: *374.56 feet msl*
Started at *on 5-2-98*	TOC Elevation: *NA feet msl*
Completed at *on 5-4-98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *136.0 feet*
Geologist: *J. Albert*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
125				-	-	-/-		Silt with fine to very fine sand, greenish gray (10Y5/1) micaceous with some cemented lenses of sandstone	248.6	Bentonite Grout hole plug (30% solids)
130								Sand, very fine grained, silty, partially cemented, greenish gray (10Y5/1) to pale yellow (2.5Y7/3)		
135				-	-	-/-			238.6	
								Boring terminated at 136.0 ft.		
140										
145										
150										
155										
160								Background in CPM is: not available		

Boring 720-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5185.43 E, -2035.15 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-20-98*	Surface Elevation: *373.79 feet msl*
Completed at *on 4-22-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *156.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Note: analytical samples are groundwater	
								Clay, silty, yellowish brown (10YR5/6), stiff	
5									
10				-	-	-/-			
								Clay, silty with 10% medium grained sand traces gravel, yellowish brown (10YR5/6)	
15									
								Silt, clayey with some sand and gravel, strong brown, (7.5YR5/6), dense	355.8
20									
								Silt, sandy with 20-25% medium to fine gravel, strong brown (7.5YR5/8)	
25									
30				-	-	-/-			
35								Silt, clayey, some sand, yellowish brown (10YR5/8), firm	
								Silt, sandy, yellowish brown (10YR5/8), soft	
40									

Boring 720-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5185.43 E, -2035.15 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-20-98*	Surface Elevation: *373.79 feet msl*
Completed at *on 4-22-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *156.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
45								Silt, same as above	
50				-	-	-/-			
									319.8
55								Sand, silty, with some medium to fine gravel, pale yellow (2.5Y7/4), medium dense	
60									
									310.8
65								Gravel (65%), medium to coarse, subrounded to subangular, sand (30%) medium grained, silt (5%), brownish yellow (10YR6/8) dense	
70				-	-	-/-			
75									
									297.8
								No recovery - assume same as above	
80									

Boring 720-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5185.43 E, -2035.15 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-20-98*	Surface Elevation: *373.79 feet msl*
Completed at *on 4-22-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *156.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								No recovery	
85									
90				-	-	-/-			
								Gravel (65%) subangular to subrounded, sand (30%) medium grained, silt (5%), yellowish brown (10YR5/8), dense	282.8
95									277.8
								Silt, sandy, some clay, strong brown (7.5YR5/6), stiff Mc Nairy at approximately 96 ft.	
100									
								Silt, clayey, some fine sand, dark gray (10YR4/1), stiff	
105									
110				-	-	-/-			
115									
								Silt, clayey and clay with some silty fine sand, dark gray (10YR4/1) stiff (sand increases with depth)	
120									

Boring 720-018

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5185.43 E, -2035.15 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 4-20-98*	Surface Elevation: *373.79 feet msl*
Completed at *on 4-22-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Well Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *156.0 feet*

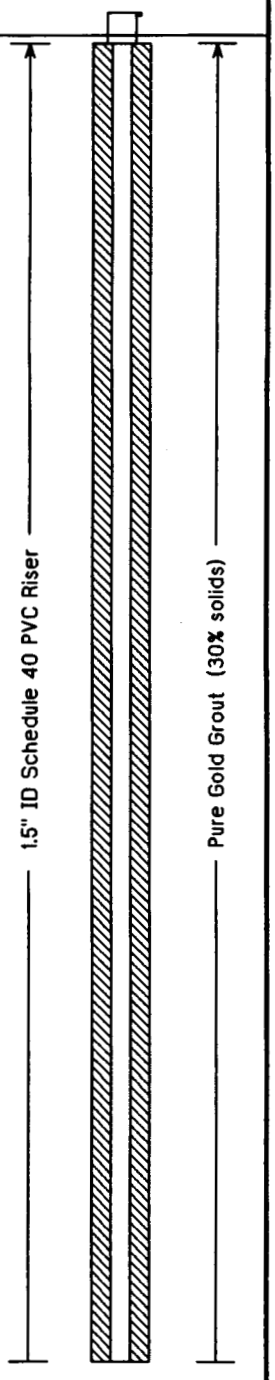
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, same as above	
125				-	-	-/-			
130									
135									237.8
								Clay, silty, very dark gray (3/N), very stiff	
140									
145				-	-	-/-			
								Clay, silty, gray (5Y5/1), very stiff, levens mbr at approximately 148.0 ft.	
150									
155									217.8
								Boring terminated at 156.0 ft.	
								Background in CPM is: not available	
160									

Piezometer 720-019

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4931.91 E, -2492.84 N*
Location: *Paducah, KY*	Surface Elevation: *374.19 feet msl*
Started at *on 5/4/98*	TOC Elevation: *NA feet msl*
Completed at *on 5/4/98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*
Geologist: *D.Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, silty soft, wet, gray (10YR6/1)	
5									
10				-	-	-/-			
15									
								Silt with approximately 10% clay and 10% sand, poorly sorted, subangular, very soft, brownish yellow (10YR6/6)	357.2
20									
25								Silt and clay with 20-30% medium, very coarse, subangular to angular, poorly sorted sand, soft, brownish yellow (10YR6/6)	349.2
30				-	-	-/-			
35									
40									

WELL DIAGRAM

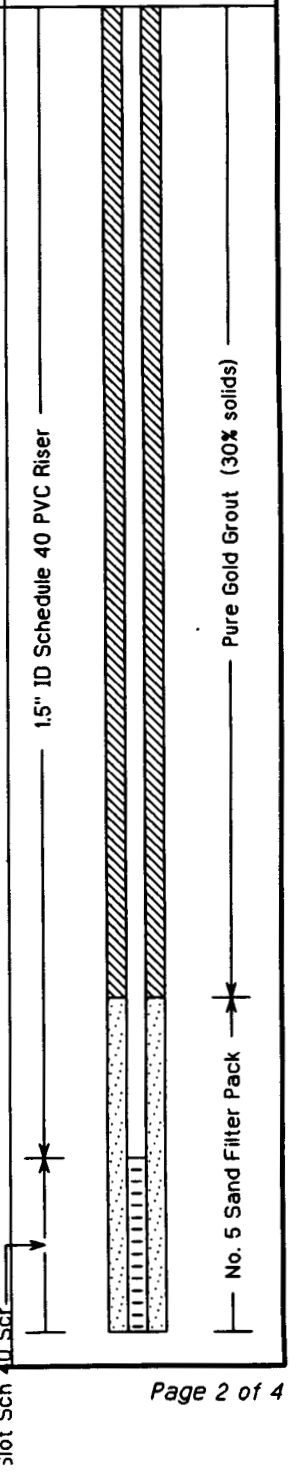


Piezometer 720-019

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4931.91 E, -2492.84 N*
Location: *Paducah, KY*	Surface Elevation: *374.19 feet msl*
Started at *on 5/4/98*	TOC Elevation: *NA feet msl*
Completed at *on 5/4/98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*
Geologist: *D.Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt and clay, same as above	
45									
50				-	-	-/-			
55									319.2
								Sand, silt, clay, sand very fine	
									317.2
								Silt sandy with some clay, sand medium grained, subangular, well sorted, soft, yellow (2.5Y8/6)	
60									
								Silt sandy with some clay, sand medium grained, subangular, well sorted, soft, pale yellow (2.5Y7/4)	
65									
70									
									302.2
								Chert gravel 1/8 to 1 inch with 20-40% sand, subangular, poorly sorted very fine, very course, appoximatley 20% silt and clay, dense brown (10YR5/3)	
75									
		X		-	-	0/-			
80									

WELL DIAGRAM

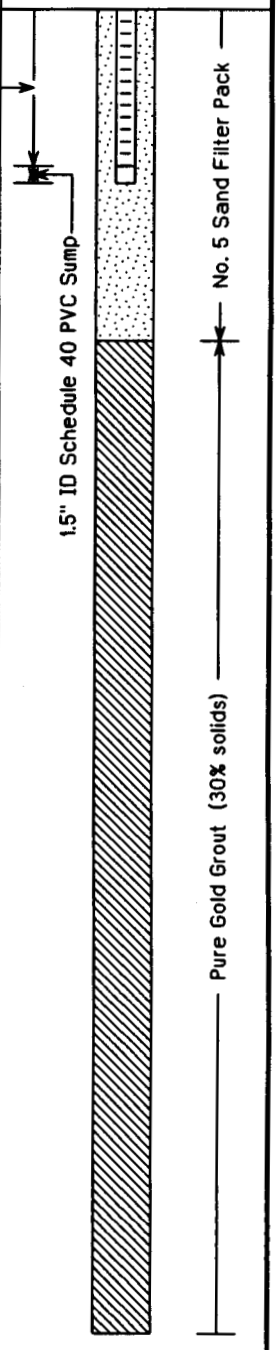


Piezometer 720-019

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4931.91 E, -2492.84 N*
Location: *Paducah, KY*	Surface Elevation: *374.19 feet msl*
Started at *on 5/4/98*	TOC Elevation: *NA feet msl*
Completed at *on 5/4/98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*
Geologist: *D.Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
		X		-	-	0/-		Gravel, same as above	
85									
		X		-	-	0/-			
90									
				-	-	0/-			
								Clay silty, stiff, brownish yellow (10YR6/6)	280.2
95								Clay with approximately 10% micaceous, stiff to very stiff, dark bluish gray (3/1)	
100								Clay with approximately 40% medium sand, subangular, well sorted, stiff, dark greenish gray (3/1)	274.2
105									
110								Clay, silt, sand, very fine to fine, subangular, moderately sorted, soft, very dark gray (5Y3/1) trace of chert gravel throughout	264.2
115									
		X		-	-	0/-			
120									

WELL DIAGRAM



Piezometer 720-019

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4931.91 E, -2492.84 N*
Location: *Paducah, KY*	Surface Elevation: *374.19 feet msl*
Started at *on 5/4/98*	TOC Elevation: *NA feet msl*
Completed at *on 5/4/98*	Depth to Groundwater: *NA feet TOC* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *138.0 feet*
Geologist: *D.Doyle*	Well Screen: *to feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Clay, same as above		
125										
130										
135										
		X		-	-	0/-		Clay with 10-20% formed, subangular, moderately sorted sand, very dark gray (10YR3/1), stiff	236.2	
140								Boring terminated at 138 feet		
145										
150										
155										
160								Background in CPM is: not available		

Boring 720-020

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-2-98*	Surface Elevation: *feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *49.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								*=No readings to 15 feet due to high background	
								Boring started at 15 feet	
5				*	*				
10				*	*				
15						0/0			

Boring 720-020

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-2-98*	Surface Elevation: *feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *49.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	*	1285	0/20 0/76 0/82		Clay, some silt, yellowish brown (10YR5/6) mottled brownish yellow (10YR6/6) and gray (10YR6/1) hard to brittle slightly damp Trace fine grained cherty gravel, some very dark gray (10YR3/1) staining	
								Interval not logged	
20	X	X	100.0	*	1103	6/16 0/150 0/40 0/30		Clay, trace gravel, gray (10YR6/1), firm Clay (50%), gravel (50%) poorly sorted, angular to subrounded, fine to medium grained, cherty, dark yellowish brown (10YR4/6) with gray (10YR6/1) mottles	
								Interval not logged	
25	X	X	100.0	*	830	0/11 3/5 12/7 0/12		Same as 21.0 - 23.0 ft. Clay (60%), gravelly (30%), trace silt and sand, gray (10YR6/1) with brownish yellow mottling (10YR6/6), damp	
	X		100.0	*	830	4/5 0/6 36/0		Sand (80%) moderately sorted, medium to coarse grained, quartzitic, cherty, silt (20%) dark yellowish brown (10YR4/6) damp Clay, light brownish yellow (10YR6/4) with light gray (10YR7/2) and dark yellowish brown (10YR4/6) mottling, firm	
30									

Boring 720-020

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-2-98*	Surface Elevation: *feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *49.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, trace silt and fine sand, gray (10YR6/1) with yellowish brown (10YR5/8) mottles	
						25/2		Clay, silty, trace gravel, light gray (10YR7/2) with very pale brown (10YR7/4) mottling	
			100.0	*	1069				
						0/4		Clay (50%) gravelley (35%) fine to medium grained, angular to rounded, cherty, sand silt (15%), dark yellowish brown (10YR4/6) with gray (10YR6/1) mottling, firm, slightly moist	
						0/3			
						8/6			
			100.0	*					
35						13/0			
						2/4			
					1046				
						3/4			
			100.0	*	1264				
						2/4		Clay, trace silt, brownish yellow with some gray (10YR6/1) mottling, moderatley firm, damp	
						0/0		Interval not logged	
40						0/0		Same as 38.0 - 39.0 ft. interval	
						0/0			
			100.0	*	-				
						0/0			
						0/0		Clay, some silt and fine sand, gray (10YR6/1) and brownish yellow (10YR6/8), moderately firm, slightly damp	
						0/0			
45						0/0			

Boring 720-020

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-2-98*	Surface Elevation: *feet msl*
Completed at *on 5-2-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *49.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	*	-	0/0		Clay, trace silt, brown (10YR5/3) with gray (10YR5/1) and yellow (10YR7/6) mottling	
						0/0			
						0/0			
						0/0			
50								Boring terminated at 49.0 ft.	
55									
60								Background in CPM is: not available	

Boring 720-021

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-1-98*	Surface Elevation: *feet msl*
Completed at *on 5-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started at 15 feet	
5									
10									
15						2/0			

Boring 720-021

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-1-98*	Surface Elevation: *feet msl*
Completed at *on 5-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
			100.0	0	849	2/0 1/5 1/3		Clay, trace silt, olive-yellow (2.5Y6/6) with gray (2.5Y6/1) and dark yellowish brown (10YR4/6) mottles, slightly damp	
								Interval not logged	
20			100.0	0	1071	0/0 0/0 0/0 0/0		Clay, light yellowish brown (2.5Y6/4), soft, damp Clay, (60%), gravel (20%), fine to medium grained, cherty, sand (10%), medium to coarse grained, light yellowish brown (2.5YR6/4)	
								Interval not logged	
						45/0		Clay, light yellowish brown (2.5YR6/5), soft, damp	
25			100.0	0	988	5/0 4/0 2/0		Sand (70%) poorly sorted, fine to coarse grained, angular to subrounded, quartzitic and cherty, gravel (30%) poorly sorted, fine to coarse grained, angular to rounded, trace silt and clay, light yellowish brown (2.5Y6/4)	
						3/0		Gravel (60%) poorly sorted, fine to coarse grained, angular to rounded, cherty, sand (40%) poorly sorted, medium to coarse grained, angular to rounded, cherty and quartzitic, light yellowish brown (2.5Y6/4) damp	
			100.0	0	958	2/0		Same as 25.0 - 27.0 ft. interval	
30						3/0			

Boring 720-021

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-1-98*	Surface Elevation: *feet msl*
Completed at *on 5-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						26/0		Sand (70%) poorly sorted, fine to coarse grained, angular to subrounded, quartzitic and cherty, gravel (30%) poorly sorted, fine to coarse grained, angular to rounded, trace silt/clay, light yellowish brown (2.5Y6/4), moist to slightly wet	
			100.0	0	885	11/0			
						4/0			
						15/1			
			100.0	0					
35						8/0		Moist to slightly wet, some very dark gray staining (10YR3/1)	
						11/0		Same as above, brownish yellow (10YR6/8), moist, slightly damp	
						5/0			
			100.0	0	964				
						6/0		Clay, silty and sandy, yellowish brown (10YR5/6), moderately firm	
						0/0		Interval not logged	
40						0/0		Clay, silty, trace fine grained sand, brownish yellow, mottled gray (10YR6/1) and yellowish brown (10YR5/6)	
						0/0			
			100.0	0	1259				
						0/0			
						0/0		Interval not logged	
45						0/0			

Boring 720-021

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *E, N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5-1-98*	Surface Elevation: *feet msl*
Completed at *on 5-1-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	0	1215	0/0		Clay, same as above	
						0/0			
						0/0			
								Boring terminated at 48.0 ft.	
50									
55									
								Background in CPM is: alpha-0, beta-849	
60									

Boring 720-022

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.77 E, -2676.87 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-9-98*	Surface Elevation: *372.42 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started at 5.0 ft.	
5						0/0		Clay (80%); silty (20%), yellowish brown (10YR5/4) mottled gray (10YR6/1)and very dark gray (10YR3/1), stiff, slightly moist	367.4
			100.0	0	210	0/0			
						0/0			
						0/0			364.4
								Interval not sampled	
10						0/0		Same as 5.0 - 8.0 ft. interval	362.4
			100.0	0	210	0/0		Clay (100%) yellowish brown (10YR5/6), mottled very dark gray (10YR3/1) and brownish yellow (10YR6/6)	
						0/0			
						0/0		Clay (60%); gravel (40%) fine to medium grained, subangular to subrounded, poorly sorted, cherty, medium to coarse sand (10%) strong brown (2.5YR4/6) with gray (7.5YR6/1) mottles	359.4
								Interval not sampled	
15						0/0			357.4

Boring 720-022

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.77 E, -2676.87 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-9-98*	Surface Elevation: *372.42 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									357.4
	X	X	100.0	0	210	0/0		Clay (80%); gravel (20%) medium to fine grained, poorly sorted, angular to subangular, cherty, gray (10YR6/1) with dark yellowish brown mottles, very firm	
						0/0		Clay (50%); gravel (40%) poorly sorted, fine to coarse grained, angular to subrounded, cherty, trace silt/sand (10%), dark yellowish brown (10YR4/6) with some gray (10YR6/1) mottling	
						0/0			354.4
								Interval not sampled	
20						0/0			352.4
	X	X	100.0	0	210	0/0		Sand (60%) poorly sorted, medium to coarse grained, angular to subrounded, quartzitic to cherty; gravel (40%) poorly sorted, fine to coarse, angular to subrounded, trace silt/clay gray (10YR6/1) with yellowish brown (10YR5/6) chert, moist	
						0/0		Sand (80%) poorly sorted, medium to coarse grained, angular to subrounded, quartzitic and cherty; gravel (20%) poorly sorted, fine to medium grained, subangular to subrounded, cherty, dark yellowish brown (10YR4/6) with some dark red (10R3/6) staining	
						0/0			349.4
								Interval not sampled	
25						0/0			347.4
	X	X				0/0		Same as 21.0 - 23.0 ft. interval	
			100.0	0	210				345.9
						0/0		Sand (90%) fine to very fine; silt (10%) somewhat indurated, very hard, brittle	345.4
						0/0		Sand (60%), poorly sorted, fine to coarse grained, angular to subrounded, quartzitic and cherty; gravel (40%) medium to coarse grained, poorly sorted, angular to subrounded, cherty, trace silt/clay dark yellowish brown (10YR4/6)	
						0/0			
						0/0			
30						0/0			

Boring 720-022

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.77 E, -2676.87 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-9-98*	Surface Elevation: *372.42 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X		100.0	0	210	0/0		Same as 27.0 - 30.0 ft. interval	
						0/0			
						0/0		Clay (100%), trace fine gravel, yellowish brown (10YR5/8) with gray (10YR6/1) mottling	339.6 / 339.4
								Interval not sampled	
35	X	X	100.0	0	210	-/3		Clay (70%); silty and sandy (30%) yellowish brown (10YR3/6) with gray (10YR6/1) mottling, firm to somewhat brittle	337.4
						-/0			
						-/0			
						-/3		Interval not sampled	334.4
40	X	X	100.0	0	210	-/0		Clay (100%) yellowish brown, mottled gray (10YR6/1) and red (10Y5/6) very firm, stiff	332.4
						-/0		Same as 35.0 - 38.0 ft. interval	
						-/0			
						-/0		Interval not sampled	329.4
45						-/0			327.4

Boring 720-022

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5139.77 E, -2676.87 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-9-98*	Surface Elevation: *372.42 feet msl*
Completed at *on 4-13-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									327.4
						-/0		Clay (80%); silt and fine sand (20%), trace gravel, brownish yellow (10YR6/8) with dark yellowish brown (10YR4/4) and gray (10YR6/1) mottling, rare light red (10R6/8) streaking	
			100.0	0	210				
						-/0			
						-/0			
			100.0	0	210	-/0			
50						-/0			322.4
								Boring terminated at 50.0 ft.	
55									
								Background in CPM is: alpha-0, beta-210	
60									

Boring 720-023

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5713.87 E, -1998.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-14-98*	Surface Elevation: *372.56 feet msl*
Completed at *on 4-14-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *33.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started at 15 feet	
5									
10									
15						0/0			357.6

Boring 720-023

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5713.87 E, -1998.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-14-98*	Surface Elevation: *372.56 feet msl*
Completed at *on 4-14-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *33.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									357.6
	X	X	100.0	0	195	0/8 0/9 0/0		Clay (60%) sandy (20%) and gravelly (20%) sand is poorly sorted, fine to medium grained, subangular to subrounded, gravel is poorly sorted, fine to medium grained, angular to subrounded, cherty, dark yellowish brown (10YR4/6) to yellowish brown (10YR5/8) with some gray (10YR6/1) mottling	
						0/0		Interval not sampled	354.6
20	X	X	100.0	0	195	4/4		Same as 15.0 - 18.0 ft. interval	352.6
								Sand (95%), moderately sorted, medium to coarse grained, angular to subrounded, quartzitic with some chert, gravel (5%), fine grained, yellow (10YR7/6) with yellowish brown (10YR5/6) banding, some gray (10YR3/1) mottling, moist	350.6 349.6
								Interval not sampled	
25	X	X	100.0	0	195	2/0 1/0 0/0 1/0		Clay (70%), sandy (30%), poorly sorted, fine to medium grained, subangular to subrounded, quartzitic and cherty, trac silt, yellowish brown (10YR5/6) with dark yellowish brown (10YR4/6) color change at 27.0 - 28.0 ft., some gray (10YR6/1) mottling, trace very fine gravel	347.6
								Interval not sampled	344.6
30						0/0			342.6

Boring 720-023

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5713.87 E, -1998.06 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-14-98*	Surface Elevation: *372.56 feet msl*
Completed at *on 4-14-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technol...*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *33.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X							342.6
						0/0		Clay (50%), silty/sandy (40%), trace gravel (10%) fine sand, gravel fine to medium grained, yellowish brown (10YR5/6) with gray (10YR6/1) mottles, moderately firm, slightly moist	
			100.0	0	195	0/0			
									340.6
						2/0		Sand (70%) poorly sorted, fine to coarse grained, angular to subrounded, quartzitic and cherty, silty/clayey (20%), trace gravel (10%) yellowish brown (10YR5/6) with gray (10YR6/1) mottles	339.6
								Boring terminated at 33.0 ft. Could not retrieve drive point and steel rods from boring	
35									
40									
								Background in CPM is: alpha-0, beta-195	
45									

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Boring 720-024

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5621.74 E, -2668.03 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-16-98*	Surface Elevation: *371.12 feet msl*
Completed at *on 4-16-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started 15 feet	
5									
10									
15						0/0			356.1

Boring 720-024

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-562174 E, -2668.03 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-16-98*	Surface Elevation: *371.12 feet msl*
Completed at *on 4-16-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									358.1
			100.0	0	207	0/0		Clay (70%), gravely (30%) poorly sorted, fine to coarse grained, angualr to subrounded, cherty, trace silt and sand yellowish brown (10YR5/4) to dark yellowish brown (10YR4/6), mottled gray (10YR6/1), stiff, damp	
						0/0			354.1
						0/0		Gravel (40%) poorly sorted, fine to medium grained, angular to subrounded, cherty, sand (30%) poorly sorted, fine to medium grained, quartzitic and cherty, clay (30%) gray (10YR5/1) with yellowish brown (10YR5/6) mottling, staining	353.1
								Interval not sampled	
20						0/0			351.1
								Same as 17.0 - 18.0 ft. interval	350.6
			100.0	0	207	0/0		Clay (60%) silty to sandy (40%) light brownish gray (10YR6/2), mottled yellow (10YR7/6), stiff	
						0/0			
						0/0			348.1
								Interval not sampled	
25						0/0			346.1
								Same as 20.5 - 23.0 ft. but with trace fine to medium grained cherty gravel	
			100.0	0	207	8/5			
						0/0			
						0/0		Clay (70%) silty and sandy (20%), gravelly (10%) fine to medium, cherty with some quartz subangular to subrounded, gray (10YR6/1) with trace (10YR6/6) brownish yellow mottles	343.1
								Sand (60%) poorly sorted, fine to coarse grained, angular to subrounded, cherty and quartzitic, gravel (40%) poorly sorted, fine to coarse grained, angular to subrounded, cherty with quartz, trace silt and clay, yellowish brown (10YR5/8), with some red (10R5/8) stained grains	
30						0/0			

Boring 720-024

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-562.74 E, -2668.03 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-16-98*	Surface Elevation: *371.12 feet msl*
Completed at *on 4-16-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100.0	0	207	0/0		Same as 28.0 - 30.0 ft., very moist to wet	
						0/0			
						5/8			338.1
								Interval not sampled	
35									336.1
	X	X	100.0	0	207			Clay (90%), trace silt (10%) brownish yellow (10YR6/8) with gray (10YR6/1) mottling, somewhat firm	
									333.1
								Interval not sampled	
40									331.1
	X	X	100.0	0	207			Sand (80%) poorly sorted, medium to coarse grained, angular to subrounded, quartzitic and cherty, silt and clay (20%) brownish yellow (10YR6/6) mottled gray (10YR6/1) and yellowish brown (10YR5/6), very moist to slightly wet	
								Clay (90%), trace silt (10%), yellowish brown (10YR5/6) with some (10YR4/6) dark yellowish brown mottling, very stiff, moist	329.1
									328.1
								Interval not sampled	
45						0/0			326.1

Boring 720-024

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5621.74 E, -2668.03 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 4-16-98*	Surface Elevation: *371.12 feet msl*
Completed at *on 4-16-98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *50.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									326.1
			100.0	0	207	0/0		Clay same as 42.0 - 43.0 ft. interval	
						0/0			
						0/0			323.1
			100.0	0	207	0/0		Silt (50%); clay (50%), trace fine grained gravel, pale yellow (2.5Y7/3) mottled olive yellow (2.5Y6/8)	
50						0/0		Boring terminated at 50.0 ft.	321.1
55									
								Background in CPM is: alpha-0, beta-207	
60									

Boring 720-026

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5792.91 E, -1729.12 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/19/98*	Surface Elevation: *374.24 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *92.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Grass surface (topsoil)	
								Silt, clayey, trace sand, very pale brown (10YR7/3)	373.2
5									
10				-	-	-/-		Sand (55%) medium to fine grained; silt (45%), yellowish brown (10YR5/6)	364.2
15								Sand (80%) fine grained, well sorted; silt (20%), light yellowish brown (10YR6/4)	
									355.2
20								Gravel (60%) medium ot fine grained, subangular to subround; sand (40%) fine grained, brownish yellow (10YR6/6)	
									352.2
								Silt (90%); sand (40%) fine grained, brownish yellow (10YR6/8) (with trace of gravel)	
25									
									348.2
								Sand (40%) fine grained; gravel (40%) medium to fine grained, subangular to subround; silt (20%), yellowish brown (10YR5/8)	
30				-	-	-/-			
									343.2
								Silt, some fine grained sand, trace fine gravel, yellow (2.5Y7/6)	
35									
									338.2
								Clay, sandy, some silt, yellowish brown (10YR5/6)	
40									

Boring 720-026

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5792.91 E, -1729.12 N*
Location: *Paducah, KY*	Geologist: *JAlbert*
Started at *on 5/19/98*	Surface Elevation: *374.24 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *92.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									333.2
								Silt, trace to some very fine sand, trace fine grained gravel, brownish yellow (10YR6/8)	
45									328.2
								Sand, fine to very fine grained, silty, trace fine grained gravel, brownish yellow (10YR6/6) with some black (10YR2/1)	
50				-	-	-/-			
55									
60									314.2
								Gravelly zone 60-61 feet	313.2
								Gravel (65-70%) subangular to subround; sand (25-30%); silt (5%), yellowish brown (10YR5/8)	
65									
70				-	-	-/-			
								Gravel (65-70%); sand (25-30%); silt (5%), strong brown (7.5YR5/6)	
75									
80									

Boring 720-026

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5792.91 E, -1729.12 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 5/19/98*	Surface Elevation: *374.24 feet msl*
Completed at *on 5/21/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *92.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (55-60%) subround to subangular; sand (20-25%); silt (10-20%), strong brown (7.5YR5/6)	
85									
90				-	-	-/-			
								Boring terminated at 92 feet	282.2
95									
100									
105									
110									
115								Background in CPM is: not available	
120									

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Boring 720-027

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5033.54 E, -2054.41 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/5/98*	Surface Elevation: *374.42 feet msl*
Completed at *on 5/5/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Techno*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Boring started at 5 feet	
5						12/0		Clay, some silt, gray (10YR6/1) with yellowish brown (10YR5/8) mottling, firm, dry to slightly damp.	369.4
			100	0	220	0/0			
						1/0			
						1/0		Interval not logged	366.4
10						0/0		Clay, some silt, yellowish brown (10YR5/6) with some gray (10YR6/1) mottling, firm, slightly damp.	364.4
			100	0	220	0/0			
						0/0			
						0/0		Interval not logged	361.4
15						40/0			359.4

Boring 720-027

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5033.54 E, -2054.41 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/5/98*	Surface Elevation: *374.42 feet msl*
Completed at *on 5/5/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X	100	0	220	0/0 2/6 0/0		Clay, some silt and sand, yellowish brown (10YR5/6) with gray (10YR6/1) and trace dark yellowish brown (10YR4/6) mottling, firm, slightly damp	358.4
								Interval not logged	356.4
20	X	X	100	0	220	0/0 0/0 2/0 2/0		Clay (50%) gravelly, fine to coarse grained, angular to rounded, cherty, trace sand (fine grained), yellowish brown (10YR5/6) with gray (10YR6/1) mottling, slightly damp	354.4
25	X	X				12/0 0/0 12/0		Gravel (60%) poorly sorted, fine to coarse grained, angular to subround, cherty; sand (30%) poorly sorted, fine to coarse grained, angular subround, cherty, quartzitic; silt and clay (10%), yellowish brown (10YR5/6), with red (10YR5/8) stains, dry	351.4
	X	X				7/0 3/6 6/0 5/0		Sand (80%) poorly sorted, medium to coarse grained, angular to subround, cherty, quartzitic; gravel (20%) poorly sorted, fine to medium grained, angular to rounded, cherty, trace silt and clay, dark yellowish brown (10YR4/6)	348.4
30								Clay, trace silt and fine sand, yellowish brown (10YR4/6) with brownish yellow (10YR6/6) mottling	346.4

Boring 720-027

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5033.54 E, -2054.41 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/5/98*	Surface Elevation: *374.42 feet msl*
Completed at *on 5/5/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
						19/-		Clay, some silt and sand, firm, damp, gray (10YR6/1) with yellowish brown (10YR5/6) mottling	342.9
			100	0	220	26/-		Sand (60%) poorly sorted, fine to medium grained, cherty to quartzitic angular to subround; silt and clay (30%), trace gravel, dark yellowish brown (7.5YR4/6), slightly moist	341.4
						34/-		Sand (60%) poorly sorted, fine to coarse grained, angular to subround cherty with some quartz; gravel (30%) fine to medium grained, angular to subangular, cherty; clay (10%), yellowish brown (10YR5/8), damp	
						19/-			
35			100	0	220	4/-		Clay, some silt, yellowish brown (10YR5/6), damp with some gray (10YR6/1) mottling	339.4
						2/-			
						4/-			
			100	0	220	0/-			
						1/-		Interval not logged	335.4
40						0/-		Light yellowish brown (2.5Y6/4) with strong brown (7.5YR4/6) mottling	334.4
						0/-			
			100	0	220	0/-			
						0/-		Interval not logged	331.4
45						1/-			329.4

Boring 720-027

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-5033.54 E, -2054.41 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 5/5/98*	Surface Elevation: *374.42 feet msl*
Completed at *on 5/5/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *48.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
	X	X						Clay (as above) yellowish brown (10YR5/8) with gray (10YR6/1) mottles	326.4
						0/-			
			100	0	220	0/-			
						0/-			
								Boring terminated at 48 feet	326.4
50									
55									
								Background in CPM is: alpha-0, beta-220	
60									

Boring 720-028

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4565.85 E, -2631.76 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 6/1/98*	Surface Elevation: *375.53 feet msl*
Completed at *on 6/3/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface grass/topsoil	
								Silt, clayey, yellowish brown (10YR5/4)	
5									
10				-	-	-/-			
								Silt with very fine sand and trace clay, light brown (7.5YR6/4)	
15									
									358.5
								Sand and gravel, trace to some silt, brown (7.5YR5/4)	
20									
									354.5
								Silty sand, very fine grained to silt, yellowish brown (10YR5/6)	
25									
30				-	-	-/-			
									344.5
								Sand, fine grain, silty with 5-10%, medium to fine gravel, yellowish brown (10YR5/6)	
35									
									339.5
								Clay, silty with 20% medium to fine gravel, subangular to subround, yellowish brown (10YR5/6)	
40									335.5

Boring 720-028

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4565.85 E, -2631.76 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 6/1/98*	Surface Elevation: *375.53 feet msl*
Completed at *on 6/3/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt, clayey to very fine sand, yellow (2.5Y7/6)	335.5
45									329.5
								Sand (90%) medium grain; silt (10%), yellow (2.5Y7/6)	
50				-	-	-/-			324.5
								Sand (70%) medium to fine gravel; gravel (20%) medium to fine grain, subangular to subround; silt (10%), yellowish brown (10YR5/8)	322.5
								Clay, silty, yellow (2.5Y7/6)	
55								Clay, silty, brownish yellow (10YR6/6) with trace of sand and gravel gravel at approximately 60 feet	
60									
65									309.5
								Sand (95%) fine grain; silt (5%), brownish yellow (10YR6/6)	
70				-	-	-/-			
75									298.5
								Gravel (55-60%) subangular to subround; sand (30-35%); silt (5%), yellowish brown (10YR4/6)	
80									

Boring 720-028

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4565.85 E, -2631.76 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 6/1/98*	Surface Elevation: *375.53 feet msl*
Completed at *on 6/3/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (50-55%) subangular to subround; sand (35-40%); silt (10%), strong brown (7.5YR4/6)	
85									
90				-	-	-/-			
95									
								McNairy at 98 feet	277.5
100								Sand very fine grain, silty, brownish yellow (10YR6/6) grading to very pale brown (10YR7/4) with traces of clay laminae Sand very fine grained, silty with trace of clay laminae, olive yellow (2.5Y6/6)	
105									
110				-	-	-/-			
115									
120									

Boring 720-028

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4565.85 E, -2631.76 N*
Location: *Paducah, KY*	Geologist: *J.Albert*
Started at *on 6/1/98*	Surface Elevation: *375.53 feet msl*
Completed at *on 6/3/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Dual Wall Reverse Air Rotary*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Sand very fine grained, silty, dark gray (2.5Y4/1) grading to silt, sandy and clayey, dark gray (2.5Y4/1) micaceous	
125				-	-	-/-			
130									
135				-	-	-/-			
								Silt, clayey and sandy, dark gray (2.5Y4/1) micaceous	239.5
140									
								Boring terminated at 141.0 feet	234.5
145									
150									
155									
								Background in CPM is: not available	
160									

Boring 720-029

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4860.19 E, -1960.29 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/27/98*	Surface Elevation: *375.68 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Grass surface/topsoil	
								Clay, silty, brownish yellow (10YR6/6)	374.7
5								Clay, silty, olive brown (2.5Y4/3) (poor recovery)	
10				-	-	-/-			
								Silt, some coarse sand to fine gravel, yellowish brown (10YR5/4)	361.7
15									
20									
								gravel (50%) medium to fine grain; sand (25%) medium to coarse grain; silt (25%), strong brown (7.5YR5/8)	353.7
25									
								Sand with some clay and medium to fine grained gravel, gray (7.5YR5/1)	349.7
30				-	-	-/-		Sand, silty, trace to some fine gravel, very pale brown (10YR7/3)	
35									
40									

Boring 720-029

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4860.19 E, -1960.29 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/27/98*	Surface Elevation: *375.68 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
									334.7
								Clay, silty, trace to some fine sand, yellowish brown (10YR5/8)	
									331.7
45								Sand, silty, trace fine gravel, brownish yellow (10YR6/6)	
50				-	-	-/-			
								Sand, very fine to fine grained, silty with trace gravel, pale yellow (2.5Y7/4)	
55									
								Sand, very fine to fine grained, silty with trace gravel grading to sand with 30-40% medium to fine grave, brownish yellow (10YR6/8)	
60									
									314.7
								Gravel (60%) subround to subangular; sand (35%) medium to fine grained quartz; silt (5%), brownish yellow (10YR6/6)	
65									
								Gravel (65%) subround to subangular; sand (30%) medium to fine; silt (5%), strong brown (7.5YR5/6)	
70				-	-	-/-			
75									
80									

Boring 720-029

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4860.19 E, -1960.29 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/27/98*	Surface Elevation: *375.68 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Gravel (55-60%) subround to subangular; sand (30-40%); silt (5-10%), dark yellowish brown (10YR4/6)	
85									
90				-	-	-/-			
								Gravel (60-65%) subangular to subround; sand (20-25%); silt (10-20%), strong brown (7.5YR5/6)	
95									
								McNairy at 98 feet	277.7
								Silt and clay, trace to some fine to very fine sand, strong brown (7.5YR5/8)	
100									274.7
								Silt and very fine sand, trace clay, light yellowish brown (2.5Y6/4)	
105									
110				-	-	-/-		Silt, some clay and very fine sand, brownish yellow (10YR6/8)	
									261.7
115								Silt and clay, trace very fine sand, brown (10YR4/3) to very dark gray (10YR3/1)	
								Silt and clay trace to little very fine sand, very dark gray (2.5Y3/1)	
120									

Boring 720-029

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4860.19 E, -1960.29 N*
Location: *Paducah, KY*	Geologist: *J. Albert*
Started at *on 5/27/98*	Surface Elevation: *375.68 feet msl*
Completed at *on 5/30/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Direct Push Technology*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *141.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Silt and clay, same as above	
125				-	-	-/-			
130									
135				-	-	-/-			
								Clay, some silt, very dark gray (2.5Y3/1)	239.7
140									
								Boring terminated at 141 feet	234.7
145									
150									
155									
								Background in CPM is: not available	
160									

Boring 720-030

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4869.90 E, -1959.52 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/18/98*	Surface Elevation: *375.30 feet msl*
Completed at *on 6/18/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Auger*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *30.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Clay, some silt, firm, dark yellowish brown (10YR3/6)	
	X					0/0		Clay, some gravel and sand, hard, dark yellowish brown (10YR3/4)	
		X				0/0		Clay, trace silt, firm to slightly brittle, yellowish brown (10YR5/6)	
5			100	0	230	0/0		Not sampled	370.3
						0/0			
						0/0		Clay, silty, trace loose gravel, somewhat firm, brown (10YR4/3) damp	367.3
	X		100	0	230	0/0		Clay, soft, brownish yellow (10YR6/8) with gray (10YR6/1) mottled, moist to slightly wet	
10		X				0/0		Not sampled	365.3
						0/0		Clay, some silt and fine sand, firm, yellowish brown (10YR5/4) with gray (10YR6/1) and brownish yellow (10YR6/6) mottling, damp	362.3
	X	X	100	0	230	0/0			
15						0/0			360.3

Boring 720-030

Project: *Paducah Gaseous Diffusion Plant Wag 27 RI*	Coordinates: *-4869.90 E, -1959.52 N*
Location: *Paducah, KY*	Geologist: *R. McComb*
Started at *on 6/18/98*	Surface Elevation: *375.30 feet msl*
Completed at *on 6/18/98*	Depth to Groundwater: *NA feet bgs* Measured: *NA*
Drilling Method: *Auger*	Groundwater Elevation: *NA feet msl*
Drilling Company: *Miller Drilling*	Total Depth: *30.0 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	% Recovery	RAD/Alpha	RAD/Beta	FID/PID (ppm)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Not sampled	360.3
						0/0		Clay, some silt and fine sand, firm, yellowish brown (10YR5/4) with gray (10YR6/1) and brownish yellow (10YR6/6) mottling, damp	357.3
			100	0	230	0/0			
								Clay, firm, gray (10YR6/1), some yellow (10YR7/6) mottling, damp	
20						0/0		Not sampled	355.3
						0/0		Clay very firm, gray (10YR6/1), mottled yellowish brown (10YR5/6) and vidal gray (10YR3/1), limestone gravel at 23.75-24.0 feet	352.3
			100	0	230	0/0			
25						0/0		Not sampled	350.3
						0/0		Clay, some silt and gravel, heavily mottled gray (10YR6/1), dark yellowish brown (10YR4/4), and yellowish brown (10YR5/6), damp	347.3
			100	0	230	0/0			
30						0/0		Boring terminated at 30 feet	345.3

Background in CPM is: alpha-0, beta-230

PIEZOMETER WATER LEVEL DATA FOR WAG 27								
DATE	PIEZOMETER	TIME	STATIC (FT)	TOC ELEV.	WATER ELEV.	MEASURE POINT	STICKUP (FT)	TOTAL DEPTH (FT)
5/28/98	PZ-1	1415	49.77	376.70	326.93	N-SIDE	3.0	82.25
5/28/98	PZ-2	1345	44.72	3372.32	327.60	"	FLUSH	81.57
5/28/98	PZ-3	1335	46.19	373.71	327.52	"	"	80.76
5/28/98	PZ-4	1400	46.90	374.52	327.62	"	"	82.34
5/28/98	PZ-5	1406	43.45	373.96	330.51	"	"	83.14
6/13/98	PZ-1	1025	49.39	376.7	327.31	N-SIDE	3.0	82.25
6/13/98	PZ-2	1043	44.30	372.3	328.02	"	FLUSH	81.57
6/13/98	PZ-3	1038	45.86	373.7	327.85	"	"	80.76
6/13/98	PZ-4	1035	46.63	374.5	327.89	"	"	82.34
6/13/98	PZ-5	1020	45.22	374.0	328.74	"	"	83.14

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C-720 Building

Piezometer Water Level Measurements

ID1	ID	WELLNAME	MEASDATE	MPLOC	MPELEV	D2WTR	WTRELEV	COMMENTS
1	1	MW-020	1/29/98	WWP		41.97	-41.97	Feet
2	2	MW-063	1/26/98	WWP	372.6	49.8	322.8	Feet
3	3	MW-064	1/26/98	WWP	372.6	10.24	362.36	Feet
4	4	MW-065	1/26/98	WWP	372.58	49.8	322.78	Feet
5	5	MW-066	1/26/98	WWP	370.07	48.05	322.02	Feet
6	6	MW-067	1/27/98	WWP	375.48	51.23	324.25	Feet
7	7	MW-068	1/26/98	WWP	379.72	37.15	342.57	Feet
8	8	MW-072	1/26/98	TIC	374.66	50.88	323.78	Feet
9	9	MW-073	1/27/98	TIC	374.97	50.92	324.05	Feet
10	10	MW-074	1/27/98	TIC	375.06	18.87	356.19	Feet
11	11	MW-075	1/26/98	TIC	376.1	8.91	367.19	Feet
12	12	MW-076	1/26/98	TIC	376.31	52.45	323.86	Feet
13	13	MW-077	1/26/98	TIC	377.16	52.96	324.2	Feet
14	14	MW-078	1/26/98	TIC	375.6	51.95	323.65	Feet
15	15	MW-080	1/26/98	TIC	376.52	52.82	323.7	Feet
16	16	MW-081	1/26/98	TIC	376.51	52.81	323.7	Feet
17	17	MW-082	1/26/98	TIC	376.54	14.62	361.92	Feet
18	18	MW-083	1/26/98	TIC	376.59	12.36	364.23	Feet
19	19	MW-084	1/26/98	WWP	375.86	52.15	323.71	Feet
20	20	MW-085	1/26/98	WWP	375.86	14.77	361.09	Feet
21	21	MW-086	1/26/98	WWP	375.87	52.12	323.75	Feet
22	22	MW-087	1/26/98	WWP	375.77	52.05	323.72	Feet
23	23	MW-088	1/26/98	WWP	375.74	14.35	361.39	Feet
24	24	MW-089	1/26/98	WWP	375.67	51.96	323.71	Feet
25	25	MW-090	1/26/98	WWP	374.51	56.67	317.84	Feet
26	26	MW-091	1/26/98	WWP	374.48	11.1	363.38	Feet
27	27	MW-092	1/26/98	WWP	374.51	50.81	323.7	Feet
28	28	MW-093	1/26/98	WWP	377.61	53.65	323.96	Feet
29	29	MW-094	1/26/98	WWP	377.62	16.17	361.45	Feet
30	30	MW-095	1/26/98	WWP	377.62	53.78	323.84	Feet
31	31	MW-096	1/26/98	TIC	377.32	35.1	342.22	Feet
32	33	MW-098	1/26/98	WWP	370.43	49.51	320.92	Feet
33	34	MW-099	1/26/98	WWP	369.41	48.01	321.4	Feet
34	35	MW-100	1/26/98	WWR		51.69	-51.69	Feet
35	36	MW-101	1/27/98	TIC		11.83	-11.83	Feet
36	37	MW-102	1/26/98	WWP	384.58	59.71	324.87	Feet
37	38	MW-103	1/26/98	WWP	385.22	60.55	324.67	Feet
38	39	MW-106	1/26/98	WWP	369.35	46.22	323.13	Feet
39	40	MW-107	1/26/98	TIC		62.26	-62.26	Feet
40	41	MW-108	1/26/98	TIC		61.7	-61.7	Feet
41	42	MW-110	1/26/98	TIC		61.61	-61.61	Feet
42	43	MW-111	1/26/98	TIC		16.17	-16.17	Feet
43	44	MW-115	1/26/98	TIC		61.26	-61.26	Feet
44	45	MW-117	1/26/98	TIC		62.24	-62.24	Feet
45	46	MW-118	1/26/98	TIC		61.52	-61.52	Feet
46	47	MW-120	1/26/98	TOC	387	61.86	325.14	Feet
47	48	MW-121	1/27/98	TOC	375.18	53.22	321.96	Feet
48	49	MW-122	1/26/98	TOC	365.16	41.74	323.42	Feet

49	50	MW-123	1/27/98	TOC	375.06	53.59	321.47	Feet
50	51	MW-124	1/26/98	TOC	365.25	42.99	322.26	Feet
51	52	MW-125	1/27/98	TOC	375.39	45.74	329.65	Feet
52	53	MW-126	1/26/98	TOC	364.6	42.4	322.2	Feet
53	54	MW-128	1/26/98	TOC	364.9	3.29	361.61	Feet
54	55	MW-132	1/26/98	TOC	363.31	41.82	321.49	Feet
55	56	MW-133	1/26/98	TOC	337.46	17.43	320.03	Feet
56	57	MW-134	1/26/98	TOC	368.7	46.09	322.61	Feet
57	58	MW-135	1/26/98	TOC	336.32	16.68	319.64	Feet
58	59	MW-137	1/26/98	TOC	336.21	16.58	319.63	Feet
59	60	MW-138	1/26/98	TOC	336.04	9.68	326.36	Feet
60	61	MW-139	1/26/98	TOC	363.67	42.07	321.6	Feet
61	62	MW-140	1/27/98	TOC	344.73	22.49	322.24	Feet
62	63	MW-141	1/27/98	TOC	345.35	22.64	322.71	Feet
63	64	MW-142	1/27/98	TOC	345.64	22.78	322.86	Feet
64	65	MW-143	1/27/98	TOC	345.88	13.05	332.83	Feet
65	66	MW-144	1/27/98	TOC	380.59	55.65	324.94	Feet
66	67	MW-145	1/27/98	TOC	380.73	57.26	323.47	Feet
67	68	MW-146	1/27/98	TOC	353.57	35.39	318.18	Feet
68	69	MW-147	1/27/98	TOC	353.78	35.58	318.2	Feet
69	70	MW-150	1/26/98	TOC	377.14	54.77	322.37	Feet
70	71	MW-151	1/26/98	TOC	383.04	19.21	363.83	Feet
71	72	MW-152	1/26/98	TOC	353.9	37.59	316.31	Feet
72	73	MW-153	1/26/98	TOC	353.74	37.63	316.11	Feet
73	74	MW-154	1/27/98	TOC	375.08	6.56	368.52	Feet
74	75	MW-155	1/26/98	TOC	381.55	57.37	324.18	Feet
75	76	MW-156	1/26/98	TOC	382.41	58.22	324.19	Feet
76	77	MW-157	1/26/98	TOC	382.04	34.97	347.07	Feet
77	78	MW-158	1/26/98	TOC	374.01	49.88	324.13	Feet
78	79	MW-159	1/26/98	TOC	374.12	50.11	324.01	Feet
79	80	MW-160	1/26/98	TOC	373.94	9.25	364.69	Feet
80	81	MW-161	1/26/98	TOC	373.81	49.61	324.2	Feet
81	82	MW-162	1/26/98	TOC	374.51	12.52	361.99	Feet
82	83	MW-163	1/26/98	TOC	386.41	62.45	323.96	Feet
83	84	MW-164	1/26/98	TOC	386.64	46.98	339.66	Feet
84	85	MW-165	1/26/98	TOC	380.06	56.29	323.77	Feet
85	86	MW-166	1/26/98	TOC	380.44	38.34	342.1	Feet
86	87	MW-167	1/26/98	TOC	376.68	7.1	369.58	Feet
87	88	MW-168	1/26/98	TOC	377.7	53.97	323.73	Feet
88	89	MW-169	1/26/98	TOC	373.65	50.19	323.46	Feet
89	90	MW-170	1/26/98	TOC	374.2	9.15	365.05	Feet
90	91	MW-171	1/26/98	TOC	374.98	5.85	369.13	Feet
91	92	MW-172	1/26/98	TOC	374.1	8.61	365.49	Feet
92	93	MW-173	1/26/98	TOC	373.62	50	323.62	Feet
93	94	MW-174	1/26/98	TOC	373.6	7.67	365.93	Feet
94	95	MW-175	1/26/98	TOC	381.51	57.27	324.24	Feet
95	96	MW-177	1/26/98	TOC	380.07	47.03	333.04	Feet
96	97	MW-178	1/26/98	TOC	379.22	55.05	324.17	Feet
97	98	MW-179	1/26/98	TOC	358.89	36.36	322.53	Feet

98	99	MW-180	1/26/98	TOC	358.41	17.95	340.46	Feet
99	100	MW-181	1/26/98	TOC	371.2	48.06	323.14	Feet
100	101	MW-182	1/26/98	TOC	371.43	13.48	357.95	Feet
101	102	MW-185	1/26/98	TOC	373.95	50.9	323.05	Feet
102	103	MW-186	1/26/98	TOC	374.06	9.62	364.44	Feet
103	104	MW-187	1/26/98	TOC	374.06	8.95	365.11	Feet
104	105	MW-188	1/26/98	TOC	374.43	50.34	324.09	Feet
105	106	MW-189	1/26/98	TOC	375.79	20.09	355.7	Feet
106	107	MW-190	1/27/98	TOC	373.6	6.31	367.29	Feet
107	108	MW-191	1/26/98	TOC	360.38	38.05	322.33	Feet
108	109	MW-192	1/26/98	TOC	359.37	36.89	322.48	Feet
109	110	MW-193	1/26/98	TOC	368.1	45.13	322.97	Feet
110	111	MW-194	1/26/98	TOC	356.52	33.43	323.09	Feet
111	112	MW-196	1/26/98	TOC	390.24	11.1	379.14	Feet
112	113	MW-197	1/27/98	TOC	368.53	45.84	322.69	Feet
113	114	MW-199	1/26/98	TOC	356.87	35.62	321.25	Feet
114	115	MW-200	1/27/98	TOC	378.61	56.34	322.27	Feet
115	116	MW-201	1/27/98	TOC	366.59	46.54	320.05	Feet
116	117	MW-202	1/27/98	TOC	372.93	51.77	321.16	Feet
117	118	MW-203	1/26/98	TOC	377.91	53.7	324.21	Feet
118	119	MW-204	1/26/98	TOC	378.06	45.87	332.19	Feet
119	120	MW-205	1/26/98	TOC	379.97	56.53	323.44	Feet
120	121	MW-206	1/26/98	TOC	384.92	61.3	323.62	Feet
121	122	MW-207	1/27/98	TOC	379.62	35.43	344.19	Feet
122	123	MW-207	1/27/98	TIC	379.51	35.43	344.08	Feet
123	124	MW-208	1/27/98	TOC		31.76	-31.76	Feet
124	125	MW-210	1/26/98	TIC		26.24	-26.24	Feet
125	126	MW-211	1/26/98	TIC		36.42	-36.42	Feet
126	127	MW-212	1/26/98	TIC	379.7	38.81	340.89	Feet
127	128	MW-213	1/26/98	TIC	380.96	40.76	340.2	Feet
128	129	MW-214	1/26/98	TIC	379.25	35.21	344.04	Feet
129	130	MW-215	1/26/98	TIC	383.87	41.42	342.45	Feet
130	131	MW-216	1/26/98	TIC	380.11	44.24	335.87	Feet
131	132	MW-217	1/26/98	TIC	378.56	28.92	349.64	Feet
132	133	MW-218	1/27/98	TIC	371.63	17.99	353.64	Feet
133	134	MW-219	1/26/98	TIC	380.12	39.7	340.42	Feet
134	135	MW-220	1/26/98	TIC	381.65	58.39	323.26	Feet
135	136	MW-221	1/26/98	TIC	391.14	68.1	323.04	Feet
136	137	MW-222	1/26/98	TIC	395.2	72.12	323.08	Feet
137	138	MW-223	1/26/98	TIC	394.85	71.32	323.53	Feet
138	139	MW-224	1/26/98	TIC	395.7	72.6	323.1	Feet
139	140	MW-225	1/26/98	TIC	385.86	62.59	323.27	Feet
140	141	MW-226	1/26/98	TOC	378.98	54.55	324.43	Feet
141	142	MW-227	1/26/98	TOC	379.18	54.55	324.63	Feet
142	143	MW-233	1/27/98	WWR	369.84	48.63	321.21	Feet
143	144	MW-234	1/27/98	WWR	368.92	47.84	321.08	Feet
144	145	MW-235	1/27/98	WWR	369.59	48.56	321.03	Feet
145	146	MW-236	1/27/98	WWR	368.89	47.99	320.9	Feet
146	147	MW-237	1/27/98	WWR	369.59	25.49	344.1	Feet

147	148	MW-238	1/27/98	WWR	370.18	49.21	320.97	Feet
148	149	MW-239	1/27/98	WWR	369.65	48.29	321.36	Feet
149	150	MW-240	1/27/98	WWR	369.82	48.71	321.11	Feet
150	151	MW-241	1/27/98	WWR	369.25	48.11	321.14	Feet
151	152	MW-242	1/26/98	WWR	369.21	46.23	322.98	Feet
152	153	MW-243	1/26/98	WWR	367.4	44.71	322.69	Feet
153	154	MW-244	1/26/98	WWR	365.55	42.84	322.71	Feet
154	155	MW-245	1/26/98	WWR	368.83	46.04	322.79	Feet
155	156	MW-246	1/26/98	WWR	366.48	8.32	358.16	Feet
156	157	MW-247	1/26/98	WWR	366.64	43.55	323.09	Feet
157	158	MW-248	1/26/98	WWR	368.03	45.41	322.62	Feet
158	159	MW-249	1/26/98	WWR	366.64	43.82	322.82	Feet
159	160	MW-250	1/26/98	WWR	367.33	44.62	322.71	Feet
160	161	MW-251	1/26/98	TOC		17.86	-17.86	Feet
161	162	MW-255	1/26/98	WWR		60.14	-60.14	Feet
162	163	MW-256	1/26/98	WWR		61.23	-61.23	Feet
163	164	MW-257	1/26/98	WWR		49.95	-49.95	Feet
164	165	MW-258	1/26/98	WWR	383.76	59.99	323.77	Feet
165	166	MW-260	1/26/98	WWR		60	-60	Feet
166	167	MW-261	1/26/98	WWR		50.15	-50.15	Feet
167	168	MW-262	1/26/98	WWR		50.1	-50.1	Feet
168	169	MW-263	1/26/98	WWR		36.94	-36.94	Feet
169	170	MW-264	1/26/98	WWR		42.53	-42.53	Feet
170	171	MW-265	1/26/98	WWR	369.19	45.78	323.41	Feet
171	172	MW-266	1/26/98	WWR		42.11	-42.11	Feet
172	173	MW-267	1/26/98	WWR		57.39	-57.39	Feet
173	174	MW-268	1/26/98	WWR	371.07	49.43	321.64	Feet
174	175	MW-269	1/26/98	WWR		49.22	-49.22	Feet
175	176	MW-270	1/26/98	WWR		47.08	-47.08	Feet
176	177	MW-271	1/26/98	WWR		47.15	-47.15	Feet
177	178	MW-272	1/26/98	WWR		44.41	-44.41	Feet
178	179	MW-273	1/26/98	WWR		44.24	-44.24	Feet
179	180	MW-274	1/26/98	WWR	368.56	46.66	321.9	Feet
180	181	MW-275	1/26/98	WWR		46.42	-46.42	Feet
181	182	MW-276	1/26/98	WWR	362.59	39.65	322.94	Feet
182	183	MW-277	1/26/98	WWR		39.86	-39.86	Feet
183	184	MW-283	1/26/98	TOC	370	47.93	322.07	Feet
184	185	MW-284	1/26/98	TOC	370.95	48.71	322.24	Feet
185	186	MW-287	1/26/98	TOC		49.46	-49.46	Feet
186	187	MW-288	1/26/98	TOC	371.31	49.03	322.28	Feet
187	188	MW-289	1/26/98	TOC		48.97	-48.97	Feet
188	189	MW-290	1/26/98	TOC		48.72	-48.72	Feet
189	190	MW-291	1/26/98	TOC	370.45	48.27	322.18	Feet
190	191	MW-292	1/26/98	TOC	376.05	53.39	322.66	Feet
191	192	MW-293	1/26/98	TOC	366.45	44.36	322.09	Feet
192	193	MW-294	1/26/98	TOC	366.6	44.51	322.09	Feet
193	194	MW-300	1/26/98	TIC	372.14	5.55	366.59	Feet
194	195	MW-302	1/26/98	TIC	383.18	8.14	375.04	Feet
195	196	MW-303	1/26/98	TIC	368.72	11.74	356.98	Feet

196	197	MW-304	1/27/98	TIC	375.43	8.36	367.07	Feet
197	198	MW-305	1/26/98	TIC	415.13	11.62	403.51	Feet
198	199	MW-306	1/26/98	TIC	421.84	20.08	401.76	Feet
199	200	MW-307	1/26/98	TIC	417.47	16.48	400.99	Feet
200	201	MW-308	1/26/98	TIC	418	15.54	402.46	Feet
201	202	MW-309	1/26/98	TIC	380.09	4.35	375.74	Feet
202	203	MW-310	1/26/98	TIC	388.84	10.41	378.43	Feet
203	204	MW-311	1/26/98	TIC	394.86	15.6	379.26	Feet
204	205	MW-312	1/26/98	TIC	369.87	8.28	361.59	Feet
205	206	MW-313	1/26/98	TIC	370.73	10.34	360.39	Feet
206	207	MW-315	1/26/98	TIC	377.55	10.82	366.73	Feet
207	208	MW-316	1/26/98	TIC	370.86	6.06	364.8	Feet
208	209	MW-317	1/26/98	TIC	387.93	11.05	376.88	Feet
209	210	MW-318	1/29/98	TIC	377.57	5.84	371.73	Feet
210	211	MW-325	1/27/98	TIC	374.88	50.64	324.24	Feet
211	212	MW-326	1/27/98	TIC	374.97	50.73	324.24	Feet
212	213	MW-327	1/26/98	TIC	372.06	47.92	324.14	Feet
213	214	MW-328	1/26/98	TIC	368.26	44.17	324.09	Feet
214	215	MW-329	1/26/98	TIC	375.15	50.97	324.18	Feet
215	216	MW-330	1/26/98	TIC	376.57	52.44	324.13	Feet
216	217	MW-333	1/26/98	WWR		53.3	-53.3	Feet
217	218	MW-334	1/26/98	TIC		8.81	-8.81	Feet
218	219	MW-335	1/27/98	TIC		9.22	-9.22	Feet
219	220	MW-336	1/27/98	TIC		17.8	-17.8	Feet
220	221	MW-337	1/27/98	WWR		50.77	-50.77	Feet
221	222	MW-338	1/27/98	WWR		50.05	-50.05	Feet
222	223	MW-339	1/27/98	WWR		50.79	-50.79	Feet
223	224	MW-340	1/26/98	WWR		51.26	-51.26	Feet
224	225	P-Z5G	1/27/98	TIC		58.09	-58.09	Feet
225	226	P-Z5S	1/27/98	TIC		19.86	-19.86	Feet

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DUMMER SURVEYING & ENGINEERING SERVICES, INC.

September 22, 1998

DAVID H. DUMMER, JR., PLS
PRESIDENT
Registered in Kentucky

STEVEN W. MILLER, PE
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RICKY A. TOSH, PLS
VICE PRESIDENT
SURVEYING SERVICES
Registered in Kentucky & Illinois

Bryce Behnky
CH2M Hill
209 Wallace Avenue
Kevil, KY 42053

re: WAG 27 - Remedial Investigation / Feasibility Study
Paducah Gaseous Diffusion Plant
McCracken Co., Kentucky

Dear Sir:

With this letter we are submitting a computer printout of the coordinate list of proposed bore hole locations and as-built locations for the above referenced project.

I have reviewed the enclosed information and have found it to be true and accurate to the best of my knowledge and belief.

If you have any questions, please do not hesitate to call.

Respectfully Submitted,

David H. Dummer, Jr., PLS
President

Enclosure

198001.doc

National Society of Professional Engineers
Kentucky Society of Professional Engineers

434 South 6th Street • Paducah, KY 42003
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Prepared by: Dummer Surveying Company #CGDS06768
ist-Coords/Brg-Azi 198001 9/22/98 14:50:12 Factor: 1.0000000

Pt.No.	Code	North	East	Elevation	Desc.
300		-1700.05063	-6524.68793	371.339	001-~~001~~ 101
301		-1699.67288	-6575.20439	371.681	001-~~002~~ 102
302		-1699.49782	-6625.07977	372.061	001-~~003~~ 103
303		-1699.71655	-6675.04518	372.124	001-~~004~~ 104
304		-1700.05414	-6724.84504	372.233	001-~~005~~ 105
305		-1700.17994	-6774.46159	371.973	001-~~006~~ 106
306		-1699.74082	-6826.10554	371.435	001-~~007~~ 107
307		-1698.82433	-6874.40886	371.241	001-~~008~~ 108
308		-1699.07372	-6925.47764	371.404	001-~~009~~ 109
309		-1699.73704	-6975.72145	371.725	001-~~010~~ 110
310		-1699.83374	-7025.48746	369.645	001-~~011~~ 111
311		-1749.71098	-7025.02280	368.261	001-~~012~~ 112
312		-1750.67808	-6974.80930	372.224	001-~~013~~ 113
313		-1749.21448	-6925.30336	372.242	001-~~014~~ 114
314		-1750.80489	-6875.49362	373.045	001-~~015~~ 115
315		-1749.82220	-6824.72890	373.386	001-~~016~~ 116
316		-1749.74737	-6775.32205	373.865	001-~~017~~ 117
317		-1749.91669	-6724.76002	374.923	001-~~018~~ 118
318		-1750.29647	-6675.12603	373.893	001-~~019~~ 119
319		-1749.56691	-6624.84241	373.492	001-~~020~~ 120
320		-1749.91402	-6574.80552	373.288	001-~~021~~ 121
321		-1749.37141	-6525.75115	372.082	001-~~022~~ 122
322		-1796.58206	-6574.83056	372.010	001-~~023~~ 123
323		-1796.89732	-6625.03899	373.936	001-~~024~~ 124
324		-1796.10326	-6675.34562	374.129	001-~~025~~ 125
325		-1797.13434	-6725.60525	374.724	001-~~026~~ 126
326		-1796.47000	-6773.55210	374.219	001-~~027~~ 127
327		-1800.37010	-6824.70780	373.001	001-~~028~~ 128
328		-1798.37644	-6875.88267	372.335	001-~~029~~ 129
329		-1800.06782	-6924.89105	371.545	001-~~030~~ 130
330		-1800.41473	-6973.04940	371.665	001-~~031~~ 131
331		-1851.13060	-6975.21310	369.155	001-~~032~~ 132
332		-1848.99213	-6924.97367	370.665	001-~~033~~ 133
333		-1849.42480	-6874.76940	371.901	001-~~034~~ 134
334		-1843.76235	-6827.51678	373.500	001-~~035~~ 135
335		-1849.60270	-6774.37740	374.007	001-~~036~~ 136
336		-1851.55840	-6723.69100	374.020	001-~~037~~ 137
337		-1849.54216	-6674.82777	373.967	001-~~038~~ 138
338		-1885.17177	-6724.00459	373.441	001-~~039~~ 139
339		-1898.86220	-6776.77070	372.922	001-~~040~~ 140
340		-1898.05120	-6825.73410	372.283	001-~~041~~ 141
341		-1888.02253	-6876.76855	370.288	001-~~042~~ 142
342		-1900.44260	-6925.28300	369.789	001-~~043~~ 143
343		-1900.20561	-6975.40233	367.831	001-~~044~~ 144
344		-1805.95380	-6550.14710	367.592	001-~~045~~ 145
345		-1901.01850	-6689.73330	366.600	001-~~046~~ 146
346		-1920.63260	-6738.72800	366.044	001-~~047~~ 147
347		-1923.08000	-6958.76290	364.577	001-~~048~~ 148
348		-1684.48440	-7040.72200	367.390	001-~~049~~ 149
349		-1680.00720	-6594.12240	369.350	001-~~050~~ 150
350		-1699.96848	-6920.18637	371.540	001-~~051~~ 151

Prepared by: Dummer Surveying Company #CGDS06768
List-Coords/Brg-Azi 198001 9/22/98 14:51:05 Factor: 1.0000000

Pt.No.	Code	North	East	Elevation	Desc.
351		-1767.09250	-6894.11770	372.642	001-~~052~~ 152
352		-1766.75010	-6875.22820	372.182	001-~~053~~ 153
353		-1773.71426	-6875.45844	372.366	001-~~054~~ 154
354		-1732.00430	-6876.61000	373.040	001-~~055~~ 155
355		-1720.76230	-6877.01410	372.643	001-~~056~~ 156
356		-1720.78980	-6835.76330	372.689	001-~~057~~ 157
357		-1730.97594	-6835.65226	372.698	001-~~058~~ 158
358		-1757.52498	-6835.45902	373.267	001-~~059~~ 159
359		-1757.46089	-6789.53345	373.855	001-~~060~~ 160
360		-1729.42030	-6791.35240	373.521	001-~~061~~ 161
361		-1816.16328	-6933.62932	371.082	001-~~062~~ 162
362		-1816.53371	-6919.41102	371.342	001-~~063~~ 163
363		-1791.39520	-6823.69580	373.110	001-~~064~~ 164
364		-1720.67840	-6878.94200	372.600	001-~~065~~ 165
365		-1720.33050	-6900.38980	372.389	001-~~066~~ 166
366		-1755.76568	-6835.98071	373.467	001-~~067~~ 167
367		-1721.22870	-6790.62770	373.272	001-~~068~~ 168
368		-1695.54040	-6855.42280	371.026	001-~~069~~ 169
369		-1865.28990	-6967.56960	366.340	001-~~070~~ 170
370		-1727.83300	-6741.02890	373.856	001-~~071~~ 171
371		-1765.14840	-6875.11180	372.512	001-~~072~~ 172
372		-1719.97270	-6950.58110	372.082	001-~~073~~ 173
373		-1796.66360	-6875.13970	372.432	001-~~074~~ 174
374		-1684.69260	-7197.43020	371.200	001-~~075~~ 175
375		-1699.48050	-6594.88820	371.767	001-~~076~~ 176
376		-1700.52000	-6585.07810	371.606	001-~~076A~~ 176A
377		-1856.93310	-6719.08300	374.460	001-~~077~~ 177
378		-1857.18020	-6708.71850	374.399	001-~~077A~~ 177A
379		-1956.07420	-7139.25080	365.361	001-~~078~~ 178
380		-1700.05750	-7020.53470	371.183	001-~~079~~ 179
381		-1414.73090	-7396.06600	373.466	001-~~080~~ 180
382		-1725.62240	-6080.71730	371.588	001-~~081~~ 181
383		-1275.04340	-7200.19197	372.033	001-~~082~~ 182
384		-1041.71900	-7601.83060	373.172	001-~~083~~ 183
385		-1191.70410	-7344.02260	372.800	001-~~084~~ 184
391		-1048.25730	-6899.07870	372.688	091-001
392		-907.38540	-6939.90030	369.801	091-002
393		-1016.76040	-6812.76800	368.024	091-003
394		-1017.96600	-7007.53030	368.700	091-004
395		-1096.08200	-7001.62070	366.283	091-005
396		-1095.65550	-6812.39410	366.289	091-006

Prepared by: Dummer Surveying Company #CGDS06768
List-Coords/Brg-Azi 198001 9/22/98 14:52:46 Factor: 1.0000000

Pt.No.	Code	North	East	Elevation	Desc.
401		346.20180	-5613.11870	371.908	196-001
402		346.10790	-5629.26920	371.422	196-002
403		329.03210	-5787.64820	371.110	196-003
404		255.97010	-5654.37470	370.120	196-004
405		294.26810	-5649.79090	371.042	196-005
406		340.26300	-5645.62640	369.217	196-006
407		259.66950	-5647.65300	368.410	196-007
408		358.24440	-5039.15830	371.820	196-008
409		358.46680	-5040.99210	371.902	196-009
410		372.83810	-5024.51040	371.311	196-010
411		370.55330	-5084.86200	371.505	196-011
412		329.85610	-5746.42270	371.290	196-012
413		375.84880	-5044.54040	371.333	196-013
414		356.49200	-5096.16110	371.723	196-014
415		390.43930	-5078.62180	371.455	196-015
416		350.63050	-5630.19420	371.701	196-016
417		369.56760	-5611.43710	371.422	196-017
418		230.99230	-5654.68830	370.723	196-018
451		-2605.02410	-5040.00280	372.080	720-001
452		-2607.93820	-5139.89960	371.803	720-002
453		-2606.98270	-5375.03330	371.797	720-003
454		-2607.98804	-5515.00084	371.874	720-004
455		-2608.00883	-5620.01354	371.786	720-005
456		-2517.36978	-5810.29158	371.814	720-006
457		-2118.90020	-5626.45880	374.877	720-007
458		-2124.84030	-5385.04440	374.881	720-008
459		-2195.12250	-5119.91730	375.083	720-009
460		-2229.58810	-4900.72660	374.256	720-010
461		-2298.46440	-4991.10820	374.882	720-011
462		-2730.97790	-5152.49940	373.490	720-012
463		-2417.82080	-5931.02860	372.467	720-013
464		-2265.73060	-5930.34400	372.744	720-014
465		-2056.40880	-5939.87700	373.722	720-015
467		-2065.62690	-5429.72530	374.623	720-017
468		-2035.14660	-5185.43050	373.719	720-018
469		-2492.83830	-4931.91070	374.206	720-019
472		-2676.86880	-5139.77010	372.341	720-022
473		-1998.05950	-5713.87110	372.541	720-023
474		-2668.03270	-5621.74020	371.034	720-024
476		-1729.11820	-5792.91140	374.228	720-026
477		-2051.41470	-5033.53820	374.386	720-027
478		-2631.76108	-4565.85208	375.517	720-028
479		-1960.29260	-4860.19020	375.556	720-029
480		-1959.52210	-4869.90050	375.278	720-030
500		-1170.37670	-4075.26020	376.845	040-014
501		-1180.81840	-4067.16220	376.730	040-015
502		-1198.45570	-4066.72800	376.742	040-016
503		-1208.11650	-4082.92230	376.862	040-017
504		-1194.03330	-4104.00300	377.154	040-018

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The **Enclosure** is not available due to ***SIZE***.

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Appendix D

Borehole Geophysical Logs

R.E. Wright Environmental, Inc.
a Subsidiary of Science Applications International Corporation
An Employee-Owned Company

June 23, 1998

Mr. Edward Short
Vice President
Miller Drilling Company
1304 Latta Street
Chattanooga, TN 37406

RE: Data Transmittal of the CPT/DPT Investigation
at the Paducah Gaseous Diffusion Plant
R.E. Wright Project No. 01-1408-00-1502-000

Dear Mr. Short:

R.E. Wright Environmental, Inc. (R.E. Wright) is pleased to submit this data transmittal to Miller Drilling Company (MDC) documenting the results of the Cone Penetrometer Test (CPT) investigation performed by R.E. Wright at the Paducah Gaseous Diffusion Plant (PGDP) located in Paducah, Kentucky. R.E. Wright performed this investigation at the request of Mr. Mark Herndon of MDC.

FIELD ACTIVITIES

Field activities occurred from February 19 through March 18, 1998. R.E. Wright mobilized its Cone Penetrometer Test (CPT) rig and crew to the site to perform CPT borings and continuous soil borings for evaluation of subsurface soil conditions at three solid waste managment units (SWMUs). All CPT and soil boring locations were previously designated by a representative from CH_2M Hill.

R.E. Wright utilized a 10 ton electronic subtraction cone manufactured by Hogentogler & Co., Inc. to perform the Cone Penetration Tests (CPTs). The CPT consists of pushing the cone into the ground at a constant rate of 2 centimeters per second. Measurements of tip bearing stress or resistance (Qc), sleeve friction (Fs), inclination (I), and pore pressure (u) are recorded at 5 centimeter intervals during the test to provide a nearly continuous stratigraphic log and interpretative Standard Penetration Test (SPT) N values. The data are transmitted as analog voltage signals via a cable (inside a rod string) to a computer data acquisition system located on the CPT rig. All CPTs are performed in accordance with ASTM standard (D5778) and are attached as appendix B.

916 Springdale Drive, Exton, Pennsylvania 19341 • Phone (610) 594-3630 • Fax (610) 594-3626

The CPT crew utilized the Geoprobe® macro-core sampler to collect soil sampies from the soil borings. The macro-core sampler is approximately 4 feet in length, and is lined with standard Geoprobe® acetate liners to preserve sample integrity. The sampler is equipped with a stainless steel cutting shoe. As the sampler is advanced the cutting shoe cuts through the subsurface forcing soil to enter the sampler. The sampler is retrieved and the acetate liner tube is removed from the sampler. The sampler is finally reassembled with a new acetate liner and a clean cutting shoe to collect the next macro-core.

The CPT operator presented the retrieved acetate lined soil samples from each boring to CH_2M HILL's field representative directly in the acetate liners from each boring location. The soils were logged and field screened by a represantative from CH_2M HILL.

RESULTS OF FIELD ACTIVITIES

R.E. Wright performed a total of 35 soil borings in SWMUs 196 and 01 with target depths of 10 feet below below grade (BG). Terminal depths and locations of borings are presented in Table 1.

R.E. Wright also performed 13 CPTUs in SWMUs 01 and 196, and at building 720. Actual depths and locations of the soundings are presented in Table 2. The CPTU logs and graphs are attached as Appendix A. The soil behavior type classification used in CPT stratigraphic interpretation is from Robertson *et al.*, 1986, a copy of which is included with the logs.

R.E. Wright appreciates the opportunity to provide CPT services to MDC. Please contact us if you have any questions or comments concerning the information presented herein.

Respectfully submitted,

R.E. WRIGHT ENVIRONMENTAL, INC.

Luis M. Mercado / GJV

Luis M. Mercado
Operations Manager, Cone Penetrometer Division

Gregory J. Vorbach

Gregory J. Vorbach
Service, Operation and Maintenance Manager
Philadelphia Area office

cc:Steven J. Parker, P.G.,Ensafe
LMM:gjv
PADCPT.DOC

TABLE 1

DIRECT PUSH TECHNOLOGY CONTINOUS SOIL BORINGS

PADUCAH GASEOUS DIFFUSSION PLANT

SWMU	LOCATION	TOTAL DEPTH (ft)
SWMU-196		
1	SWMU-196-001	10
2	SWMU-196-001A	10
3	SWMU-196-002	10
4	SWMU-196-002A	7.5
5	SWMU-196-004	10
6	SWMU-196-008	10
7	SWMU-196-009	10
8	SWMU-196-010	10
9	SWMU-196-011	10
SWMU-01		
1	SWMU-01-~~001~~ 101	10
2	SWMU-01-~~002~~ 102	10
3	SWMU-01-~~003~~ 103	10
4	SWMU-01-~~004~~ 104	10
5	SWMU-01-~~005~~ 105	10
6	SWMU-01-~~018~~ 118	10
7	SWMU-01-~~019~~ 119	10
8	SWMU-01-~~020~~ 120	10
9	SWMU-01-~~021~~ 121	10
10	SWMU-01-~~023~~ 123	10
11	SWMU-01-~~024~~ 124	10
12	SWMU-01-~~025~~ 125	10
13	SWMU-01-~~026~~ 126	10
14	SWMU-01-~~038~~ 138	10
15	SWMU-01-~~039~~ 139	10
16	SWMU-01-~~052~~ 152	10
17	SWMU-01-~~053~~ 153	10
18	SWMU-01-~~054~~ 154	10
19	SWMU-01-~~055~~ 155	10
20	SWMU-01-~~056~~ 156	10
21	SWMU-01-~~057~~ 157	10
22	SWMU-01-~~058~~ 158	10
23	SWMU-01-~~059~~ 159	10
24	SWMU-01-~~060~~ 160	10
25	SWMU-01-~~061~~ 161	10
26	SWMU-01-~~062~~ 162	10

TABLE 2

CONE PENETROMETER TEST BORINGS

PADUCAH GASEOUS DIFFUSSION PLANT

SWMU	LOCATION	TOTAL DEPTH (ft)
SWMU-196		
1	SWMU-196-003	35.9
2	SWMU-196-005	19.5
3	SWMU-196-005A	18.9
SWMU-01		
1	SWMU-01-~~051B~~ 15 16	44.5
2	SWMU-01-~~063~~ 163	14.3
3	SWMU-01-~~063A~~ 163A	58.2
4	SWMU-01-~~064~~ 164	19.2
5	SWMU-01-~~064A~~ 164A	60.5
6	SWMU-01-~~067~~ 167	55.6
SWMU-720		
1	SWMU-720-012*	30.3
2	SWMU-720-018	24.9
3	SWMU-720-018A	23

*Note: CPTU-720-012 suffered a loss of data between 8.4 feet and 10.5 feet due to a malfunctioning headload switch.

CPT LOG DEFINITIONS

The following definitions are provided in the *Operating Instructions Electronic Cone Penetrometer*, by Hogentogler & Co., Inc., February 1995 to assist in the interpretation of the retrieved CPT stratigraphic logs.

- *Qc-Tip Resistance*: This is the measured resistance on the 60 degree, ten square centimeter tip of the cone, printed in terms of pressure; force divided by unit area.

- *Fs-Local Friction*: This is the measured resistance, due to soil friction, on the 150 square centimeter friction element located directly above the tip. Fs is also printed in terms of pressure; force divided by unit area.

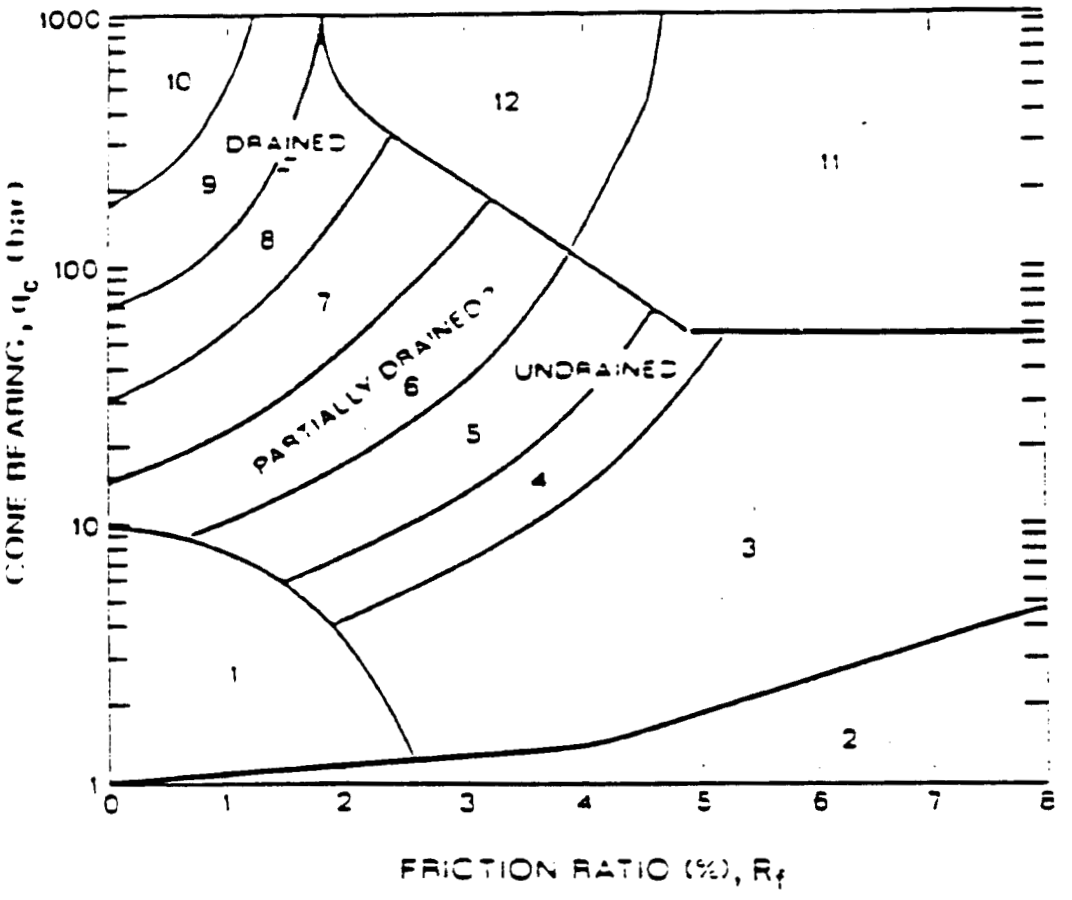
- *Rf-Friction Ratio*: This is the local friction divided by the tip resistance, expressed in percent.

- *Pw-Pore Pressure(U)*: This is the local pore pressure from the formation. U is measured directly behind the cone tip and is measured in kilograms per square centimeter.

- *INC-Inclination*: This is the angle of the cone with respect to the vertical. Inclination has little to do with data interpretation and is generally used as a means of tool protection.

- *Interpreted Soil Type*: This is determined from the tip resistance (Qc) and the friction resistance (Rf) using Robertson & Campenella-1983, based on 60 percent hammer efficiency and 0.15 meter sliding data average.

- *SPT (N)-Standard Penetration Test*: Based on the interpreted soil type and the value of Qc, the SPT (N) value (blows per foot) can be determined. Due to the variance of repeatability and reliability of the SPT test, caution should be used when using the CPT determined N values. These N values should be cross correlated with actual SPT data for comparison.



Zone	q_c/N	Soil Behaviour Type
1)	2	sensitive fine grained
2)	1	organic material
3)	1	clay
4)	1.5	silty clay to clay
5)	2	clayey silt to silty clay
6)	2.5	sandy silt to clayey silt
7)	3	silty sand to sandy silt
8)	4	sand to silty sand
9)	5	sand
10)	6	gravelly sand to sand
11)	1	very stiff fine grained (*)
12)	2	sand to clayey sand (*)

(*) overconsolidated or cemented

Figure 4.2 Simplified Soil Classification Chart for Standard Electronic Friction Cone (Robertson et al, 1986)

APPENDIX A

CPT DATA LOGS AND GRAPHS

SOUNDING DATA IN FILE CPT680 03-18-98 09:36

ᴰERATOR : GJV-LMM LOCATION : CPTU-196-003

: 4-CHANNEL JOB No. : 1507-000

ʌ. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	9.3	-0.060	-0.65	0.00	0.0	?	?
0.10	0.3	9.0	0.010	0.11	-0.01	0.0	sensitive fine grained	4
0.15	0.5	8.4	0.080	0.95	-0.07	0.0	clayey silt to silty clay	6
0.20	0.7	16.4	0.330	2.01	-0.03	0.0	sandy silt to clayey silt	7
0.25	0.8	25.2	0.440	1.75	-0.68	0.0	sandy silt to clayey silt	9
0.30	1.0	23.9	0.480	2.01	-0.75	0.0	sandy silt to clayey silt	10
0.35	1.1	26.7	0.930	3.49	-0.76	0.0	sandy silt to clayey silt	11
0.40	1.3	31.1	0.730	2.34	-0.75	0.0	clayey silt to silty clay	14
0.45	1.5	26.2	0.880	3.36	-0.72	0.0	clayey silt to silty clay	14
0.50	1.6	27.8	0.800	2.88	-0.66	0.0	clayey silt to silty clay	14
0.55	1.8	27.1	1.000	3.68	-0.60	0.0	clayey silt to silty clay	14
0.60	2.0	30.6	0.890	2.91	-0.60	0.0	clayey silt to silty clay	15
0.65	2.1	30.8	0.930	3.02	-0.59	0.0	clayey silt to silty clay	15
0.70	2.3	27.2	0.880	3.24	-0.59	0.0	clayey silt to silty clay	13
0.75	2.5	20.6	0.700	3.40	-0.60	0.0	clayey silt to silty clay	11
^.80	2.6	15.3	0.460	3.01	-0.63	0.0	silty clay to clay	10
	2.8	10.2	0.380	3.72	-0.74	0.0	silty clay to clay	7
0.90	3.0	6.3	0.230	3.66	-0.66	0.0	clay	7
0.95	3.1	3.5	0.150	4.25	-0.35	0.0	clay	4
1.00	3.3	2.2	0.150	6.70	-0.39	0.0	clay	3
1.05	3.4	2.3	0.170	7.52	-0.31	0.0	organic material	3
1.10	3.6	3.5	0.220	6.20	-0.32	0.0	clay	4
1.15	3.8	4.8	0.270	5.57	-0.32	0.0	clay	5
1.20	3.9	6.7	0.280	4.15	-0.32	0.0	clay	6
1.25	4.1	5.6	0.270	4.84	-0.32	0.0	clay	6
1.30	4.3	4.4	0.230	5.25	-0.32	0.0	clay	5
1.35	4.4	3.7	0.230	6.30	-0.32	0.0	clay	4
1.40	4.6	5.2	0.250	4.78	-0.32	0.0	clay	5
1.45	4.8	5.9	0.240	4.07	-0.32	0.0	clay	5
1.50	4.9	4.2	0.250	5.91	-0.31	0.0	clay	5
1.55	5.1	5.4	0.250	4.60	-0.31	0.0	clay	5
1.60	5.2	4.2	0.260	6.21	-0.31	0.0	clay	4
1.65	5.4	3.5	0.260	7.32	-0.31	0.0	clay	4
1.70	5.6	4.3	0.280	6.56	-0.30	0.0	clay	4
1.75	5.7	5.5	0.320	5.84	-0.30	0.0	clay	5
1.80	5.9	6.6	0.410	6.21	-0.30	0.0	clay	7
1.85	6.1	8.2	0.460	5.60	-0.29	0.0	clay	8
1.90	6.2	9.5	0.520	5.46	-0.29	0.0	clay	9
1.95	6.4	10.4	0.590	5.66	-0.28	0.0	clay	11
2.00	6.6	12.2	0.670	5.48	-0.28	0.0	clay	12

ᵗterpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	14.3	0.790	5.54	-0.28	0.0	clay	15
2.10	6.9	20.0	1.020	5.11	-0.27	0.0	clay	18
2.15	7.1	20.8	1.090	5.24	-0.27	0.0	clay	21
2.20	7.2	21.5	1.240	5.76	-0.26	0.0	clay	21
2.25	7.4	20.5	1.240	6.04	-0.26	0.0	clay	21
2.30	7.5	20.2	1.050	5.19	-0.26	0.0	clay	19
2.35	7.7	16.0	0.820	5.12	-0.26	0.0	clay	16
2.40	7.9	11.9	0.730	6.14	-0.25	0.0	clay	12
2.45	8.0	7.2	0.540	7.46	-0.26	0.0	clay	8
2.50	8.2	5.5	0.380	6.91	-0.27	0.0	clay	6
2.55	8.4	5.2	0.380	7.38	-0.26	0.0	clay	5
2.60	8.5	5.7	0.440	7.76	-0.26	0.0	clay	5
2.65	8.7	5.3	0.450	8.57	-0.26	0.0	clay	6
2.70	8.9	6.9	0.520	7.59	-0.26	0.0	clay	7
2.75	9.0	8.5	0.510	5.98	-0.26	0.0	clay	7
2.80	9.2	6.5	0.500	7.68	-0.26	0.0	clay	7
2.85	9.4	5.6	0.450	8.04	-0.26	0.0	organic material	5
2.90	9.5	3.3	0.380	11.66	-0.26	0.0	organic material	5
2.95	9.7	4.8	0.350	7.22	-0.25	0.0	clay	6
3.00	9.8	9.0	0.430	4.78	-0.24	0.0	clay	8
3.05	10.0	11.3	0.660	5.84	-0.24	0.0	clay	12
3.10	10.2	15.3	0.760	4.98	-0.24	0.0	clay	15
3.15	10.3	17.6	0.780	4.43	-0.23	0.0	clay	16
3.20	10.5	15.6	0.740	4.74	-0.23	0.0	clay	16
3.25	10.7	16.2	0.660	4.07	-0.22	0.0	clay	16
3.30	10.8	16.2	0.610	3.77	-0.22	0.0	silty clay to clay	11
3.35	11.0	15.5	0.610	3.93	-0.22	0.0	silty clay to clay	10
3.40	11.2	15.2	0.650	4.27	-0.21	0.0	silty clay to clay	11
3.45	11.3	18.5	0.600	3.24	-0.21	0.0	silty clay to clay	11
3.50	11.5	13.8	0.660	4.78	-0.21	0.1	silty clay to clay	11
3.55	11.6	15.9	0.700	4.39	-0.20	0.1	clay	16
3.60	11.8	19.2	0.670	3.49	-0.20	0.1	silty clay to clay	12
3.65	12.0	20.3	0.690	3.40	-0.20	0.1	silty clay to clay	13
3.70	12.1	18.2	0.790	4.35	-0.19	0.1	silty clay to clay	13
3.75	12.3	19.9	0.840	4.23	-0.19	0.1	silty clay to clay	14
3.80	12.5	22.8	0.930	4.08	-0.19	0.1	clayey silt to silty clay	11
3.85	12.6	21.7	0.410	1.89	-0.19	0.2	silty clay to clay	13
3.90	12.8	16.2	0.900	5.55	-0.19	0.2	clay	15
3.95	13.0	8.4	0.890	10.62	-0.17	0.2	clay	15
4.00	13.1	19.2	0.770	4.01	-0.17	0.2	clay	15
4.05	13.3	18.0	0.760	4.22	-0.17	0.2	silty clay to clay	12
4.10	13.5	16.7	0.670	4.00	-0.18	0.2	clay	16
4.15	13.6	11.8	0.620	5.26	-0.18	0.2	clay	14
4.20	13.8	12.2	0.550	4.50	-0.18	0.2	clay	12
4.25	13.9	12.1	0.510	4.20	-0.17	0.2	clay	11
4.30	14.1	9.9	0.520	5.25	-0.17	0.2	clay	11
4.35	14.3	9.9	0.460	4.65	-0.16	0.2	clay	10
4.40	14.4	10.2	0.460	4.51	-0.16	0.2	clay	10
4.45	14.6	11.0	0.480	4.35	-0.15	0.2	clay	12
4.50	14.8	15.6	0.600	3.84	-0.14	0.2	clay	14

ɔil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	14.3	0.710	4.95	-0.14	0.2	clay	15
4.60	15.1	16.1	0.740	4.61	-0.14	0.2	clay	15
4.65	15.3	15.0	0.760	5.06	-0.13	0.2	clay	16
4.70	15.4	16.5	0.720	4.36	-0.13	0.2	silty clay to clay	11
4.75	15.6	17.8	0.530	2.97	-0.12	0.2	silty clay to clay	11
4.80	15.7	15.9	0.570	3.59	-0.12	0.2	silty clay to clay	11
4.85	15.9	16.4	0.830	5.06	-0.11	0.2	silty clay to clay	14
4.90	16.1	29.5	1.110	3.77	-0.11	0.2	clay	21
4.95	16.2	18.2	1.110	6.10	-0.12	0.4	clay	21
5.00	16.4	16.3	0.920	5.65	-0.10	0.4	clay	16
5.05	16.6	13.9	0.730	5.26	-0.08	0.4	clay	16
5.10	16.7	18.3	0.630	3.44	-0.08	0.4	silty clay to clay	11
5.15	16.9	17.6	0.620	3.51	-0.07	0.4	clayey silt to silty clay	9
5.20	17.1	17.1	0.560	3.27	-0.06	0.4	silty clay to clay	11
5.25	17.2	16.2	0.650	4.02	-0.04	0.4	silty clay to clay	13
5.30	17.4	26.4	1.130	4.28	-0.03	0.4	clayey silt to silty clay	16
5.35	17.6	52.3	1.790	3.42	-0.01	0.4	sandy silt to clayey silt	21
5.40	17.7	77.6	1.690	2.18	0.04	0.4	sandy silt to clayey silt	27
5.45	17.9	71.3	1.410	1.98	0.15	0.4	silty sand to sandy silt	24
5.50	18.0	69.3	1.350	1.95	0.35	0.4	silty sand to sandy silt	26
5.55	18.2	89.9	1.400	1.56	0.47	0.4	silty sand to sandy silt	31
5.60	18.4	115.4	1.970	1.71	0.59	0.4	silty sand to sandy silt	47
5.65	18.5	220.6	4.580	2.08	0.57	0.4	silty sand to sandy silt	58
5.70	18.7	184.8	4.580	2.48	0.30	0.4	silty sand to sandy silt	61
5.75	18.9	145.6	4.080	2.80	0.43	0.5	silty sand to sandy silt	64
5.80	19.0	242.5	5.100	2.10	0.53	0.6	silty sand to sandy silt	67
5.85	19.2	218.4	5.520	2.53	-0.05	0.6	silty sand to sandy silt	71
5.90	19.4	178.7	5.270	2.95	-0.14	0.6	silty sand to sandy silt	68
5.95	19.5	217.9	4.380	2.01	-0.11	0.6	silty sand to sandy silt	74
6.00	19.7	266.4	5.640	2.12	-0.12	0.6	sand to silty sand	61
6.05	19.8	246.5	4.250	1.72	0.25	0.6	sand to silty sand	62
6.10	20.0	225.9	5.990	2.65	0.02	0.6	silty sand to sandy silt	67
6.15	20.2	130.9	4.600	3.51	0.13	0.6	silty sand to sandy silt	51
6.20	20.3	103.2	2.870	2.78	0.34	0.6	sandy silt to clayey silt	43
6.25	20.5	91.3	1.220	1.34	0.34	0.6	silty sand to sandy silt	28
6.30	20.7	54.9	1.550	2.82	0.37	0.6	silty sand to sandy silt	25
6.35	20.8	75.2	1.820	2.42	0.44	0.6	sandy silt to clayey silt	30
6.40	21.0	95.2	3.510	3.69	0.43	0.7	silty sand to sandy silt	49
6.45	21.2	268.3	5.320	1.98	0.43	0.7	silty sand to sandy silt	76
6.50	21.3	318.8	9.350	2.93	0.37	0.7	silty sand to sandy silt	99
6.55	21.5	302.9	7.010	2.31	0.23	0.7	silty sand to sandy silt	92
6.60	21.7	209.5	5.230	2.50	0.31	0.7	sand to silty sand	89
6.65	21.8	555.0	5.770	1.04	0.36	0.8	gravelly sand to sand	74
6.70	22.0	559.1	-0.270	-0.05	0.54	0.8	gravelly sand to sand	95
6.75	22.1	598.5	4.130	0.69	0.57	0.8	gravelly sand to sand	70
6.80	22.3	100.9	5.310	5.26	0.56	0.9	sand	88
6.85	22.5	622.0	4.720	0.76	0.53	0.9	sand	89
6.90	22.6	614.9	3.870	0.63	0.61	1.0	gravelly sand to sand	103
6.95	22.8	623.6	3.600	0.58	0.66	1.1	gravelly sand to sand	104
7.00	23.0	636.7	4.020	0.63	0.73	1.2	gravelly sand to sand	102

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
7.05	23.1	581.9	3.500	0.60	0.72	1.5	gravelly sand to sand	95
7.10	23.3	495.1	2.980	0.60	0.77	1.6	gravelly sand to sand	84
7.15	23.5	439.1	4.040	0.92	0.79	1.7	gravelly sand to sand	76
7.20	23.6	427.6	2.930	0.69	0.78	2.0	gravelly sand to sand	73
7.25	23.8	447.8	3.480	0.78	0.78	2.1	gravelly sand to sand	72
7.30	23.9	424.5	1.720	0.41	0.85	2.1	gravelly sand to sand	69
7.35	24.1	369.8	0.180	0.05	0.87	2.2	gravelly sand to sand	56
7.40	24.3	210.4	1.890	0.90	0.76	2.3	sand	42
7.45	24.4	43.1	2.750	6.38	0.55	2.5	silty sand to sandy silt	39
7.50	24.6	98.0	2.870	2.93	0.59	2.5	silty sand to sandy silt	33
7.55	24.8	156.6	1.250	0.80	0.64	2.4	sand to silty sand	37
7.60	24.9	190.4	2.720	1.43	0.66	2.3	sand to silty sand	37
7.65	25.1	97.9	2.980	3.05	0.65	2.3	sand to silty sand	37
7.70	25.3	161.4	2.120	1.31	0.66	2.3	sand	44
7.75	25.4	396.9	3.500	0.88	0.68	2.4	gravelly sand to sand	61
7.80	25.6	544.1	3.130	0.58	0.78	2.1	gravelly sand to sand	80
7.85	25.8	501.5	3.190	0.64	0.84	2.1	gravelly sand to sand	84
7.90	25.9	469.7	4.200	0.89	0.85	2.1	gravelly sand to sand	81
7.95	26.1	481.3	3.390	0.70	0.80	2.1	gravelly sand to sand	81
8.00	26.2	514.0	2.700	0.53	0.89	2.0	gravelly sand to sand	80
8.05	26.4	450.0	2.580	0.57	0.89	1.9	gravelly sand to sand	79
8.10	26.6	454.5	1.950	0.43	0.90	1.9	gravelly sand to sand	74
8.15	26.7	421.3	3.230	0.77	0.98	1.9	sand	67
8.20	26.9	128.7	2.820	2.19	0.86	1.7	sand	40
8.25	27.1	56.2	1.340	2.39	0.87	1.7	silty sand to sandy silt	25
8.30	27.2	36.8	0.500	1.36	1.01	1.7	sandy silt to clayey silt	18
8.35	27.4	38.7	0.610	1.58	1.05	1.7	silty sand to sandy silt	12
8.40	27.6	34.7	0.600	1.73	1.07	1.7	sandy silt to clayey silt	13
8.45	27.7	26.1	0.610	2.33	1.07	1.7	sandy silt to clayey silt	12
8.50	27.9	27.5	0.940	3.42	1.09	1.7	sandy silt to clayey silt	13
8.55	28.1	41.8	1.130	2.70	1.18	1.7	sandy silt to clayey silt	15
8.60	28.2	39.8	0.910	2.29	1.33	1.7	sandy silt to clayey silt	18
8.65	28.4	56.8	1.420	2.50	1.52	1.7	silty sand to sandy silt	20
8.70	28.5	83.4	1.480	1.78	1.61	1.7	silty sand to sandy silt	28
8.75	28.7	113.8	2.340	2.06	1.64	1.7	silty sand to sandy silt	37
8.80	28.9	137.4	3.550	2.58	1.56	1.7	silty sand to sandy silt	45
8.85	29.0	153.3	3.680	2.40	1.54	1.7	silty sand to sandy silt	52
8.90	29.2	173.4	4.340	2.50	1.61	1.7	silty sand to sandy silt	61
8.95	29.4	220.1	5.320	2.42	1.60	1.7	silty sand to sandy silt	72
9.00	29.5	250.4	7.860	3.14	1.49	1.7	sand to clayey sand (*)	115
9.05	29.7	221.5	8.000	3.61	1.52	1.7	sand to clayey sand (*)	120
9.10	29.9	247.0	7.500	3.04	1.82	2.1	sand to clayey sand (*)	124
9.15	30.0	272.6	7.380	2.71	1.76	2.2	sand to clayey sand (*)	130
9.20	30.2	258.1	8.530	3.30	1.79	2.2	sand to clayey sand (*)	139
9.25	30.3	300.9	8.140	2.71	1.73	2.4	sand to clayey sand (*)	152
9.30	30.5	351.2	9.510	2.71	1.70	2.5	silty sand to sandy silt	102
9.35	30.7	264.8	5.860	2.21	1.66	2.5	silty sand to sandy silt	91
9.40	30.8	199.3	6.490	3.26	1.69	2.5	sand to clayey sand (*)	96
9.45	31.0	111.0	8.530	7.68	1.74	2.5	very stiff fine grained (*)	146
9.50	31.2	127.8	6.640	5.20	1.66	2.6	very stiff fine grained (*)	137

soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

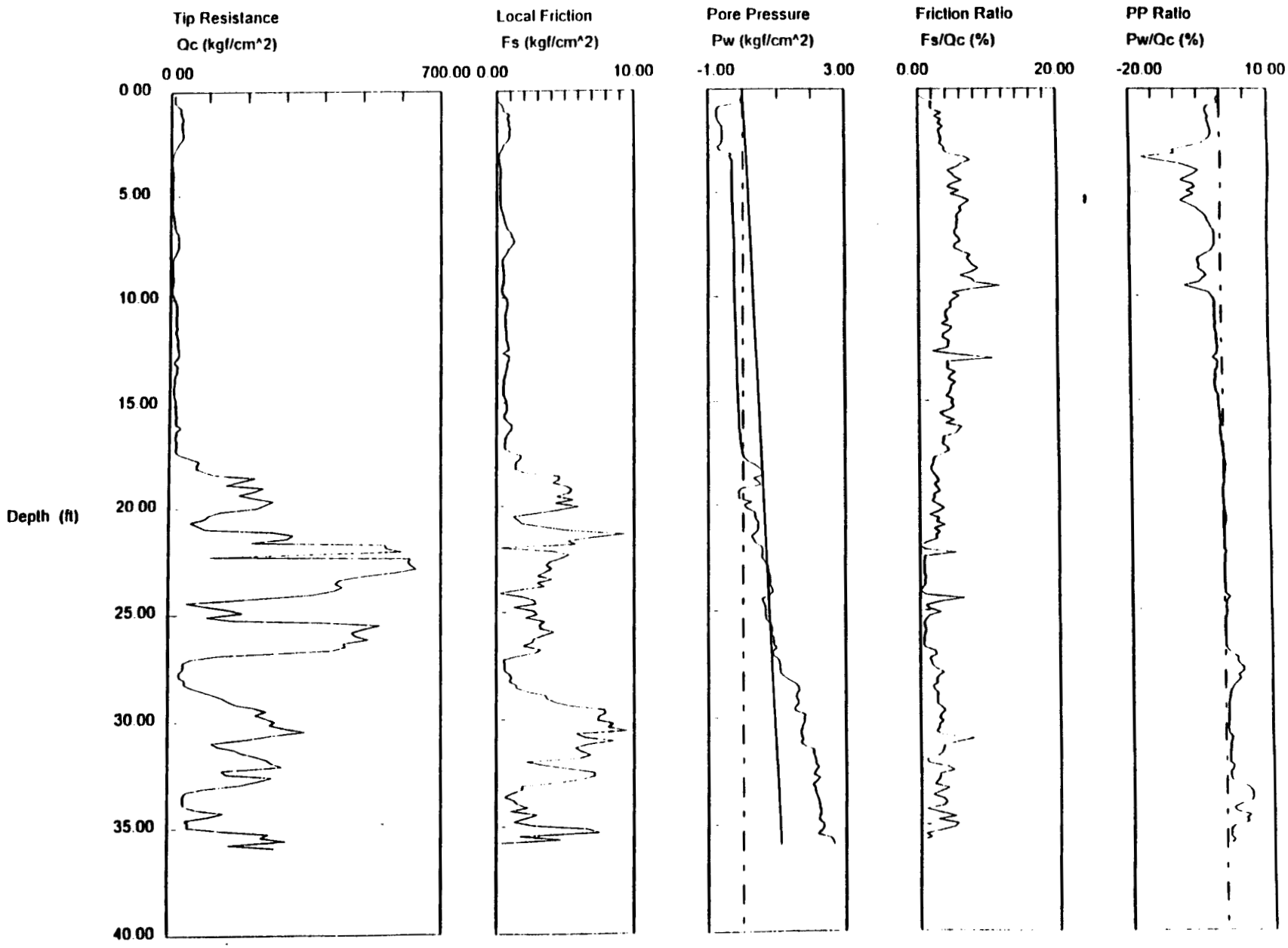
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
9.55	31.3	171.9	5.780	3.36	1.81	2.6	sand to clayey sand (*)	81
9.60	31.5	187.6	6.190	3.30	2.05	2.6	sandy silt to clayey silt	78
9.65	31.7	226.3	6.900	3.05	2.03	2.6	silty sand to sandy silt	74
9.70	31.8	252.9	6.100	2.41	2.07	2.7	sand to silty sand	62
9.75	32.0	264.6	2.180	0.82	2.10	2.7	sand to silty sand	67
9.80	32.2	291.3	3.430	1.18	2.10	2.7	sand to silty sand	58
9.85	32.3	137.4	5.210	3.79	2.20	2.7	silty sand to sandy silt	64
9.90	32.5	148.8	7.160	4.81	2.10	2.7	sand to clayey sand (*)	92
9.95	32.6	265.6	7.220	2.72	2.03	2.8	sand to clayey sand (*)	107
10.00	32.8	230.4	6.310	2.74	2.23	2.8	silty sand to sandy silt	76
10.05	33.0	186.5	4.470	2.40	2.13	3.0	silty sand to sandy silt	57
10.10	33.1	94.8	1.830	1.93	2.00	3.2	silty sand to sandy silt	36
10.15	33.3	46.1	1.890	4.10	2.08	3.2	sandy silt to clayey silt	24
10.20	33.5	39.1	1.120	2.86	2.08	3.3	sandy silt to clayey silt	16
10.25	33.6	37.5	0.600	1.60	2.13	3.4	sandy silt to clayey silt	15
10.30	33.8	38.6	1.260	3.27	2.17	3.4	sandy silt to clayey silt	16
10.35	34.0	40.6	1.510	3.72	2.20	3.4	clayey silt to silty clay	25
10.40	34.1	72.0	2.290	3.18	2.22	3.5	silty sand to sandy silt	28
10.45	34.3	141.9	0.990	0.70	2.24	3.5	silty sand to sandy silt	35
10.50	34.4	103.4	2.980	2.88	2.27	3.5	silty sand to sandy silt	32
10.55	34.6	42.7	2.150	5.03	2.21	3.5	sandy silt to clayey silt	27
10.60	34.8	52.6	1.250	2.38	2.20	3.5	clayey silt to silty clay	24
10.65	34.9	48.8	2.610	5.35	2.33	3.5	clayey silt to silty clay	40
10.70	35.1	136.5	6.700	4.91	2.35	3.5	sand to clayey sand (*)	74
10.75	35.3	256.1	7.560	2.95	2.27	3.5	silty sand to sandy silt	70
10.80	35.4	236.1	1.680	0.71	2.15	3.5	sand to silty sand	66
10.85	35.6	301.1	4.720	1.57	2.56	3.5	?	?
10.90	35.8	153.5	?	?	2.62	3.4	?	?
10.95	35.9	272.1	?	?	2.66	3.4	?	?

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.L. Wright Inc.

Operator: GJV-LMM
Sounding: CPT680
Cone Used: 4-CHANNEL

CPT Date: 03-18-98 09:36
Location: CPTU-196-003
Job No.: 1507-000



Maximum Depth = 35.93 feet

Depth Increment = 0.16 feet

ROUNDING DATA IN FILE CPT663 03-03-98 09:38

PERATOR : GJV-LMM LOCATION : CPTU-196-005

CONE ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19841

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	19.3	0.275	1.43	-0.00	-0.02	0.0	?	?
0.10	0.3	53.4	0.441	0.83	-0.00	-0.00	0.0	silty sand to sandy silt	14
0.15	0.5	53.4	0.742	1.39	0.00	0.00	0.0	silty sand to sandy silt	17
0.20	0.7	49.1	0.853	1.74	0.01	0.02	0.0	sand to silty sand	17
0.25	0.8	102.6	0.549	0.54	-0.03	-0.03	0.1	sand to silty sand	20
0.30	1.0	93.4	0.682	0.73	-0.01	-0.01	0.1	sand to silty sand	23
0.35	1.1	76.9	0.962	1.25	0.01	0.02	0.1	sand to silty sand	20
0.40	1.3	64.6	1.049	1.62	-0.00	-0.00	0.1	silty sand to sandy silt	21
0.45	1.5	47.0	0.880	1.87	0.00	0.00	0.1	silty sand to sandy silt	15
0.50	1.6	27.6	0.509	1.84	-0.00	-0.00	0.1	sandy silt to clayey silt	12
0.55	1.8	12.9	0.371	2.87	0.00	0.02	0.1	sandy silt to clayey silt	9
0.60	2.0	25.7	-0.033	-0.13	-0.01	-0.04	0.1	silty sand to sandy silt	9
0.65	2.1	40.6	0.297	0.73	-0.00	-0.00	0.1	silty sand to sandy silt	11
0.70	2.3	34.9	0.498	1.43	-0.00	-0.00	0.2	sandy silt to clayey silt	12
0.75	2.5	11.0	0.449	4.08	0.04	0.40	0.2	sandy silt to clayey silt	10
0.80	2.6	28.9	0.435	1.51	0.07	0.24	0.2	sandy silt to clayey silt	9
0.85	2.8	30.2	0.499	1.65	-0.45	-1.50	0.2	sandy silt to clayey silt	11
0.90	3.0	21.8	0.360	1.65	-0.50	-2.31	0.2	sandy silt to clayey silt	9
0.95	3.1	14.1	0.256	1.81	-0.29	-2.06	0.2	clayey silt to silty clay	8
1.00	3.3	9.3	0.187	2.01	-0.31	-3.39	0.2	clayey silt to silty clay	5
1.05	3.4	6.9	0.070	1.01	-0.31	-4.52	0.2	clayey silt to silty clay	4
1.10	3.6	6.0	0.082	1.37	-0.31	-5.15	0.2	sensitive fine grained	3
1.15	3.8	5.3	0.107	2.00	-0.31	-5.78	0.2	silty clay to clay	4
1.20	3.9	5.3	0.115	2.18	-0.31	-5.84	0.2	sensitive fine grained	3
1.25	4.1	5.3	0.041	0.77	-0.31	-5.83	0.2	sensitive fine grained	3
1.30	4.3	4.7	0.071	1.51	-0.31	-6.53	0.2	sensitive fine grained	3
1.35	4.4	5.8	0.118	2.06	-0.31	-5.30	0.2	silty clay to clay	4
1.40	4.6	6.9	0.123	1.78	-0.30	-4.39	0.2	silty clay to clay	4
1.45	4.8	6.9	0.166	2.39	-0.30	-4.29	0.2	silty clay to clay	4
1.50	4.9	5.6	0.160	2.85	-0.30	-5.39	0.2	silty clay to clay	4
1.55	5.1	5.4	0.106	1.96	-0.30	-5.51	0.2	clay	6
1.60	5.2	7.5	0.246	3.29	-0.29	-3.89	0.2	clay	7
1.65	5.4	8.6	0.320	3.72	-0.29	-3.33	0.2	clay	8
1.70	5.6	8.8	0.344	3.90	-0.28	-3.23	0.2	clay	9
1.75	5.7	9.3	0.324	3.49	-0.28	-3.00	0.2	clay	9
1.80	5.9	9.3	0.253	2.74	-0.28	-2.98	0.2	silty clay to clay	6
1.85	6.1	9.6	0.308	3.22	-0.28	-2.87	0.2	silty clay to clay	7
1.90	6.2	10.6	0.272	2.56	-0.27	-2.54	0.2	silty clay to clay	7
1.95	6.4	10.9	0.237	2.17	-0.26	-2.38	0.2	clayey silt to silty clay	5
2.00	6.6	11.3	0.274	2.43	-0.25	-2.26	0.2	clayey silt to silty clay	6

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	11.1	0.259	2.34	-0.25	-2.28	0.2	clayey silt to silty clay	5
2.10	6.9	10.1	0.214	2.11	-0.25	-2.46	0.2	clayey silt to silty clay	5
2.15	7.1	9.8	0.161	1.64	-0.25	-2.52	0.2	clayey silt to silty clay	5
2.20	7.2	9.6	0.153	1.60	-0.24	-2.54	0.2	clayey silt to silty clay	5
2.25	7.4	9.6	0.145	1.52	-0.24	-2.53	0.2	clayey silt to silty clay	5
2.30	7.5	10.9	0.110	1.02	-0.24	-2.22	0.2	clayey silt to silty clay	5
2.35	7.7	11.3	0.126	1.12	-0.24	-2.13	0.2	clayey silt to silty clay	5
2.40	7.9	10.6	0.143	1.35	-0.24	-2.24	0.2	clayey silt to silty clay	5
2.45	8.0	11.1	0.166	1.50	-0.23	-2.07	0.2	clayey silt to silty clay	5
2.50	8.2	11.0	0.159	1.44	-0.23	-2.07	0.2	clayey silt to silty clay	6
2.55	8.4	10.9	0.189	1.73	-0.23	-2.06	0.2	clayey silt to silty clay	6
2.60	8.5	12.1	0.149	1.24	-0.22	-1.85	0.2	clayey silt to silty clay	6
2.65	8.7	13.1	0.175	1.34	-0.22	-1.69	0.2	clayey silt to silty clay	7
2.70	8.9	14.8	0.382	2.59	-0.22	-1.47	0.2	clayey silt to silty clay	8
2.75	9.0	18.2	0.338	1.85	-0.22	-1.19	0.2	clayey silt to silty clay	8
2.80	9.2	16.4	0.394	2.40	-0.21	-1.28	0.2	clayey silt to silty clay	9
2.85	9.4	19.1	0.409	2.14	-0.20	-1.07	0.2	clayey silt to silty clay	9
2.90	9.5	20.4	0.474	2.32	-0.20	-0.99	0.2	clayey silt to silty clay	10
2.95	9.7	19.4	0.559	2.89	-0.19	-1.00	0.2	clayey silt to silty clay	11
3.00	9.8	25.8	0.502	1.94	-0.17	-0.65	0.2	sandy silt to clayey silt	9
3.05	10.0	24.9	0.428	1.72	-0.16	-0.66	0.2	sandy silt to clayey silt	10
3.10	10.2	21.5	0.375	1.74	-0.16	-0.74	0.2	sandy silt to clayey silt	9
3.15	10.3	20.4	0.349	1.71	-0.15	-0.75	0.2	sandy silt to clayey silt	8
3.20	10.5	18.2	0.365	2.00	-0.15	-0.83	0.2	sandy silt to clayey silt	8
3.25	10.7	21.4	0.304	1.42	-0.15	-0.70	0.2	sandy silt to clayey silt	8
3.30	10.8	19.5	0.256	1.31	-0.15	-0.75	0.2	sandy silt to clayey silt	8
3.35	11.0	16.9	0.190	1.12	-0.14	-0.84	0.2	sandy silt to clayey silt	7
3.40	11.2	15.6	0.332	2.14	-0.14	-0.89	0.2	sandy silt to clayey silt	7
3.45	11.3	19.5	0.249	1.27	-0.14	-0.69	0.2	sandy silt to clayey silt	7
3.50	11.5	18.9	0.362	1.91	-0.13	-0.70	0.2	sandy silt to clayey silt	8
3.55	11.6	22.9	0.490	2.14	-0.13	-0.56	0.2	sandy silt to clayey silt	9
3.60	11.8	28.5	0.675	2.36	-0.13	-0.44	0.2	sandy silt to clayey silt	13
3.65	12.0	43.5	0.624	1.43	-0.13	-0.29	0.2	sandy silt to clayey silt	13
3.70	12.1	28.5	0.521	1.83	-0.13	-0.44	0.2	sandy silt to clayey silt	12
3.75	12.3	20.0	0.355	1.78	-0.13	-0.63	0.2	sandy silt to clayey silt	10
3.80	12.5	25.5	0.452	1.77	-0.12	-0.48	0.2	sandy silt to clayey silt	9
3.85	12.6	20.0	0.398	1.99	-0.16	-0.79	0.2	sandy silt to clayey silt	8
3.90	12.8	15.3	0.307	2.01	-0.16	-1.04	0.2	clayey silt to silty clay	8
3.95	13.0	14.8	0.382	2.58	-0.15	-1.02	0.2	clayey silt to silty clay	9
4.00	13.1	23.9	0.359	1.50	-0.15	-0.63	0.2	sandy silt to clayey silt	8
4.05	13.3	22.8	0.189	0.83	-0.13	-0.56	0.2	sandy silt to clayey silt	9
4.10	13.5	17.2	0.106	0.62	-0.13	-0.76	0.2	sandy silt to clayey silt	7
4.15	13.6	15.9	0.048	0.30	-0.13	-0.78	0.2	sandy silt to clayey silt	6
4.20	13.8	14.5	0.044	0.31	-0.12	-0.80	0.2	sandy silt to clayey silt	7
4.25	13.9	18.8	0.265	1.41	-0.11	-0.60	0.2	sandy silt to clayey silt	9
4.30	14.1	34.9	0.459	1.32	-0.13	-0.36	0.2	sandy silt to clayey silt	12
4.35	14.3	39.6	0.737	1.86	-0.14	-0.35	0.2	silty sand to sandy silt	13
4.40	14.4	46.6	0.860	1.85	-0.17	-0.37	0.2	silty sand to sandy silt	16
4.45	14.6	54.0	0.919	1.70	-0.16	-0.30	0.2	silty sand to sandy silt	20
4.50	14.8	78.8	1.115	1.41	-0.15	-0.19	0.2	silty sand to sandy silt	24

soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

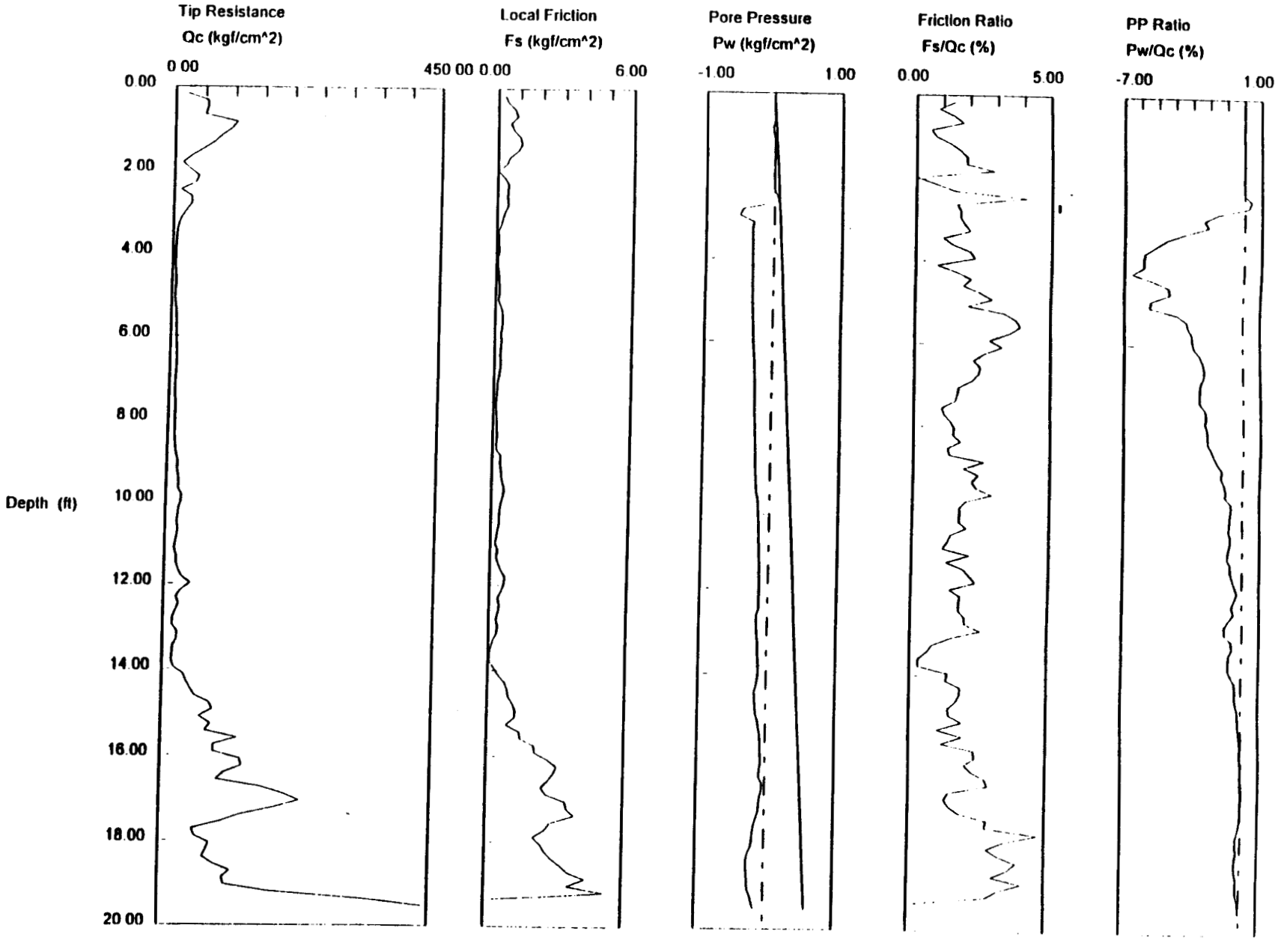
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	84.6	1.238	1.46	-0.15	-0.18	0.2	silty sand to sandy silt	25
4.60	15.1	62.5	1.216	1.94	-0.12	-0.18	0.2	silty sand to sandy silt	25
4.65	15.3	82.0	0.835	1.02	-0.10	-0.12	0.2	silty sand to sandy silt	24
4.70	15.4	72.4	1.423	1.97	-0.08	-0.11	0.2	sand to silty sand	23
4.75	15.6	126.1	1.474	1.17	-0.08	-0.06	0.2	silty sand to sandy silt	32
4.80	15.7	87.3	2.056	2.36	-0.07	-0.08	0.2	silty sand to sandy silt	33
4.85	15.9	87.3	2.110	2.42	-0.07	-0.08	0.2	silty sand to sandy silt	34
4.90	16.1	131.0	2.681	2.05	-0.06	-0.04	0.2	silty sand to sandy silt	39
4.95	16.2	134.7	3.083	2.29	-0.08	-0.06	0.2	silty sand to sandy silt	41
5.00	16.4	105.6	2.934	2.78	-0.09	-0.09	0.2	silty sand to sandy silt	37
5.05	16.6	93.5	2.707	2.90	-0.04	-0.04	0.2	silty sand to sandy silt	40
5.10	16.7	164.0	2.400	1.46	-0.04	-0.03	0.2	sand to silty sand	38
5.15	16.9	202.8	2.645	1.30	-0.07	-0.03	0.2	sand to silty sand	50
5.20	17.1	231.3	3.471	1.50	-0.08	-0.04	0.2	sand to silty sand	52
5.25	17.2	189.3	3.549	1.87	-0.09	-0.05	0.2	silty sand to sandy silt	62
5.30	17.4	134.2	3.882	2.89	-0.12	-0.09	0.2	silty sand to sandy silt	47
5.35	17.6	100.9	2.832	2.81	-0.15	-0.15	0.2	sandy silt to clayey silt	39
5.40	17.7	54.6	2.607	4.77	-0.17	-0.31	0.2	clayey silt to silty clay	36
5.45	17.9	59.6	2.088	3.50	-0.17	-0.29	0.2	clayey silt to silty clay	33
5.50	18.0	83.7	2.427	2.90	-0.19	-0.22	0.2	sandy silt to clayey silt	30
5.55	18.2	78.9	2.613	3.31	-0.23	-0.29	0.2	sandy silt to clayey silt	31
5.60	18.4	73.0	2.901	3.98	-0.25	-0.35	0.2	clayey silt to silty clay	40
5.65	18.5	90.4	3.311	3.66	-0.25	-0.28	0.3	sandy silt to clayey silt	38
5.70	18.7	118.8	3.649	3.07	-0.25	-0.21	0.3	sandy silt to clayey silt	42
5.75	18.9	105.7	4.410	4.17	-0.23	-0.22	0.3	sandy silt to clayey silt	45
5.80	19.0	109.4	3.616	3.31	-0.23	-0.21	0.3	sandy silt to clayey silt	53
5.85	19.2	181.7	5.219	2.87	-0.20	-0.11	0.3	?	?
5.90	19.4	334.4	?	?	-0.16	-0.05	0.2	?	?
5.95	19.5	440.9	?	?	-0.14	-0.03	0.2	?	?

ıil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.L. Wright Inc.

Operator: GJV-LMM
Sounding: CPT663
Cone Used: 4-CHANNEL

CPT Date: 03-03-98 09:38
Location: CPTU-196-005
Job No.: 1507-000



Maximum Depth = 19.52 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT664 03-03-98 10:42

'ERATOR : GJV-LMM LOCATION : CPTU-196-005A

ID : 4-CHANNEL JOB No. : 1507-000

R. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19841

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	23.3	0.280	1.20	0.05	0.19	0.3	?	?
0.10	0.3	56.9	0.557	0.98	0.01	0.02	0.1	sandy silt to clayey silt	15
0.15	0.5	30.2	1.261	4.17	0.03	0.09	0.2	sandy silt to clayey silt	18
0.20	0.7	45.5	1.456	3.20	-0.01	-0.03	0.2	clayey silt to silty clay	21
0.25	0.8	48.6	1.307	2.69	-0.00	-0.01	0.2	sandy silt to clayey silt	19
0.30	1.0	47.1	1.061	2.25	0.04	0.08	0.2	sandy silt to clayey silt	20
0.35	1.1	56.0	0.835	1.49	0.03	0.06	0.2	silty sand to sandy silt	16
0.40	1.3	43.2	0.761	1.76	0.05	0.13	0.2	silty sand to sandy silt	15
0.45	1.5	34.3	0.621	1.81	0.04	0.11	0.2	sandy silt to clayey silt	13
0.50	1.6	19.6	0.620	3.17	0.07	0.38	0.2	clayey silt to silty clay	11
0.55	1.8	12.9	0.645	5.01	0.03	0.23	0.2	silty clay to clay	11
0.60	2.0	15.5	0.512	3.31	0.03	0.16	0.2	silty clay to clay	10
0.65	2.1	15.4	0.533	3.47	0.06	0.41	0.3	silty clay to clay	10
0.70	2.3	15.4	0.421	2.74	0.20	1.33	0.3	clayey silt to silty clay	8
0.75	2.5	17.2	0.387	2.25	0.09	0.54	0.3	clayey silt to silty clay	8
0.80	2.6	14.4	0.306	2.13	-0.21	-1.43	0.3	clayey silt to silty clay	7
.85	2.8	10.0	0.236	2.36	-0.23	-2.27	0.3	clayey silt to silty clay	5
0.90	3.0	7.7	0.168	2.18	-0.21	-2.77	0.3	silty clay to clay	5
0.95	3.1	5.6	0.207	3.71	-0.21	-3.70	0.3	clay	7
1.00	3.3	8.5	0.280	3.28	-0.20	-2.39	0.3	clay	8
1.05	3.4	8.5	0.264	3.10	-0.28	-3.25	0.3	clay	8
1.10	3.6	6.1	0.228	3.73	-0.28	-4.49	0.3	clay	7
1.15	3.8	5.1	0.195	3.85	-0.26	-5.10	0.3	clay	5
1.20	3.9	4.3	0.199	4.57	-0.25	-5.88	0.3	clay	5
1.25	4.1	5.1	0.195	3.80	-0.25	-4.82	0.3	clay	5
1.30	4.3	5.1	0.199	3.88	-0.25	-4.81	0.3	clay	5
1.35	4.4	5.3	0.171	3.25	-0.24	-4.55	0.3	clay	5
1.40	4.6	5.0	0.176	3.53	-0.24	-4.80	0.3	clay	5
1.45	4.8	5.6	0.328	5.84	-0.24	-4.29	0.3	clay	6
1.50	4.9	6.0	0.346	5.80	-0.24	-4.09	0.3	clay	6
1.55	5.1	6.6	0.355	5.35	-0.23	-3.45	0.3	clay	7
1.60	5.2	7.4	0.355	4.77	-0.22	-3.01	0.3	clay	7
1.65	5.4	7.7	0.416	5.37	-0.21	-2.74	0.3	clay	8
1.70	5.6	9.1	0.423	4.62	-0.21	-2.32	0.3	clay	9
1.75	5.7	10.6	0.342	3.23	-0.19	-1.80	0.3	clay	9
1.80	5.9	8.5	0.263	3.08	-0.19	-2.29	0.3	silty clay to clay	6
1.85	6.1	8.1	0.219	2.70	-0.19	-2.32	0.3	silty clay to clay	6
1.90	6.2	8.4	0.191	2.26	-0.18	-2.16	0.3	silty clay to clay	6
1.95	6.4	8.6	0.197	2.30	-0.19	-2.20	0.3	silty clay to clay	6
2.00	6.6	8.4	0.209	2.49	-0.17	-2.04	0.3	silty clay to clay	6

nterpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	8.2	0.245	2.99	-0.17	-2.11	0.3	silty clay to clay	5
2.10	6.9	7.7	0.263	3.43	-0.17	-2.23	0.3	clay	8
2.15	7.1	8.3	0.250	3.01	-0.16	-1.95	0.3	silty clay to clay	6
2.20	7.2	9.2	0.248	2.69	-0.15	-1.65	0.3	silty clay to clay	6
2.25	7.4	9.4	0.258	2.74	-0.15	-1.61	0.3	silty clay to clay	6
2.30	7.5	10.1	0.279	2.76	-0.14	-1.42	0.3	silty clay to clay	6
2.35	7.7	7.6	0.055	-0.72	-0.15	-2.00	0.3	clayey silt to silty clay	4
2.40	7.9	6.8	0.110	1.62	-0.15	-2.24	0.3	clayey silt to silty clay	4
2.45	8.0	11.1	0.236	2.13	-0.15	-1.32	0.3	clay	10
2.50	8.2	13.3	0.944	7.08	-0.13	-0.99	0.3	clay	14
2.55	8.4	17.1	1.195	6.98	-0.13	-0.77	0.3	clay	18
2.60	8.5	23.2	1.214	5.23	-0.09	-0.38	0.3	clay	20
2.65	8.7	19.5	1.291	6.64	-0.08	-0.39	0.3	clay	21
2.70	8.9	21.2	1.433	6.75	-0.06	-0.29	0.3	clay	23
2.75	9.0	27.1	1.382	5.10	-0.08	-0.28	0.3	clay	24
2.80	9.2	23.4	1.298	5.54	-0.06	-0.27	0.3	clay	23
2.85	9.4	18.9	1.029	5.45	-0.06	-0.33	0.3	clay	20
2.90	9.5	16.3	1.086	6.67	-0.05	-0.28	0.3	clay	18
2.95	9.7	20.0	1.116	5.58	-0.06	-0.32	0.3	clay	18
3.00	9.8	19.1	1.006	5.27	-0.05	-0.27	0.3	clay	19
3.05	10.0	16.5	0.998	6.04	-0.05	-0.28	0.3	clay	18
3.10	10.2	18.1	1.009	5.57	-0.05	-0.30	0.3	clay	18
3.15	10.3	20.6	1.074	5.20	-0.05	-0.24	0.3	clay	20
3.20	10.5	21.0	1.135	5.42	-0.04	-0.17	0.3	clay	23
3.25	10.7	27.2	1.209	4.45	-0.03	-0.13	0.3	clay	24
3.30	10.8	23.3	0.950	4.07	-0.03	-0.12	0.3	clay	23
3.35	11.0	17.6	0.898	5.10	-0.02	-0.14	0.3	clay	20
3.40	11.2	18.2	0.868	4.77	-0.00	-0.01	0.3	clay	18
3.45	11.3	17.2	0.938	5.46	0.01	0.06	0.3	clay	18
3.50	11.5	18.5	0.937	5.06	0.01	0.04	0.3	clay	19
3.55	11.6	21.5	1.075	4.99	0.04	0.19	0.3	clay	22
3.60	11.8	26.6	1.102	4.14	0.03	0.13	0.3	clay	22
3.65	12.0	18.9	1.042	5.50	0.04	0.19	0.3	clay	20
3.70	12.1	15.0	0.942	6.27	0.05	0.33	0.3	clay	17
3.75	12.3	16.8	0.954	5.69	0.05	0.30	0.3	clay	16
3.80	12.5	16.0	0.959	6.00	0.06	0.37	0.3	clay	17
3.85	12.6	18.4	0.859	4.68	0.06	0.31	0.3	clay	17
3.90	12.8	17.8	0.812	4.55	0.05	0.28	0.3	clay	17
3.95	13.0	14.9	0.819	5.48	0.05	0.32	0.3	clay	16
4.00	13.1	13.9	0.815	5.86	0.05	0.39	0.3	clay	15
4.05	13.3	16.8	0.815	4.86	0.06	0.38	0.3	clay	16
4.10	13.5	18.1	0.841	4.65	0.07	0.40	0.3	clay	18
4.15	13.6	20.5	0.710	3.46	0.09	0.46	0.3	clayey silt to silty clay	11
4.20	13.8	29.2	0.718	2.46	0.10	0.36	0.3	sandy silt to clayey silt	13
4.25	13.9	44.6	1.017	2.28	0.10	0.22	0.3	clayey silt to silty clay	20
4.30	14.1	46.2	2.666	5.77	0.15	0.32	0.3	silty clay to clay	32
4.35	14.3	52.8	3.154	5.97	0.24	0.45	0.3	clayey silt to silty clay	36
4.40	14.4	118.6	3.737	3.15	0.35	0.30	0.3	sandy silt to clayey silt	44
4.45	14.6	156.3	2.908	1.86	0.31	0.20	0.1	silty sand to sandy silt	47
4.50	14.8	150.5	3.443	2.29	0.23	0.15	0.1	silty sand to sandy silt	49

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

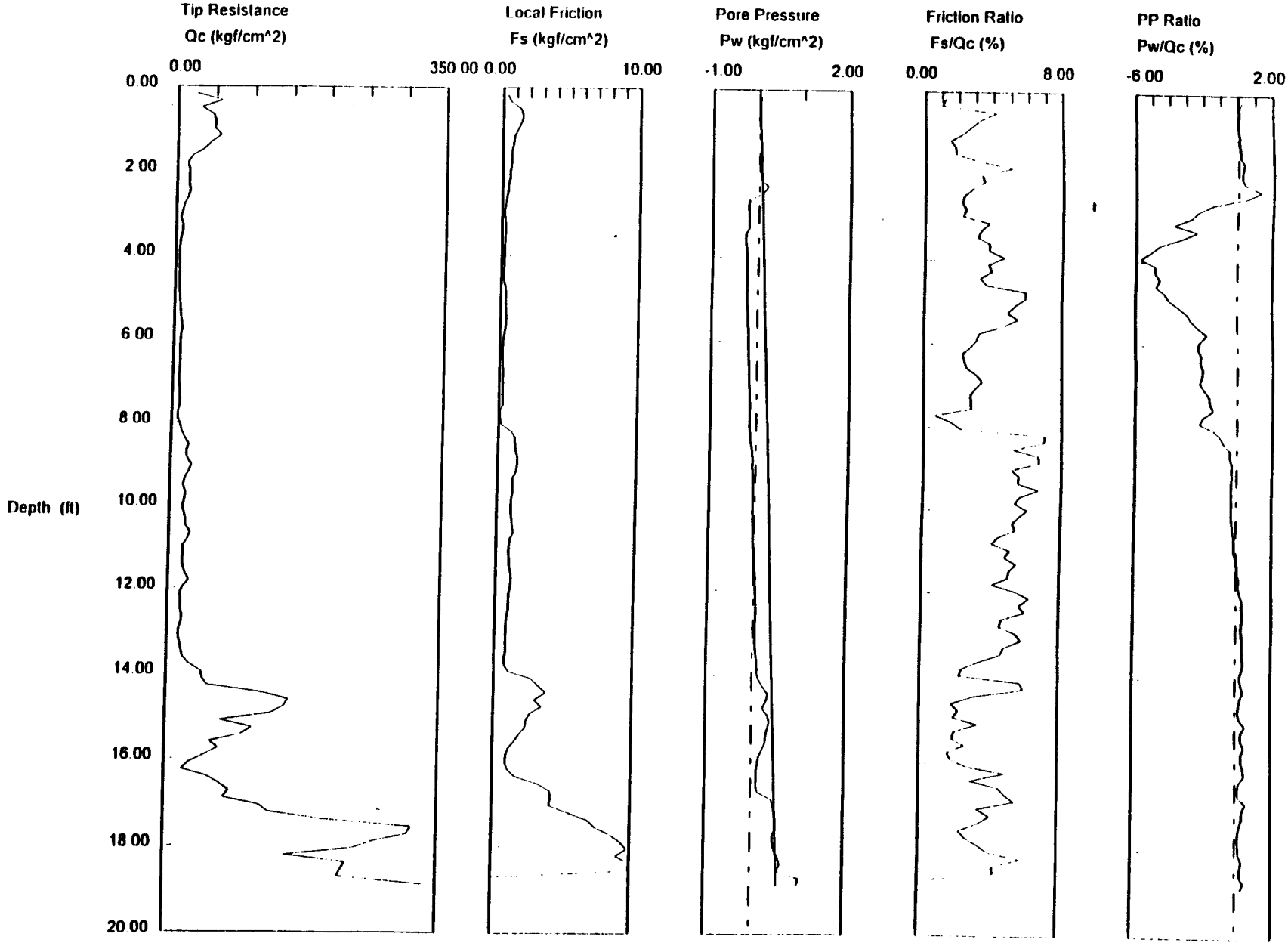
DEPTH ers	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	133.8	2.619	1.96	0.34	0.25	0.1	silty sand to sandy silt	39
4.60	15.1	70.1	2.381	3.40	0.39	0.56	0.1	silty sand to sandy silt	35
4.65	15.3	110.9	2.273	2.05	0.34	0.30	0.1	silty sand to sandy silt	31
4.70	15.4	97.2	1.860	1.91	0.31	0.32	0.1	silty sand to sandy silt	30
4.75	15.6	57.6	1.516	2.63	0.30	0.52	0.1	silty sand to sandy silt	25
4.80	15.7	68.6	1.119	1.63	0.23	0.33	0.1	silty sand to sandy silt	20
4.85	15.9	50.6	0.940	-1.86	0.16	0.32	0.1	silty sand to sandy silt	17
4.90	16.1	31.9	0.888	2.78	0.14	0.44	0.1	sandy silt to clayey silt	14
4.95	16.2	22.0	1.091	4.97	0.11	0.48	0.1	clayey silt to silty clay	18
5.00	16.4	54.7	1.621	2.96	0.12	0.22	0.1	clayey silt to silty clay	25
5.05	16.6	71.1	3.265	4.60	0.10	0.14	0.1	clayey silt to silty clay	35
5.10	16.7	83.2	4.126	4.96	0.15	0.18	0.2	very stiff fine grained (*)	77
5.15	16.9	75.8	4.184	5.52	0.45	0.60	0.2	very stiff fine grained (*)	93
5.20	17.1	120.6	4.056	3.36	0.49	0.40	0.2	very stiff fine grained (*)	110
5.25	17.2	132.8	5.487	4.13	0.52	0.39	0.1	sand to clayey sand (*)	75
5.30	17.4	198.9	6.924	3.48	0.55	0.28	0.1	silty sand to sandy silt	72
5.35	17.6	317.8	7.472	2.35	0.55	0.17	0.1	sand to clayey sand (*)	138
5.40	17.7	311.9	8.551	2.74	0.48	0.15	0.1	sand to clayey sand (*)	150
5.45	17.9	268.9	9.309	3.46	0.48	0.18	0.1	sand to clayey sand (*)	137
5.50	18.0	242.4	9.800	4.04	0.51	0.21	0.1	very stiff fine grained (*)	221
5.55	18.2	153.2	8.995	5.87	0.60	0.39	0.1	very stiff fine grained (*)	210
5.60	18.4	233.2	10.228	4.39	0.65	0.28	0.1	very stiff fine grained (*)	205
5.65	18.5	227.8	9.950	4.37	0.58	0.25	0.1	?	?
5.70	18.7	222.9	?	?	1.06	0.48	0.1	?	?
75	18.9	334.9	?	?	1.01	0.30	0.1	?	?

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT664
Cone Used: 4-CHANNEL

CPT Date: 03-03-98 10:42
Location: CPTU-196-005A
Job No.: 1507-000



Maximum Depth = 18.86 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT673 03-12-98 08:39

PERATOR : GJV-LMM LOCATION : CPTU-720-012

E ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	32.2	1.220	3.78	-0.49	-1.52	0.0	?	?
0.10	0.3	35.0	1.140	3.26	-0.70	-2.00	0.0	clayey silt to silty clay	16
0.15	0.5	27.4	1.120	4.09	-0.75	-2.74	0.0	clayey silt to silty clay	15
0.20	0.7	27.3	1.160	4.24	-0.75	-2.74	0.0	silty clay to clay	18
0.25	0.8	27.0	1.040	3.85	-0.72	-2.67	0.0	silty clay to clay	17
0.30	1.0	22.7	1.080	4.76	-0.70	-3.09	0.0	clay	23
0.35	1.1	19.2	1.030	5.37	-0.55	-2.87	0.0	clay	20
0.40	1.3	17.7	1.050	5.93	-0.54	-3.05	0.0	clay	18
0.45	1.5	17.1	1.160	6.79	-0.55	-3.22	0.0	clay	17
0.50	1.6	17.3	1.200	6.95	-0.55	-3.19	0.0	clay	18
0.55	1.8	18.5	1.290	6.96	-0.53	-2.86	0.0	clay	18
0.60	2.0	16.8	1.250	7.45	-0.52	-3.10	0.0	clay	17
0.65	2.1	16.0	1.190	7.42	-0.52	-3.24	0.0	clay	16
0.70	2.3	16.4	1.200	7.31	-0.52	-3.17	0.0	clay	16
0.75	2.5	16.1	1.230	7.65	-0.52	-3.23	0.0	clay	17
0.80	2.6	17.6	1.300	7.40	-0.51	-2.90	0.0	clay	17
0.85	2.8	18.8	1.330	7.06	-0.51	-2.71	0.0	clay	19
0.90	3.0	19.6	1.270	6.48	-0.51	-2.60	0.0	clay	19
0.95	3.1	18.4	1.210	6.58	-0.50	-2.72	0.0	clay	19
1.00	3.3	18.7	1.070	5.71	-0.50	-2.67	0.0	clay	19
1.05	3.4	19.7	0.900	4.57	-0.50	-2.54	0.0	clay	19
1.10	3.6	18.4	0.740	4.03	-0.50	-2.72	0.0	silty clay to clay	12
1.15	3.8	16.9	0.570	3.37	-0.50	-2.96	0.0	silty clay to clay	11
1.20	3.9	14.1	0.540	3.83	-0.50	-3.55	0.0	silty clay to clay	10
1.25	4.1	13.1	0.440	3.37	-0.50	-3.83	0.0	silty clay to clay	9
1.30	4.3	12.9	0.430	3.34	-0.50	-3.89	0.0	silty clay to clay	9
1.35	4.4	12.4	0.380	3.06	-0.49	-3.95	0.0	clayey silt to silty clay	7
1.40	4.6	14.7	0.350	2.38	-0.47	-3.20	0.0	clayey silt to silty clay	7
1.45	4.8	13.4	0.340	2.54	-0.46	-3.44	0.0	clayey silt to silty clay	7
1.50	4.9	15.1	0.310	2.06	-0.47	-3.12	0.0	clayey silt to silty clay	7
1.55	5.1	15.0	0.300	2.00	-0.46	-3.06	0.0	clayey silt to silty clay	7
1.60	5.2	13.7	0.300	2.18	-0.46	-3.35	0.0	clayey silt to silty clay	7
1.65	5.4	13.4	0.290	2.16	-0.46	-3.43	0.0	clayey silt to silty clay	7
1.70	5.6	13.1	0.350	2.68	-0.46	-3.52	0.0	clayey silt to silty clay	7
1.75	5.7	16.9	0.490	2.91	-0.45	-2.67	0.0	clayey silt to silty clay	9
1.80	5.9	21.6	0.540	2.50	-0.45	-2.09	0.0	clayey silt to silty clay	10
1.85	6.1	19.2	0.470	2.44	-0.45	-2.34	0.0	clayey silt to silty clay	9
1.90	6.2	15.2	0.330	2.17	-0.45	-2.96	0.0	clayey silt to silty clay	8
1.95	6.4	12.8	0.260	2.03	-0.45	-3.52	0.0	clayey silt to silty clay	7
2.00	6.6	13.7	0.300	2.19	-0.44	-3.21	0.0	clayey silt to silty clay	7

interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	16.6	0.340	2.04	-0.44	-2.64	0.0	clayey silt to silty clay	8
2.10	6.9	15.1	0.370	2.45	-0.44	-2.91	0.0	clayey silt to silty clay	8
2.15	7.1	17.5	0.320	1.83	-0.44	-2.51	0.0	sandy silt to clayey silt	7
2.20	7.2	19.0	0.260	1.37	-0.44	-2.31	0.0	sandy silt to clayey silt	7
2.25	7.4	17.0	0.230	1.35	-0.44	-2.58	0.0	sandy silt to clayey silt	7
2.30	7.5	16.7	0.220	1.32	-0.44	-2.64	0.0	sandy silt to clayey silt	7
2.35	7.7	16.4	0.210	1.28	-0.44	-2.68	0.0	sandy silt to clayey silt	7
2.40	7.9	19.8	0.240	1.21	-0.43	-2.17	0.0	sandy silt to clayey silt	8
2.45	8.0	20.2	0.010	0.05	0.00	0.00	0.0	silty sand to sandy silt	7
2.50	8.2	18.8	0.010	0.05	0.00	0.00	0.0	sandy silt to clayey silt	5
2.55	8.4	0.1	0.010	10.00	0.00	0.00	0.0	sensitive fine grained	3
2.65	8.7	0.1	0.010	10.00	0.00	0.00	0.0	?	?
2.70	8.9	0.1	0.010	10.00	0.00	0.00	0.0	?	?
2.80	9.2	0.1	0.010	10.00	0.00	0.00	0.0	?	?
2.85	9.4	0.1	0.010	10.00	0.00	0.00	0.0	?	?
2.90	9.5	0.1	0.010	10.00	0.00	0.00	0.0	?	?
2.95	9.7	0.1	0.010	10.00	0.00	0.00	0.0	?	?
3.00	9.8	0.1	0.010	10.00	0.00	0.00	0.0	?	?
3.05	10.0	0.1	0.010	10.00	0.00	0.00	0.0	?	?
3.10	10.2	0.1	0.010	10.00	0.00	0.00	0.0	?	?
3.15	10.3	0.1	0.010	10.00	0.00	0.00	0.0	?	?
3.20	10.5	0.1	0.010	10.00	0.00	0.00	0.0	clay	5
3.25	10.7	15.8	0.490	3.10	-0.01	-0.06	0.0	silty clay to clay	8
3.30	10.8	20.5	0.550	2.69	0.01	0.05	0.0	clayey silt to silty clay	10
3.35	11.0	23.7	0.800	3.38	0.04	0.17	0.0	clayey silt to silty clay	13
3.40	11.2	32.3	0.740	2.29	0.05	0.15	0.0	sandy silt to clayey silt	12
3.45	11.3	37.7	0.810	2.15	0.08	0.21	0.0	sandy silt to clayey silt	14
3.50	11.5	37.2	0.840	2.26	0.11	0.30	0.0	sandy silt to clayey silt	15
3.55	11.6	40.0	0.820	2.05	0.12	0.30	0.0	sandy silt to clayey silt	14
3.60	11.8	27.9	0.780	2.80	0.10	0.36	0.0	sandy silt to clayey silt	13
3.65	12.0	32.2	0.620	1.93	0.10	0.31	0.0	sandy silt to clayey silt	12
3.70	12.1	31.5	0.490	1.56	0.08	0.25	0.0	sandy silt to clayey silt	12
3.75	12.3	28.4	0.720	2.53	0.09	0.32	0.0	sandy silt to clayey silt	15
3.80	12.5	54.5	1.120	2.05	0.08	0.15	0.0	sandy silt to clayey silt	18
3.85	12.6	48.9	1.040	2.13	0.05	0.10	0.0	sandy silt to clayey silt	18
3.90	12.8	30.6	0.710	2.32	0.03	0.10	0.1	sandy silt to clayey silt	14
3.95	13.0	23.6	0.450	1.91	0.04	0.17	0.1	sandy silt to clayey silt	11
4.00	13.1	27.3	0.380	1.39	0.05	0.18	0.1	clayey silt to silty clay	13
4.05	13.3	26.0	1.920	7.40	0.07	0.27	0.1	silty clay to clay	19
4.10	13.5	30.5	1.390	4.55	0.06	0.20	0.1	silty clay to clay	26
4.15	13.6	61.8	2.340	3.79	-0.21	-0.34	0.1	clayey silt to silty clay	29
4.20	13.8	82.6	3.660	4.43	0.21	0.25	0.1	clayey silt to silty clay	41
4.25	13.9	103.8	3.910	3.77	-0.28	-0.27	0.1	very stiff fine grained (*)	92
4.30	14.1	90.6	5.000	5.52	-0.35	-0.39	0.1	very stiff fine grained (*)	112
4.35	14.3	140.9	4.820	3.42	-0.40	-0.28	0.1	sandy silt to clayey silt	52
4.40	14.4	160.7	4.250	2.64	-0.60	-0.37	0.1	silty sand to sandy silt	58
4.45	14.6	218.0	4.050	1.86	-0.67	-0.31	0.1	sand to silty sand	54
4.50	14.8	274.4	4.350	1.59	-0.77	-0.28	0.1	sand to silty sand	67
4.55	14.9	315.2	7.040	2.23	-0.77	-0.24	0.1	sand to silty sand	77
4.60	15.1	339.6	8.180	2.41	-0.77	-0.23	0.1	sand to clayey sand (*)	147

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.65	15.3	225.6	8.860	3.93	-0.75	-0.33	0.0	sand to clayey sand (*)	128
4.70	15.4	201.7	8.260	4.10	-0.73	-0.36	0.0	sand to clayey sand (*)	107
4.75	15.6	213.2	6.870	3.22	-0.61	-0.29	0.0	silty sand to sandy silt	80
4.80	15.7	308.5	5.430	1.76	-0.60	-0.19	0.0	sand to silty sand	62
4.85	15.9	226.1	3.410	1.51	0.00	0.00	0.0	sand to silty sand	61
4.90	16.1	192.8	3.320	1.72	0.55	0.29	0.0	silty sand to sandy silt	56
4.95	16.2	83.1	3.490	4.20	2.71	3.26	0.0	sandy silt to clayey silt	50
5.00	16.4	101.4	5.150	5.08	3.22	3.18	0.0	very stiff fine grained (*)	97
5.05	16.6	106.3	4.570	4.30	2.29	2.15	0.0	very stiff fine grained (*)	89
5.10	16.7	60.0	2.920	4.87	0.70	1.17	0.0	clayey silt to silty clay	35
5.15	16.9	45.2	1.560	3.45	0.73	1.61	0.0	clayey silt to silty clay	25
5.20	17.1	44.8	1.400	3.12	0.74	1.65	0.0	sandy silt to clayey silt	20
5.25	17.2	56.8	1.310	2.31	0.75	1.32	0.0	sandy silt to clayey silt	21
5.30	17.4	57.9	1.550	2.68	0.75	1.29	0.0	sandy silt to clayey silt	22
5.35	17.6	46.9	1.870	3.99	0.00	0.00	0.0	clayey silt to silty clay	23
5.40	17.7	32.4	1.790	5.52	-0.05	-0.15	0.0	clay	34
5.45	17.9	22.4	1.210	5.40	-0.04	-0.18	0.0	clay	25
5.50	18.0	20.4	0.880	4.32	-0.04	-0.20	0.0	clay	21
5.55	18.2	19.8	0.760	3.84	-0.03	-0.15	0.0	silty clay to clay	14
5.60	18.4	21.1	0.980	4.65	-0.03	-0.14	0.0	silty clay to clay	15
5.65	18.5	26.0	1.080	4.16	-0.03	-0.12	0.0	silty clay to clay	18
5.70	18.7	32.9	1.050	3.19	-0.02	-0.06	0.0	clay	32
5.75	18.9	36.2	3.230	8.92	0.24	0.66	0.0	very stiff fine grained (*)	68
5.80	19.0	135.4	5.660	4.18	0.21	0.16	0.0	sandy silt to clayey silt	55
5.85	19.2	242.3	6.110	2.52	0.21	0.09	0.0	silty sand to sandy silt	68
5.90	19.4	234.4	6.580	2.81	0.21	0.09	0.0	silty sand to sandy silt	84
5.95	19.5	279.1	5.670	2.03	0.21	0.08	0.0	sand to clayey sand (*)	124
6.00	19.7	230.8	9.610	4.16	0.21	0.09	0.1	sand to clayey sand (*)	118
6.05	19.8	196.3	9.820	5.00	0.27	0.14	0.1	very stiff fine grained (*)	193
6.10	20.0	151.1	7.390	4.89	0.28	0.19	0.1	very stiff fine grained (*)	181
6.15	20.2	195.2	7.460	3.82	0.28	0.14	0.1	very stiff fine grained (*)	166
6.20	20.3	152.2	6.780	4.45	0.28	0.18	0.1	very stiff fine grained (*)	177
6.25	20.5	184.9	9.990	5.40	0.28	0.15	0.1	sand to clayey sand (*)	108
6.30	20.7	310.3	8.470	2.73	0.29	0.09	0.1	sand to clayey sand (*)	115
6.35	20.8	193.5	6.970	3.60	0.29	0.15	0.2	silty sand to sandy silt	106
6.40	21.0	446.1	7.700	1.73	0.30	0.07	0.2	sand to silty sand	92
6.45	21.2	458.8	9.990	2.18	0.31	0.07	0.2	sand to silty sand	99
6.50	21.3	279.5	8.890	3.18	0.32	0.11	0.2	sand to clayey sand (*)	147
6.55	21.5	141.1	6.490	4.60	0.32	0.23	0.2	sand to clayey sand (*)	94
6.60	21.7	145.8	6.680	4.58	0.32	0.22	0.2	sand to clayey sand (*)	83
6.65	21.8	210.9	5.520	2.62	0.33	0.16	0.2	silty sand to sandy silt	74
6.70	22.0	309.0	5.230	1.69	0.33	0.11	0.3	silty sand to sandy silt	88
6.75	22.1	271.3	7.480	2.76	0.33	0.12	0.3	sand to silty sand	79
6.80	22.3	364.0	7.690	2.11	0.39	0.11	0.3	sand to silty sand	90
6.85	22.5	442.9	7.960	1.80	0.39	0.09	0.3	sand to silty sand	110
6.90	22.6	509.0	8.240	1.62	0.42	0.08	0.4	sand to silty sand	125
6.95	22.8	552.0	9.450	1.71	0.42	0.08	0.4	sand	106
7.00	23.0	527.0	7.460	1.42	0.42	0.08	0.5	sand	110
7.05	23.1	564.2	7.150	1.27	0.43	0.08	0.5	sand	115
7.10	23.3	640.5	3.790	0.59	0.44	0.07	0.7	gravelly sand to sand	97

ıil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 ▣ sliding data average

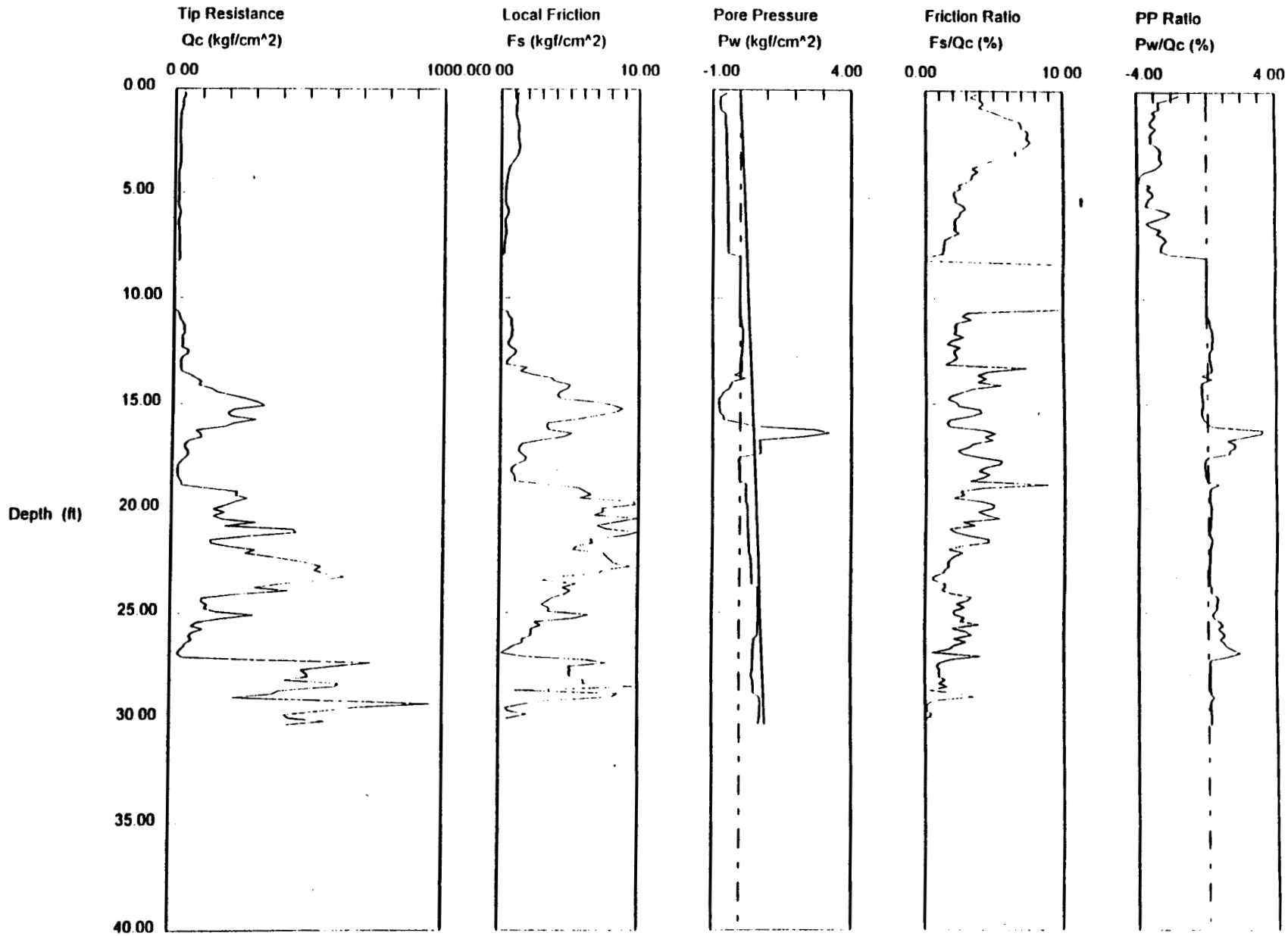
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
7.15	23.5	547.1	3.060	0.56	0.44	0.08	0.7	gravelly sand to sand	88
7.20	23.6	399.7	5.540	1.39	0.43	0.11	0.7	sand	84
7.25	23.8	308.3	4.510	1.46	0.65	0.21	0.7	sand	76
7.30	23.9	432.5	5.110	1.18	0.66	0.15	0.7	sand to silty sand	82
7.35	24.1	239.8	4.690	1.96	0.66	0.28	0.7	sand to silty sand	65
7.40	24.3	113.5	3.850	3.39	0.66	0.58	0.6	silty sand to sandy silt	51
7.45	24.4	109.7	3.440	3.14	0.67	0.61	0.6	sandy silt to clayey silt	48
7.50	24.6	133.3	3.030	2.27	0.67	0.50	0.7	silty sand to sandy silt	41
7.55	24.8	121.6	3.570	2.94	0.68	0.56	0.6	silty sand to sandy silt	47
7.60	24.9	166.3	3.500	2.10	0.68	0.41	0.6	silty sand to sandy silt	66
7.65	25.1	305.4	6.440	2.11	0.68	0.22	0.6	silty sand to sandy silt	73
7.70	25.3	184.5	5.330	2.89	0.68	0.37	0.6	silty sand to sandy silt	65
7.75	25.4	97.3	2.500	2.57	0.68	0.70	0.6	sandy silt to clayey silt	48
7.80	25.6	74.6	2.970	3.98	0.67	0.90	0.6	sandy silt to clayey silt	39
7.85	25.8	117.6	2.300	1.96	0.67	0.57	0.6	sandy silt to clayey silt	36
7.90	25.9	77.5	2.320	3.00	0.67	0.86	0.6	sandy silt to clayey silt	35
7.95	26.1	66.1	2.260	3.42	0.66	1.00	0.6	sandy silt to clayey silt	30
8.00	26.2	78.6	1.650	2.10	0.54	0.69	0.6	sandy silt to clayey silt	27
8.05	26.4	56.2	1.700	3.03	0.53	0.94	0.6	sandy silt to clayey silt	24
8.10	26.6	48.6	1.010	2.08	0.52	1.07	0.6	sandy silt to clayey silt	19
8.15	26.7	35.0	0.620	1.77	0.51	1.46	0.6	sandy silt to clayey silt	15
8.20	26.9	26.2	0.120	0.46	0.50	1.91	0.6	sandy silt to clayey silt	14
8.25	27.1	44.2	1.830	4.14	0.50	1.13	0.6	silty sand to sandy silt	44
8.30	27.2	329.2	6.230	1.89	0.49	0.15	0.6	sand	74
8.35	27.4	742.6	7.780	1.05	0.49	0.07	0.7	sand	111
8.40	27.6	598.3	4.980	0.83	0.48	0.08	0.7	gravelly sand to sand	101
8.45	27.7	480.1	5.150	1.07	0.48	0.10	0.7	gravelly sand to sand	88
8.50	27.9	500.1	5.010	1.00	0.44	0.09	0.7	sand	99
8.55	28.1	508.1	5.160	1.02	0.44	0.09	0.7	sand	95
8.60	28.2	418.8	6.080	1.45	0.49	0.12	0.7	sand	103
8.65	28.4	621.0	6.090	0.98	0.51	0.08	0.7	sand	110
8.70	28.5	606.9	9.990	1.65	0.52	0.09	0.7	sand	108
8.75	28.7	399.4	1.010	0.25	0.52	0.13	0.7	sand	92
8.80	28.9	375.5	8.580	2.28	0.53	0.14	0.8	sand to silty sand	83
8.85	29.0	226.1	8.140	3.60	0.73	0.32	0.8	sand to silty sand	99
8.90	29.2	582.3	3.470	0.60	0.75	0.13	0.8	gravelly sand to sand	98
8.95	29.4	964.1	1.880	0.20	0.77	0.08	0.8	gravelly sand to sand	124
9.00	29.5	678.0	0.470	0.07	0.75	0.11	0.8	gravelly sand to sand	122
9.05	29.7	558.0	0.710	0.13	0.75	0.13	0.8	gravelly sand to sand	92
9.10	29.9	419.0	2.060	0.49	0.74	0.18	0.8	gravelly sand to sand	79
9.15	30.0	438.9	0.760	0.17	0.74	0.17	0.8	gravelly sand to sand	72
9.15	30.0	438.9	0.760	0.17	0.74	0.17	0.8	?	?
9.20	30.2	573.6	?	?	0.71	0.12	0.8	?	?
9.25	30.3	400.9	?	?	0.69	0.17	0.8	?	?

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT673
Cone Used: 4-CHANNEL

CPT Date: 03-12-98 08:39
Location: CPTU-720-012
Job No.: 1507-000



Maximum Depth = 30.35 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT678 03-12-98 14:11

OPERATOR : GJV-LMM LOCATION : CPTU-720-018

CONE ID : 4-CHANNEL JOB No. : 1507-000

K. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	4.6	0.130	2.81	0.01	0.22	0.1	?	?
0.10	0.3	7.3	0.330	4.50	-0.01	-0.14	0.0	clay	9
0.15	0.5	16.5	0.590	3.57	-0.50	-3.03	0.0	silty clay to clay	10
0.20	0.7	20.5	0.810	3.96	-0.68	-3.32	0.0	clayey silt to silty clay	11
0.25	0.8	26.5	0.750	2.83	-0.76	-2.86	0.0	clayey silt to silty clay	11
0.30	1.0	17.8	0.620	3.48	-0.83	-4.66	0.0	clayey silt to silty clay	10
0.35	1.1	17.3	0.600	3.47	-0.85	-4.91	0.0	silty clay to clay	12
0.40	1.3	20.8	0.870	4.18	-0.84	-4.04	0.0	silty clay to clay	14
0.45	1.5	23.9	0.760	3.18	-0.85	-3.55	0.0	silty clay to clay	14
0.50	1.6	18.4	0.900	4.89	-0.45	-2.44	0.0	clay	18
0.55	1.8	11.0	0.750	6.81	-0.50	-4.54	0.0	clay	16
0.60	2.0	17.7	0.830	4.68	-0.49	-2.76	0.0	clay	18
0.65	2.1	24.9	0.830	3.34	-0.48	-1.93	0.0	clayey silt to silty clay	10
0.70	2.3	19.0	0.220	1.16	-0.48	-2.52	0.0	clayey silt to silty clay	9
0.75	2.5	12.6	0.130	1.03	-0.48	-3.81	0.0	sandy silt to clayey silt	6
0.80	2.6	13.0	0.040	0.31	-0.46	-3.54	0.0	sandy silt to clayey silt	5
0.85	2.8	14.1	0.020	0.14	-0.45	-3.18	0.0	silty sand to sandy silt	7
0.90	3.0	37.6	0.170	0.45	-0.45	-1.20	0.0	silty sand to sandy silt	10
0.95	3.1	36.1	0.150	0.42	-0.45	-1.25	0.0	silty sand to sandy silt	12
1.00	3.3	32.6	0.380	1.17	-0.45	-1.38	0.0	silty sand to sandy silt	12
1.05	3.4	35.6	0.500	1.40	-0.45	-1.26	0.0	sandy silt to clayey silt	13
1.10	3.6	26.1	0.410	1.57	-0.45	-1.73	0.0	silty sand to sandy silt	16
1.15	3.8	78.9	0.600	0.76	-0.44	-0.56	0.0	silty sand to sandy silt	19
1.20	3.9	69.2	1.110	1.60	-0.45	-0.65	0.0	silty sand to sandy silt	21
1.25	4.1	38.2	1.120	2.93	-0.46	-1.20	0.0	sandy silt to clayey silt	18
1.30	4.3	28.9	0.810	2.80	-0.45	-1.56	0.0	sandy silt to clayey silt	18
1.35	4.4	71.3	0.930	1.30	-0.45	-0.63	0.0	sandy silt to clayey silt	20
1.40	4.6	48.2	1.250	2.59	-0.46	-0.95	0.0	sandy silt to clayey silt	19
1.45	4.8	26.8	0.870	3.25	-0.47	-1.76	0.0	sandy silt to clayey silt	12
1.50	4.9	18.3	0.380	2.07	-0.47	-2.57	0.1	clayey silt to silty clay	10
1.55	5.1	14.0	0.220	1.57	-0.47	-3.35	0.1	clayey silt to silty clay	7
1.60	5.2	12.2	0.290	2.38	-0.46	-3.77	0.1	clayey silt to silty clay	7
1.65	5.4	16.1	0.270	1.68	-0.47	-2.92	0.1	clayey silt to silty clay	7
1.70	5.6	13.3	0.230	1.73	-0.45	-3.39	0.1	clayey silt to silty clay	7
1.75	5.7	11.7	0.110	0.94	-0.45	-3.85	0.1	sandy silt to clayey silt	5
1.80	5.9	12.1	0.000	0.00	-0.45	-3.71	0.1	sandy silt to clayey silt	5
1.85	6.1	11.4	0.030	0.26	-0.45	-3.93	0.1	sandy silt to clayey silt	5
1.90	6.2	11.8	0.140	1.18	-0.45	-3.81	0.1	clayey silt to silty clay	6
1.95	6.4	10.6	0.250	2.36	-0.44	-4.16	0.1	clayey silt to silty clay	5
2.00	6.6	9.4	0.290	3.07	-0.44	-4.66	0.1	clayey silt to silty clay	5

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	9.6	0.110	1.15	-0.44	-4.60	0.1	clayey silt to silty clay	6
2.10	6.9	15.1	0.090	0.60	-0.44	-2.92	0.1	sandy silt to clayey silt	5
2.15	7.1	14.6	0.030	0.21	-0.44	-3.02	0.1	sandy silt to clayey silt	6
2.20	7.2	13.9	0.040	0.29	-0.43	-3.10	0.1	sandy silt to clayey silt	6
2.25	7.4	17.4	0.070	0.40	-0.43	-2.47	0.1	sandy silt to clayey silt	7
2.30	7.5	17.9	0.070	0.39	-0.43	-2.40	0.1	sandy silt to clayey silt	7
2.35	7.7	13.8	0.320	2.32	-0.43	-3.12	0.1	sandy silt to clayey silt	6
2.40	7.9	11.0	0.040	0.36	-0.43	-3.92	0.1	clayey silt to silty clay	5
2.45	8.0	7.9	0.040	0.51	-0.43	-5.46	0.1	sensitive fine grained	4
2.50	8.2	5.0	0.050	1.00	-0.43	-8.60	0.1	sensitive fine grained	3
2.55	8.4	4.6	0.010	0.22	-0.43	-9.29	0.1	sensitive fine grained	3
2.60	8.5	6.6	0.110	1.66	-0.42	-6.33	0.1	clayey silt to silty clay	3
2.65	8.7	9.5	0.200	2.11	-0.39	-4.11	0.1	silty clay to clay	5
2.70	8.9	7.6	0.260	3.43	-0.39	-5.14	0.1	silty clay to clay	6
2.75	9.0	10.4	0.360	3.46	-0.38	-3.66	0.1	clay	10
2.80	9.2	11.1	0.370	3.35	-0.39	-3.53	0.1	silty clay to clay	7
2.85	9.4	10.1	0.370	3.66	-0.38	-3.76	0.1	silty clay to clay	7
2.90	9.5	10.3	0.370	3.59	-0.38	-3.69	0.1	clay	10
2.95	9.7	10.2	0.400	3.92	-0.38	-3.72	0.1	clay	10
3.00	9.8	10.6	0.340	3.22	-0.38	-3.60	0.1	clay	10
3.05	10.0	7.9	0.320	4.03	-0.30	-3.77	0.1	clay	9
3.10	10.2	7.7	0.300	3.88	-0.30	-3.88	0.1	clay	8
3.15	10.3	7.3	0.280	3.81	-0.30	-4.09	0.1	clay	7
3.20	10.5	6.4	0.340	5.27	-0.30	-4.65	0.1	clay	7
3.25	10.7	7.4	0.370	5.01	-0.30	-4.06	0.1	clay	7
3.30	10.8	7.4	0.490	6.58	-0.29	-3.89	0.1	clay	8
3.35	11.0	8.2	0.480	5.84	-0.29	-3.53	0.1	clay	8
3.40	11.2	9.0	0.520	5.79	-0.29	-3.23	0.1	clay	10
3.45	11.3	12.1	0.570	4.71	-0.29	-2.40	0.1	clay	12
3.50	11.5	14.8	0.700	4.73	-0.28	-1.89	0.1	clay	13
3.55	11.6	13.1	0.550	4.21	-0.29	-2.22	0.1	clay	14
3.60	11.8	13.5	0.480	3.57	-0.25	-1.86	0.1	clay	12
3.65	12.0	10.9	0.530	4.88	-0.25	-2.30	0.1	clay	12
3.70	12.1	12.8	0.610	4.78	-0.25	-1.96	0.1	clay	12
3.75	12.3	13.2	0.630	4.76	-0.24	-1.81	0.1	clay	13
3.80	12.5	12.3	0.520	4.22	-0.24	-1.95	0.1	clay	12
3.85	12.6	11.1	0.730	6.60	-0.24	-2.17	0.1	clay	18
3.90	12.8	31.9	1.070	3.36	-0.23	-0.72	0.1	clay	22
3.95	13.0	23.0	1.250	5.44	-0.24	-1.04	0.1	silty clay to clay	21
4.00	13.1	41.7	1.530	3.67	-0.24	-0.57	0.1	clayey silt to silty clay	21
4.05	13.3	58.8	1.680	2.85	-0.24	-0.41	0.1	clayey silt to silty clay	26
4.10	13.5	56.7	2.130	3.76	-0.25	-0.44	0.1	sandy silt to clayey silt	25
4.15	13.6	70.1	2.230	3.18	-0.26	-0.37	0.1	clayey silt to silty clay	32
4.20	13.8	64.8	2.230	3.44	-0.28	-0.43	0.1	sandy silt to clayey silt	27
4.25	13.9	69.1	2.080	3.01	-0.27	-0.39	0.1	sandy silt to clayey silt	25
4.30	14.1	56.6	1.810	3.20	-0.28	-0.49	0.1	sandy silt to clayey silt	23
4.35	14.3	48.8	1.920	3.93	-0.27	-0.55	0.1	clayey silt to silty clay	34
4.40	14.4	101.3	3.590	3.54	-0.26	-0.26	0.1	silty sand to sandy silt	37
4.45	14.6	185.2	2.950	1.59	-0.27	-0.15	0.1	silty sand to sandy silt	55
4.50	14.8	208.9	2.890	1.38	-0.20	-0.10	0.1	sand to silty sand	52

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	224.4	2.540	1.13	-0.23	-0.10	0.1	sand	41
4.60	15.1	187.2	2.410	1.29	-0.27	-0.14	0.1	sand	40
4.65	15.3	186.9	2.540	1.36	-0.31	-0.17	0.1	sand to silty sand	48
4.70	15.4	196.6	3.010	1.53	-0.09	-0.05	0.1	sand to silty sand	49
4.75	15.6	207.9	2.680	1.29	-0.06	-0.03	0.1	sand to silty sand	52
4.80	15.7	224.7	2.720	1.21	-0.04	-0.02	0.1	sand	45
4.85	15.9	239.6	2.420	1.01	0.00	0.00	0.1	sand	45
4.90	16.1	217.8	1.990	0.91	0.02	0.01	0.1	sand	43
4.95	16.2	193.4	1.840	0.95	0.33	0.17	0.1	sand	40
5.00	16.4	189.1	1.380	0.73	0.43	0.23	0.1	sand	36
5.05	16.6	164.9	1.740	1.06	0.53	0.32	0.1	sand	31
5.10	16.7	113.4	1.650	1.46	0.65	0.57	0.1	sand to silty sand	29
5.15	16.9	73.8	1.390	1.88	0.82	1.11	0.1	silty sand to sandy silt	31
5.20	17.1	93.4	1.350	1.45	0.85	0.91	0.1	sand to silty sand	27
5.25	17.2	155.5	1.710	1.10	0.56	0.36	0.1	sand to silty sand	35
5.30	17.4	174.5	1.500	0.86	0.68	0.39	0.1	sand	33
5.35	17.6	172.0	2.080	1.21	0.65	0.38	0.1	sand to silty sand	35
5.40	17.7	76.6	1.540	2.01	0.58	0.76	0.1	silty sand to sandy silt	31
5.45	17.9	32.3	1.000	3.09	0.69	2.13	0.1	sandy silt to clayey silt	17
5.50	18.0	21.5	0.720	3.34	0.89	4.13	0.1	clayey silt to silty clay	13
5.55	18.2	24.6	0.770	3.12	0.88	3.57	0.1	clayey silt to silty clay	12
5.60	18.4	27.6	0.980	3.54	0.93	3.36	0.1	clayey silt to silty clay	14
5.65	18.5	30.3	1.080	3.57	0.87	2.87	0.1	clayey silt to silty clay	14
5.70	18.7	24.8	0.960	3.87	0.69	2.78	0.1	clayey silt to silty clay	13
5.75	18.9	23.0	0.830	3.61	0.70	3.05	0.1	silty clay to clay	16
5.80	19.0	24.5	0.990	4.03	0.70	2.85	0.1	silty clay to clay	16
5.85	19.2	22.8	1.130	4.96	0.70	3.07	0.1	clay	23
5.90	19.4	21.4	1.280	5.98	0.70	3.27	0.1	clay	22
5.95	19.5	23.0	1.230	5.34	0.71	3.08	0.1	clay	22
6.00	19.7	23.0	1.070	4.65	0.71	3.09	0.1	clay	22
6.05	19.8	20.4	1.010	4.94	0.73	3.57	0.1	clay	23
6.10	20.0	25.9	0.980	3.78	0.73	2.82	0.1	silty clay to clay	16
6.15	20.2	27.3	1.070	3.92	0.73	2.68	0.1	silty clay to clay	17
6.20	20.3	24.7	0.960	3.89	0.73	2.96	0.1	silty clay to clay	17
6.25	20.5	22.4	1.030	4.61	0.74	3.31	0.1	clayey silt to silty clay	14
6.30	20.7	38.4	1.110	2.89	0.74	1.93	0.1	clayey silt to silty clay	16
6.35	20.8	35.5	1.290	3.63	0.75	2.11	0.1	clayey silt to silty clay	21
6.40	21.0	50.0	2.730	5.46	0.76	1.52	0.1	clayey silt to silty clay	36
6.45	21.2	133.5	4.700	3.52	-0.10	-0.07	0.0	very stiff fine grained (*)	100
6.50	21.3	115.1	5.150	4.47	-0.23	-0.20	0.0	very stiff fine grained (*)	117
6.55	21.5	101.8	5.510	5.41	-0.24	-0.24	0.1	very stiff fine grained (*)	109
6.60	21.7	111.2	5.340	4.80	-0.22	-0.20	0.1	sand to clayey sand (*)	82
6.65	21.8	277.3	6.680	2.41	-0.22	-0.08	0.1	silty sand to sandy silt	86
6.70	22.0	383.5	6.360	1.66	-0.24	-0.06	0.1	sand to silty sand	83
6.75	22.1	334.4	8.090	2.42	-0.25	-0.07	0.1	sand to silty sand	99
6.80	22.3	467.7	9.590	2.05	-0.19	-0.04	0.2	sand to silty sand	110
6.85	22.5	522.5	9.310	1.78	-0.16	-0.03	0.2	sand to silty sand	131
6.90	22.6	583.7	8.610	1.48	-0.10	-0.02	0.3	sand	122
6.95	22.8	730.4	6.060	0.83	-0.12	-0.02	0.3	sand	127
7.00	23.0	586.2	7.140	1.22	-0.07	-0.01	0.3	gravelly sand to sand	102

ıil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

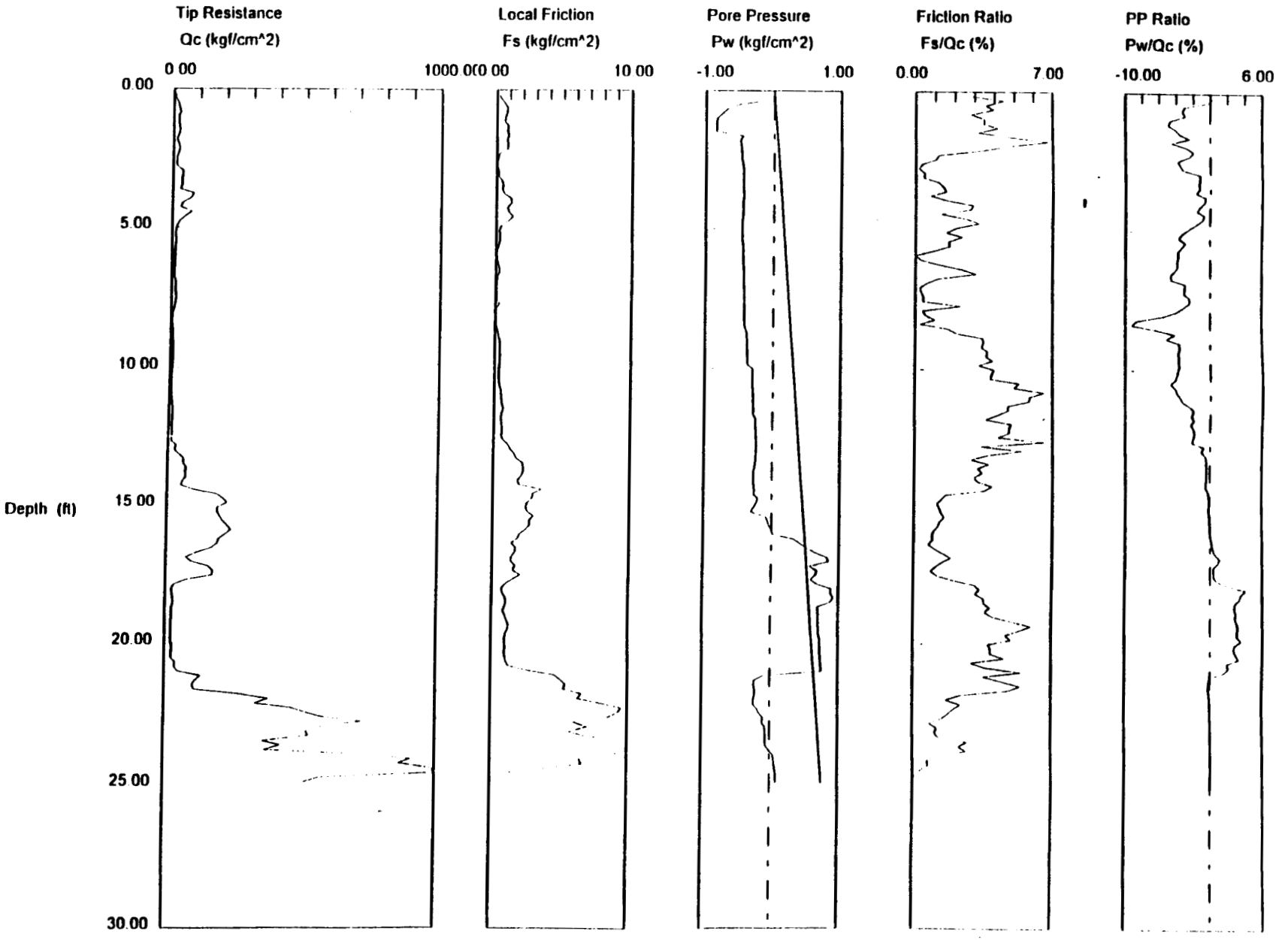
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC 1 deg	INTERPRETED SOIL TYPE	N SPT
7.05	23.1	524.7	5.770	1.10	-0.07	-0.01	0.3	sand	110
7.10	23.3	535.5	6.950	1.30	-0.06	-0.01	0.3	sand to silty sand	119
7.15	23.5	362.8	9.990	2.75	-0.07	-0.02	0.4	sand to silty sand	111
7.20	23.6	430.7	9.990	2.32	-0.06	-0.01	0.4	sand to clayey sand (*)	194
7.25	23.8	370.0	9.990	2.70	-0.01	-0.00	0.4	sand to silty sand	125
7.30	23.9	703.8	8.960	1.27	0.05	0.01	0.4	sand	132
7.35	24.1	912.0	6.500	0.71	0.06	0.01	0.4	gravelly sand to sand	138
7.40	24.3	867.1	6.780	0.78	0.07	0.01	0.4	gravelly sand to sand	154
7.45	24.4	990.2	4.070	0.41	0.08	0.01	0.4	gravelly sand to sand	159
7.50	24.6	999.0	0.810	0.08	0.09	0.01	0.4	?	?
7.55	24.8	578.4	?	?	0.09	0.02	0.4	?	?
7.60	24.9	517.0	?	?	0.09	0.02	0.4	?	?

oil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT678
Cone Used: 4-CHANNEL

CPT Date: 03-12-98 14:11
Location: CPTU-720-018
Job No.: 1507-000



Maximum Depth = 24.93 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT679 03-12-98 15:19

ᴰERATOR : GJV-LMM LOCATION : CPTU-720-018A

ᴱ ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19841

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	6.3	0.613	9.66	-0.01	-0.22	0.1	?	?
0.10	0.3	10.0	0.541	5.40	-0.16	-1.55	0.1	clay	10
0.15	0.5	12.8	0.826	6.43	-0.39	-3.04	0.1	clay	12
0.20	0.7	14.3	0.796	5.55	-0.64	-4.45	0.1	clay	15
0.25	0.8	17.1	0.960	5.61	-0.66	-3.87	0.1	clay	16
0.30	1.0	16.5	1.106	6.68	-0.67	-4.07	0.1	clay	15
0.35	1.1	11.7	1.024	8.77	-0.68	-5.82	0.1	clay	16
0.40	1.3	18.8	0.987	5.26	-0.67	-3.55	0.1	clay	19
0.45	1.5	26.7	1.147	4.30	-0.66	-2.49	0.1	clay	23
0.50	1.6	24.8	1.401	5.65	-0.64	-2.59	0.1	clay	25
0.55	1.8	24.6	1.321	5.37	-0.63	-2.55	0.1	clay	23
0.60	2.0	18.4	1.242	6.74	-0.63	-3.40	0.1	clay	20
0.65	2.1	15.8	1.568	9.92	-0.63	-3.96	0.1	clay	16
0.70	2.3	14.4	1.455	10.09	-0.55	-3.79	0.1	clay	17
0.75	2.5	21.6	1.541	7.14	-0.54	-2.48	0.2	clay	19
0.80	2.6	20.7	1.485	7.17	-0.54	-2.61	0.2	clay	25
0.85	2.8	32.1	1.648	5.13	-0.55	-1.71	0.2	silty clay to clay	25
0.90	3.0	57.7	1.901	3.30	-0.40	-0.69	0.2	clayey silt to silty clay	25
0.95	3.1	60.6	2.329	3.84	-0.43	-0.71	0.2	clayey silt to silty clay	31
1.00	3.3	65.7	2.398	3.65	-0.72	-1.10	0.2	clayey silt to silty clay	33
1.05	3.4	69.3	2.277	3.28	-0.73	-1.05	0.2	sandy silt to clayey silt	27
1.10	3.6	68.7	2.284	3.33	-0.72	-1.05	0.2	clayey silt to silty clay	31
1.15	3.8	50.3	2.323	4.62	-0.72	-1.43	0.2	clayey silt to silty clay	27
1.20	3.9	42.1	2.181	5.19	-0.72	-1.71	0.2	clay	43
1.25	4.1	36.9	1.978	5.36	-0.71	-1.94	0.2	silty clay to clay	30
1.30	4.3	55.3	1.921	3.47	-0.71	-1.28	0.2	clayey silt to silty clay	27
1.35	4.4	71.8	2.437	3.40	-0.71	-0.99	0.2	clayey silt to silty clay	27
1.40	4.6	36.9	2.199	5.96	-0.72	-1.95	0.2	silty clay to clay	30
1.45	4.8	25.5	1.741	6.83	-0.72	-2.81	0.2	clay	28
1.50	4.9	21.8	1.289	5.92	-0.71	-3.28	0.2	clay	22
1.55	5.1	18.5	1.204	6.50	-0.71	-3.84	0.2	clay	19
1.60	5.2	15.7	1.161	7.40	-0.71	-4.52	0.2	clay	16
1.65	5.4	12.8	1.211	9.44	-0.71	-5.53	0.2	clay	13
1.70	5.6	10.2	1.089	10.67	-0.71	-6.97	0.2	?	?
1.75	5.7	12.1	1.224	10.13	-0.69	-5.72	0.2	?	?
1.80	5.9	11.9	1.192	10.04	-0.69	-5.80	0.2	?	?
1.85	6.1	9.4	1.281	13.60	-0.69	-7.35	0.2	?	?
1.90	6.2	11.1	1.246	11.25	-0.69	-6.22	0.2	?	?
1.95	6.4	11.2	1.118	9.98	-0.69	-6.13	0.2	?	?
2.00	6.6	7.5	0.986	13.16	-0.69	-9.19	0.2	?	?

ᶜ ᶦᶜ interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	5.6	0.884	15.79	-0.69	-12.27	0.2	?	?
2.10	6.9	7.2	0.965	13.36	-0.69	-9.50	0.2	?	?
2.15	7.1	7.8	0.908	11.59	-0.69	-8.74	0.2	?	?
2.20	7.2	5.8	0.827	14.34	-0.68	-11.85	0.2	?	?
2.25	7.4	5.6	0.770	13.65	-0.68	-12.13	0.2	?	?
2.30	7.5	4.1	0.801	19.67	-0.68	-16.81	0.2	?	?
2.35	7.7	4.0	0.734	18.34	-0.68	-17.05	0.2	?	?
2.40	7.9	4.4	0.672	15.42	-0.68	-15.64	0.2	?	?
2.45	8.0	5.1	0.856	16.92	-0.68	-13.42	0.2	?	?
2.50	8.2	5.0	0.864	17.35	-0.68	-13.61	0.3	?	?
2.55	8.4	5.0	0.880	17.46	-0.67	-13.37	0.3	?	?
2.60	8.5	8.0	0.848	10.61	-0.67	-8.44	0.3	?	?
2.65	8.7	6.8	1.007	14.81	-0.67	-9.85	0.3	?	?
2.70	8.9	5.5	0.948	17.11	-0.67	-12.08	0.3	?	?
2.75	9.0	6.1	0.943	15.35	-0.65	-10.59	0.3	?	?
2.80	9.2	7.6	0.907	11.89	-0.65	-8.47	0.3	?	?
2.85	9.4	5.6	0.943	16.78	-0.64	-11.48	0.3	?	?
2.90	9.5	8.2	0.836	10.24	-0.64	-7.87	0.3	?	?
2.95	9.7	5.5	0.894	16.14	-0.64	-11.55	0.3	?	?
3.00	9.8	4.1	0.841	20.57	-0.62	-15.13	0.3	?	?
3.05	10.0	3.9	0.737	18.81	-0.62	-15.71	0.3	?	?
3.10	10.2	4.3	0.799	18.80	-0.62	-14.56	0.3	?	?
3.15	10.3	4.0	0.830	20.85	-0.62	-15.50	0.3	?	?
3.20	10.5	3.9	0.846	21.91	-0.62	-15.96	0.3	?	?
3.25	10.7	4.5	0.887	19.80	-0.61	-13.71	0.3	?	?
3.30	10.8	5.2	0.873	16.69	-0.61	-11.74	0.3	?	?
3.35	11.0	6.5	0.908	13.95	-0.61	-9.40	0.3	?	?
3.40	11.2	7.3	0.913	12.43	-0.61	-8.30	0.3	?	?
3.45	11.3	5.4	0.829	15.23	-0.61	-11.12	0.3	?	?
3.50	11.5	5.1	0.874	17.20	-0.61	-11.97	0.3	?	?
3.55	11.6	11.4	1.002	8.78	-0.60	-5.29	0.3	clay	11
3.60	11.8	15.9	1.054	6.61	-0.60	-3.79	0.3	clay	14
3.65	12.0	15.4	1.241	8.08	-0.60	-3.90	0.2	clay	15
3.70	12.1	13.5	1.211	8.96	-0.60	-4.43	0.2	clay	14
3.75	12.3	14.1	1.377	9.75	-0.56	-3.93	0.2	clay	15
3.80	12.5	17.7	1.350	7.62	-0.56	-3.14	0.2	clay	15
3.85	12.6	12.2	1.341	11.01	-0.55	-4.54	0.2	clay	14
3.90	12.8	11.1	1.234	11.14	-0.55	-4.93	0.2	?	?
3.95	13.0	11.9	1.182	9.96	-0.54	-4.58	0.2	?	?
4.00	13.1	11.8	1.138	9.62	-0.54	-4.57	0.2	clay	12
4.05	13.3	12.4	1.162	9.35	-0.54	-4.31	0.2	clay	13
4.10	13.5	13.5	1.294	9.56	-0.53	-3.94	0.2	clay	14
4.15	13.6	17.1	1.319	7.70	-0.52	-3.06	0.2	clay	16
4.20	13.8	17.8	1.471	8.27	-0.52	-2.90	0.2	clay	18
4.25	13.9	19.7	1.599	8.13	-0.51	-2.59	0.3	clay	22
4.30	14.1	28.1	1.990	7.09	-0.51	-1.80	0.3	clay	31
4.35	14.3	45.3	2.217	4.89	-0.51	-1.12	0.3	clay	40
4.40	14.4	47.0	2.529	5.39	-0.50	-1.06	0.3	clay	46
4.45	14.6	46.4	2.305	4.97	-0.49	-1.05	0.3	clay	48
4.50	14.8	51.1	2.586	5.06	-0.47	-0.92	0.3	clayey silt to silty clay	28

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

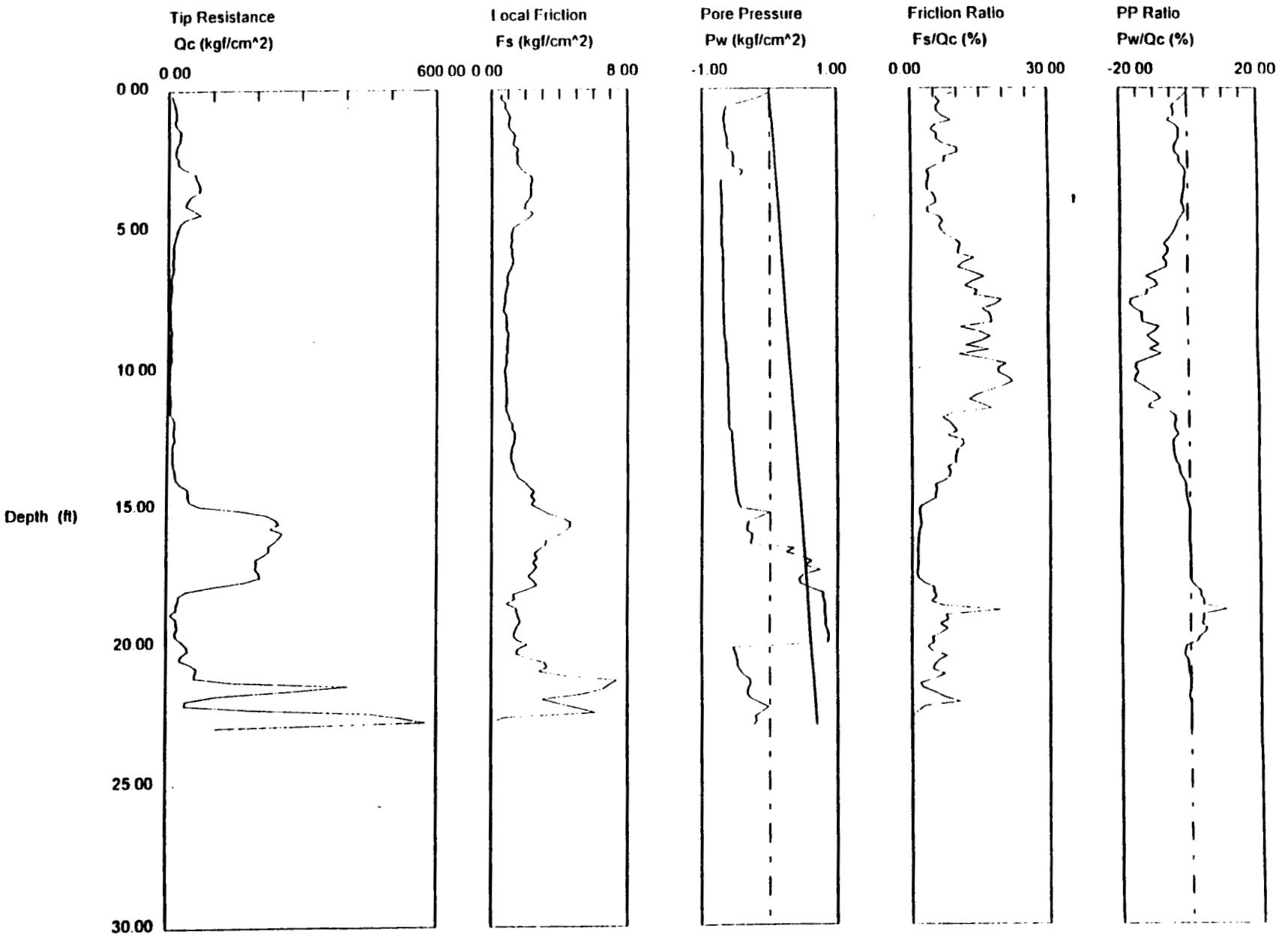
DEPTH ers	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	71.3	2.340	3.28	-0.46	-0.65	0.3	sandy silt to clayey silt	38
4.60	15.1	165.5	2.855	1.73	-0.43	-0.26	0.5	silty sand to sandy silt	51
4.65	15.3	222.0	3.332	1.50	0.00	0.00	0.5	sand to silty sand	52
4.70	15.4	242.5	4.191	1.73	-0.15	-0.06	0.5	sand to silty sand	59
4.75	15.6	249.4	4.647	1.86	-0.31	-0.12	0.5	sand to silty sand	60
4.80	15.7	230.2	4.603	2.00	-0.33	-0.14	0.5	sand to silty sand	61
4.85	15.9	257.7	4.318	1.68	-0.34	-0.13	0.5	sand to silty sand	62
4.90	16.1	250.3	3.854	1.54	-0.25	-0.10	0.7	sand to silty sand	62
4.95	16.2	240.9	3.219	1.34	-0.27	-0.11	0.7	sand to silty sand	60
5.00	16.4	226.4	3.167	1.40	-0.29	-0.13	0.7	sand	46
5.05	16.6	228.5	2.795	1.22	0.36	0.16	0.8	sand	45
5.10	16.7	216.0	2.508	1.16	0.24	0.11	0.8	sand	43
5.15	16.9	198.8	2.707	1.36	0.48	0.24	0.8	sand	41
5.20	17.1	200.6	2.421	1.21	0.62	0.31	0.8	sand to silty sand	50
5.25	17.2	197.4	2.681	1.36	0.52	0.26	0.8	sand	40
5.30	17.4	205.6	2.429	1.18	0.74	0.36	0.8	sand	41
5.35	17.6	208.8	2.146	1.03	0.49	0.24	0.8	sand	39
5.40	17.7	174.0	2.470	1.42	0.43	0.25	1.0	sand to silty sand	40
5.45	17.9	101.6	2.672	2.63	0.45	0.44	1.1	silty sand to sandy silt	36
5.50	18.0	44.6	2.090	4.69	0.60	1.35	1.1	clayey silt to silty clay	29
5.55	18.2	26.7	1.264	4.74	0.78	2.93	1.1	clay	32
5.60	18.4	25.7	1.364	5.30	0.78	3.03	1.2	clay	25
5.65	18.5	21.3	0.864	4.06	0.81	3.82	1.2	clay	23
5.70	18.7	21.6	1.438	6.65	0.81	3.75	1.3	clay	17
75	18.9	7.7	1.497	19.35	0.81	10.43	1.4	clay	17
5.80	19.0	21.8	1.598	7.32	0.82	3.76	1.4	clay	17
5.85	19.2	21.6	1.707	7.89	0.83	3.84	1.4	clay	23
5.90	19.4	25.4	1.525	6.00	0.82	3.22	1.4	clay	22
5.95	19.5	18.0	1.393	7.72	0.85	4.69	1.4	clay	21
6.00	19.7	20.8	1.306	6.27	0.87	4.17	1.5	clay	24
6.05	19.8	34.3	1.502	4.38	0.88	2.55	1.5	clay	33
6.10	20.0	44.4	2.133	4.81	0.85	1.92	1.5	clayey silt to silty clay	21
6.15	20.2	48.1	1.599	3.32	-0.54	-1.12	1.5	clayey silt to silty clay	21
6.20	20.3	33.2	1.459	4.40	-0.51	-1.54	1.5	silty clay to clay	24
6.25	20.5	27.8	2.124	7.63	-0.49	-1.76	1.5	clay	38
6.30	20.7	53.7	3.118	5.81	-0.48	-0.89	1.5	clay	50
6.35	20.8	67.6	3.307	4.90	-0.47	-0.70	1.5	very stiff fine grained (*)	62
6.40	21.0	63.6	2.790	4.39	-0.44	-0.69	1.5	very stiff fine grained (*)	64
6.45	21.2	60.6	4.313	7.12	-0.39	-0.64	1.5	very stiff fine grained (*)	90
6.50	21.3	146.5	7.359	5.02	-0.29	-0.20	1.5	silty sand to sandy silt	68
6.55	21.5	405.2	6.912	1.71	-0.28	-0.07	1.5	silty sand to sandy silt	92
6.60	21.7	275.9	6.515	2.36	-0.32	-0.12	1.4	silty sand to sandy silt	88
6.65	21.8	109.8	5.325	4.85	-0.34	-0.31	1.4	sandy silt to clayey silt	57
6.70	22.0	43.3	2.981	6.89	-0.29	-0.68	1.5	very stiff fine grained (*)	64
6.75	22.1	39.3	4.027	10.26	-0.16	-0.40	1.5	very stiff fine grained (*)	90
6.80	22.3	188.9	5.134	2.72	-0.02	-0.01	1.4	silty sand to sandy silt	75
6.85	22.5	450.2	6.163	1.37	-0.11	-0.02	1.3	sand	77
6.90	22.6	518.7	0.764	0.15	-0.22	-0.04	1.2	?	?
6.95	22.8	576.5	?	?	-0.19	-0.03	1.2	?	?
00	23.0	108.3	?	?	-0.24	-0.22	1.2	?	?

: il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV LMM
Sounding: CPT679
Cone Used: 4-CHANNEL

CPT Date: 03-12-98 15:19
Location: CPTU-720-018A
Job No: 1507-000



Maximum Depth = 22.97 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT667 03-05-98 10:06

'ERATOR : GJV-LMM LOCATION : CPTU-01-~~0518~~ 151B

ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19841

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
1.10	3.6	2.3	0.168	7.36	-0.21	-9.34	0.0	?	?
1.15	3.8	3.3	0.186	5.65	-0.07	-2.24	0.0	clay	3
1.20	3.9	3.9	0.209	5.38	0.11	2.94	0.0	clay	4
1.25	4.1	4.5	0.294	6.53	0.65	14.38	0.0	clay	5
1.30	4.3	5.7	0.362	6.37	0.79	14.00	0.0	clay	5
1.35	4.4	5.8	0.467	8.02	0.80	13.76	0.0	clay	6
1.40	4.6	5.2	0.465	8.89	0.82	15.77	0.0	clay	5
1.45	4.8	5.2	0.366	7.04	0.82	15.74	0.0	organic material	5
1.50	4.9	4.7	0.415	8.89	0.76	16.21	0.0	clay	5
1.55	5.1	6.3	0.366	5.80	0.68	10.76	0.0	clay	6
1.60	5.2	8.5	0.360	4.23	0.68	8.03	0.0	clay	8
1.65	5.4	7.9	0.292	3.70	0.57	7.16	0.0	clay	8
1.70	5.6	6.9	0.290	4.20	0.57	8.32	0.0	clay	7
1.75	5.7	6.1	0.306	5.01	0.61	10.00	0.0	clay	7
1.80	5.9	6.9	0.312	4.53	0.62	9.00	0.0	clay	7
1.85	6.1	7.3	0.505	6.88	0.66	8.94	0.0	clay	8
1.90	6.2	10.5	0.468	4.45	1.81	17.22	0.0	clay	11
1.95	6.4	14.5	0.468	3.22	1.71	11.77	0.0	silty clay to clay	9
2.00	6.6	17.5	0.470	2.68	1.72	9.82	0.0	clayey silt to silty clay	8
2.05	6.7	17.5	0.545	3.12	1.51	8.65	0.0	clayey silt to silty clay	8
2.10	6.9	14.3	0.574	4.03	1.22	8.54	0.0	silty clay to clay	10
2.15	7.1	12.6	0.567	4.50	1.14	9.01	0.0	clay	13
2.20	7.2	11.4	0.566	4.97	1.13	9.89	0.0	clay	12
2.25	7.4	12.9	0.698	5.42	1.11	8.65	0.0	clay	12
2.30	7.5	13.2	0.754	5.71	1.13	8.55	0.0	clay	15
2.35	7.7	18.4	0.906	4.93	1.17	6.37	0.0	clay	18
2.40	7.9	23.0	0.918	3.98	1.19	5.18	0.0	silty clay to clay	14
2.45	8.0	23.2	0.662	2.86	1.22	5.28	0.0	clayey silt to silty clay	12
2.50	8.2	23.8	0.504	2.12	1.26	5.31	0.0	clayey silt to silty clay	13
2.55	8.4	28.3	0.768	2.72	1.28	4.54	0.0	sandy silt to clayey silt	11
2.60	8.5	26.8	0.697	2.60	1.29	4.81	0.0	sandy silt to clayey silt	11
2.65	8.7	25.5	0.578	2.27	1.43	5.60	0.0	sandy silt to clayey silt	11
2.70	8.9	28.6	0.608	2.13	1.44	5.03	0.0	sandy silt to clayey silt	11
2.75	9.0	29.8	0.573	1.92	1.44	4.84	0.0	sandy silt to clayey silt	12
2.80	9.2	30.8	0.620	2.01	1.46	4.73	0.0	sandy silt to clayey silt	12
2.85	9.4	31.5	0.621	1.97	1.47	4.67	0.0	sandy silt to clayey silt	12
2.90	9.5	30.5	0.591	1.94	1.48	4.85	0.0	sandy silt to clayey silt	12
2.95	9.7	28.5	0.618	2.17	1.50	5.27	0.0	sandy silt to clayey silt	12
3.00	9.8	31.1	0.700	2.25	1.51	4.86	0.0	sandy silt to clayey silt	12
3.05	10.0	32.0	0.734	2.30	1.52	4.76	0.0	sandy silt to clayey silt	13

! interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
3.10	10.2	32.9	0.764	2.32	1.52	4.61	0.0	clayey silt to silty clay	16
3.15	10.3	30.0	1.209	4.04	1.54	5.13	0.0	clayey silt to silty clay	17
3.20	10.5	38.4	1.289	3.36	1.56	4.06	0.0	clayey silt to silty clay	17
3.25	10.7	36.4	1.147	3.15	1.56	4.29	0.0	clayey silt to silty clay	19
3.30	10.8	37.5	0.950	2.54	1.59	4.25	0.0	sandy silt to clayey silt	15
3.35	11.0	38.4	0.668	1.74	1.63	4.24	0.0	sandy silt to clayey silt	15
3.40	11.2	35.0	0.617	-1.77	1.64	4.70	0.0	silty sand to sandy silt	12
3.45	11.3	37.4	0.444	1.19	1.65	4.41	0.0	sandy silt to clayey silt	14
3.50	11.5	31.1	0.765	2.46	1.68	5.40	0.0	sandy silt to clayey silt	14
3.55	11.6	34.8	0.960	2.76	1.67	4.81	0.0	sandy silt to clayey silt	13
3.60	11.8	28.4	0.858	3.02	1.68	5.92	0.0	clayey silt to silty clay	14
3.65	12.0	21.2	0.799	3.77	1.71	8.06	0.0	clayey silt to silty clay	12
3.70	12.1	21.8	0.752	3.45	1.73	7.91	0.0	clayey silt to silty clay	11
3.75	12.3	24.1	0.701	2.90	1.75	7.24	0.0	clayey silt to silty clay	11
3.80	12.5	21.8	0.618	2.83	1.75	8.02	0.0	clayey silt to silty clay	11
3.85	12.6	19.9	0.574	2.89	1.75	8.84	0.0	clayey silt to silty clay	10
3.90	12.8	18.2	0.579	3.18	1.77	9.71	0.0	clayey silt to silty clay	9
3.95	13.0	18.2	0.591	3.24	1.77	9.68	0.0	clayey silt to silty clay	9
4.00	13.1	17.3	0.576	3.34	1.77	10.23	0.0	clayey silt to silty clay	9
4.05	13.3	19.2	0.541	2.82	1.78	9.25	0.0	clayey silt to silty clay	9
4.10	13.5	19.6	0.514	2.62	1.78	9.09	0.0	clayey silt to silty clay	10
4.15	13.6	21.2	0.505	2.39	1.80	8.49	0.0	clayey silt to silty clay	10
4.20	13.8	21.2	0.485	2.29	1.83	8.64	0.0	sandy silt to clayey silt	9
4.25	13.9	25.1	0.551	2.19	1.85	7.37	0.0	sandy silt to clayey silt	10
4.30	14.1	27.8	0.623	2.24	1.86	6.68	0.0	sandy silt to clayey silt	11
4.35	14.3	29.3	0.802	2.74	1.85	6.32	0.0	silty sand to sandy silt	15
4.40	14.4	79.4	1.043	1.31	1.64	2.06	0.0	silty sand to sandy silt	24
4.45	14.6	108.3	1.589	1.47	0.81	0.75	0.0	sand to silty sand	28
4.50	14.8	153.6	2.546	1.66	0.43	0.28	0.0	sand to silty sand	35
4.55	14.9	162.6	2.858	1.76	0.53	0.33	0.1	sand to silty sand	40
4.60	15.1	163.8	2.980	1.82	0.44	0.27	0.1	silty sand to sandy silt	51
4.65	15.3	134.6	2.682	1.99	0.17	0.13	0.1	silty sand to sandy silt	47
4.70	15.4	121.4	2.317	1.91	0.11	0.09	0.1	silty sand to sandy silt	42
4.75	15.6	121.7	2.317	1.90	-0.05	-0.04	0.2	silty sand to sandy silt	36
4.80	15.7	78.0	1.852	2.37	-0.38	-0.49	0.2	silty sand to sandy silt	27
4.85	15.9	44.8	1.469	3.28	-0.38	-0.86	0.2	sandy silt to clayey silt	23
4.90	16.1	48.7	1.187	2.44	-0.37	-0.75	0.2	sandy silt to clayey silt	17
4.95	16.2	35.5	0.909	2.57	-0.35	-1.00	0.3	sandy silt to clayey silt	14
5.00	16.4	21.2	0.809	3.81	-0.35	-1.64	0.3	clayey silt to silty clay	13
5.05	16.6	19.1	0.517	2.70	-0.34	-1.75	0.3	clayey silt to silty clay	10
5.10	16.7	19.9	0.762	3.84	-0.33	-1.65	0.3	clayey silt to silty clay	12
5.15	16.9	34.8	0.846	2.43	-0.32	-0.93	0.3	sandy silt to clayey silt	12
5.20	17.1	37.2	0.930	2.50	-0.34	-0.91	0.3	sandy silt to clayey silt	23
5.25	17.2	103.5	2.014	1.95	-0.29	-0.28	0.4	sand to silty sand	28
5.30	17.4	196.8	1.694	0.86	-0.27	-0.14	0.5	sand	39
5.35	17.6	284.3	2.964	1.04	-0.14	-0.05	0.5	sand	49
5.40	17.7	257.9	3.238	1.26	-0.22	-0.09	0.6	sand to silty sand	59
5.45	17.9	167.4	3.512	2.10	-0.18	-0.11	0.6	sand to silty sand	46
5.50	18.0	121.4	2.478	2.04	0.00	0.00	0.6	silty sand to sandy silt	44
5.55	18.2	105.9	1.150	1.09	0.01	0.01	0.6	sand to silty sand	27

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ers	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
5.60	18.4	95.2	1.241	1.30	0.08	0.09	0.6	sand	28
5.65	18.5	220.1	-0.155	-0.07	0.08	0.04	0.6	sand	39
5.70	18.7	262.8	1.040	0.40	0.14	0.05	0.7	sand	39
5.75	18.9	102.0	1.239	1.21	0.25	0.24	0.7	sand	37
5.80	19.0	195.2	2.581	1.32	0.34	0.18	0.7	sand to silty sand	37
5.85	19.2	147.5	1.523	1.03	0.18	0.12	0.7	sand	33
5.90	19.4	147.0	0.359	-0.24	0.31	0.21	0.7	sand	36
5.95	19.5	247.6	1.324	0.53	0.24	0.10	0.6	sand	34
6.00	19.7	111.1	1.776	1.60	0.20	0.18	0.6	sand	37
6.05	19.8	203.7	1.541	0.76	0.22	0.11	0.6	sand	40
6.10	20.0	284.0	1.854	0.65	0.06	0.02	0.5	sand	44
6.15	20.2	165.4	1.923	1.16	-0.16	-0.10	0.5	sand	34
6.20	20.3	68.0	0.977	1.44	0.44	0.65	0.5	sand to silty sand	22
6.25	20.5	29.9	0.240	0.80	1.06	3.54	0.5	silty sand to sandy silt	14
6.30	20.7	27.9	0.161	0.58	1.09	3.91	0.5	silty sand to sandy silt	10
6.35	20.8	30.4	0.262	0.86	1.12	3.67	0.5	silty sand to sandy silt	13
6.40	21.0	61.4	1.047	1.71	1.15	1.87	0.5	sandy silt to clayey silt	19
6.45	21.2	51.3	2.817	5.49	0.87	1.70	0.5	clayey silt to silty clay	36
6.50	21.3	104.7	4.141	3.96	0.91	0.87	0.5	clayey silt to silty clay	44
6.55	21.5	105.8	4.125	3.90	0.16	0.15	0.5	very stiff fine grained (*)	106
6.60	21.7	107.3	5.583	5.20	-0.25	-0.24	0.5	very stiff fine grained (*)	107
6.65	21.8	106.6	6.195	5.81	-0.27	-0.25	0.4	very stiff fine grained (*)	118
6.70	22.0	139.8	7.408	5.30	-0.38	-0.27	0.4	very stiff fine grained (*)	134
6.75	22.1	156.8	7.472	4.76	-0.46	-0.30	0.4	sand to clayey sand (*)	78
.80	22.3	171.1	1.912	1.12	-0.44	-0.26	0.4	sand to silty sand	56
6.85	22.5	347.3	2.254	0.65	-0.28	-0.08	0.7	sand	45
6.90	22.6	153.4	1.740	1.13	-0.29	-0.19	0.7	sand to silty sand	57
6.95	22.8	187.9	5.527	2.94	-0.29	-0.16	0.7	silty sand to sandy silt	57
7.00	23.0	169.7	4.529	2.67	-0.28	-0.17	0.7	silty sand to sandy silt	64
7.05	23.1	220.1	2.527	1.15	-0.32	-0.14	0.7	silty sand to sandy silt	47
7.10	23.3	36.8	1.395	3.79	-0.33	-0.91	0.7	silty sand to sandy silt	32
7.15	23.5	35.2	1.085	3.08	-0.33	-0.94	0.8	clayey silt to silty clay	17
7.20	23.6	30.4	1.109	3.64	-0.33	-1.07	0.8	clayey silt to silty clay	16
7.25	23.8	28.3	1.184	4.18	-0.26	-0.91	0.8	silty clay to clay	20
7.30	23.9	29.5	1.187	4.03	-0.25	-0.85	0.8	silty clay to clay	18
7.35	24.1	24.8	1.190	4.80	-0.24	-0.98	0.8	silty clay to clay	18
7.40	24.3	27.2	1.085	3.99	-0.23	-0.87	0.7	silty clay to clay	18
7.45	24.4	28.3	1.110	3.93	-0.22	-0.79	0.7	clayey silt to silty clay	15
7.50	24.6	36.1	1.080	2.99	-0.22	-0.59	0.7	clayey silt to silty clay	17
7.55	24.8	35.0	1.075	3.07	-0.21	-0.60	0.7	clayey silt to silty clay	17
7.60	24.9	33.6	1.115	3.32	-0.20	-0.61	0.6	clayey silt to silty clay	17
7.65	25.1	32.9	1.060	3.23	-0.20	-0.61	0.5	clayey silt to silty clay	16
7.70	25.3	29.6	0.923	3.12	-0.20	-0.67	0.5	clayey silt to silty clay	15
7.75	25.4	29.7	0.854	2.87	-0.19	-0.64	0.4	clayey silt to silty clay	15
7.80	25.6	31.4	1.028	3.28	-0.18	-0.56	0.4	clayey silt to silty clay	16
7.85	25.8	34.2	1.344	3.93	-0.17	-0.49	0.3	clayey silt to silty clay	17
7.90	25.9	35.2	1.215	3.45	-0.16	-0.46	0.3	clayey silt to silty clay	17
7.95	26.1	34.8	1.128	3.24	-0.15	-0.42	0.3	clayey silt to silty clay	18
8.00	26.2	35.6	1.019	2.86	-0.14	-0.38	0.3	clayey silt to silty clay	17
8.05	26.4	31.7	1.062	3.35	-0.13	-0.42	0.3	clayey silt to silty clay	16

..il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
8.10	26.6	30.5	1.053	3.46	-0.11	-0.36	0.3	clayey silt to silty clay	15
8.15	26.7	29.0	1.128	3.89	-0.10	-0.35	0.3	clayey silt to silty clay	15
8.20	26.9	29.8	1.169	3.92	-0.10	-0.33	0.3	silty clay to clay	19
8.25	27.1	28.0	1.235	4.40	-0.10	-0.35	0.3	silty clay to clay	20
8.30	27.2	31.8	1.306	4.11	-0.10	-0.31	0.3	silty clay to clay	21
8.35	27.4	34.3	1.362	3.97	-0.09	-0.27	0.3	silty clay to clay	22
8.40	27.6	34.0	1.330	3.91	-0.09	-0.26	0.3	clayey silt to silty clay	17
8.45	27.7	32.2	1.245	3.86	-0.09	-0.26	0.2	clayey silt to silty clay	16
8.50	27.9	31.7	1.198	3.78	-0.08	-0.26	0.2	clayey silt to silty clay	16
8.55	28.1	29.8	1.123	3.77	-0.08	-0.28	0.2	silty clay to clay	19
8.60	28.2	25.4	1.056	4.15	-0.09	-0.33	0.2	silty clay to clay	18
8.65	28.4	25.1	1.064	4.23	-0.09	-0.34	0.2	silty clay to clay	16
8.70	28.5	22.9	1.014	4.44	-0.08	-0.37	0.2	silty clay to clay	16
8.75	28.7	22.3	0.847	3.79	-0.07	-0.33	0.2	silty clay to clay	15
8.80	28.9	21.6	0.831	3.84	-0.07	-0.31	0.2	silty clay to clay	14
8.85	29.0	19.1	0.831	4.34	-0.07	-0.36	0.1	silty clay to clay	13
8.90	29.2	18.9	0.756	4.01	-0.07	-0.37	0.1	silty clay to clay	13
8.95	29.4	20.5	0.900	4.38	-0.06	-0.32	0.1	silty clay to clay	14
9.00	29.5	25.1	0.996	3.96	-0.05	-0.18	0.1	silty clay to clay	16
9.05	29.7	24.5	1.056	4.32	-0.03	-0.13	0.1	silty clay to clay	16
9.10	29.9	24.3	0.981	4.04	-0.03	-0.11	0.1	silty clay to clay	16
9.15	30.0	24.1	0.952	3.94	-0.02	-0.08	0.1	silty clay to clay	16
9.20	30.2	25.6	0.953	3.72	-0.02	-0.06	0.1	clayey silt to silty clay	13
9.25	30.3	28.4	0.967	3.40	-0.01	-0.05	0.1	silty clay to clay	18
9.30	30.5	25.5	1.075	4.22	-0.01	-0.03	0.1	silty clay to clay	18
9.35	30.7	29.2	1.128	3.87	0.01	0.03	0.1	silty clay to clay	19
9.40	30.8	31.1	1.172	3.77	0.01	0.04	0.1	silty clay to clay	20
9.45	31.0	28.8	1.235	4.29	0.01	0.05	0.1	clayey silt to silty clay	16
9.50	31.2	33.1	1.119	3.38	0.03	0.08	0.0	silty clay to clay	19
9.55	31.3	23.2	1.000	4.31	0.04	0.16	0.0	silty clay to clay	18
9.60	31.5	23.3	1.025	4.40	0.04	0.18	0.0	clay	24
9.65	31.7	26.1	1.260	4.84	0.07	0.25	0.0	clay	26
9.70	31.8	28.1	1.499	5.33	0.07	0.25	0.0	clay	28
9.75	32.0	29.5	1.542	5.24	0.08	0.27	0.0	clay	29
9.80	32.2	29.8	1.717	5.77	0.08	0.28	0.0	clay	31
9.85	32.3	32.5	1.819	5.60	0.13	0.41	0.0	clay	32
9.90	32.5	33.1	1.873	5.65	0.14	0.43	0.1	clay	33
9.95	32.6	32.2	1.819	5.65	0.15	0.47	0.0	clay	32
10.00	32.8	30.3	1.653	5.45	0.15	0.50	0.0	clay	31
10.05	33.0	31.4	1.544	4.92	0.16	0.51	0.0	clay	31
10.10	33.1	31.8	1.680	5.28	0.17	0.53	0.0	clay	31
10.15	33.3	31.0	1.398	4.52	0.17	0.56	0.0	silty clay to clay	21
10.20	33.5	32.8	1.235	3.77	0.17	0.53	0.1	clayey silt to silty clay	16
10.25	33.6	33.1	1.122	3.39	0.19	0.57	0.1	clayey silt to silty clay	16
10.30	33.8	30.1	1.122	3.73	0.21	0.70	0.1	clayey silt to silty clay	16
10.35	34.0	31.3	1.201	3.84	0.22	0.70	0.1	clayey silt to silty clay	16
10.40	34.1	33.8	1.311	3.88	0.27	0.80	0.1	clayey silt to silty clay	16
10.45	34.3	32.7	1.300	3.98	0.28	0.86	0.1	clayey silt to silty clay	16
10.50	34.4	32.0	1.259	3.94	0.29	0.91	0.1	silty clay to clay	21
10.55	34.6	30.5	1.202	3.94	0.29	0.96	0.1	silty clay to clay	20

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
10.60	34.8	29.3	1.152	3.93	0.30	1.03	0.1	silty clay to clay	19
10.65	34.9	27.2	1.114	4.10	0.30	1.12	0.1	silty clay to clay	19
10.70	35.1	26.8	0.973	3.63	0.30	1.13	0.1	clayey silt to silty clay	13
10.75	35.3	26.7	0.919	3.45	0.31	1.16	0.1	clayey silt to silty clay	13
10.80	35.4	24.5	0.615	2.51	0.33	1.34	0.1	clayey silt to silty clay	13
10.85	35.6	23.8	0.920	3.86	0.33	1.38	0.1	silty clay to clay	14
10.90	35.8	16.1	0.933	-5.81	0.34	2.10	0.1	clay	21
10.95	35.9	22.2	0.897	4.04	0.35	1.58	0.1	clay	20
11.00	36.1	21.2	0.766	3.62	0.35	1.66	0.1	silty clay to clay	14
11.05	36.3	20.5	0.678	3.30	0.36	1.74	0.1	silty clay to clay	14
11.10	36.4	19.5	1.085	5.58	0.38	1.94	0.1	silty clay to clay	13
11.15	36.6	20.4	0.405	1.99	0.39	1.89	0.1	silty clay to clay	18
11.20	36.7	42.7	2.099	4.91	0.48	1.13	0.1	clayey silt to silty clay	19
11.25	36.9	49.7	1.918	3.86	0.62	1.25	0.1	sandy silt to clayey silt	22
11.30	37.1	74.8	0.875	1.17	0.63	0.85	0.1	sandy silt to clayey silt	22
11.35	37.2	38.8	0.657	1.69	0.72	1.85	0.1	silty sand to sandy silt	15
11.40	37.4	24.8	0.448	1.80	0.68	2.73	0.1	sandy silt to clayey silt	12
11.45	37.6	25.8	0.840	3.25	0.63	2.42	0.1	clayey silt to silty clay	12
11.50	37.7	20.9	0.765	3.67	0.57	2.75	0.1	clayey silt to silty clay	13
11.55	37.9	31.7	0.809	2.56	0.61	1.92	0.1	clayey silt to silty clay	13
11.60	38.1	25.8	1.088	4.21	0.63	2.45	0.1	clayey silt to silty clay	15
11.65	38.2	29.8	1.380	4.63	0.67	2.24	0.1	silty clay to clay	20
11.70	38.4	35.5	1.490	4.20	0.70	1.99	0.1	silty clay to clay	22
11.75	38.5	35.8	1.345	3.76	0.72	2.02	0.1	clayey silt to silty clay	18
11.80	38.7	38.2	1.325	3.47	0.75	1.98	0.1	clayey silt to silty clay	21
11.85	38.9	49.8	1.503	3.02	0.81	1.62	0.1	clayey silt to silty clay	22
11.90	39.0	43.4	1.526	3.52	0.82	1.89	0.1	sandy silt to clayey silt	17
11.95	39.2	37.6	0.761	2.02	0.77	2.05	0.1	sandy silt to clayey silt	15
12.00	39.4	30.8	0.834	2.70	0.75	2.45	0.1	sandy silt to clayey silt	12
12.05	39.5	23.5	1.006	4.27	0.75	3.17	0.1	silty clay to clay	17
12.10	39.7	22.3	1.078	4.82	0.74	3.33	0.1	clay	23
12.15	39.9	23.5	1.083	4.61	0.77	3.27	0.1	clay	23
12.20	40.0	22.9	1.112	4.86	0.77	3.38	0.1	clay	23
12.25	40.2	22.5	1.152	5.11	0.77	3.42	0.1	clay	22
12.30	40.4	21.2	0.809	3.82	0.77	3.64	0.1	clay	21
12.35	40.5	19.0	0.779	4.11	0.78	4.13	0.1	silty clay to clay	13
12.40	40.7	19.2	0.785	4.08	0.80	4.19	0.1	silty clay to clay	14
12.45	40.8	23.9	0.889	3.72	0.83	3.47	0.1	silty clay to clay	14
12.50	41.0	22.0	0.840	3.83	0.84	3.83	0.1	clay	22
12.55	41.2	20.9	1.533	7.34	0.94	4.51	0.1	clay	27
12.60	41.3	37.1	2.012	5.42	1.01	2.73	0.1	clayey silt to silty clay	19
12.65	41.5	57.0	0.384	0.67	1.03	1.80	0.1	silty clay to clay	28
12.70	41.7	29.9	2.772	9.27	1.02	3.42	0.1	clay	42
12.75	41.8	38.0	4.017	10.58	1.22	3.22	0.1	clay	50
12.80	42.0	82.2	6.549	7.96	1.29	1.57	0.1	very stiff fine grained (*)	121
12.85	42.2	243.5	4.512	1.85	0.41	0.17	0.2	silty sand to sandy silt	70
12.90	42.3	299.9	3.567	1.19	0.59	0.20	0.2	sand	60
12.95	42.5	359.7	2.445	0.68	0.37	0.10	0.3	sand	61
13.00	42.7	248.9	2.486	1.00	0.36	0.14	0.2	sand	57
13.05	42.8	253.4	3.189	1.26	0.38	0.15	0.2	sand	50

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

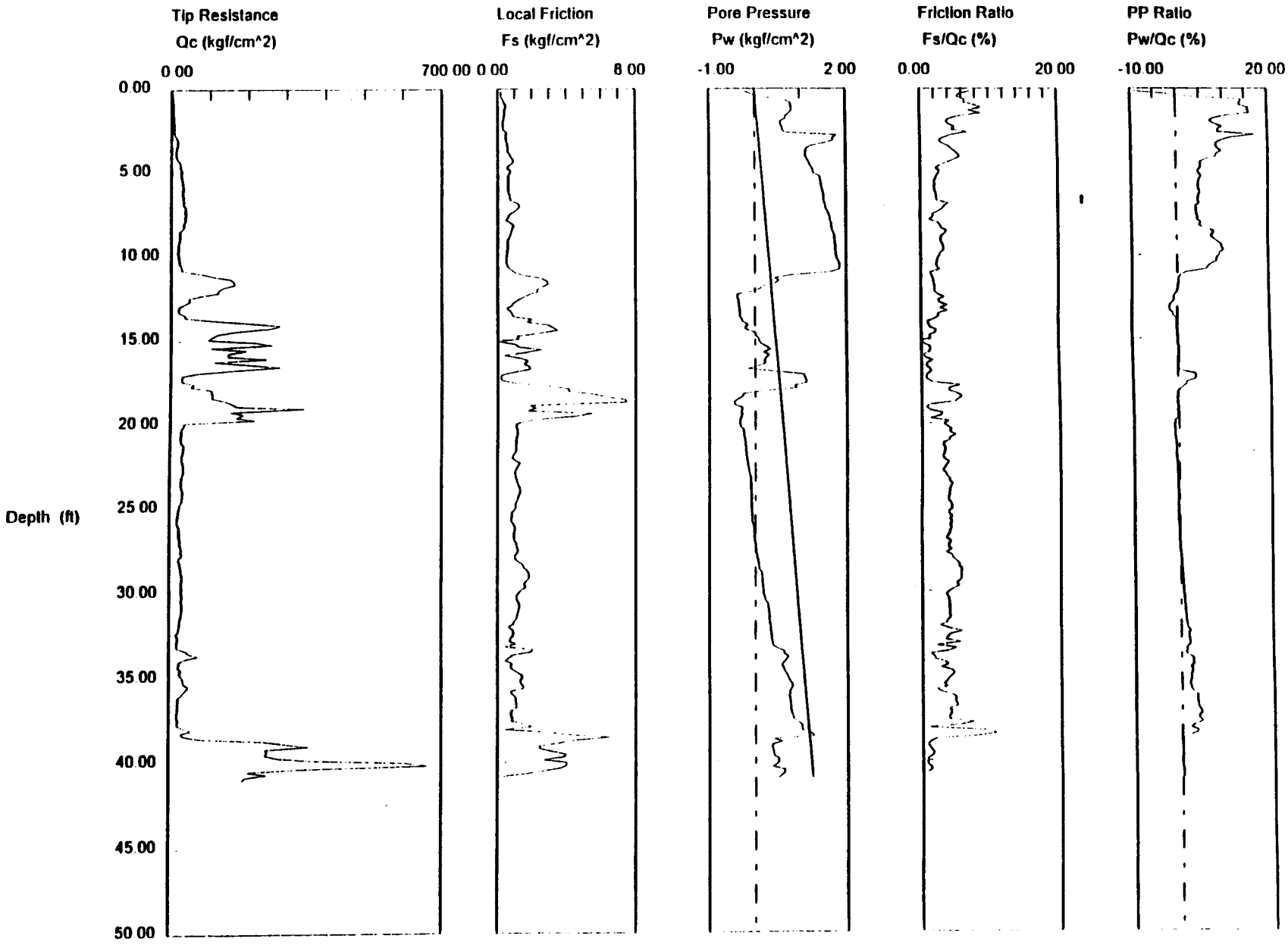
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
13.10	43.0	247.6	3.991	1.61	0.40	0.16	0.2	sand to silty sand	65
13.15	43.1	276.8	3.858	1.39	0.40	0.15	0.2	sand	59
13.20	43.3	365.3	2.682	0.73	0.50	0.14	0.2	gravelly sand to sand	70
13.25	43.5	608.9	4.029	0.66	0.51	0.08	0.2	gravelly sand to sand	91
13.30	43.6	666.2	4.027	0.60	0.48	0.07	0.2	gravelly sand to sand	90
13.35	43.8	336.6	3.715	1.10	0.37	0.11	0.2	gravelly sand to sand	67
13.40	44.0	202.7	2.691	1.33	0.65	0.32	0.2	sand	53
13.45	44.1	251.0	1.666	0.66	0.64	0.25	0.2	?	?
13.50	44.3	193.6	?	?	0.58	0.30	0.2	?	?
13.55	44.5	188.8	?	?	0.50	0.27	0.2	?	?

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. W ght Inc.

Operator: GJV-LMM
Sounding: CPT667
Cone Used: 4-CHANNEL

CPT Date: 03-05-98 10:06
Location: CPTU-01-~~051A~~151A
Job No.: 1507-000



Maximum Depth = 41.01 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT668 03-09-98 12:32

PERATOR : GJV-LMM LOCATION : CPTU-01-~~063~~ 163

CONE ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	9.4	0.140	1.48	0.00	0.1	?	?
0.10	0.3	8.6	0.200	2.31	-0.07	0.1	clayey silt to silty clay	5
0.15	0.5	14.0	0.230	1.65	-0.41	0.1	clayey silt to silty clay	7
0.20	0.7	17.0	0.340	2.00	-0.47	0.1	clayey silt to silty clay	9
0.25	0.8	20.9	0.420	2.01	-0.49	0.1	sandy silt to clayey silt	8
0.30	1.0	22.1	0.460	2.08	-0.43	0.1	sandy silt to clayey silt	9
0.35	1.1	23.5	0.450	1.92	-0.39	0.1	sandy silt to clayey silt	11
0.40	1.3	35.6	0.480	1.35	-0.34	0.1	sandy silt to clayey silt	12
0.45	1.5	28.8	0.650	2.25	-0.58	0.1	sandy silt to clayey silt	11
0.50	1.6	15.9	0.660	4.14	-0.68	0.1	clayey silt to silty clay	10
0.55	1.8	13.8	0.700	5.09	-0.59	0.1	clay	15
0.60	2.0	16.3	0.650	3.99	-0.56	0.1	clay	15
0.65	2.1	14.8	0.600	4.06	-0.56	0.1	silty clay to clay	10
0.70	2.3	14.9	0.490	3.30	-0.53	0.1	silty clay to clay	10
0.75	2.5	15.8	0.540	3.42	-0.50	0.1	clayey silt to silty clay	8
0.80	2.6	19.7	0.580	2.95	-0.49	0.1	clayey silt to silty clay	9
0.85	2.8	16.4	0.560	3.42	-0.54	0.1	silty clay to clay	11
0.90	3.0	12.9	0.520	4.03	-0.49	0.1	silty clay to clay	9
0.95	3.1	11.4	0.380	3.32	-0.49	0.1	silty clay to clay	9
1.00	3.3	15.0	0.310	2.07	-0.47	0.1	clayey silt to silty clay	7
1.05	3.4	14.6	0.340	2.34	-0.46	0.1	clayey silt to silty clay	7
1.10	3.6	14.3	0.460	3.22	-0.44	0.1	clayey silt to silty clay	8
1.15	3.8	18.9	0.570	3.02	-0.43	0.1	clayey silt to silty clay	10
1.20	3.9	26.8	0.580	2.17	-0.43	0.1	sandy silt to clayey silt	10
1.25	4.1	27.5	0.520	1.89	-0.44	0.1	sandy silt to clayey silt	11
1.30	4.3	24.8	0.520	2.10	-0.44	0.1	sandy silt to clayey silt	9
1.35	4.4	16.7	0.360	2.15	-0.44	0.1	clayey silt to silty clay	9
1.40	4.6	12.2	0.170	1.39	-0.43	0.1	clayey silt to silty clay	6
1.45	4.8	9.3	0.020	0.22	-0.43	0.1	clayey silt to silty clay	5
1.50	4.9	6.3	0.030	0.48	-0.42	0.1	sensitive fine grained	4
1.55	5.1	6.3	0.060	0.95	-0.41	0.1	sensitive fine grained	3
1.60	5.2	6.2	0.040	0.64	-0.40	0.1	sensitive fine grained	3
1.65	5.4	6.6	0.030	0.45	-0.40	0.1	sensitive fine grained	3
1.70	5.6	6.4	0.000	0.00	-0.38	0.1	sensitive fine grained	3
1.75	5.7	6.4	0.050	0.78	-0.37	0.1	sensitive fine grained	3
1.80	5.9	7.9	0.130	1.64	-0.37	0.1	clayey silt to silty clay	4
1.85	6.1	7.6	0.160	2.11	-0.37	0.1	clayey silt to silty clay	4
1.90	6.2	9.5	0.170	1.79	-0.32	0.1	clayey silt to silty clay	4
1.95	6.4	9.7	0.180	1.86	-0.32	0.1	clayey silt to silty clay	5
2.00	6.6	7.8	0.190	2.43	-0.32	0.1	silty clay to clay	5

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

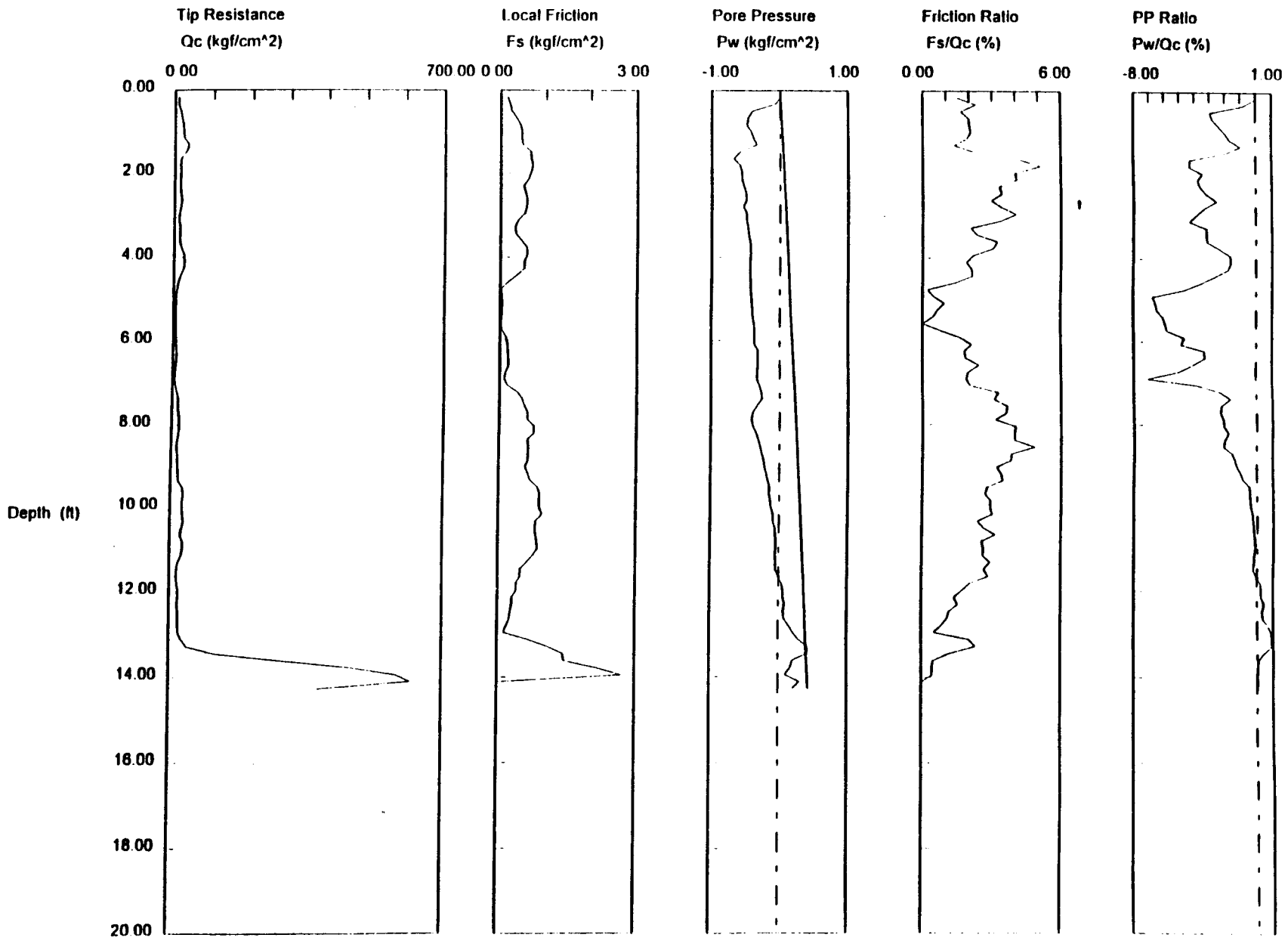
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	6.6	0.130	1.97	-0.33	0.1	silty clay to clay	4
2.10	6.9	4.8	0.090	1.88	-0.34	0.1	silty clay to clay	4
2.15	7.1	7.8	0.160	2.05	-0.30	0.1	silty clay to clay	5
2.20	7.2	11.9	0.390	3.27	-0.27	0.1	silty clay to clay	8
2.25	7.4	16.0	0.490	3.06	-0.26	0.1	silty clay to clay	9
2.30	7.5	14.8	0.540	3.65	-0.33	0.1	silty clay to clay	11
2.35	7.7	17.0	0.610	3.60	-0.39	0.1	silty clay to clay	11
2.40	7.9	19.5	0.610	3.13	-0.41	0.1	silty clay to clay	12
2.45	8.0	18.6	0.750	4.02	-0.39	0.1	silty clay to clay	13
2.50	8.2	19.0	0.750	3.96	-0.34	0.1	silty clay to clay	12
2.55	8.4	15.4	0.610	3.97	-0.31	0.1	clay	16
2.60	8.5	13.2	0.640	4.85	-0.28	0.1	clay	15
2.65	8.7	16.4	0.630	3.83	-0.26	0.1	clay	15
2.70	8.9	16.5	0.630	3.81	-0.23	0.1	silty clay to clay	11
2.75	9.0	17.5	0.560	3.19	-0.22	0.1	silty clay to clay	12
2.80	9.2	18.6	0.630	3.38	-0.19	0.1	clayey silt to silty clay	9
2.85	9.4	19.7	0.680	3.46	-0.17	0.1	clayey silt to silty clay	11
2.90	9.5	30.2	0.840	2.78	-0.14	0.1	clayey silt to silty clay	14
2.95	9.7	33.1	0.890	2.69	-0.15	0.1	sandy silt to clayey silt	12
3.00	9.8	30.0	0.880	2.93	-0.13	0.1	sandy silt to clayey silt	12
3.05	10.0	30.2	0.880	2.91	-0.12	0.1	clayey silt to silty clay	15
3.10	10.2	31.4	0.950	3.02	-0.09	0.1	sandy silt to clayey silt	13
3.15	10.3	34.5	0.820	2.38	-0.09	0.1	sandy silt to clayey silt	13
3.20	10.5	29.9	0.790	2.64	-0.06	0.1	sandy silt to clayey silt	12
3.25	10.7	25.8	0.810	3.15	-0.05	0.1	sandy silt to clayey silt	12
3.30	10.8	33.0	0.840	2.55	-0.04	0.1	sandy silt to clayey silt	12
3.35	11.0	32.3	0.860	2.66	-0.04	0.1	sandy silt to clayey silt	13
3.40	11.2	28.8	0.750	2.61	-0.06	0.2	clayey silt to silty clay	14
3.45	11.3	21.1	0.620	2.94	-0.04	0.2	clayey silt to silty clay	11
3.50	11.5	18.0	0.480	2.66	-0.05	0.2	clayey silt to silty clay	9
3.55	11.6	16.8	0.480	2.86	-0.01	0.2	clayey silt to silty clay	9
3.60	11.8	19.3	0.400	2.07	0.04	0.2	clayey silt to silty clay	10
3.65	12.0	22.9	0.400	1.74	0.06	0.2	sandy silt to clayey silt	9
3.70	12.1	22.3	0.310	1.39	0.06	0.2	sandy silt to clayey silt	9
3.75	12.3	19.6	0.310	1.58	0.09	0.2	sandy silt to clayey silt	9
3.80	12.5	23.3	0.280	1.20	0.07	0.2	sandy silt to clayey silt	9
3.85	12.6	23.3	0.260	1.11	0.08	0.2	sandy silt to clayey silt	9
3.90	12.8	22.7	0.200	0.88	0.15	0.3	silty sand to sandy silt	8
3.95	13.0	24.2	0.130	0.54	0.21	0.3	sandy silt to clayey silt	11
4.00	13.1	32.0	0.660	2.06	0.29	0.3	sandy silt to clayey silt	14
4.05	13.3	46.5	1.090	2.34	0.42	0.3	silty sand to sandy silt	22
4.10	13.5	117.4	1.430	1.22	0.43	0.3	sand	30
4.15	13.6	285.6	1.460	0.51	0.21	0.3	sand	58
4.20	13.8	467.0	2.170	0.46	0.18	0.3	gravelly sand to sand	74
4.25	13.9	583.5	2.720	0.47	0.10	0.3	?	?
4.30	14.1	619.8	?	?	0.31	0.3	?	?
4.35	14.3	380.7	?	?	0.21	0.3	?	?

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT668
Cone Used: 4-CHANNEL

CPT Date: 03-09-98 12:32
Location: CPTU-01-~~063~~ 163
Job No.: 1507-000



Maximum Depth = 14.27 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT669 03-09-98 13:42

PERATOR : GJV-LMM LOCATION : CPTU-01-~~063A~~ 163A

E ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR. RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	9.1	0.250	2.74	-0.19	0.0	?	?
0.10	0.3	12.8	0.260	2.03	0.12	0.0	clayey silt to silty clay	8
0.15	0.5	24.9	0.350	1.41	-0.23	0.0	sandy silt to clayey silt	9
0.20	0.7	26.7	0.380	1.42	-0.64	0.0	sandy silt to clayey silt	10
0.25	0.8	26.1	0.540	2.07	-0.65	0.0	sandy silt to clayey silt	10
0.30	1.0	25.4	0.540	2.13	-0.61	0.0	sandy silt to clayey silt	10
0.35	1.1	27.1	0.590	2.18	-0.59	0.0	sandy silt to clayey silt	10
0.40	1.3	26.2	0.600	2.29	-0.64	0.0	sandy silt to clayey silt	10
0.45	1.5	21.6	0.540	2.50	-0.65	0.0	clayey silt to silty clay	10
0.50	1.6	12.5	0.450	3.60	-0.65	0.0	silty clay to clay	10
0.55	1.8	10.2	0.520	5.11	-0.64	0.0	clay	12
0.60	2.0	14.3	0.560	3.93	-0.64	0.0	clayey silt to silty clay	9
0.65	2.1	32.1	0.750	2.34	-0.62	0.0	sandy silt to clayey silt	12
0.70	2.3	42.7	0.930	2.18	-0.63	0.0	sandy silt to clayey silt	14
0.75	2.5	31.5	0.960	3.05	-0.63	0.0	sandy silt to clayey silt	13
0.80	2.6	25.5	0.690	2.71	-0.62	0.0	sandy silt to clayey silt	11
0.85	2.8	28.3	0.650	2.30	-0.62	0.0	sandy silt to clayey silt	11
0.90	3.0	26.1	0.570	2.18	-0.59	0.0	sandy silt to clayey silt	10
0.95	3.1	17.6	0.460	2.62	-0.58	0.0	clayey silt to silty clay	10
1.00	3.3	19.1	0.460	2.40	-0.58	0.0	clayey silt to silty clay	9
1.05	3.4	18.9	0.440	2.33	-0.57	0.0	clayey silt to silty clay	9
1.10	3.6	17.5	0.580	3.31	-0.56	0.0	sandy silt to clayey silt	10
1.15	3.8	36.1	0.710	1.96	-0.56	0.0	sandy silt to clayey silt	13
1.20	3.9	41.8	0.840	2.01	-0.56	0.0	sandy silt to clayey silt	17
1.25	4.1	46.2	0.840	1.82	-0.56	0.0	sandy silt to clayey silt	17
1.30	4.3	40.3	0.800	1.99	-0.55	0.0	sandy silt to clayey silt	17
1.35	4.4	41.4	0.730	1.76	-0.55	0.0	sandy silt to clayey silt	16
1.40	4.6	37.9	0.700	1.85	-0.56	0.0	sandy silt to clayey silt	15
1.45	4.8	32.5	0.530	1.63	-0.55	0.0	sandy silt to clayey silt	13
1.50	4.9	28.6	0.470	1.64	-0.55	0.0	sandy silt to clayey silt	11
1.55	5.1	24.1	0.480	1.99	-0.55	0.0	sandy silt to clayey silt	9
1.60	5.2	15.6	0.450	2.88	-0.55	0.0	clayey silt to silty clay	9
1.65	5.4	13.6	0.370	2.73	-0.55	0.0	clayey silt to silty clay	7
1.70	5.6	10.1	0.310	3.06	-0.54	0.0	silty clay to clay	7
1.75	5.7	8.0	0.260	3.25	-0.54	0.0	clay	8
1.80	5.9	7.1	0.240	3.36	-0.54	0.0	clay	7
1.85	6.1	6.8	0.250	3.68	-0.54	0.0	clay	7
1.90	6.2	7.0	0.270	3.85	-0.47	0.0	clay	7
1.95	6.4	6.7	0.280	4.18	-0.47	0.0	clay	7
2.00	6.6	6.2	0.270	4.34	-0.47	0.0	clay	6

' interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	6.0	0.290	4.82	-0.46	0.0	clay	6
2.10	6.9	6.9	0.310	4.49	-0.46	0.0	clay	7
2.15	7.1	8.0	0.360	4.48	-0.45	0.0	clay	8
2.20	7.2	7.6	0.350	4.60	-0.45	0.0	clay	8
2.25	7.4	7.2	0.330	4.61	-0.45	0.0	clay	7
2.30	7.5	7.4	0.310	4.21	-0.45	0.0	clay	7
2.35	7.7	6.6	0.310	4.67	-0.44	0.0	clay	7
2.40	7.9	6.0	0.300	4.98	-0.44	0.0	clay	6
2.45	8.0	5.9	0.260	4.38	-0.44	0.0	clay	6
2.50	8.2	5.4	0.230	4.27	-0.43	0.0	clay	7
2.55	8.4	8.3	0.260	3.15	-0.43	0.0	clay	8
2.60	8.5	9.9	0.390	3.96	-0.43	0.0	clayey silt to silty clay	7
2.65	8.7	22.4	0.420	1.88	-0.41	0.0	clayey silt to silty clay	10
2.70	8.9	26.3	0.400	1.52	-0.38	0.0	sandy silt to clayey silt	10
2.75	9.0	24.5	0.550	2.24	-0.36	0.0	sandy silt to clayey silt	11
2.80	9.2	32.5	0.790	2.43	-0.34	0.0	sandy silt to clayey silt	12
2.85	9.4	30.5	1.000	3.28	-0.33	0.0	sandy silt to clayey silt	14
2.90	9.5	41.6	1.050	2.52	-0.25	0.0	clayey silt to silty clay	18
2.95	9.7	38.2	1.250	3.28	-0.23	0.0	sandy silt to clayey silt	16
3.00	9.8	37.7	1.150	3.05	-0.21	0.0	clayey silt to silty clay	18
3.05	10.0	32.0	1.050	3.28	-0.19	0.0	clayey silt to silty clay	17
3.10	10.2	32.7	1.140	3.49	-0.18	0.0	clayey silt to silty clay	17
3.15	10.3	37.6	1.170	3.11	-0.17	0.0	clayey silt to silty clay	18
3.20	10.5	35.7	1.020	2.85	-0.16	0.0	sandy silt to clayey silt	14
3.25	10.7	35.3	0.980	2.78	-0.13	0.0	sandy silt to clayey silt	14
3.30	10.8	36.3	0.860	2.37	-0.12	0.0	sandy silt to clayey silt	14
3.35	11.0	36.2	0.710	1.96	-0.11	0.0	sandy silt to clayey silt	14
3.40	11.2	33.8	0.620	1.84	-0.10	0.0	sandy silt to clayey silt	14
3.45	11.3	31.9	0.670	2.10	-0.09	0.0	sandy silt to clayey silt	13
3.50	11.5	33.0	0.750	2.28	-0.07	0.0	sandy silt to clayey silt	13
3.55	11.6	34.1	0.830	2.43	-0.05	0.0	sandy silt to clayey silt	14
3.60	11.8	35.3	0.800	2.27	-0.04	0.0	sandy silt to clayey silt	14
3.65	12.0	36.4	0.750	2.06	-0.02	0.0	sandy silt to clayey silt	14
3.70	12.1	35.8	0.760	2.12	0.01	0.0	sandy silt to clayey silt	15
3.75	12.3	39.6	1.020	2.57	0.04	0.0	sandy silt to clayey silt	15
3.80	12.5	39.3	1.080	2.74	0.05	0.0	sandy silt to clayey silt	16
3.85	12.6	41.7	0.760	1.82	0.25	0.0	sandy silt to clayey silt	17
3.90	12.8	50.0	0.820	1.64	0.36	0.0	silty sand to sandy silt	18
3.95	13.0	66.7	0.950	1.42	0.44	0.0	silty sand to sandy silt	21
4.00	13.1	74.2	2.310	3.11	0.72	0.0	silty sand to sandy silt	27
4.05	13.3	101.7	0.840	0.83	0.76	0.0	sand to silty sand	30
4.10	13.5	185.8	1.790	0.96	0.61	0.0	sand to silty sand	35
4.15	13.6	127.3	3.380	2.65	0.72	0.0	sand to silty sand	50
4.20	13.8	285.4	4.110	1.44	0.44	0.0	sand to silty sand	62
4.25	13.9	331.2	4.020	1.21	-0.39	0.0	sand	74
4.30	14.1	491.6	3.750	0.76	-0.34	0.0	gravelly sand to sand	78
4.35	14.3	583.8	4.060	0.70	-0.41	0.0	gravelly sand to sand	97
4.40	14.4	676.3	4.470	0.66	-0.38	0.0	gravelly sand to sand	120
4.45	14.6	893.2	5.900	0.66	-0.14	0.0	gravelly sand to sand	138
4.50	14.8	922.9	6.950	0.75	-0.08	0.0	gravelly sand to sand	150

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	891.8	6.200	0.70	0.00	0.0	gravelly sand to sand	143
4.60	15.1	756.0	5.290	0.70	0.08	0.0	gravelly sand to sand	128
4.65	15.3	647.6	5.340	0.82	0.02	0.0	gravelly sand to sand	109
4.70	15.4	557.5	4.020	0.72	0.02	0.0	gravelly sand to sand	93
4.75	15.6	460.8	3.910	0.85	0.02	0.0	gravelly sand to sand	79
4.80	15.7	401.7	2.280	0.57	0.17	0.0	gravelly sand to sand	67
4.85	15.9	336.0	2.860	0.85	0.06	0.0	sand	65
4.90	16.1	244.6	3.790	1.55	0.03	0.0	sand to silty sand	60
4.95	16.2	137.9	3.300	2.39	0.05	0.0	silty sand to sandy silt	51
5.00	16.4	75.1	1.670	2.22	0.18	0.0	silty sand to sandy silt	29
5.05	16.6	50.1	1.230	2.45	0.32	0.0	sandy silt to clayey silt	23
5.10	16.7	44.8	1.080	2.41	0.32	0.0	sandy silt to clayey silt	17
5.15	16.9	34.6	1.000	2.89	0.35	0.0	sandy silt to clayey silt	15
5.20	17.1	36.8	0.770	2.09	0.36	0.0	sandy silt to clayey silt	14
5.25	17.2	35.3	0.720	2.04	0.36	0.0	sandy silt to clayey silt	14
5.30	17.4	31.1	0.590	1.89	0.36	0.0	sandy silt to clayey silt	13
5.35	17.6	34.1	0.490	1.44	0.36	0.0	sandy silt to clayey silt	13
5.40	17.7	35.2	0.550	1.56	0.36	0.0	sandy silt to clayey silt	14
5.45	17.9	33.4	0.590	1.76	0.37	0.0	sandy silt to clayey silt	14
5.50	18.0	37.9	0.540	1.43	0.37	0.0	sandy silt to clayey silt	14
5.55	18.2	32.3	0.810	2.51	0.38	0.0	clayey silt to silty clay	21
5.60	18.4	53.7	3.000	5.59	0.38	0.0	clayey silt to silty clay	27
5.65	18.5	77.2	2.470	3.20	0.35	0.0	sandy silt to clayey silt	39
5.70	18.7	163.3	2.260	1.38	0.35	0.0	silty sand to sandy silt	45
5.75	18.9	160.3	2.240	1.40	-0.17	0.0	silty sand to sandy silt	53
5.80	19.0	150.1	4.820	3.21	-0.19	0.0	silty sand to sandy silt	66
5.85	19.2	286.6	7.050	2.46	-0.43	0.0	silty sand to sandy silt	78
5.90	19.4	269.4	7.450	2.76	-0.59	0.0	silty sand to sandy silt	81
5.95	19.5	173.7	5.420	3.12	-0.60	0.0	sandy silt to clayey silt	69
6.00	19.7	74.3	3.890	5.24	-0.61	0.0	very stiff fine grained (*)	100
6.05	19.8	52.7	3.900	7.40	-0.59	0.0	very stiff fine grained (*)	83
6.10	20.0	123.4	4.970	4.03	-0.58	0.0	sandy silt to clayey silt	57
6.15	20.2	248.8	5.310	2.13	-0.59	0.0	silty sand to sandy silt	75
6.20	20.3	306.4	5.710	1.86	-0.60	0.0	sand to silty sand	75
6.25	20.5	349.2	6.030	1.73	-0.59	0.0	sand to silty sand	75
6.30	20.7	247.2	5.540	2.24	-0.58	0.0	silty sand to sandy silt	77
6.35	20.8	97.6	3.920	4.02	-0.61	0.0	sandy silt to clayey silt	52
6.40	21.0	43.8	2.820	6.44	-0.61	0.0	silty clay to clay	37
6.45	21.2	27.2	1.230	4.52	-0.61	0.0	clay	31
6.50	21.3	22.8	0.890	3.91	-0.60	0.0	silty clay to clay	15
6.55	21.5	19.1	0.820	4.29	-0.61	0.0	silty clay to clay	14
6.60	21.7	21.2	0.800	3.78	-0.61	0.0	silty clay to clay	13
6.65	21.8	19.8	0.790	4.00	-0.61	0.0	silty clay to clay	13
6.70	22.0	19.4	0.810	4.18	-0.61	0.0	silty clay to clay	13
6.75	22.1	20.3	0.820	4.05	-0.60	0.0	silty clay to clay	13
6.80	22.3	20.6	0.870	4.23	-0.60	0.0	clay	21
6.85	22.5	21.2	0.990	4.67	-0.60	0.0	silty clay to clay	15
6.90	22.6	23.5	0.970	4.13	-0.60	0.0	clay	22
6.95	22.8	20.8	0.980	4.71	-0.54	0.0	clay	23
7.00	23.0	23.3	1.130	4.86	-0.53	0.0	clay	24

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
7.05	23.1	28.4	1.160	4.08	-0.53	0.0	silty clay to clay	18
7.10	23.3	29.7	1.340	4.52	-0.52	0.0	silty clay to clay	21
7.15	23.5	36.5	1.550	4.25	-0.51	0.0	silty clay to clay	22
7.20	23.6	34.0	1.560	4.59	-0.50	0.0	silty clay to clay	22
7.25	23.8	29.5	1.460	4.95	-0.50	0.0	silty clay to clay	21
7.30	23.9	30.7	1.290	4.20	-0.50	0.0	silty clay to clay	21
7.35	24.1	32.3	1.300	4.02	-0.49	0.0	silty clay to clay	21
7.40	24.3	32.1	1.350	4.21	-0.49	0.0	silty clay to clay	21
7.45	24.4	31.4	1.460	4.66	-0.48	0.0	silty clay to clay	21
7.50	24.6	32.5	1.530	4.71	-0.48	0.0	silty clay to clay	22
7.55	24.8	36.1	1.620	4.49	-0.47	0.0	silty clay to clay	24
7.60	24.9	38.7	1.680	4.34	-0.45	0.0	silty clay to clay	25
7.65	25.1	38.2	1.730	4.53	-0.45	0.0	silty clay to clay	26
7.70	25.3	40.1	1.840	4.59	-0.44	0.0	silty clay to clay	28
7.75	25.4	45.8	1.970	4.30	-0.44	0.0	silty clay to clay	29
7.80	25.6	44.3	2.290	5.17	-0.44	0.1	clay	45
7.85	25.8	44.2	2.670	6.04	-0.43	0.1	clay	44
7.90	25.9	45.0	2.730	6.07	-0.43	0.1	clay	45
7.95	26.1	45.6	2.580	5.66	-0.40	0.1	clay	44
8.00	26.2	40.5	2.300	5.68	-0.39	0.1	clay	41
8.05	26.4	35.6	1.870	5.25	-0.39	0.1	clay	35
8.10	26.6	29.1	1.490	5.12	-0.39	0.1	clay	30
8.15	26.7	26.3	1.190	4.53	-0.39	0.1	clay	27
8.20	26.9	24.6	1.100	4.48	-0.39	0.1	silty clay to clay	17
8.25	27.1	24.2	1.040	4.30	-0.38	0.1	silty clay to clay	16
8.30	27.2	24.0	1.010	4.22	-0.38	0.1	silty clay to clay	16
8.35	27.4	23.9	0.980	4.10	-0.38	0.1	silty clay to clay	16
8.40	27.6	23.5	0.950	4.05	-0.38	0.1	silty clay to clay	16
8.45	27.7	24.3	0.930	3.83	-0.38	0.2	silty clay to clay	16
8.50	27.9	24.2	0.940	3.89	-0.38	0.2	silty clay to clay	16
8.55	28.1	23.8	0.960	4.03	-0.37	0.2	silty clay to clay	16
8.60	28.2	24.5	0.930	3.80	-0.36	0.2	silty clay to clay	16
8.65	28.4	23.2	0.890	3.83	-0.35	0.2	silty clay to clay	16
8.70	28.5	22.6	0.810	3.58	-0.35	0.2	clayey silt to silty clay	11
8.75	28.7	22.7	0.770	3.39	-0.35	0.2	clayey silt to silty clay	11
8.80	28.9	22.5	0.760	3.39	-0.35	0.2	clayey silt to silty clay	11
8.85	29.0	23.4	0.840	3.59	-0.34	0.2	clayey silt to silty clay	12
8.90	29.2	24.9	0.940	3.77	-0.34	0.2	clayey silt to silty clay	13
8.95	29.4	28.4	1.000	3.53	-0.30	0.2	clayey silt to silty clay	14
9.00	29.5	29.1	1.030	3.54	-0.29	0.2	clayey silt to silty clay	15
9.05	29.7	30.1	1.050	3.49	-0.29	0.2	clayey silt to silty clay	15
9.10	29.9	28.8	1.020	3.54	-0.28	0.2	clayey silt to silty clay	15
9.15	30.0	29.2	0.910	3.12	-0.27	0.2	clayey silt to silty clay	14
9.20	30.2	28.9	0.910	3.14	-0.26	0.2	clayey silt to silty clay	16
9.25	30.3	37.0	1.100	2.97	-0.26	0.2	clayey silt to silty clay	17
9.30	30.5	36.1	1.210	3.35	-0.25	0.2	clayey silt to silty clay	18
9.35	30.7	35.3	1.240	3.51	-0.24	0.1	clayey silt to silty clay	18
9.40	30.8	35.8	1.240	3.46	-0.23	0.1	clayey silt to silty clay	17
9.45	31.0	33.2	1.270	3.83	-0.22	0.1	clayey silt to silty clay	18
9.50	31.2	40.7	1.500	3.69	-0.21	0.1	clayey silt to silty clay	19

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH :ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
9.55	31.3	42.0	1.490	3.55	-0.20	0.1	clayey silt to silty clay	20
9.60	31.5	39.7	1.340	3.37	-0.17	0.1	clayey silt to silty clay	20
9.65	31.7	35.4	1.100	3.10	-0.16	0.1	clayey silt to silty clay	18
9.70	31.8	35.4	1.130	3.19	-0.15	0.1	clayey silt to silty clay	19
9.75	32.0	41.0	1.260	3.08	-0.13	0.1	sandy silt to clayey silt	17
9.80	32.2	50.2	1.240	2.47	-0.13	0.1	sandy silt to clayey silt	17
9.85	32.3	35.2	1.290	3.67	-0.12	0.1	clayey silt to silty clay	20
9.90	32.5	33.4	1.210	3.62	-0.12	0.1	clayey silt to silty clay	16
9.95	32.6	30.3	1.210	4.00	-0.05	0.1	clayey silt to silty clay	15
10.00	32.8	28.4	1.130	3.98	-0.04	0.1	clayey silt to silty clay	15
10.05	33.0	30.8	1.060	3.44	-0.03	0.1	clayey silt to silty clay	15
10.10	33.1	29.7	1.190	4.00	-0.03	0.1	clayey silt to silty clay	16
10.15	33.3	33.1	1.210	3.65	-0.02	0.1	clayey silt to silty clay	15
10.20	33.5	29.3	1.070	3.65	-0.01	0.1	clayey silt to silty clay	15
10.25	33.6	25.8	0.960	3.72	0.01	0.1	clayey silt to silty clay	13
10.30	33.8	24.8	0.970	3.91	0.02	0.1	clayey silt to silty clay	14
10.35	34.0	31.4	1.160	3.69	0.05	0.1	clayey silt to silty clay	16
10.40	34.1	41.7	1.260	3.02	0.08	0.1	clayey silt to silty clay	18
10.45	34.3	37.8	1.370	3.62	0.10	0.1	clayey silt to silty clay	19
10.50	34.4	35.7	1.220	3.42	0.11	0.1	clayey silt to silty clay	18
10.55	34.6	33.8	1.210	3.58	0.12	0.1	clayey silt to silty clay	17
10.60	34.8	32.5	1.250	3.84	0.12	0.1	clayey silt to silty clay	16
10.65	34.9	32.4	1.230	3.80	0.20	0.1	clayey silt to silty clay	16
10.70	35.1	30.7	1.170	3.81	0.22	0.1	clayey silt to silty clay	16
10.75	35.3	30.4	1.140	3.75	0.23	0.1	clayey silt to silty clay	15
10.80	35.4	31.0	1.160	3.75	0.24	0.1	clayey silt to silty clay	15
10.85	35.6	30.8	1.140	3.70	0.25	0.1	clayey silt to silty clay	15
10.90	35.8	30.2	1.140	3.78	0.26	0.1	clayey silt to silty clay	15
10.95	35.9	29.0	1.120	3.87	0.26	0.1	clayey silt to silty clay	15
11.00	36.1	29.2	1.030	3.53	0.42	0.1	clayey silt to silty clay	14
11.05	36.3	27.7	1.050	3.79	0.42	0.1	silty clay to clay	18
11.10	36.4	25.0	1.030	4.12	0.43	0.1	silty clay to clay	17
11.15	36.6	24.5	0.940	3.84	0.44	0.1	silty clay to clay	16
11.20	36.7	23.7	0.890	3.76	0.44	0.1	silty clay to clay	16
11.25	36.9	23.9	0.860	3.60	0.45	0.1	clayey silt to silty clay	12
11.30	37.1	24.3	0.830	3.42	0.46	0.1	clayey silt to silty clay	12
11.35	37.2	24.1	0.840	3.49	0.47	0.1	clayey silt to silty clay	12
11.40	37.4	24.4	0.830	3.40	0.47	0.1	clayey silt to silty clay	12
11.45	37.6	23.9	0.830	3.48	0.49	0.1	clayey silt to silty clay	12
11.50	37.7	23.8	0.810	3.40	0.49	0.1	clayey silt to silty clay	12
11.55	37.9	24.5	0.850	3.47	0.50	0.1	clayey silt to silty clay	12
11.60	38.1	24.0	0.860	3.58	0.52	0.1	clayey silt to silty clay	12
11.65	38.2	24.7	0.890	3.60	0.59	0.1	clayey silt to silty clay	12
11.70	38.4	24.9	0.870	3.50	0.59	0.1	clayey silt to silty clay	12
11.75	38.5	24.8	0.860	3.47	0.60	0.1	clayey silt to silty clay	12
11.80	38.7	23.7	0.790	3.33	0.61	0.1	clayey silt to silty clay	12
11.85	38.9	22.5	0.740	3.30	0.61	0.1	clayey silt to silty clay	11
11.90	39.0	21.4	0.710	3.32	0.62	0.1	clayey silt to silty clay	11
11.95	39.2	21.5	0.710	3.30	0.80	0.1	clayey silt to silty clay	11
2.00	39.4	21.0	0.680	3.24	0.80	0.1	clayey silt to silty clay	11

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
12.05	39.5	21.1	0.670	3.17	0.80	0.1	clayey silt to silty clay	11
12.10	39.7	21.2	0.660	3.12	0.80	0.1	clayey silt to silty clay	11
12.15	39.9	21.9	0.630	2.87	0.81	0.1	clayey silt to silty clay	11
12.20	40.0	21.5	0.670	3.12	0.80	0.1	clayey silt to silty clay	11
12.25	40.2	22.2	0.680	3.06	0.80	0.1	clayey silt to silty clay	11
12.30	40.4	21.1	0.650	3.07	0.80	0.1	clayey silt to silty clay	11
12.35	40.5	19.8	0.620	3.14	0.81	0.1	clayey silt to silty clay	10
12.40	40.7	19.5	0.590	3.03	0.81	0.1	clayey silt to silty clay	10
12.45	40.8	18.8	0.590	3.13	0.81	0.1	clayey silt to silty clay	10
12.50	41.0	19.0	0.600	3.16	0.81	0.1	clayey silt to silty clay	10
12.55	41.2	21.2	0.600	2.83	0.82	0.1	clayey silt to silty clay	10
12.60	41.3	20.4	0.590	2.89	0.82	0.1	clayey silt to silty clay	10
12.65	41.5	20.0	0.590	2.94	0.81	0.1	clayey silt to silty clay	10
12.70	41.7	20.4	0.560	2.74	0.81	0.1	clayey silt to silty clay	10
12.75	41.8	19.4	0.560	2.89	0.82	0.1	clayey silt to silty clay	10
12.80	42.0	20.3	0.550	2.71	0.82	0.1	clayey silt to silty clay	10
12.85	42.2	22.5	0.580	2.58	0.77	0.1	clayey silt to silty clay	12
12.90	42.3	26.5	0.650	2.45	0.78	0.1	sandy silt to clayey silt	10
12.95	42.5	27.8	0.710	2.56	0.77	0.1	sandy silt to clayey silt	11
13.00	42.7	26.7	0.710	2.66	0.76	0.1	clayey silt to silty clay	13
13.05	42.8	25.5	0.680	2.66	0.75	0.1	clayey silt to silty clay	13
13.10	43.0	24.9	0.640	2.57	0.73	0.1	clayey silt to silty clay	12
13.15	43.1	23.8	0.620	2.61	0.73	0.1	clayey silt to silty clay	12
13.20	43.3	24.2	0.710	2.94	0.73	0.1	clayey silt to silty clay	12
13.25	43.5	26.2	0.760	2.90	1.03	0.1	clayey silt to silty clay	13
13.30	43.6	25.7	0.760	2.96	1.09	0.1	clayey silt to silty clay	13
13.35	43.8	24.6	0.720	2.93	1.12	0.1	clayey silt to silty clay	12
13.40	44.0	21.8	0.710	3.26	1.11	0.1	clayey silt to silty clay	11
13.45	44.1	21.8	0.590	2.71	1.24	0.1	clayey silt to silty clay	11
13.50	44.3	20.0	0.550	2.76	1.25	0.1	clayey silt to silty clay	10
13.55	44.5	18.4	0.550	3.00	1.26	0.1	clayey silt to silty clay	9
13.60	44.6	18.4	0.480	2.61	1.29	0.1	clayey silt to silty clay	9
13.65	44.8	18.6	0.510	2.74	1.31	0.1	clayey silt to silty clay	9
13.70	44.9	18.4	0.470	2.56	1.31	0.1	clayey silt to silty clay	9
13.75	45.1	15.8	0.480	3.03	1.77	0.1	clayey silt to silty clay	9
13.80	45.3	17.0	0.470	2.76	1.83	0.1	clayey silt to silty clay	8
13.85	45.4	16.0	0.510	3.18	1.89	0.1	clayey silt to silty clay	8
13.90	45.6	17.1	0.510	2.99	1.93	0.1	clayey silt to silty clay	8
13.95	45.8	16.9	0.580	3.43	2.01	0.1	clayey silt to silty clay	9
14.00	45.9	18.1	0.630	3.47	2.03	0.1	silty clay to clay	12
14.05	46.1	18.6	0.720	3.87	2.10	0.1	silty clay to clay	12
14.10	46.3	17.2	0.680	3.95	3.52	0.1	silty clay to clay	12
14.15	46.4	16.8	0.680	4.04	4.34	0.1	silty clay to clay	11
14.20	46.6	17.6	0.660	3.75	4.80	0.1	silty clay to clay	12
14.25	46.8	19.2	0.790	4.11	4.97	0.1	silty clay to clay	12
14.30	46.9	18.3	0.700	3.82	5.20	0.1	silty clay to clay	13
14.35	47.1	22.0	0.610	2.78	6.65	0.1	clayey silt to silty clay	9
14.40	47.2	16.1	0.550	3.41	6.92	0.1	clayey silt to silty clay	9
14.45	47.4	16.9	0.550	3.26	7.06	0.1	clayey silt to silty clay	9
14.50	47.6	19.5	0.580	2.97	7.45	0.1	clayey silt to silty clay	9

soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ·ers	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
14.55	47.7	19.0	0.600	3.16	7.56	0.1	clayey silt to silty clay	9
14.60	47.9	18.1	0.620	3.42	7.86	0.1	clayey silt to silty clay	9
14.65	48.1	18.5	0.590	3.18	7.75	0.1	silty clay to clay	12
14.70	48.2	18.5	0.700	3.79	7.29	0.1	silty clay to clay	12
14.75	48.4	14.9	0.660	4.42	6.63	0.1	silty clay to clay	12
14.80	48.6	19.2	0.620	3.23	5.81	0.1	silty clay to clay	11
14.85	48.7	14.5	0.570	3.92	5.77	0.1	silty clay to clay	11
14.90	48.9	14.8	0.520	3.51	5.28	0.1	silty clay to clay	11
14.95	49.0	19.3	0.790	4.10	5.67	0.1	clay	17
15.00	49.2	16.6	0.890	5.36	5.99	0.1	clay	16
15.05	49.4	12.9	0.720	5.60	2.01	0.1	clay	14
15.10	49.5	12.9	0.670	5.19	2.87	0.1	clay	13
15.15	49.7	12.9	0.870	6.75	3.35	0.1	clay	17
15.20	49.9	24.3	1.280	5.26	4.01	0.1	clay	20
15.25	50.0	21.8	1.170	5.37	4.55	0.1	clay	25
15.30	50.2	29.6	1.770	5.98	4.13	0.1	silty clay to clay	24
15.35	50.4	57.6	1.930	3.35	9.55	0.1	silty sand to sandy silt	27
15.40	50.5	157.3	2.120	1.35	2.10	0.1	sand to silty sand	34
15.45	50.7	193.9	2.640	1.36	0.27	0.1	sand to silty sand	43
15.50	50.9	160.2	4.330	2.70	-0.09	0.1	silty sand to sandy silt	48
15.55	51.0	79.1	3.770	4.76	-0.10	0.1	clayey silt to silty clay	44
15.60	51.2	26.5	3.140	11.86	0.08	0.1	very stiff fine grained (*)	66
15.65	51.3	92.7	2.710	2.92	0.15	0.1	clay	47
15.70	51.5	22.4	2.300	10.29	-0.04	0.1	silty clay to clay	31
.75	51.7	24.9	1.970	7.91	0.40	0.1	clay	23
.5.80	51.8	20.8	1.480	7.11	0.96	0.1	clay	32
15.85	52.0	49.0	2.190	4.47	1.98	0.1	clay	36
15.90	52.2	38.2	1.940	5.07	0.57	0.1	clayey silt to silty clay	27
15.95	52.3	75.6	1.920	2.54	1.03	0.1	sandy silt to clayey silt	28
16.00	52.5	96.8	2.830	2.92	0.66	0.1	clayey silt to silty clay	32
16.05	52.7	20.0	2.560	12.81	0.39	0.1	clayey silt to silty clay	35
16.10	52.8	94.3	3.000	3.18	1.16	0.1	sandy silt to clayey silt	41
16.15	53.0	192.2	4.030	2.10	0.64	0.1	silty sand to sandy silt	57
16.20	53.1	226.5	4.820	2.13	0.43	0.1	sand to silty sand	57
16.25	53.3	265.1	5.050	1.91	0.53	0.1	sand to silty sand	69
16.30	53.5	333.5	4.510	1.35	0.57	0.1	sand to silty sand	73
16.35	53.6	281.9	4.950	1.76	0.31	0.1	sand to silty sand	71
16.40	53.8	235.9	4.870	2.06	0.40	0.1	silty sand to sandy silt	65
16.45	54.0	67.2	5.550	8.25	0.16	0.1	very stiff fine grained (*)	122
16.50	54.1	61.5	4.060	6.60	-0.07	0.1	?	?
16.55	54.3	-47.5	2.690	-5.66	-0.06	0.2	?	?
16.60	54.5	-34.2	1.540	-4.51	-0.02	0.2	?	?
16.65	54.6	-70.6	0.860	-1.22	0.07	0.2	?	?
16.70	54.8	-72.7	0.850	-1.17	0.10	0.2	?	?
16.75	55.0	-72.5	0.850	-1.17	0.60	0.2	?	?
16.80	55.1	-76.0	0.850	-1.12	0.62	0.2	?	?
16.85	55.3	-76.8	0.830	-1.08	0.63	0.2	?	?
16.90	55.4	-74.8	0.850	-1.14	0.63	0.2	?	?
16.95	55.6	-80.4	0.870	-1.08	0.64	0.3	?	?
·7.00	55.8	-79.5	0.770	-0.97	0.65	0.3	?	?

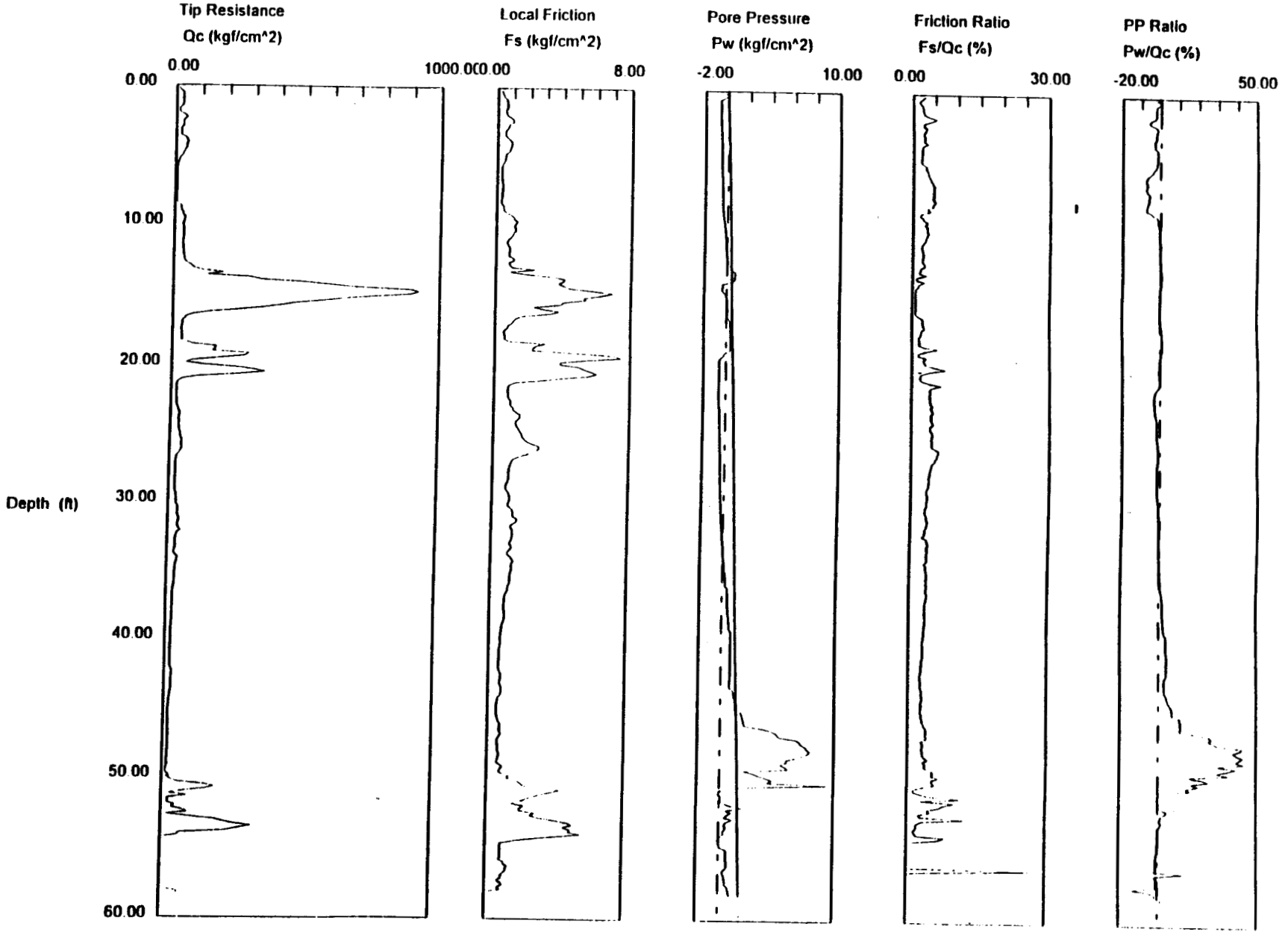
il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	INC I deg	INTERPRETED SOIL TYPE	N SPT
17.05	55.9	-78.9	1.050	-1.33	0.68	0.3	?	?
17.10	56.1	-50.7	1.080	-2.13	0.73	0.3	?	?
17.15	56.3	4.8	1.290	26.71	0.62	0.3	?	?
17.20	56.4	-20.1	1.190	-5.93	0.36	0.3	?	?
17.25	56.6	-51.8	1.170	-2.26	0.35	0.3	?	?
17.30	56.8	-56.8	1.010	-1.78	0.47	0.3	?	?
17.35	56.9	-62.7	0.920	-1.47	0.49	0.3	?	?
17.40	57.1	-61.9	0.910	-1.47	0.52	0.3	?	?
17.45	57.2	-63.0	0.680	-1.08	0.57	0.3	?	?
17.50	57.4	-4.2	0.910	-21.82	0.55	0.3	?	?
17.55	57.6	-18.2	1.010	-5.54	0.80	0.3	?	?
17.60	57.7	-45.0	0.690	-1.53	0.82	0.3	?	?
17.65	57.9	-72.0	0.850	-1.18	0.90	0.3	?	?
17.70	58.1	-63.1	?	?	0.91	0.3	?	?
17.75	58.2	-64.5	?	?	1.03	0.3	?	?

R.E. Wright Inc.

Operator: GJV-I MM
Sounding: CPT669
Cone Used: 4-CHANNEL

CPT Date: 03-09-98 13:42
Location: CPTU-01-~~063A~~ 163 A
Job No.: 1507-000



Maximum Depth = 58.23 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT670 03-10-98 08:49

PERATOR : GJV-LMM LOCATION : CPTU-01-~~064~~164

CONE ID : 4-CHANNEL JOB No. : 1507-000

. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19841

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	41.3	1.208	2.93	-0.72	-1.74	0.0	?	?
0.10	0.3	49.7	1.186	2.39	-0.76	-1.54	0.0	sandy silt to clayey silt	20
0.15	0.5	56.5	0.812	1.44	-0.81	-1.43	0.0	silty sand to sandy silt	18
0.20	0.7	52.3	0.794	1.52	-0.75	-1.43	0.0	silty sand to sandy silt	17
0.25	0.8	44.4	0.911	2.05	-0.64	-1.44	0.0	sandy silt to clayey silt	17
0.30	1.0	33.1	0.942	2.84	-0.72	-2.18	0.0	sandy silt to clayey silt	14
0.35	1.1	26.4	0.916	3.48	-0.75	-2.83	0.0	clayey silt to silty clay	14
0.40	1.3	24.9	0.800	3.22	-0.74	-2.98	0.0	sandy silt to clayey silt	16
0.45	1.5	65.1	0.903	1.39	-0.73	-1.13	0.0	silty sand to sandy silt	18
0.50	1.6	69.6	0.943	1.35	-0.74	-1.06	0.0	silty sand to sandy silt	21
0.55	1.8	53.9	0.870	1.61	-0.73	-1.36	0.0	silty sand to sandy silt	18
0.60	2.0	35.0	0.650	1.86	-0.73	-2.09	0.0	sandy silt to clayey silt	15
0.65	2.1	21.8	0.336	1.54	-0.73	-3.36	0.0	sandy silt to clayey silt	10
0.70	2.3	20.0	0.362	1.81	-0.73	-3.67	0.0	sandy silt to clayey silt	9
0.75	2.5	28.5	0.392	1.38	-0.70	-2.47	0.0	sandy silt to clayey silt	10
0.80	2.6	27.8	0.434	1.56	-0.70	-2.52	0.0	sandy silt to clayey silt	10
0.85	2.8	19.9	0.455	2.29	-0.69	-3.48	0.0	sandy silt to clayey silt	9
0.90	3.0	16.5	0.456	2.76	-0.65	-3.96	0.0	clayey silt to silty clay	9
0.95	3.1	14.7	0.491	3.34	-0.65	-4.44	0.0	silty clay to clay	10
1.00	3.3	15.9	0.588	3.70	-0.65	-4.10	0.0	silty clay to clay	10
1.05	3.4	15.8	0.657	4.17	-0.65	-4.12	0.0	clay	15
1.10	3.6	13.3	0.756	5.66	-0.64	-4.81	0.0	clay	14
1.15	3.8	13.8	0.765	5.53	-0.64	-4.62	0.0	clay	13
1.20	3.9	12.9	0.749	5.81	-0.64	-4.95	0.0	clay	13
1.25	4.1	12.8	0.698	5.47	-0.63	-4.96	0.0	clay	14
1.30	4.3	16.5	0.838	5.07	-0.63	-3.83	0.0	clay	17
1.35	4.4	20.5	0.940	4.58	-0.63	-3.06	0.0	clay	19
1.40	4.6	21.2	1.034	4.89	-0.63	-2.95	0.0	clay	21
1.45	4.8	21.0	0.978	4.65	-0.61	-2.90	0.0	clay	21
1.50	4.9	19.3	0.877	4.54	-0.61	-3.14	0.0	clay	20
1.55	5.1	19.8	0.836	4.22	-0.61	-3.05	0.0	clay	20
1.60	5.2	19.5	0.798	4.09	-0.60	-3.08	0.0	silty clay to clay	14
1.65	5.4	22.5	0.980	4.35	-0.59	-2.64	0.0	silty clay to clay	15
1.70	5.6	26.5	1.091	4.12	-0.59	-2.23	0.0	silty clay to clay	18
1.75	5.7	31.8	1.282	4.04	-0.56	-1.76	0.0	silty clay to clay	21
1.80	5.9	34.7	1.380	3.98	-0.56	-1.60	0.0	clayey silt to silty clay	17
1.85	6.1	34.5	1.184	3.43	-0.55	-1.59	0.0	clayey silt to silty clay	17
1.90	6.2	32.4	1.056	3.26	-0.55	-1.68	0.0	clayey silt to silty clay	16
1.95	6.4	31.4	0.900	2.86	-0.55	-1.74	0.0	clayey silt to silty clay	16
2.00	6.6	30.1	0.797	2.65	-0.54	-1.79	0.0	sandy silt to clayey silt	12

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	28.9	0.691	2.39	-0.54	-1.87	0.0	sandy silt to clayey silt	12
2.10	6.9	28.8	0.726	2.52	-0.54	-1.86	0.0	sandy silt to clayey silt	12
2.15	7.1	30.4	0.791	2.60	-0.54	-1.76	0.0	sandy silt to clayey silt	12
2.20	7.2	33.3	0.790	2.37	-0.54	-1.61	0.0	sandy silt to clayey silt	13
2.25	7.4	32.1	0.704	2.19	-0.53	-1.66	0.0	sandy silt to clayey silt	13
2.30	7.5	30.6	0.651	2.13	-0.53	-1.72	0.0	sandy silt to clayey silt	12
2.35	7.7	29.4	0.681	2.31	-0.52	-1.78	0.0	sandy silt to clayey silt	12
2.40	7.9	30.2	0.713	2.36	-0.52	-1.72	0.0	sandy silt to clayey silt	12
2.45	8.0	31.2	0.748	2.40	-0.51	-1.65	0.0	sandy silt to clayey silt	12
2.50	8.2	30.8	0.717	2.33	-0.51	-1.67	0.0	sandy silt to clayey silt	12
2.55	8.4	30.1	0.656	2.18	-0.51	-1.70	0.0	sandy silt to clayey silt	12
2.60	8.5	30.9	0.549	1.78	-0.51	-1.64	0.0	sandy silt to clayey silt	12
2.65	8.7	30.1	0.729	2.42	-0.50	-1.68	0.0	sandy silt to clayey silt	12
2.70	8.9	31.4	1.016	3.23	-0.50	-1.59	0.0	sandy silt to clayey silt	13
2.75	9.0	38.9	0.940	2.42	-0.46	-1.19	0.0	sandy silt to clayey silt	14
2.80	9.2	34.5	0.813	2.36	-0.46	-1.32	0.0	sandy silt to clayey silt	14
2.85	9.4	29.1	0.668	2.29	-0.46	-1.57	0.0	sandy silt to clayey silt	13
2.90	9.5	30.3	0.658	2.17	-0.45	-1.49	0.0	sandy silt to clayey silt	12
2.95	9.7	31.8	0.681	2.14	-0.45	-1.40	0.0	sandy silt to clayey silt	12
3.00	9.8	31.5	0.667	2.12	-0.44	-1.41	0.0	sandy silt to clayey silt	12
3.05	10.0	29.8	0.632	2.12	-0.44	-1.48	0.0	sandy silt to clayey silt	12
3.10	10.2	29.6	0.623	2.11	-0.44	-1.47	0.0	sandy silt to clayey silt	12
3.15	10.3	31.3	0.682	2.18	-0.43	-1.38	0.0	sandy silt to clayey silt	13
3.20	10.5	36.2	0.469	1.30	-0.43	-1.20	0.0	sandy silt to clayey silt	12
3.25	10.7	25.8	0.417	1.62	-0.43	-1.67	0.0	sandy silt to clayey silt	12
3.30	10.8	24.8	0.382	1.54	-0.43	-1.71	0.0	sandy silt to clayey silt	10
3.35	11.0	25.4	0.405	1.59	-0.42	-1.66	0.0	sandy silt to clayey silt	10
3.40	11.2	23.1	0.458	1.98	-0.42	-1.82	0.0	sandy silt to clayey silt	10
3.45	11.3	23.6	0.399	1.69	-0.42	-1.77	0.0	sandy silt to clayey silt	9
3.50	11.5	22.2	0.223	1.01	-0.42	-1.88	0.0	sandy silt to clayey silt	9
3.55	11.6	20.2	0.226	1.12	-0.41	-2.04	0.0	sandy silt to clayey silt	9
3.60	11.8	21.9	0.256	1.17	-0.41	-1.87	0.0	sandy silt to clayey silt	9
3.65	12.0	22.4	0.312	1.39	-0.41	-1.83	0.0	sandy silt to clayey silt	9
3.70	12.1	21.0	0.289	1.38	-0.40	-1.92	0.0	sandy silt to clayey silt	9
3.75	12.3	21.2	0.265	1.25	-0.38	-1.77	0.0	sandy silt to clayey silt	8
3.80	12.5	19.9	0.228	1.15	-0.37	-1.85	0.0	sandy silt to clayey silt	8
3.85	12.6	21.7	0.212	0.98	-0.37	-1.68	0.0	sandy silt to clayey silt	8
3.90	12.8	20.8	0.152	0.73	-0.36	-1.75	0.0	sandy silt to clayey silt	8
3.95	13.0	18.8	0.143	0.76	-0.35	-1.89	0.0	sandy silt to clayey silt	8
4.00	13.1	18.8	0.173	0.92	-0.36	-1.89	0.0	sandy silt to clayey silt	8
4.05	13.3	20.3	0.204	1.00	-0.35	-1.74	0.0	sandy silt to clayey silt	8
4.10	13.5	24.5	0.256	1.04	-0.35	-1.44	0.0	sandy silt to clayey silt	9
4.15	13.6	24.9	0.566	2.28	-0.34	-1.39	0.0	sandy silt to clayey silt	14
4.20	13.8	52.6	0.774	1.47	-0.34	-0.64	0.0	silty sand to sandy silt	18
4.25	13.9	85.1	0.824	0.97	-0.38	-0.44	0.0	sand to silty sand	19
4.30	14.1	92.4	0.889	0.96	-0.09	-0.10	0.0	sand to silty sand	23
4.35	14.3	98.5	0.234	0.24	0.21	0.21	0.0	sand to silty sand	23
4.40	14.4	88.8	0.943	1.06	0.29	0.32	0.0	sand to silty sand	20
4.45	14.6	51.5	0.956	1.86	0.49	0.95	0.0	sand to silty sand	21
4.50	14.8	106.0	1.075	1.01	0.37	0.35	0.0	sand to silty sand	22

ıil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

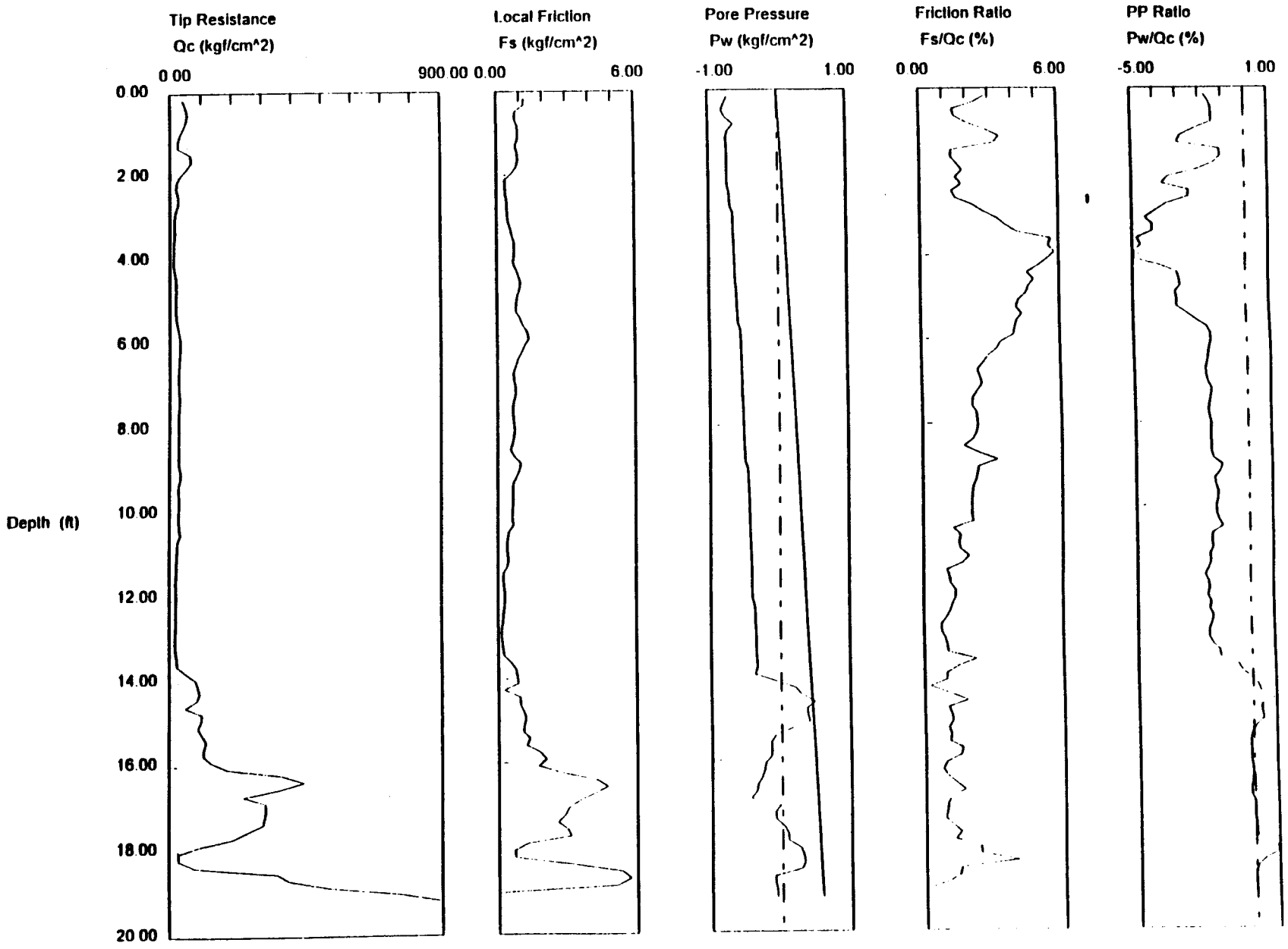
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	103.5	1.196	1.16	0.38	0.37	0.0	sand to silty sand	25
4.60	15.1	92.1	1.118	1.21	0.41	0.45	0.0	sand to silty sand	25
4.65	15.3	105.8	1.069	1.01	0.14	0.13	0.0	sand to silty sand	27
4.70	15.4	121.1	1.365	1.13	-0.09	-0.07	0.0	sand to silty sand	28
4.75	15.6	113.5	1.201	1.06	-0.16	-0.14	0.0	sand to silty sand	29
4.80	15.7	110.3	1.772	1.61	-0.14	-0.13	0.0	sand to silty sand	30
4.85	15.9	135.8	2.055	1.51	-0.15	-0.11	0.0	sand to silty sand	36
4.90	16.1	187.9	1.721	0.92	-0.24	-0.13	0.0	sand	46
4.95	16.2	369.5	2.736	0.74	-0.25	-0.07	0.0	sand	67
5.00	16.4	442.9	4.212	0.95	-0.29	-0.07	0.0	sand	78
5.05	16.6	357.6	4.733	1.32	-0.35	-0.10	0.0	sand	70
5.10	16.7	242.0	4.114	1.70	-0.36	-0.15	0.0	sand	61
5.15	16.9	314.7	3.469	1.10	-0.45	-0.14	0.0	sand	58
5.20	17.1	316.5	3.008	0.95	-0.02	-0.01	0.0	sand	63
5.25	17.2	311.7	2.863	0.92	-0.10	-0.03	0.0	sand	62
5.30	17.4	305.6	2.539	0.83	-0.09	-0.03	0.0	sand	58
5.35	17.6	254.7	2.955	1.16	0.03	0.01	0.0	sand	51
5.40	17.7	205.8	3.123	1.52	0.08	0.04	0.1	sand to silty sand	47
5.45	17.9	98.1	1.238	1.26	0.09	0.09	0.1	sand to silty sand	28
5.50	18.0	29.5	0.690	2.34	0.26	0.90	0.1	silty sand to sandy silt	18
5.55	18.2	30.9	0.734	2.38	0.30	0.99	0.1	clayey silt to silty clay	24
5.60	18.4	82.7	3.286	3.98	0.33	0.40	0.1	silty sand to sandy silt	52
5.65	18.5	354.4	5.351	1.51	0.28	0.08	0.0	sand to silty sand	69
5.70	18.7	392.5	5.719	1.46	-0.11	-0.03	0.0	sand	85
5.75	18.9	525.1	5.132	0.98	-0.10	-0.02	0.0	?	?
5.80	19.0	755.8	?	?	-0.08	-0.01	0.0	?	?
5.85	19.2	896.4	?	?	-0.07	-0.01	0.0	?	?

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT670
Cone Used: 4-CHANNEL

CPT Date: 03-10-98 08.49
Location: CPTU-01-~~064~~ 164
Job No.: 1507-000



Maximum Depth = 19.19 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT671 03-10-98 10:22

'ERATOR : GJV-LMM LOCATION : CPTU-01-~~064A~~ 164A

CONE ID : 4-CHANNEL JOB No. : 1507-000

E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	16.2	0.260	1.61	-0.01	-0.06	0.0	?	?
0.10	0.3	34.2	0.410	1.20	-0.58	-1.70	0.0	silty sand to sandy silt	11
0.15	0.5	52.0	0.680	1.31	-0.70	-1.35	0.0	silty sand to sandy silt	15
0.20	0.7	49.7	0.790	1.59	-0.82	-1.65	0.0	silty sand to sandy silt	18
0.25	0.8	58.0	0.770	1.33	-0.84	-1.45	0.0	silty sand to sandy silt	18
0.30	1.0	55.0	0.830	1.51	-0.88	-1.60	0.0	silty sand to sandy silt	18
0.35	1.1	49.2	0.940	1.91	-0.92	-1.87	0.0	silty sand to sandy silt	16
0.40	1.3	39.2	0.950	2.42	-0.89	-2.27	0.0	sandy silt to clayey silt	15
0.45	1.5	26.3	0.750	2.85	-0.88	-3.35	0.0	sandy silt to clayey silt	11
0.50	1.6	18.6	0.510	2.75	-0.88	-4.74	0.0	clayey silt to silty clay	10
0.55	1.8	16.1	0.400	2.48	-0.88	-5.45	0.0	clayey silt to silty clay	8
0.60	2.0	16.2	0.320	1.98	-0.88	-5.45	0.0	clayey silt to silty clay	8
0.65	2.1	16.7	0.240	1.43	-0.88	-5.26	0.0	sandy silt to clayey silt	7
0.70	2.3	15.9	0.200	1.26	-0.88	-5.53	0.0	sandy silt to clayey silt	6
0.75	2.5	10.4	0.110	1.06	-0.88	-8.45	0.0	clayey silt to silty clay	6
0.80	2.6	8.7	0.110	1.26	-0.88	-10.10	0.0	clayey silt to silty clay	5
0.85	2.8	10.8	0.200	1.85	-0.88	-8.14	0.0	clayey silt to silty clay	6
0.90	3.0	19.3	0.260	1.35	-0.86	-4.47	0.0	sandy silt to clayey silt	8
0.95	3.1	31.8	0.480	1.51	-0.86	-2.70	0.0	sandy silt to clayey silt	10
1.00	3.3	27.4	0.490	1.79	-0.85	-3.10	0.0	sandy silt to clayey silt	11
1.05	3.4	20.6	0.550	2.67	-0.85	-4.13	0.0	clayey silt to silty clay	11
1.10	3.6	18.8	0.640	3.40	-0.85	-4.51	0.0	clayey silt to silty clay	10
1.15	3.8	17.6	0.730	4.15	-0.85	-4.83	0.0	silty clay to clay	12
1.20	3.9	16.8	0.550	3.28	-0.85	-5.07	0.0	silty clay to clay	11
1.25	4.1	13.2	0.380	2.89	-0.85	-6.45	0.0	silty clay to clay	8
1.30	4.3	8.3	0.210	2.54	-0.79	-9.56	0.0	silty clay to clay	6
1.35	4.4	6.7	0.080	1.19	-0.65	-9.67	0.0	clayey silt to silty clay	4
1.40	4.6	6.3	0.050	0.80	-0.62	-9.89	0.0	clayey silt to silty clay	3
1.45	4.8	7.9	0.200	2.53	-0.61	-7.70	0.0	silty clay to clay	5
1.50	4.9	9.6	0.380	3.97	-0.60	-6.26	0.0	silty clay to clay	8
1.55	5.1	16.6	0.630	3.79	-0.60	-3.61	0.0	silty clay to clay	11
1.60	5.2	24.5	0.940	3.83	-0.59	-2.40	0.0	silty clay to clay	16
1.65	5.4	30.1	1.100	3.65	-0.59	-1.96	0.0	clayey silt to silty clay	14
1.70	5.6	29.5	1.010	3.42	-0.58	-1.97	0.0	clayey silt to silty clay	14
1.75	5.7	25.2	0.850	3.38	-0.58	-2.31	0.0	clayey silt to silty clay	13
1.80	5.9	21.4	0.850	3.98	-0.59	-2.76	0.0	silty clay to clay	15
1.85	6.1	21.9	0.850	3.89	-0.58	-2.65	0.0	clayey silt to silty clay	12
1.90	6.2	25.9	0.810	3.13	-0.57	-2.21	0.0	clayey silt to silty clay	12
1.95	6.4	26.0	0.870	3.34	-0.57	-2.19	0.0	clayey silt to silty clay	13
2.00	6.6	28.0	0.970	3.46	-0.57	-2.03	0.0	clayey silt to silty clay	14

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH :ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	32.1	1.020	3.17	-0.57	-1.77	0.0	clayey silt to silty clay	15
2.10	6.9	31.5	0.950	3.02	-0.56	-1.78	0.0	clayey silt to silty clay	16
2.15	7.1	29.6	0.850	2.87	-0.56	-1.89	0.0	sandy silt to clayey silt	12
2.20	7.2	31.5	0.750	2.38	-0.55	-1.75	0.0	sandy silt to clayey silt	12
2.25	7.4	30.9	0.710	2.30	-0.55	-1.78	0.0	sandy silt to clayey silt	12
2.30	7.5	30.9	0.630	2.04	-0.55	-1.78	0.0	sandy silt to clayey silt	12
2.35	7.7	31.8	0.720	2.26	-0.55	-1.73	0.0	sandy silt to clayey silt	13
2.40	7.9	33.7	0.750	2.22	-0.55	-1.63	0.0	sandy silt to clayey silt	13
2.45	8.0	35.3	0.760	2.15	-0.55	-1.56	0.0	sandy silt to clayey silt	14
2.50	8.2	34.4	0.780	2.27	-0.55	-1.60	0.0	sandy silt to clayey silt	14
2.55	8.4	34.7	0.740	2.13	-0.55	-1.58	0.0	sandy silt to clayey silt	14
2.60	8.5	32.7	0.690	2.11	-0.54	-1.65	0.0	sandy silt to clayey silt	13
2.65	8.7	32.7	0.660	2.02	-0.54	-1.65	0.0	sandy silt to clayey silt	13
2.70	8.9	34.2	0.670	1.96	-0.54	-1.58	0.0	sandy silt to clayey silt	14
2.75	9.0	37.5	0.570	1.52	-0.54	-1.44	0.0	sandy silt to clayey silt	14
2.80	9.2	35.8	0.670	1.87	-0.53	-1.48	0.0	sandy silt to clayey silt	14
2.85	9.4	33.2	0.690	2.08	-0.53	-1.60	0.0	sandy silt to clayey silt	14
2.90	9.5	35.7	0.670	1.88	-0.51	-1.43	0.0	sandy silt to clayey silt	13
2.95	9.7	31.9	0.820	2.57	-0.50	-1.57	0.0	sandy silt to clayey silt	14
3.00	9.8	40.0	0.760	1.90	-0.50	-1.25	0.0	sandy silt to clayey silt	14
3.05	10.0	33.3	0.590	1.77	-0.50	-1.50	0.0	sandy silt to clayey silt	14
3.10	10.2	28.8	0.430	1.49	-0.49	-1.70	0.0	sandy silt to clayey silt	12
3.15	10.3	26.0	0.360	1.39	-0.49	-1.89	0.0	sandy silt to clayey silt	10
3.20	10.5	23.6	0.350	1.49	-0.48	-2.04	0.0	sandy silt to clayey silt	10
3.25	10.7	24.5	0.520	2.12	-0.48	-1.96	0.0	sandy silt to clayey silt	10
3.30	10.8	27.8	0.530	1.91	-0.48	-1.73	0.0	sandy silt to clayey silt	10
3.35	11.0	26.4	0.610	2.31	-0.48	-1.82	0.0	sandy silt to clayey silt	11
3.40	11.2	30.2	0.500	1.66	-0.48	-1.59	0.0	sandy silt to clayey silt	11
3.45	11.3	27.2	0.290	1.07	-0.48	-1.77	0.0	sandy silt to clayey silt	10
3.50	11.5	21.2	0.300	1.41	-0.47	-2.21	0.0	sandy silt to clayey silt	9
3.55	11.6	21.2	0.260	1.22	-0.47	-2.21	0.0	sandy silt to clayey silt	8
3.60	11.8	19.6	0.270	1.38	-0.47	-2.40	0.0	sandy silt to clayey silt	8
3.65	12.0	19.9	0.240	1.21	-0.47	-2.36	0.0	sandy silt to clayey silt	8
3.70	12.1	19.2	0.270	1.40	-0.47	-2.44	0.0	sandy silt to clayey silt	8
3.75	12.3	20.2	0.340	1.68	-0.46	-2.27	0.0	sandy silt to clayey silt	8
3.80	12.5	23.2	0.350	1.51	-0.46	-1.98	0.0	sandy silt to clayey silt	9
3.85	12.6	21.2	0.340	1.60	-0.46	-2.17	0.0	sandy silt to clayey silt	9
3.90	12.8	24.6	0.320	1.30	-0.44	-1.79	0.0	sandy silt to clayey silt	9
3.95	13.0	21.7	0.280	1.29	-0.43	-1.98	0.0	sandy silt to clayey silt	9
4.00	13.1	20.9	0.250	1.20	-0.43	-2.06	0.0	sandy silt to clayey silt	8
4.05	13.3	19.2	0.220	1.15	-0.42	-2.19	0.0	sandy silt to clayey silt	8
4.10	13.5	20.2	0.260	1.29	-0.42	-2.08	0.0	sandy silt to clayey silt	9
4.15	13.6	24.4	0.320	1.31	-0.41	-1.68	0.0	sandy silt to clayey silt	10
4.20	13.8	27.5	0.300	1.09	-0.41	-1.49	0.0	silty sand to sandy silt	9
4.25	13.9	29.4	0.230	0.78	-0.40	-1.36	0.0	silty sand to sandy silt	10
4.30	14.1	29.7	0.210	0.71	-0.39	-1.31	0.0	silty sand to sandy silt	10
4.35	14.3	32.3	0.450	1.39	-0.39	-1.21	0.0	silty sand to sandy silt	11
4.40	14.4	38.5	0.490	1.27	-0.37	-0.96	0.0	silty sand to sandy silt	18
4.45	14.6	90.1	0.620	0.69	-0.36	-0.40	0.0	sand to silty sand	19
4.50	14.8	100.2	0.670	0.67	-0.48	-0.48	0.0	sand to silty sand	24

il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	97.4	0.860	0.88	-0.55	-0.56	0.0	sand to silty sand	24
4.60	15.1	85.9	0.610	0.71	-0.15	-0.17	0.0	sand to silty sand	20
4.65	15.3	56.9	0.450	0.79	0.26	0.46	0.0	sand to silty sand	20
4.70	15.4	94.0	0.770	0.82	0.31	0.33	0.0	sand to silty sand	23
4.75	15.6	121.8	0.860	0.71	-0.19	-0.16	0.0	sand to silty sand	28
4.80	15.7	125.4	0.860	0.69	-0.37	-0.29	0.0	sand	25
4.85	15.9	130.9	0.650	0.50	-0.37	-0.28	0.0	sand	25
4.90	16.1	123.5	0.690	0.56	-0.05	-0.04	0.0	sand	25
4.95	16.2	115.9	0.700	0.60	0.25	0.22	0.0	sand	24
5.00	16.4	119.5	1.040	0.87	0.58	0.49	0.0	sand	26
5.05	16.6	149.0	0.890	0.60	0.05	0.03	0.0	sand	30
5.10	16.7	174.3	1.520	0.87	0.10	0.06	0.0	sand	35
5.15	16.9	200.8	1.710	0.85	0.19	0.09	0.0	sand	41
5.20	17.1	238.7	2.260	0.95	0.25	0.10	0.0	sand	51
5.25	17.2	331.5	3.210	0.97	-0.12	-0.04	0.0	sand	60
5.30	17.4	337.1	2.250	0.67	-0.24	-0.07	0.0	sand	65
5.35	17.6	304.8	2.680	0.88	-0.35	-0.11	0.0	sand	63
5.40	17.7	306.6	2.320	0.76	-0.42	-0.14	0.0	sand	58
5.45	17.9	261.9	1.400	0.53	-0.40	-0.15	0.0	sand	55
5.50	18.0	253.8	1.480	0.58	-0.37	-0.15	0.0	sand	48
5.55	18.2	201.2	2.300	1.14	-0.26	-0.13	0.0	sand	38
5.60	18.4	116.8	1.240	1.06	-0.37	-0.32	0.0	sand to silty sand	30
5.65	18.5	37.9	0.130	0.34	-0.19	-0.50	0.0	sand to silty sand	15
5.70	18.7	24.3	0.140	0.58	-0.08	-0.33	0.0	silty sand to sandy silt	9
5.75	18.9	22.9	0.090	0.39	-0.07	-0.31	0.0	silty sand to sandy silt	8
5.80	19.0	24.8	0.150	0.61	-0.06	-0.24	0.0	silty sand to sandy silt	9
5.85	19.2	29.2	0.270	0.92	-0.04	-0.14	0.0	sand to silty sand	14
5.90	19.4	119.2	0.180	0.15	-0.03	-0.03	0.1	sand to silty sand	20
5.95	19.5	96.3	0.340	0.35	-0.04	-0.04	0.1	sand to silty sand	30
6.00	19.7	138.9	2.910	2.10	-0.05	-0.04	0.2	sand to silty sand	53
6.05	19.8	406.1	7.050	1.74	-0.14	-0.03	0.4	sand	88
6.10	20.0	768.3	6.630	0.86	-0.24	-0.03	0.5	sand	133
6.15	20.2	827.8	8.430	1.02	-0.37	-0.04	0.6	gravelly sand to sand	144
6.20	20.3	992.2	9.990	1.01	-0.51	-0.05	0.7	gravelly sand to sand	157
6.25	20.5	999.0	9.990	1.00	-0.47	-0.05	0.9	gravelly sand to sand	166
6.30	20.7	999.0	6.670	0.67	-0.44	-0.04	1.0	gravelly sand to sand	167
6.35	20.8	999.0	7.310	0.73	-0.39	-0.04	1.2	gravelly sand to sand	164
6.40	21.0	948.8	8.680	0.91	-0.22	-0.02	1.2	gravelly sand to sand	151
6.45	21.2	769.2	9.060	1.18	-0.19	-0.02	1.2	gravelly sand to sand	131
6.50	21.3	645.1	8.260	1.28	-0.15	-0.02	1.2	sand	133
6.55	21.5	580.3	7.850	1.35	-0.07	-0.01	1.3	sand	113
6.60	21.7	473.8	6.220	1.31	-0.18	-0.04	1.3	sand to silty sand	119
6.65	21.8	371.0	8.710	2.35	-0.21	-0.06	1.5	sand to silty sand	87
6.70	22.0	204.8	4.740	2.31	-0.37	-0.18	1.5	silty sand to sandy silt	73
6.75	22.1	84.4	2.950	3.50	-0.35	-0.41	1.5	silty sand to sandy silt	45
6.80	22.3	117.2	1.420	1.21	-0.30	-0.26	1.6	silty sand to sandy silt	33
6.85	22.5	99.8	1.290	1.29	-0.36	-0.36	1.6	sand to silty sand	33
6.90	22.6	176.3	1.460	0.83	-0.37	-0.21	1.6	sand	29
6.95	22.8	165.8	1.010	0.61	-0.38	-0.23	1.6	sand to silty sand	40
7.00	23.0	143.3	2.980	2.08	-0.39	-0.27	1.5	sand to silty sand	47

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ›ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
7.05	23.1	249.1	3.470	1.39	-0.39	-0.16	1.5	sand to silty sand	43
7.10	23.3	119.4	3.290	2.75	-0.62	-0.52	1.5	silty sand to sandy silt	48
7.15	23.5	61.3	1.740	2.84	-0.68	-1.11	1.5	sandy silt to clayey silt	30
7.20	23.6	44.7	0.870	1.95	-0.67	-1.50	1.5	silty sand to sandy silt	17
7.25	23.8	44.1	0.120	0.27	-0.67	-1.52	1.5	silty sand to sandy silt	14
7.30	23.9	34.8	0.010	0.03	-0.67	-1.92	1.5	sand to silty sand	9
7.35	24.1	32.3	0.220	0.68	-0.68	-2.11	1.5	silty sand to sandy silt	11
7.40	24.3	30.6	0.280	0.92	-0.67	-2.19	1.5	silty sand to sandy silt	10
7.45	24.4	29.4	0.240	0.82	-0.67	-2.28	1.5	silty sand to sandy silt	10
7.50	24.6	30.0	0.160	0.53	-0.67	-2.23	1.5	silty sand to sandy silt	10
7.55	24.8	32.4	0.100	0.31	-0.67	-2.07	1.5	silty sand to sandy silt	11
7.60	24.9	34.1	0.080	0.23	-0.67	-1.96	1.5	silty sand to sandy silt	11
7.65	25.1	34.8	0.220	0.63	-0.67	-1.93	1.5	silty sand to sandy silt	11
7.70	25.3	33.5	0.320	0.96	-0.67	-2.00	1.5	silty sand to sandy silt	11
7.75	25.4	33.8	0.270	0.80	-0.67	-1.98	1.5	silty sand to sandy silt	11
7.80	25.6	33.5	0.210	0.63	-0.67	-2.00	1.5	silty sand to sandy silt	11
7.85	25.8	32.4	0.150	0.46	-0.67	-2.07	1.5	silty sand to sandy silt	11
7.90	25.9	30.9	0.060	0.19	-0.67	-2.17	1.5	silty sand to sandy silt	10
7.95	26.1	30.1	0.010	0.03	-0.67	-2.23	1.5	silty sand to sandy silt	10
8.00	26.2	29.8	0.000	0.00	-0.67	-2.25	1.5	silty sand to sandy silt	10
8.05	26.4	29.8	0.050	0.17	-0.67	-2.24	1.5	silty sand to sandy silt	10
8.10	26.6	28.4	0.070	0.25	-0.68	-2.39	1.5	silty sand to sandy silt	10
8.15	26.7	27.5	0.080	0.29	-0.68	-2.47	1.5	silty sand to sandy silt	9
8.20	26.9	26.5	0.110	0.42	-0.68	-2.57	1.5	silty sand to sandy silt	9
8.25	27.1	28.0	0.070	0.25	-0.68	-2.43	1.5	silty sand to sandy silt	9
8.30	27.2	29.0	0.070	0.24	-0.68	-2.35	1.5	silty sand to sandy silt	10
8.35	27.4	29.7	0.050	0.17	-0.68	-2.29	1.5	silty sand to sandy silt	10
8.40	27.6	31.0	0.100	0.32	-0.68	-2.20	1.5	silty sand to sandy silt	10
8.45	27.7	31.6	0.180	0.57	-0.68	-2.15	1.5	silty sand to sandy silt	11
8.50	27.9	36.6	0.730	1.99	-0.67	-1.83	1.5	silty sand to sandy silt	14
8.55	28.1	62.1	1.170	1.88	-0.67	-1.08	1.5	sandy silt to clayey silt	21
8.60	28.2	56.1	1.380	2.46	-0.67	-1.19	1.5	sandy silt to clayey silt	23
8.65	28.4	56.6	1.160	2.05	-0.67	-1.18	1.5	sandy silt to clayey silt	22
8.70	28.5	56.0	1.220	2.18	-0.67	-1.20	1.5	silty sand to sandy silt	21
8.75	28.7	74.4	1.210	1.63	-0.66	-0.89	1.5	silty sand to sandy silt	22
8.80	28.9	63.8	1.060	1.66	-0.66	-1.03	1.5	silty sand to sandy silt	23
8.85	29.0	65.4	1.440	2.20	-0.66	-1.01	1.5	silty sand to sandy silt	22
8.90	29.2	70.3	1.460	2.08	-0.66	-0.94	1.5	sandy silt to clayey silt	24
8.95	29.4	47.0	1.200	2.55	-0.66	-1.40	1.5	sandy silt to clayey silt	21
9.00	29.5	37.2	0.670	1.80	-0.66	-1.77	1.6	sandy silt to clayey silt	16
9.05	29.7	32.8	0.350	1.07	-0.66	-2.01	1.6	silty sand to sandy silt	11
9.10	29.9	30.6	0.190	0.62	-0.66	-2.15	1.7	silty sand to sandy silt	11
9.15	30.0	31.5	0.340	1.08	-0.66	-2.10	1.8	silty sand to sandy silt	11
9.20	30.2	35.7	0.470	1.32	-0.66	-1.85	1.8	silty sand to sandy silt	12
9.25	30.3	37.4	0.460	1.23	-0.65	-1.74	1.8	silty sand to sandy silt	12
9.30	30.5	33.4	0.250	0.75	-0.65	-1.95	1.8	silty sand to sandy silt	11
9.35	30.7	31.5	0.040	0.13	-0.65	-2.06	1.8	silty sand to sandy silt	11
9.40	30.8	31.2	0.040	0.13	-0.65	-2.08	1.9	silty sand to sandy silt	10
9.45	31.0	31.5	0.070	0.22	-0.65	-2.07	1.9	silty sand to sandy silt	11
9.50	31.2	32.1	0.020	0.06	-0.65	-2.03	1.9	sand to silty sand	8

›il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
9.55	31.3	36.6	0.070	0.19	-0.65	-1.78	1.9	sand to silty sand	9
9.60	31.5	37.2	0.160	0.43	-0.65	-1.75	1.9	silty sand to sandy silt	12
9.65	31.7	37.0	0.170	0.46	-0.65	-1.76	2.0	silty sand to sandy silt	12
9.70	31.8	33.2	0.160	0.48	-0.65	-1.96	2.0	silty sand to sandy silt	11
9.75	32.0	31.5	0.000	0.00	-0.65	-2.06	2.0	silty sand to sandy silt	11
9.80	32.2	33.1	0.090	0.27	-0.64	-1.93	2.0	silty sand to sandy silt	12
9.85	32.3	40.1	0.550	1.37	-0.64	-1.60	2.0	silty sand to sandy silt	14
9.90	32.5	52.8	1.030	1.95	-0.64	-1.21	2.0	silty sand to sandy silt	18
9.95	32.6	65.0	1.480	2.28	-0.64	-0.98	2.0	silty sand to sandy silt	21
10.00	32.8	69.3	1.080	1.56	-0.63	-0.91	2.0	silty sand to sandy silt	21
10.05	33.0	57.0	0.760	1.33	-0.63	-1.10	2.0	silty sand to sandy silt	20
10.10	33.1	54.6	0.570	1.04	-0.63	-1.15	2.0	silty sand to sandy silt	18
10.15	33.3	51.0	0.270	0.53	-0.62	-1.22	2.0	silty sand to sandy silt	17
10.20	33.5	45.1	0.220	0.49	-0.62	-1.37	2.0	silty sand to sandy silt	16
10.25	33.6	44.8	0.400	0.89	-0.62	-1.38	2.0	silty sand to sandy silt	16
10.30	33.8	55.1	0.530	0.96	-0.61	-1.11	2.0	silty sand to sandy silt	16
10.35	34.0	46.5	0.510	1.10	-0.60	-1.29	2.0	silty sand to sandy silt	17
10.40	34.1	47.4	0.380	0.80	-0.60	-1.27	2.0	silty sand to sandy silt	16
10.45	34.3	46.9	0.290	0.62	-0.60	-1.28	2.0	silty sand to sandy silt	15
10.50	34.4	41.1	0.320	0.78	-0.60	-1.46	2.0	silty sand to sandy silt	14
10.55	34.6	36.4	0.260	0.71	-0.60	-1.65	2.0	silty sand to sandy silt	12
10.60	34.8	32.5	0.180	0.55	-0.60	-1.85	2.0	silty sand to sandy silt	11
10.65	34.9	31.8	0.130	0.41	-0.60	-1.89	2.0	silty sand to sandy silt	11
10.70	35.1	31.5	0.090	0.29	-0.60	-1.90	2.0	silty sand to sandy silt	11
10.75	35.3	31.2	0.080	0.26	-0.60	-1.92	2.0	silty sand to sandy silt	10
10.80	35.4	31.2	0.060	0.19	-0.60	-1.92	2.0	silty sand to sandy silt	10
10.85	35.6	30.8	0.100	0.32	-0.60	-1.95	2.0	silty sand to sandy silt	10
10.90	35.8	31.2	0.130	0.42	-0.60	-1.93	2.0	silty sand to sandy silt	10
10.95	35.9	30.9	0.130	0.42	-0.60	-1.94	2.0	silty sand to sandy silt	11
11.00	36.1	33.5	0.220	0.66	-0.59	-1.76	2.0	silty sand to sandy silt	11
11.05	36.3	38.4	0.200	0.52	-0.58	-1.51	2.0	silty sand to sandy silt	12
11.10	36.4	40.0	0.300	0.75	-0.58	-1.45	2.0	silty sand to sandy silt	14
11.15	36.6	47.0	0.480	1.02	-0.58	-1.24	2.4	silty sand to sandy silt	16
11.20	36.7	57.1	0.430	0.75	-0.57	-1.00	2.5	silty sand to sandy silt	17
11.25	36.9	50.2	1.000	1.99	-0.57	-1.14	2.5	silty sand to sandy silt	18
11.30	37.1	52.2	0.900	1.73	-0.56	-1.07	2.5	silty sand to sandy silt	17
11.35	37.2	52.7	0.760	1.44	-0.55	-1.04	2.7	silty sand to sandy silt	17
11.40	37.4	48.8	0.650	1.33	-0.54	-1.11	2.7	silty sand to sandy silt	17
11.45	37.6	48.1	0.600	1.25	-0.54	-1.12	2.7	silty sand to sandy silt	16
11.50	37.7	47.0	1.020	2.17	-0.53	-1.13	2.8	silty sand to sandy silt	17
11.55	37.9	58.8	0.860	1.46	-0.53	-0.90	2.8	silty sand to sandy silt	18
11.60	38.1	54.5	0.350	0.64	-0.53	-0.97	2.8	silty sand to sandy silt	18
11.65	38.2	44.8	0.600	1.34	-0.52	-1.16	2.8	silty sand to sandy silt	19
11.70	38.4	70.6	0.680	0.96	-0.52	-0.74	2.8	silty sand to sandy silt	24
11.75	38.5	97.2	1.370	1.41	-0.51	-0.52	3.0	silty sand to sandy silt	28
11.80	38.7	84.3	1.730	2.05	-0.51	-0.61	3.0	silty sand to sandy silt	29
11.85	38.9	76.4	1.520	1.99	-0.50	-0.65	3.0	silty sand to sandy silt	25
11.90	39.0	65.2	1.470	2.25	-0.49	-0.75	3.0	sandy silt to clayey silt	27
11.95	39.2	63.3	3.240	5.12	-0.48	-0.76	3.1	sandy silt to clayey silt	36
12.00	39.4	138.6	4.240	3.06	-0.46	-0.33	3.1	very stiff fine grained (*)	106

oil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
12.05	39.5	116.5	6.010	5.16	-0.44	-0.38	3.1	very stiff fine grained (*)	143
12.10	39.7	173.0	7.570	4.38	-0.43	-0.25	2.9	sandy silt to clayey silt	64
12.15	39.9	189.5	1.140	0.60	-0.39	-0.21	2.8	silty sand to sandy silt	62
12.20	40.0	193.9	5.600	2.89	-0.37	-0.19	2.9	silty sand to sandy silt	57
12.25	40.2	127.0	4.990	3.93	-0.36	-0.28	2.9	silty sand to sandy silt	69
12.30	40.4	303.1	5.870	1.94	-0.35	-0.12	2.9	silty sand to sandy silt	76
12.35	40.5	250.9	6.770	2.70	-0.37	-0.15	2.9	silty sand to sandy silt	75
12.40	40.7	124.5	5.040	4.05	-0.16	-0.13	2.9	silty sand to sandy silt	59
12.45	40.8	152.3	4.090	2.68	-0.12	-0.08	2.9	sandy silt to clayey silt	51
12.50	41.0	107.7	2.820	2.62	-0.16	-0.15	2.9	silty sand to sandy silt	35
12.55	41.2	52.2	1.130	2.17	-0.15	-0.29	2.9	silty sand to sandy silt	22
12.60	41.3	39.4	0.440	1.12	-0.14	-0.35	2.9	silty sand to sandy silt	14
12.65	41.5	38.1	0.400	1.05	-0.12	-0.31	2.9	silty sand to sandy silt	13
12.70	41.7	38.1	0.340	0.89	-0.11	-0.29	2.9	silty sand to sandy silt	13
12.75	41.8	37.8	0.330	0.87	-0.11	-0.29	2.9	silty sand to sandy silt	13
12.80	42.0	38.3	0.380	0.99	-0.10	-0.26	3.0	silty sand to sandy silt	13
12.85	42.2	39.3	0.500	1.27	-0.10	-0.25	3.0	silty sand to sandy silt	13
12.90	42.3	40.4	0.500	1.24	-0.09	-0.22	3.0	silty sand to sandy silt	13
12.95	42.5	38.1	0.520	1.36	-0.09	-0.24	3.0	silty sand to sandy silt	13
13.00	42.7	40.8	0.520	1.27	-0.07	-0.17	3.0	silty sand to sandy silt	13
13.05	42.8	37.2	0.490	1.32	-0.06	-0.16	3.1	silty sand to sandy silt	13
13.10	43.0	35.1	0.360	1.02	-0.05	-0.14	3.1	silty sand to sandy silt	12
13.15	43.1	34.8	0.320	0.92	-0.04	-0.11	3.0	silty sand to sandy silt	12
13.20	43.3	36.8	0.240	0.65	-0.04	-0.11	3.0	silty sand to sandy silt	12
13.25	43.5	36.9	0.150	0.41	-0.03	-0.08	3.0	silty sand to sandy silt	12
13.30	43.6	34.6	0.070	0.20	0.03	0.09	3.0	sand to silty sand	9
13.35	43.8	32.8	0.020	0.06	0.03	0.09	3.0	sand to silty sand	8
13.40	44.0	32.2	0.000	0.00	0.03	0.09	3.0	sand to silty sand	8
13.45	44.1	32.8	0.030	0.09	0.04	0.12	3.0	sand to silty sand	8
13.50	44.3	32.2	0.010	0.03	0.04	0.12	3.0	sand to silty sand	8
13.55	44.5	30.4	0.000	0.00	0.05	0.16	3.0	sand to silty sand	8
13.60	44.6	30.6	0.050	0.16	0.05	0.16	3.1	silty sand to sandy silt	10
13.65	44.8	30.6	0.060	0.20	0.05	0.16	3.2	silty sand to sandy silt	10
13.70	44.9	28.9	0.090	0.31	0.05	0.17	3.2	silty sand to sandy silt	10
13.75	45.1	28.2	0.060	0.21	0.05	0.18	3.2	silty sand to sandy silt	10
13.80	45.3	30.2	0.240	0.80	0.06	0.20	3.2	silty sand to sandy silt	11
13.85	45.4	39.4	0.150	0.38	0.06	0.15	3.2	silty sand to sandy silt	11
13.90	45.6	30.4	0.050	0.16	0.08	0.26	3.3	silty sand to sandy silt	11
13.95	45.8	26.2	0.030	0.11	0.09	0.34	3.3	silty sand to sandy silt	9
14.00	45.9	26.5	0.060	0.23	0.10	0.38	3.3	silty sand to sandy silt	9
14.05	46.1	24.4	0.070	0.29	0.09	0.37	3.3	silty sand to sandy silt	8
14.10	46.3	23.8	0.080	0.34	0.10	0.42	3.3	silty sand to sandy silt	8
14.15	46.4	23.1	0.090	0.39	0.10	0.43	3.3	silty sand to sandy silt	8
14.20	46.6	22.7	0.120	0.53	0.10	0.44	3.3	silty sand to sandy silt	8
14.25	46.8	23.2	0.090	0.39	0.11	0.47	3.3	silty sand to sandy silt	8
14.30	46.9	24.2	0.040	0.17	0.11	0.46	3.3	silty sand to sandy silt	8
14.35	47.1	24.9	0.130	0.52	0.11	0.44	3.3	silty sand to sandy silt	8
14.40	47.2	24.9	0.060	0.24	0.11	0.44	3.4	silty sand to sandy silt	8
14.45	47.4	22.9	0.010	0.04	0.11	0.48	3.4	silty sand to sandy silt	8
14.50	47.6	22.0	0.060	0.27	0.12	0.55	3.4	silty sand to sandy silt	7

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
14.55	47.7	22.2	0.050	0.23	0.13	0.59	3.4	silty sand to sandy silt	8
14.60	47.9	23.8	0.040	0.17	0.13	0.55	3.4	silty sand to sandy silt	8
14.65	48.1	24.5	0.080	0.33	0.14	0.57	3.4	silty sand to sandy silt	8
14.70	48.2	24.5	0.100	0.41	0.14	0.57	3.4	silty sand to sandy silt	8
14.75	48.4	21.9	0.130	0.59	0.14	0.64	3.4	silty sand to sandy silt	7
14.80	48.6	20.9	0.000	0.00	0.14	0.67	3.4	silty sand to sandy silt	7
14.85	48.7	20.9	0.040	-0.19	0.15	0.72	3.4	silty sand to sandy silt	7
14.90	48.9	21.3	0.060	0.28	0.15	0.70	3.4	silty sand to sandy silt	7
14.95	49.0	21.4	0.100	0.47	0.15	0.70	3.4	silty sand to sandy silt	7
15.00	49.2	21.2	0.080	0.38	0.16	0.75	3.4	silty sand to sandy silt	7
15.05	49.4	22.5	0.060	0.27	0.16	0.71	3.4	silty sand to sandy silt	8
15.10	49.5	24.9	0.000	0.00	0.17	0.68	3.4	silty sand to sandy silt	8
15.15	49.7	23.8	0.060	0.25	0.17	0.72	3.4	silty sand to sandy silt	8
15.20	49.9	23.5	0.080	0.34	0.23	0.98	3.4	silty sand to sandy silt	8
15.25	50.0	23.2	0.070	0.30	0.24	1.03	3.4	silty sand to sandy silt	8
15.30	50.2	23.5	0.290	1.23	0.24	1.02	3.4	sandy silt to clayey silt	10
15.35	50.4	28.2	1.020	3.62	0.25	0.89	3.4	sandy silt to clayey silt	14
15.40	50.5	56.2	0.530	0.94	0.24	0.43	3.4	sandy silt to clayey silt	17
15.45	50.7	41.3	0.770	1.86	0.27	0.65	3.4	sand to silty sand	22
15.50	50.9	163.1	1.850	1.13	0.29	0.18	3.5	sand to silty sand	39
15.55	51.0	262.7	2.660	1.01	0.28	0.11	3.6	sand	42
15.60	51.2	201.5	3.010	1.49	0.26	0.13	3.8	sand to silty sand	45
15.65	51.3	74.7	2.120	2.84	0.20	0.27	3.8	silty sand to sandy silt	36
15.70	51.5	43.8	1.270	2.90	0.20	0.46	3.9	sandy silt to clayey silt	20
15.75	51.7	28.6	0.690	2.41	0.22	0.77	3.9	sandy silt to clayey silt	13
15.80	51.8	23.5	0.270	1.15	0.22	0.94	3.9	sandy silt to clayey silt	10
15.85	52.0	23.7	0.260	1.10	0.22	0.93	3.9	sandy silt to clayey silt	10
15.90	52.2	25.8	0.260	1.01	0.31	1.20	4.2	sandy silt to clayey silt	10
15.95	52.3	28.4	0.580	2.04	0.32	1.13	4.2	sandy silt to clayey silt	13
16.00	52.5	42.7	1.540	3.61	0.33	0.77	4.2	sandy silt to clayey silt	20
16.05	52.7	75.6	1.960	2.59	0.32	0.42	4.2	sandy silt to clayey silt	23
16.10	52.8	51.9	1.470	2.83	0.31	0.60	4.2	sandy silt to clayey silt	23
16.15	53.0	44.8	1.060	2.37	0.34	0.76	4.2	sandy silt to clayey silt	20
16.20	53.1	55.8	0.930	1.67	0.35	0.63	4.2	silty sand to sandy silt	18
16.25	53.3	57.0	0.950	1.67	0.34	0.60	4.2	sandy silt to clayey silt	23
16.30	53.5	56.1	1.720	3.07	0.35	0.62	4.2	silty sand to sandy silt	23
16.35	53.6	91.9	1.550	1.69	0.34	0.37	4.2	silty sand to sandy silt	31
16.40	53.8	128.3	1.800	1.40	0.32	0.25	4.2	silty sand to sandy silt	31
16.45	54.0	62.0	1.070	1.73	0.19	0.31	4.2	silty sand to sandy silt	25
16.50	54.1	37.8	0.900	2.38	0.18	0.48	4.2	sandy silt to clayey silt	18
16.55	54.3	33.2	0.990	2.99	0.22	0.66	4.1	sandy silt to clayey silt	13
16.60	54.5	27.8	0.720	2.59	0.22	0.79	4.1	sandy silt to clayey silt	11
16.65	54.6	22.5	0.430	1.92	0.24	1.07	4.1	sandy silt to clayey silt	9
16.70	54.8	20.2	0.360	1.78	0.25	1.24	4.0	sandy silt to clayey silt	9
16.75	55.0	24.2	0.320	1.32	0.27	1.12	4.0	sandy silt to clayey silt	10
16.80	55.1	32.2	0.500	1.55	0.29	0.90	4.0	sandy silt to clayey silt	13
16.85	55.3	40.8	0.610	1.50	0.29	0.71	4.0	silty sand to sandy silt	12
16.90	55.4	35.9	0.380	1.06	0.29	0.81	4.0	sandy silt to clayey silt	14
16.95	55.6	29.8	0.730	2.45	0.29	0.97	4.0	sandy silt to clayey silt	14
17.00	55.8	40.6	1.080	2.66	0.32	0.79	4.0	sandy silt to clayey silt	17

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

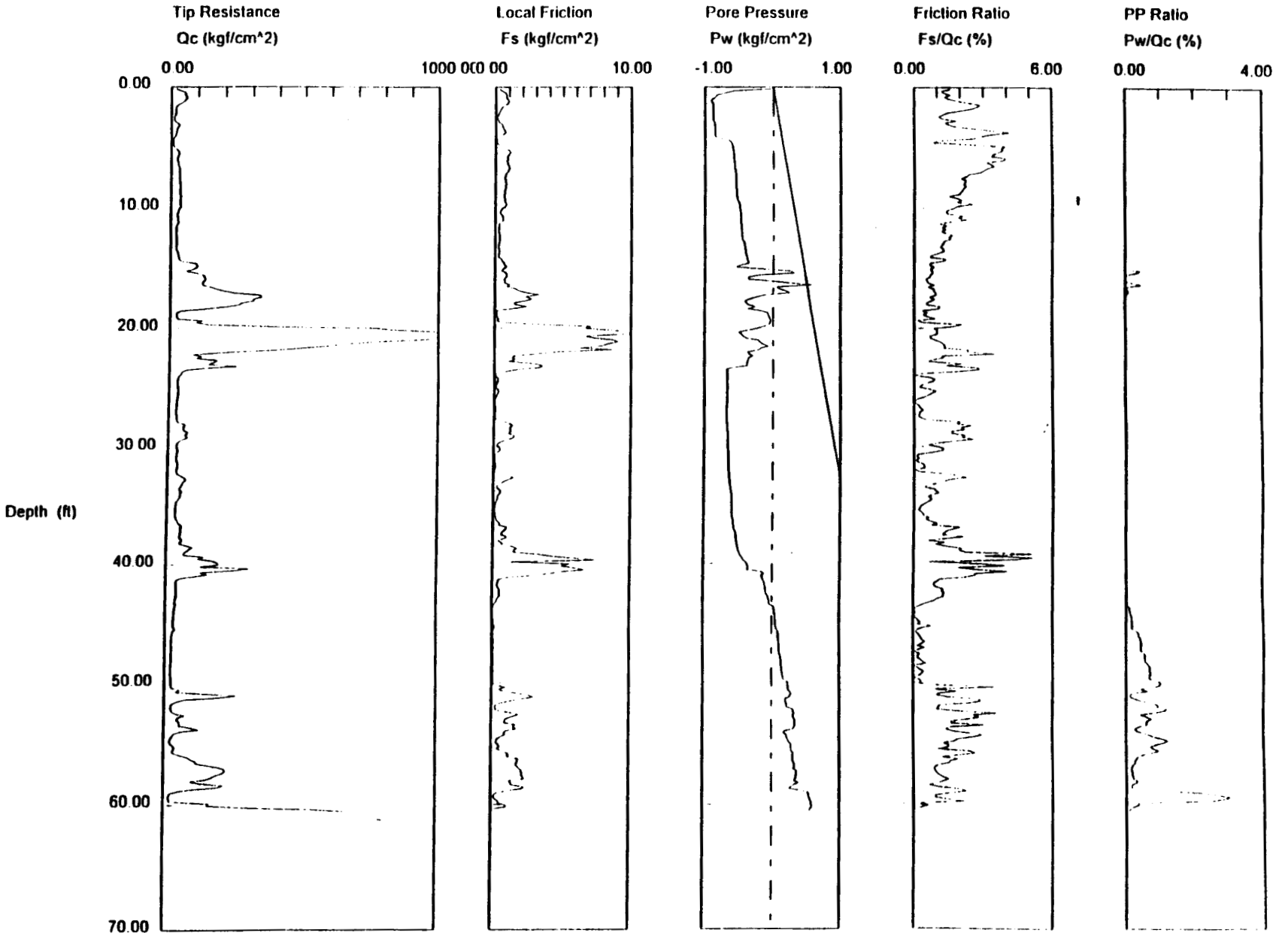
DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
17.05	55.9	60.7	1.250	2.06	0.32	0.53	4.0	silty sand to sandy silt	21
17.10	56.1	91.1	1.140	1.25	0.31	0.34	4.0	silty sand to sandy silt	28
17.15	56.3	99.5	1.930	1.94	0.31	0.31	4.0	silty sand to sandy silt	34
17.20	56.4	118.4	1.880	1.59	0.31	0.26	4.0	silty sand to sandy silt	37
17.25	56.6	119.3	1.860	1.56	0.33	0.28	4.0	sand to silty sand	33
17.30	56.8	158.6	1.730	1.09	0.34	0.21	4.0	sand to silty sand	40
17.35	56.9	205.3	1.900	0.93	0.34	0.17	4.0	sand	39
17.40	57.1	224.7	2.040	0.91	0.32	0.14	4.0	sand	44
17.45	57.2	224.4	2.180	0.97	0.37	0.16	4.0	sand	44
17.50	57.4	214.8	2.200	1.02	0.37	0.17	4.0	sand	42
17.55	57.6	190.5	2.180	1.14	0.36	0.19	4.0	sand	39
17.60	57.7	176.2	2.270	1.29	0.36	0.20	4.0	sand to silty sand	44
17.65	57.9	155.5	2.400	1.54	0.35	0.23	4.0	sand to silty sand	36
17.70	58.1	99.4	1.290	1.30	0.33	0.33	4.0	sand to silty sand	32
17.75	58.2	134.9	1.420	1.05	0.41	0.30	4.0	sand	30
17.80	58.4	219.3	1.450	0.66	0.33	0.15	4.0	sand	37
17.85	58.6	199.1	2.360	1.19	0.29	0.15	4.0	sand	35
17.90	58.7	103.2	2.150	2.08	0.26	0.25	4.0	sand to silty sand	30
17.95	58.9	52.1	1.200	2.30	0.45	0.86	4.0	silty sand to sandy silt	20
18.00	59.1	24.3	0.380	1.56	0.54	2.22	4.0	sandy silt to clayey silt	13
18.05	59.2	20.6	0.200	0.97	0.54	2.62	4.0	sandy silt to clayey silt	8
18.10	59.4	18.2	0.170	0.94	0.55	3.03	4.0	sandy silt to clayey silt	8
18.15	59.5	19.6	0.280	1.42	0.56	2.85	4.0	sandy silt to clayey silt	8
18.20	59.7	22.8	0.510	2.23	0.57	2.50	4.0	sand to silty sand	18
18.25	59.9	168.4	0.520	0.31	0.59	0.35	4.3	sand	23
18.30	60.0	158.4	1.030	0.65	0.58	0.37	4.3	sand	41
18.35	60.2	293.0	1.080	0.37	0.60	0.20	4.3	?	?
18.40	60.4	543.0	?	?	0.57	0.10	4.4	?	?
18.45	60.5	664.2	?	?	0.55	0.08	4.5	?	?

.il interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.L. Wright Inc.

Operator: GJV LMM
Sounding: CPT671
Cone Used: 4-CHANNEL

CPT Date: 03-10-98 10.22
Location: CPTU-01-~~064A~~ 164A
Job No.: 1507-000



Maximum Depth = 60.53 feet

Depth Increment = 0.16 feet

SOUNDING DATA IN FILE CPT672 03-11-98 08:41

PERATOR : GJV-LMM LOCATION : CPTU-01-067 167

ID : 4-CHANNEL JOB No. : 1507-000

R. E. WRIGHT, INC.
916 Springdale Dr., Exton, Pa 19341

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs7Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
0.05	0.2	13.1	0.390	2.97	-0.04	-0.31	0.0	?	?
0.10	0.3	20.0	0.480	2.40	-0.15	-0.75	0.0	clayey silt to silty clay	8
0.15	0.5	17.8	0.500	2.80	-0.61	-3.42	0.0	clayey silt to silty clay	8
0.20	0.7	12.9	0.360	2.79	-0.61	-4.72	0.0	silty clay to clay	10
0.25	0.8	14.4	0.570	3.96	-0.63	-4.38	0.0	clayey silt to silty clay	10
0.30	1.0	30.1	0.890	2.96	-0.61	-2.03	0.0	clayey silt to silty clay	15
0.35	1.1	44.0	1.060	2.41	-0.13	-0.30	0.0	sandy silt to clayey silt	14
0.40	1.3	31.5	1.070	3.40	-0.04	-0.13	0.0	clayey silt to silty clay	16
0.45	1.5	23.3	0.810	3.48	-0.09	-0.39	0.0	sandy silt to clayey silt	13
0.50	1.6	40.6	0.780	1.92	-0.49	-1.21	0.0	sandy silt to clayey silt	13
0.55	1.8	32.9	0.830	2.52	-0.10	-0.30	0.0	sandy silt to clayey silt	13
0.60	2.0	23.9	0.760	3.18	-0.08	-0.33	0.0	clayey silt to silty clay	12
0.65	2.1	16.6	0.520	3.14	-0.17	-1.03	0.0	clayey silt to silty clay	12
0.70	2.3	29.0	0.870	3.00	-0.10	-0.34	0.0	silty sand to sandy silt	14
0.75	2.5	83.7	0.350	0.42	0.00	0.00	0.0	silty sand to sandy silt	23
0.80	2.6	93.3	1.940	2.08	0.00	0.00	0.1	sand to silty sand	22
.85	2.8	92.0	0.730	0.79	0.00	0.00	0.0	silty sand to sandy silt	25
0.90	3.0	39.9	0.670	1.68	0.00	0.00	0.0	silty sand to sandy silt	18
0.95	3.1	31.2	0.430	1.38	0.00	0.00	0.0	sandy silt to clayey silt	11
1.00	3.3	12.8	0.460	3.59	-0.15	-1.17	0.0	clayey silt to silty clay	9
1.05	3.4	7.7	0.320	4.15	-0.08	-1.04	0.0	clay	10
1.10	3.6	10.7	0.330	3.10	-0.07	-0.66	0.0	clayey silt to silty clay	8
1.15	3.8	29.1	0.460	1.58	-0.06	-0.21	0.0	sandy silt to clayey silt	9
1.20	3.9	24.6	0.570	2.32	-0.16	-0.65	0.0	sandy silt to clayey silt	9
1.25	4.1	14.7	0.490	3.34	-0.16	-1.09	0.0	clayey silt to silty clay	8
1.30	4.3	11.5	0.440	3.82	-0.15	-1.30	0.0	silty clay to clay	8
1.35	4.4	11.2	0.470	4.20	-0.15	-1.34	0.0	clay	11
1.40	4.6	10.4	0.550	5.27	-0.12	-1.15	0.0	clay	11
1.45	4.8	12.7	0.580	4.56	-0.12	-0.94	0.0	clay	12
1.50	4.9	13.3	0.640	4.83	-0.12	-0.90	0.1	clay	13
1.55	5.1	12.3	0.710	5.79	-0.11	-0.90	0.1	clay	12
1.60	5.2	10.5	0.690	6.57	-0.10	-0.95	0.1	clay	11
1.65	5.4	10.3	0.690	6.68	-0.09	-0.87	0.1	clay	12
1.70	5.6	14.7	0.680	4.62	-0.08	-0.54	0.1	clay	13
1.75	5.7	14.3	0.670	4.68	-0.08	-0.56	0.1	clay	14
1.80	5.9	12.8	0.640	4.98	-0.07	-0.55	0.1	clay	14
1.85	6.1	13.9	0.640	4.60	-0.06	-0.43	0.1	clay	14
1.90	6.2	15.2	0.660	4.34	-0.06	-0.39	0.1	clay	16
1.95	6.4	18.6	0.830	4.45	-0.01	-0.05	0.1	clay	19
2.00	6.6	22.8	1.000	4.38	0.00	0.00	0.1	clay	21

nterpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
2.05	6.7	22.7	0.960	4.23	0.00	0.00	0.2	silty clay to clay	14
2.10	6.9	18.5	0.810	4.38	0.00	0.00	0.2	silty clay to clay	13
2.15	7.1	16.0	0.630	3.93	0.02	0.12	0.2	clay	17
2.20	7.2	15.4	0.660	4.29	0.02	0.13	0.2	silty clay to clay	12
2.25	7.4	22.5	0.640	2.84	0.03	0.13	0.2	clayey silt to silty clay	12
2.30	7.5	32.8	0.730	2.23	0.05	0.15	0.2	clayey silt to silty clay	14
2.35	7.7	26.1	0.890	-3.42	0.06	0.23	0.2	sandy silt to clayey silt	12
2.40	7.9	31.1	0.840	2.70	0.08	0.26	0.2	sandy silt to clayey silt	12
2.45	8.0	31.9	0.700	2.19	0.12	0.38	0.2	sandy silt to clayey silt	13
2.50	8.2	31.4	0.730	2.33	0.14	0.45	0.2	sandy silt to clayey silt	13
2.55	8.4	32.0	0.780	2.44	0.15	0.47	0.2	sandy silt to clayey silt	13
2.60	8.5	32.3	0.590	1.82	0.15	0.46	0.2	sandy silt to clayey silt	12
2.65	8.7	28.8	0.680	2.36	0.17	0.59	0.2	sandy silt to clayey silt	12
2.70	8.9	29.0	0.880	3.04	0.17	0.59	0.2	clayey silt to silty clay	15
2.75	9.0	29.5	1.060	3.59	0.18	0.61	0.2	clayey silt to silty clay	14
2.80	9.2	27.0	1.050	3.90	0.18	0.67	0.2	silty clay to clay	18
2.85	9.4	26.4	1.100	4.17	0.21	0.80	0.2	clayey silt to silty clay	15
2.90	9.5	39.6	1.310	3.31	0.24	0.61	0.2	clayey silt to silty clay	19
2.95	9.7	49.7	1.580	3.18	0.28	0.56	0.3	clayey silt to silty clay	25
3.00	9.8	59.4	2.010	3.39	0.30	0.51	0.3	sandy silt to clayey silt	23
3.05	10.0	66.5	1.510	2.27	0.27	0.41	0.3	sandy silt to clayey silt	23
3.10	10.2	46.8	0.870	1.86	0.28	0.60	0.3	sandy silt to clayey silt	20
3.15	10.3	38.4	0.770	2.01	0.29	0.76	0.3	sandy silt to clayey silt	16
3.20	10.5	37.0	0.560	1.51	0.31	0.84	0.3	sandy silt to clayey silt	15
3.25	10.7	33.9	0.700	2.06	0.31	0.91	0.3	sandy silt to clayey silt	14
3.30	10.8	35.9	0.620	1.73	0.33	0.92	0.3	sandy silt to clayey silt	14
3.35	11.0	32.5	0.610	1.88	0.32	0.98	0.3	sandy silt to clayey silt	13
3.40	11.2	28.2	0.670	2.38	0.34	1.21	0.3	sandy silt to clayey silt	12
3.45	11.3	33.0	0.800	2.42	0.34	1.03	0.3	sandy silt to clayey silt	13
3.50	11.5	36.3	0.780	2.15	0.35	0.97	0.3	sandy silt to clayey silt	14
3.55	11.6	32.1	0.790	2.46	0.34	1.06	0.3	sandy silt to clayey silt	13
3.60	11.8	30.7	0.770	2.51	0.35	1.14	0.3	sandy silt to clayey silt	13
3.65	12.0	32.2	0.600	1.86	0.35	1.09	0.4	sandy silt to clayey silt	13
3.70	12.1	33.4	0.430	1.29	0.36	1.08	0.4	sandy silt to clayey silt	13
3.75	12.3	30.7	0.620	2.02	0.38	1.24	0.4	sandy silt to clayey silt	13
3.80	12.5	35.8	0.810	2.26	0.38	1.06	0.4	sandy silt to clayey silt	16
3.85	12.6	54.7	0.760	1.39	0.39	0.71	0.4	silty sand to sandy silt	20
3.90	12.8	90.6	0.670	0.74	0.36	0.40	0.4	sand to silty sand	20
3.95	13.0	94.3	1.010	1.07	0.27	0.29	0.4	sand to silty sand	22
4.00	13.1	77.0	1.460	1.90	0.01	0.01	0.4	silty sand to sandy silt	25
4.05	13.3	52.2	1.300	2.49	0.00	0.00	0.4	silty sand to sandy silt	19
4.10	13.5	44.9	0.770	1.72	0.04	0.09	0.4	silty sand to sandy silt	15
4.15	13.6	39.8	0.360	0.91	0.04	0.10	0.4	silty sand to sandy silt	13
4.20	13.8	28.9	0.300	1.04	0.06	0.21	0.4	silty sand to sandy silt	11
4.25	13.9	27.3	0.320	1.17	0.08	0.29	0.4	sandy silt to clayey silt	11
4.30	14.1	27.8	0.350	1.26	0.09	0.32	0.4	sandy silt to clayey silt	11
4.35	14.3	25.8	0.450	1.74	0.10	0.39	0.4	sandy silt to clayey silt	11
4.40	14.4	28.3	0.900	3.18	0.12	0.42	0.4	clayey silt to silty clay	15
4.45	14.6	35.4	1.300	3.67	0.14	0.40	0.4	sandy silt to clayey silt	17
4.50	14.8	62.7	1.650	2.63	0.16	0.26	0.5	sandy silt to clayey silt	24

oil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
4.55	14.9	84.9	2.350	2.77	0.16	0.19	0.6	sandy silt to clayey silt	33
4.60	15.1	101.7	2.050	2.02	0.07	0.07	0.7	silty sand to sandy silt	27
4.65	15.3	58.5	1.030	1.76	0.05	0.09	0.8	silty sand to sandy silt	22
4.70	15.4	35.9	0.360	1.00	0.11	0.31	0.8	silty sand to sandy silt	14
4.75	15.6	34.5	0.660	1.91	0.13	0.38	0.8	sandy silt to clayey silt	16
4.80	15.7	46.7	1.390	2.98	0.12	0.26	0.8	sandy silt to clayey silt	18
4.85	15.9	56.7	1.520	2.68	0.13	0.23	0.8	sandy silt to clayey silt	24
4.90	16.1	77.7	2.180	2.81	0.17	0.22	0.8	silty sand to sandy silt	36
4.95	16.2	188.7	2.500	1.32	0.13	0.07	0.8	sand to silty sand	42
5.00	16.4	238.0	3.050	1.28	0.13	0.05	0.7	sand	47
5.05	16.6	276.5	2.920	1.06	0.01	0.00	0.8	sand	53
5.10	16.7	286.3	3.060	1.07	-0.11	-0.04	0.8	sand	60
5.15	16.9	333.6	2.710	0.81	-0.15	-0.04	0.8	sand	64
5.20	17.1	344.1	2.590	0.75	-0.19	-0.06	0.8	gravelly sand to sand	57
5.25	17.2	347.7	2.090	0.60	0.04	0.01	0.8	gravelly sand to sand	57
5.30	17.4	332.3	2.040	0.61	0.06	0.02	0.8	sand	63
5.35	17.6	260.3	2.190	0.84	0.00	0.00	0.8	sand	50
5.40	17.7	159.4	3.140	1.97	0.16	0.10	0.8	sand to silty sand	45
5.45	17.9	117.8	1.370	1.16	0.18	0.15	0.8	silty sand to sandy silt	38
5.50	18.0	62.6	1.260	2.01	-0.26	-0.42	0.9	sand to silty sand	24
5.55	18.2	102.7	0.390	0.38	-0.25	-0.24	0.9	sand to silty sand	22
5.60	18.4	97.9	0.760	0.78	-0.32	-0.33	0.9	sand to silty sand	25
5.65	18.5	103.1	1.010	0.98	-0.36	-0.35	0.9	sand to silty sand	23
5.70	18.7	73.7	2.070	2.81	-0.31	-0.42	0.9	sand to silty sand	24
.75	18.9	113.8	1.060	0.93	-0.12	-0.11	0.9	silty sand to sandy silt	32
5.80	19.0	98.7	1.580	1.60	-0.47	-0.48	1.0	sand to silty sand	32
5.85	19.2	173.9	1.960	1.13	-0.22	-0.13	0.8	sand to silty sand	52
5.90	19.4	346.1	4.950	1.43	-0.05	-0.01	0.8	sand	69
5.95	19.5	507.7	5.950	1.17	-0.22	-0.04	0.7	sand	87
6.00	19.7	454.4	8.200	1.80	-0.26	-0.06	0.7	sand	95
6.05	19.8	464.2	7.280	1.57	-0.26	-0.06	0.6	sand	95
6.10	20.0	501.9	6.230	1.24	-0.27	-0.05	0.6	sand	118
6.15	20.2	800.9	7.210	0.90	-0.16	-0.02	0.6	sand	141
6.20	20.3	809.4	9.990	1.23	-0.11	-0.01	0.5	sand	153
6.25	20.5	682.8	9.990	1.46	-0.01	-0.00	0.4	sand	135
6.30	20.7	535.0	9.740	1.82	0.09	0.02	0.4	sand	122
6.35	20.8	615.9	8.250	1.34	-0.03	-0.00	0.3	sand	109
6.40	21.0	484.1	6.720	1.39	-0.05	-0.01	0.3	sand	97
6.45	21.2	360.0	3.220	0.89	-0.08	-0.02	0.3	sand	61
6.50	21.3	69.6	2.750	3.95	-0.09	-0.13	0.3	sand	68
6.55	21.5	592.9	5.650	0.95	0.05	0.01	0.3	sand	82
6.60	21.7	568.1	7.120	1.25	-0.37	-0.07	0.6	sand	105
6.65	21.8	414.7	8.180	1.97	-0.35	-0.08	0.9	sand to silty sand	107
6.70	22.0	301.4	6.930	2.30	-0.36	-0.12	0.9	sand to silty sand	88
6.75	22.1	340.0	7.200	2.12	-0.31	-0.09	0.9	sand to silty sand	84
6.80	22.3	370.3	6.330	1.71	-0.27	-0.07	1.0	sand to silty sand	89
6.85	22.5	361.1	4.690	1.30	-0.21	-0.06	1.0	sand	70
6.90	22.6	325.4	4.280	1.32	-0.29	-0.09	1.1	sand to silty sand	66
6.95	22.8	107.1	2.570	2.40	-0.49	-0.46	1.2	sand to silty sand	40
7.00	23.0	42.3	0.560	1.32	-0.59	-1.39	1.3	silty sand to sandy silt	21

S l interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
7.05	23.1	39.4	0.360	0.91	-0.54	-1.37	1.3	silty sand to sandy silt	13
7.10	23.3	37.5	0.530	1.41	-0.50	-1.33	1.3	silty sand to sandy silt	13
7.15	23.5	38.3	0.540	1.41	-0.50	-1.30	1.3	silty sand to sandy silt	13
7.20	23.6	38.5	0.700	1.82	-0.49	-1.27	1.3	sandy silt to clayey silt	15
7.25	23.8	37.7	0.780	2.07	-0.46	-1.22	1.4	sandy silt to clayey silt	16
7.30	23.9	41.0	0.800	1.95	-0.43	-1.05	1.3	sandy silt to clayey silt	16
7.35	24.1	40.9	0.520	1.27	-0.43	-1.05	1.3	silty sand to sandy silt	13
7.40	24.3	39.3	0.520	1.32	-0.42	-1.07	1.3	silty sand to sandy silt	13
7.45	24.4	33.6	0.480	1.43	-0.45	-1.34	1.3	silty sand to sandy silt	12
7.50	24.6	32.9	0.450	1.37	-0.45	-1.37	1.3	silty sand to sandy silt	11
7.55	24.8	34.3	0.410	1.19	-0.45	-1.31	1.4	silty sand to sandy silt	12
7.60	24.9	36.3	0.380	1.05	-0.45	-1.24	1.4	silty sand to sandy silt	12
7.65	25.1	38.0	0.410	1.08	-0.45	-1.18	1.5	silty sand to sandy silt	12
7.70	25.3	37.7	0.380	1.01	-0.45	-1.19	1.5	silty sand to sandy silt	12
7.75	25.4	36.3	0.460	1.27	-0.45	-1.24	1.6	silty sand to sandy silt	12
7.80	25.6	36.7	0.380	1.04	-0.45	-1.23	1.6	silty sand to sandy silt	13
7.85	25.8	39.6	0.050	0.13	-0.45	-1.14	1.6	silty sand to sandy silt	13
7.90	25.9	40.3	0.070	0.17	-0.45	-1.12	1.7	sand to silty sand	10
7.95	26.1	35.8	0.080	0.22	-0.44	-1.23	1.8	sand to silty sand	9
8.00	26.2	36.3	0.120	0.33	-0.44	-1.21	1.8	silty sand to sandy silt	12
8.05	26.4	36.5	0.120	0.33	-0.44	-1.20	1.8	silty sand to sandy silt	12
8.10	26.6	35.3	0.160	0.45	-0.44	-1.25	1.8	silty sand to sandy silt	12
8.15	26.7	33.3	0.050	0.15	-0.44	-1.32	1.8	silty sand to sandy silt	11
8.20	26.9	34.5	0.020	0.06	-0.44	-1.27	1.8	sand to silty sand	9
8.25	27.1	34.7	0.010	0.03	-0.44	-1.27	1.9	sand to silty sand	9
8.30	27.2	34.3	0.040	0.12	-0.44	-1.28	1.9	sand to silty sand	8
8.35	27.4	32.8	0.020	0.06	-0.44	-1.34	1.9	sand to silty sand	8
8.40	27.6	31.3	0.070	0.22	-0.44	-1.40	1.9	sand to silty sand	8
8.45	27.7	30.3	0.010	0.03	-0.44	-1.45	1.9	silty sand to sandy silt	10
8.50	27.9	30.0	0.070	0.23	-0.44	-1.47	1.9	silty sand to sandy silt	11
8.55	28.1	34.6	0.170	0.49	-0.43	-1.24	2.0	silty sand to sandy silt	11
8.60	28.2	38.5	0.260	0.68	-0.43	-1.12	2.0	silty sand to sandy silt	12
8.65	28.4	36.3	0.280	0.77	-0.43	-1.19	2.0	silty sand to sandy silt	12
8.70	28.5	32.5	0.220	0.68	-0.43	-1.32	2.1	silty sand to sandy silt	11
8.75	28.7	31.0	0.220	0.71	-0.42	-1.36	2.1	silty sand to sandy silt	9
8.80	28.9	17.1	0.230	1.35	-0.43	-2.52	2.2	silty sand to sandy silt	9
8.85	29.0	30.5	0.210	0.69	-0.42	-1.38	2.2	silty sand to sandy silt	9
8.90	29.2	29.0	0.200	0.69	-0.42	-1.45	2.2	silty sand to sandy silt	10
8.95	29.4	30.0	0.180	0.60	-0.42	-1.40	2.2	silty sand to sandy silt	10
9.00	29.5	31.3	0.170	0.54	-0.41	-1.31	2.3	silty sand to sandy silt	10
9.05	29.7	30.4	0.170	0.56	-0.41	-1.35	2.3	silty sand to sandy silt	10
9.10	29.9	28.8	0.190	0.66	-0.40	-1.39	2.3	silty sand to sandy silt	10
9.15	30.0	29.3	0.170	0.58	-0.39	-1.33	2.3	silty sand to sandy silt	10
9.20	30.2	27.6	0.150	0.54	-0.39	-1.41	2.3	silty sand to sandy silt	9
9.25	30.3	26.5	0.120	0.45	-0.41	-1.55	2.4	silty sand to sandy silt	9
9.30	30.5	26.0	0.110	0.42	-0.41	-1.57	2.4	silty sand to sandy silt	9
9.35	30.7	27.1	0.110	0.41	-0.41	-1.52	2.4	silty sand to sandy silt	9
9.40	30.8	28.4	0.120	0.42	-0.40	-1.41	2.4	silty sand to sandy silt	9
9.45	31.0	27.0	0.140	0.52	-0.39	-1.45	2.4	silty sand to sandy silt	9
9.50	31.2	26.5	0.170	0.64	-0.38	-1.44	2.4	silty sand to sandy silt	9

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
9.55	31.3	29.6	0.310	1.05	-0.37	-1.25	2.5	silty sand to sandy silt	10
9.60	31.5	32.8	0.480	1.46	-0.36	-1.10	2.5	silty sand to sandy silt	11
9.65	31.7	37.0	0.600	1.62	-0.22	-0.59	2.6	sandy silt to clayey silt	14
9.70	31.8	38.4	0.710	1.85	-0.19	-0.49	2.6	sandy silt to clayey silt	15
9.75	32.0	37.4	0.670	1.79	-0.17	-0.45	2.6	sandy silt to clayey silt	15
9.80	32.2	37.4	0.600	1.61	-0.15	-0.40	2.6	sandy silt to clayey silt	14
9.85	32.3	33.0	0.540	1.64	-0.14	-0.42	2.6	sandy silt to clayey silt	14
9.90	32.5	31.3	0.480	1.54	-0.13	-0.42	2.6	sandy silt to clayey silt	13
9.95	32.6	30.7	0.390	1.27	-0.13	-0.42	2.6	sandy silt to clayey silt	12
10.00	32.8	29.2	0.330	1.13	-0.12	-0.41	2.6	silty sand to sandy silt	10
10.05	33.0	28.1	0.270	0.96	-0.11	-0.39	2.6	silty sand to sandy silt	10
10.10	33.1	28.5	0.200	0.70	-0.10	-0.35	2.5	silty sand to sandy silt	9
10.15	33.3	27.8	0.160	0.58	-0.09	-0.32	2.5	silty sand to sandy silt	9
10.20	33.5	28.2	0.120	0.43	-0.08	-0.28	2.5	silty sand to sandy silt	9
10.25	33.6	29.0	0.110	0.38	-0.07	-0.24	2.5	silty sand to sandy silt	10
10.30	33.8	29.4	0.110	0.37	-0.06	-0.20	2.5	silty sand to sandy silt	10
10.35	34.0	28.8	0.110	0.38	-0.05	-0.17	2.5	silty sand to sandy silt	10
10.40	34.1	28.1	0.060	0.21	-0.03	-0.11	2.5	silty sand to sandy silt	9
10.45	34.3	27.8	0.100	0.36	-0.02	-0.07	2.5	silty sand to sandy silt	9
10.50	34.4	25.1	0.170	0.68	0.02	0.08	2.5	silty sand to sandy silt	9
10.55	34.6	30.7	0.260	0.85	0.05	0.16	2.5	silty sand to sandy silt	10
10.60	34.8	32.5	0.330	1.02	0.07	0.22	2.5	silty sand to sandy silt	11
10.65	34.9	32.8	0.340	1.04	0.09	0.27	2.5	silty sand to sandy silt	11
10.70	35.1	31.9	0.270	0.85	0.10	0.31	2.5	silty sand to sandy silt	11
1.75	35.3	30.3	0.230	0.76	0.11	0.36	2.5	silty sand to sandy silt	10
.0.80	35.4	31.1	0.230	0.74	0.13	0.42	2.5	silty sand to sandy silt	11
10.85	35.6	33.4	0.320	0.96	0.14	0.42	2.5	silty sand to sandy silt	11
10.90	35.8	34.3	0.360	1.05	0.25	0.73	2.5	silty sand to sandy silt	11
10.95	35.9	33.8	0.420	1.24	0.27	0.80	2.5	silty sand to sandy silt	12
11.00	36.1	37.9	0.690	1.82	0.30	0.79	2.5	silty sand to sandy silt	13
11.05	36.3	46.9	0.910	1.94	0.33	0.70	2.5	sandy silt to clayey silt	18
11.10	36.4	49.2	1.110	2.26	0.39	0.79	2.5	sandy silt to clayey silt	19
11.15	36.6	46.1	0.930	2.02	0.39	0.85	2.5	sandy silt to clayey silt	19
11.20	36.7	44.3	0.740	1.67	0.41	0.93	2.5	sandy silt to clayey silt	18
11.25	36.9	45.4	0.950	2.09	0.43	0.95	2.5	silty sand to sandy silt	16
11.30	37.1	58.2	1.040	1.79	0.47	0.81	2.5	sandy silt to clayey silt	22
11.35	37.2	65.2	1.950	2.99	0.54	0.83	2.3	sandy silt to clayey silt	26
11.40	37.4	74.5	2.390	3.21	0.61	0.82	2.2	sandy silt to clayey silt	31
11.45	37.6	92.5	2.630	2.84	0.68	0.74	2.2	sandy silt to clayey silt	40
11.50	37.7	131.9	3.190	2.42	0.41	0.31	1.8	sandy silt to clayey silt	38
11.55	37.9	63.3	2.270	3.58	0.01	0.02	1.8	sandy silt to clayey silt	31
11.60	38.1	33.7	1.100	3.26	0.06	0.18	1.8	sandy silt to clayey silt	17
11.65	38.2	31.6	0.440	1.39	0.09	0.28	1.8	sandy silt to clayey silt	13
11.70	38.4	32.6	0.470	1.44	0.10	0.31	1.8	sandy silt to clayey silt	13
11.75	38.5	33.2	0.510	1.54	0.11	0.33	1.8	sandy silt to clayey silt	14
11.80	38.7	37.0	0.640	1.73	0.13	0.35	1.8	sandy silt to clayey silt	15
11.85	38.9	39.7	0.730	1.84	0.23	0.58	1.8	sandy silt to clayey silt	16
11.90	39.0	40.0	1.230	3.08	0.27	0.68	1.8	sandy silt to clayey silt	19
11.95	39.2	65.6	0.860	1.31	0.35	0.53	1.8	silty sand to sandy silt	16
12.00	39.4	40.3	0.730	1.81	0.35	0.87	1.8	silty sand to sandy silt	16

ıl interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

DEPTH meters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
12.05	39.5	34.0	0.250	0.73	0.38	1.12	1.8	sandy silt to clayey silt	15
12.10	39.7	38.7	0.870	2.25	0.40	1.03	1.8	sandy silt to clayey silt	17
12.15	39.9	55.4	1.320	2.38	0.40	0.72	1.8	sandy silt to clayey silt	20
12.20	40.0	56.7	1.400	2.47	0.39	0.69	1.7	sandy silt to clayey silt	22
12.25	40.2	50.5	1.310	2.59	0.42	0.83	1.7	sandy silt to clayey silt	21
12.30	40.4	53.1	0.900	1.69	0.43	0.81	1.7	silty sand to sandy silt	16
12.35	40.5	39.5	0.530	-1.34	0.44	1.11	1.7	silty sand to sandy silt	14
12.40	40.7	32.6	0.190	0.58	0.45	1.38	1.6	silty sand to sandy silt	12
12.45	40.8	31.7	0.040	0.13	0.47	1.48	1.5	silty sand to sandy silt	11
12.50	41.0	32.8	0.060	0.18	0.49	1.49	1.5	sand to silty sand	8
12.55	41.2	33.3	0.020	0.06	0.50	1.50	1.5	sand to silty sand	8
12.60	41.3	35.7	0.040	0.11	0.51	1.43	1.5	sand to silty sand	9
12.65	41.5	36.1	0.100	0.28	0.52	1.44	1.5	silty sand to sandy silt	11
12.70	41.7	26.7	0.070	0.26	0.53	1.99	1.4	silty sand to sandy silt	11
12.75	41.8	33.6	0.010	0.03	0.56	1.67	1.4	silty sand to sandy silt	10
12.80	42.0	31.3	0.110	0.35	0.56	1.79	1.4	silty sand to sandy silt	11
12.85	42.2	32.6	0.090	0.28	0.57	1.75	1.4	silty sand to sandy silt	11
12.90	42.3	39.4	0.110	0.28	0.63	1.60	1.4	silty sand to sandy silt	12
12.95	42.5	35.5	0.170	0.48	0.65	1.83	1.4	silty sand to sandy silt	12
13.00	42.7	31.8	0.100	0.31	0.65	2.04	1.4	silty sand to sandy silt	11
13.05	42.8	29.6	0.000	0.00	0.65	2.19	1.4	silty sand to sandy silt	10
13.10	43.0	28.7	0.020	0.07	0.65	2.26	1.4	silty sand to sandy silt	10
13.15	43.1	29.0	0.030	0.10	0.66	2.28	1.4	silty sand to sandy silt	10
13.20	43.3	29.6	0.010	0.03	0.66	2.23	1.4	silty sand to sandy silt	10
13.25	43.5	29.3	0.010	0.03	0.67	2.29	1.4	silty sand to sandy silt	10
13.30	43.6	27.1	0.090	0.33	0.67	2.48	1.4	silty sand to sandy silt	9
13.35	43.8	27.1	0.090	0.33	0.68	2.51	1.4	silty sand to sandy silt	9
13.40	44.0	28.6	0.070	0.24	0.68	2.37	1.4	silty sand to sandy silt	9
13.45	44.1	29.4	0.040	0.14	0.68	2.31	1.4	silty sand to sandy silt	10
13.50	44.3	30.8	0.060	0.19	0.69	2.24	1.4	silty sand to sandy silt	10
13.55	44.5	29.3	0.070	0.24	0.69	2.35	1.4	silty sand to sandy silt	10
13.60	44.6	28.8	0.090	0.31	0.70	2.43	1.4	silty sand to sandy silt	10
13.65	44.8	29.0	0.030	0.10	0.71	2.45	1.4	silty sand to sandy silt	10
13.70	44.9	29.2	0.040	0.14	0.72	2.46	1.4	silty sand to sandy silt	10
13.75	45.1	29.0	0.060	0.21	0.71	2.44	1.3	silty sand to sandy silt	10
13.80	45.3	27.6	0.140	0.51	0.71	2.57	1.3	silty sand to sandy silt	9
13.85	45.4	27.0	0.200	0.74	0.71	2.63	1.3	silty sand to sandy silt	9
13.90	45.6	26.1	0.150	0.58	0.71	2.72	1.3	silty sand to sandy silt	9
13.95	45.8	25.4	0.230	0.91	0.71	2.80	1.3	silty sand to sandy silt	9
14.00	45.9	26.1	0.170	0.65	0.72	2.75	1.3	silty sand to sandy silt	9
14.05	46.1	28.0	0.260	0.93	0.73	2.61	1.3	silty sand to sandy silt	9
14.10	46.3	28.8	0.180	0.63	0.74	2.57	1.3	silty sand to sandy silt	10
14.15	46.4	31.1	0.190	0.61	0.76	2.44	1.3	silty sand to sandy silt	11
14.20	46.6	36.9	0.270	0.73	0.76	2.06	1.3	silty sand to sandy silt	12
14.25	46.8	42.2	0.260	0.62	0.77	1.82	1.2	silty sand to sandy silt	13
14.30	46.9	36.7	0.130	0.35	0.75	2.04	1.2	silty sand to sandy silt	12
14.35	47.1	33.0	0.020	0.06	0.74	2.24	1.2	silty sand to sandy silt	11
14.40	47.2	30.5	0.150	0.49	0.74	2.43	1.2	silty sand to sandy silt	10
14.45	47.4	30.4	0.090	0.30	0.71	2.34	1.2	silty sand to sandy silt	10
14.50	47.6	29.8	0.120	0.40	0.72	2.41	1.2	silty sand to sandy silt	10

Soil interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

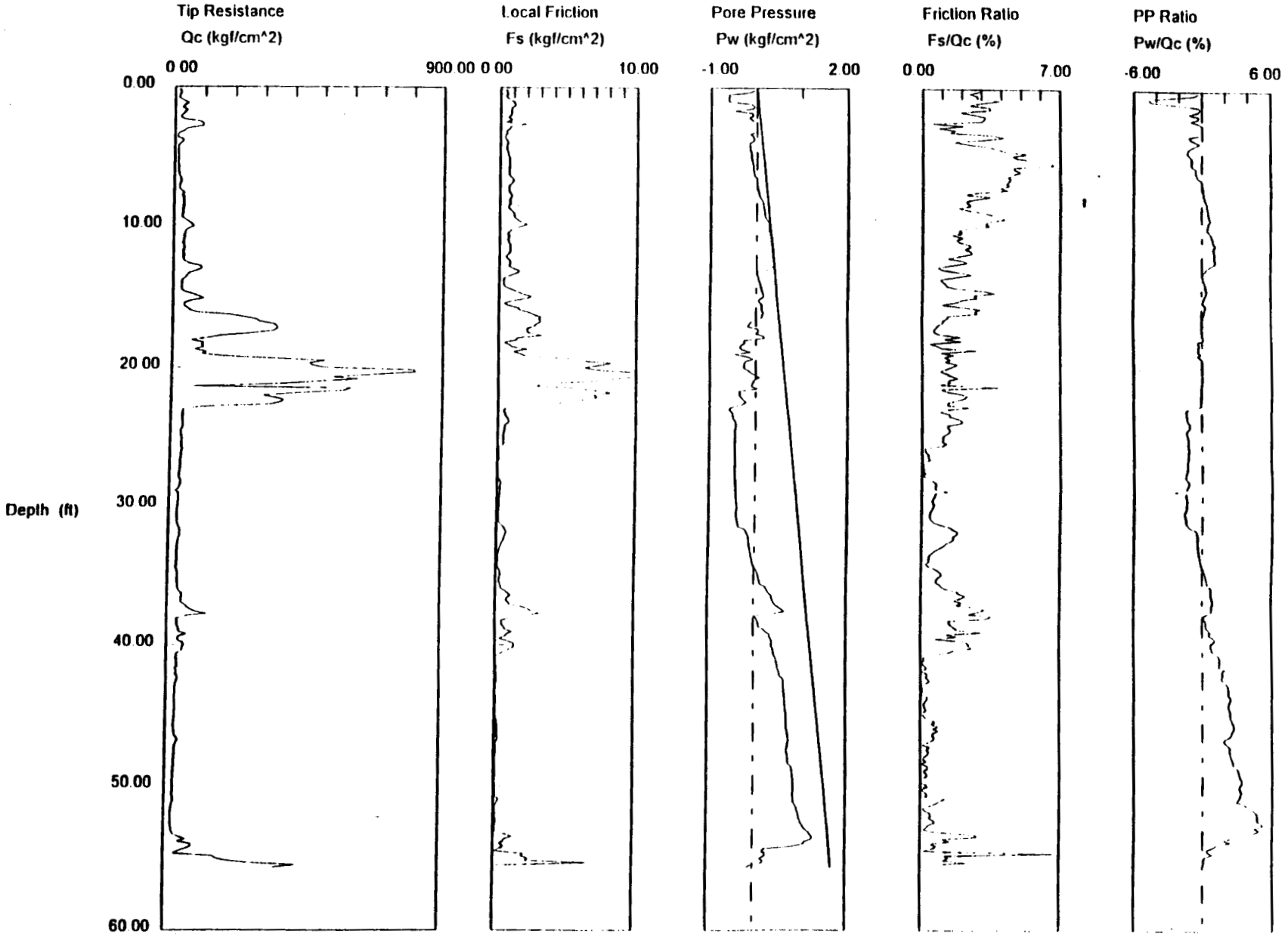
DEPTH ters	DEPTH feet	TIP Qc ksc	FRICTION Fs ksc	FR RATIO Fs/Qc %	PORE PR Pw ksc	P P RATIO Pw/Qc %	INC I deg	INTERPRETED SOIL TYPE	N SPT
14.55	47.7	29.9	0.110	0.37	0.74	2.47	1.2	silty sand to sandy silt	10
14.60	47.9	30.1	0.060	0.20	0.75	2.50	1.2	silty sand to sandy silt	10
14.65	48.1	29.4	0.030	0.10	0.75	2.55	1.2	silty sand to sandy silt	10
14.70	48.2	28.0	0.080	0.29	0.75	2.68	1.2	silty sand to sandy silt	10
14.75	48.4	28.2	0.010	0.04	0.75	2.66	1.0	silty sand to sandy silt	9
14.80	48.6	29.1	0.100	0.34	0.82	2.82	1.0	silty sand to sandy silt	9
14.85	48.7	27.0	0.100	0.37	0.83	3.07	1.0	silty sand to sandy silt	9
14.90	48.9	27.2	0.040	0.15	0.85	3.13	1.0	silty sand to sandy silt	9
14.95	49.0	26.8	0.070	0.26	0.85	3.18	1.0	silty sand to sandy silt	9
15.00	49.2	26.5	0.090	0.34	0.86	3.24	1.0	silty sand to sandy silt	9
15.05	49.4	26.1	0.050	0.19	0.86	3.30	1.0	silty sand to sandy silt	9
15.10	49.5	25.4	0.010	0.04	0.87	3.43	1.0	silty sand to sandy silt	9
15.15	49.7	25.1	0.000	0.00	0.87	3.46	1.0	silty sand to sandy silt	9
15.20	49.9	26.6	0.080	0.30	0.87	3.27	1.0	silty sand to sandy silt	9
15.25	50.0	27.6	0.090	0.33	0.87	3.15	1.0	silty sand to sandy silt	9
15.30	50.2	26.8	0.010	0.04	0.88	3.29	1.0	silty sand to sandy silt	9
15.35	50.4	25.7	0.050	0.19	0.87	3.39	1.0	silty sand to sandy silt	9
15.40	50.5	26.0	0.090	0.35	0.86	3.31	1.0	silty sand to sandy silt	9
15.45	50.7	26.8	0.060	0.22	0.87	3.24	1.0	silty sand to sandy silt	9
15.50	50.9	28.0	0.360	1.28	0.88	3.14	1.0	silty sand to sandy silt	9
15.55	51.0	29.5	0.290	0.98	0.87	2.95	1.0	silty sand to sandy silt	9
15.60	51.2	24.8	0.190	0.77	0.90	3.63	1.0	silty sand to sandy silt	9
15.65	51.3	24.1	0.110	0.46	0.93	3.87	1.0	silty sand to sandy silt	8
15.70	51.5	22.4	0.020	0.09	0.95	4.25	1.0	silty sand to sandy silt	8
15.75	51.7	21.2	0.050	0.24	0.96	4.53	1.0	silty sand to sandy silt	7
15.80	51.8	20.8	0.100	0.48	0.98	4.71	1.0	silty sand to sandy silt	7
15.85	52.0	21.1	0.110	0.52	0.99	4.68	1.0	silty sand to sandy silt	7
15.90	52.2	20.9	0.090	0.43	1.00	4.79	1.0	silty sand to sandy silt	7
15.95	52.3	21.5	0.140	0.65	1.02	4.74	1.0	silty sand to sandy silt	7
16.00	52.5	20.3	0.150	0.74	1.04	5.13	1.0	silty sand to sandy silt	7
16.05	52.7	20.4	0.080	0.39	1.07	5.24	1.0	silty sand to sandy silt	7
16.10	52.8	24.8	0.080	0.32	1.10	4.44	1.0	silty sand to sandy silt	8
16.15	53.0	23.3	0.030	0.13	1.15	4.93	1.0	silty sand to sandy silt	8
16.20	53.1	26.8	0.220	0.82	1.21	4.51	1.0	sandy silt to clayey silt	11
16.25	53.3	31.0	0.860	2.77	1.23	3.97	1.0	sandy silt to clayey silt	14
16.30	53.5	47.4	1.360	2.87	1.29	2.72	0.9	sandy silt to clayey silt	20
16.35	53.6	71.1	0.800	1.12	1.26	1.77	0.9	silty sand to sandy silt	18
16.40	53.8	45.1	0.680	1.51	1.11	2.46	0.9	sand to silty sand	17
16.45	54.0	88.1	0.470	0.53	1.10	1.25	0.9	sand to silty sand	19
16.50	54.1	90.9	0.750	0.83	0.83	0.91	0.9	sand to silty sand	21
16.55	54.3	71.2	0.460	0.65	0.25	0.35	1.0	sand to silty sand	17
16.60	54.5	46.0	0.040	0.09	0.21	0.46	1.0	silty sand to sandy silt	16
16.65	54.6	31.1	2.160	6.95	0.28	0.90	1.0	silty sand to sandy silt	26
16.70	54.8	160.8	2.030	1.26	0.27	0.17	0.9	silty sand to sandy silt	41
16.75	55.0	172.9	2.490	1.44	0.15	0.09	1.0	sand to silty sand	45
16.80	55.1	206.1	2.350	1.14	0.23	0.11	1.0	sand to silty sand	55
16.85	55.3	286.1	6.810	2.38	0.22	0.08	1.1	?	?
16.90	55.4	428.9	?	?	-0.07	-0.02	1.4	?	?
16.95	55.6	356.3	?	?	-0.13	-0.04	1.7	?	?

. interpretation reference: Robertson & Campanella-1983, based on 60% hammer efficiency and .15 m sliding data average

R.E. Wright Inc.

Operator: GJV-LMM
Sounding: CPT672
Cone Used: 4-CHANNEL

CPT Date: 03-11-98 08:41
Location: CPTU-01 ~~667~~ 167
Job No.: 1507-000



Maximum Depth = 55.61 feet

Depth Increment = 0.16 feet

1. INTRODUCTION

1.1 SITE DESCRIPTION

The Paducah Gaseous Diffusion Plant (PGDP) is located in western Kentucky approximately 16 kilometers (10 miles) west of Paducah and 6.5 kilometers (4 miles) south of the Ohio River as shown in Fig. 1.1. The PGDP is an operational uranium enrichment facility owned by the U.S. Department of Energy (DOE). Effective July 1, 1993, DOE leased the plant production operations facilities to the United States Enrichment Corporation, which in turn contracted with Lockheed Martin Utility Services, Inc. (LMUS), to provide operations and maintenance services. Bechtel Jacobs Company LLC is responsible for the environmental management activities as the management and integration contractor.

1.2 PURPOSE AND SCOPE OF INVESTIGATION

DOE has focused cleanup efforts to protect human health and the environment by expediting investigative activities whenever possible. As part of this initiative, a geophysical survey was conducted and small trenches (test pits) were excavated at Waste Area Grouping (WAG) 27 to investigate suspected buried objects at Solid Waste Management Unit (SWMU) 1 and additional excavations conducted at SWMU 196 to investigate potentially contaminated sludge from septic tanks. The purpose of this investigation is to combine the remedial investigation (RI) with other ongoing removal actions to streamline contracting and expedite the RI.

These RI activities at WAG 27 were conducted in accordance with the PGDP Hazardous and Solid Waste Amendments (HSWA) permit and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). These activities were conducted in conjunction with removal actions at WAG 23 due to the similarity of tasks. WAG 23 activities are described in the Removal Action Report (DOE 1998).

1.3 SITE BACKGROUND

WAG 27 consists of three SWMUs (1, 91, and 196) and the C-720 area. These SWMUs and the C-720 area have been grouped into WAG 27 based on geographical proximity as well as potential commonality of radiological and chemical contamination. SWMU 1, the C-747-C Landfarm is located in the southwest portion of the plant, SWMU 91, the UF_6 Cylinder Drop Test Area is located in the west-central portion, and SWMU 196 in the north-central plant area (Fig. 1.2). The subsurface investigation presented here includes only SWMU 1 and SWMU 196. Data gathered from this investigation augments the ongoing RI for WAG 27. The following site descriptions are derived from the RI/feasibility study work plan (DOE 1996).

1.3.1 SWMU 1—Former Oil Landfarm

SWMU 1, the former oil landfarm, is a potential source of contamination to off-site groundwater, surface water, and sediments. The site is a relatively flat, open, grass covered area that is mowed

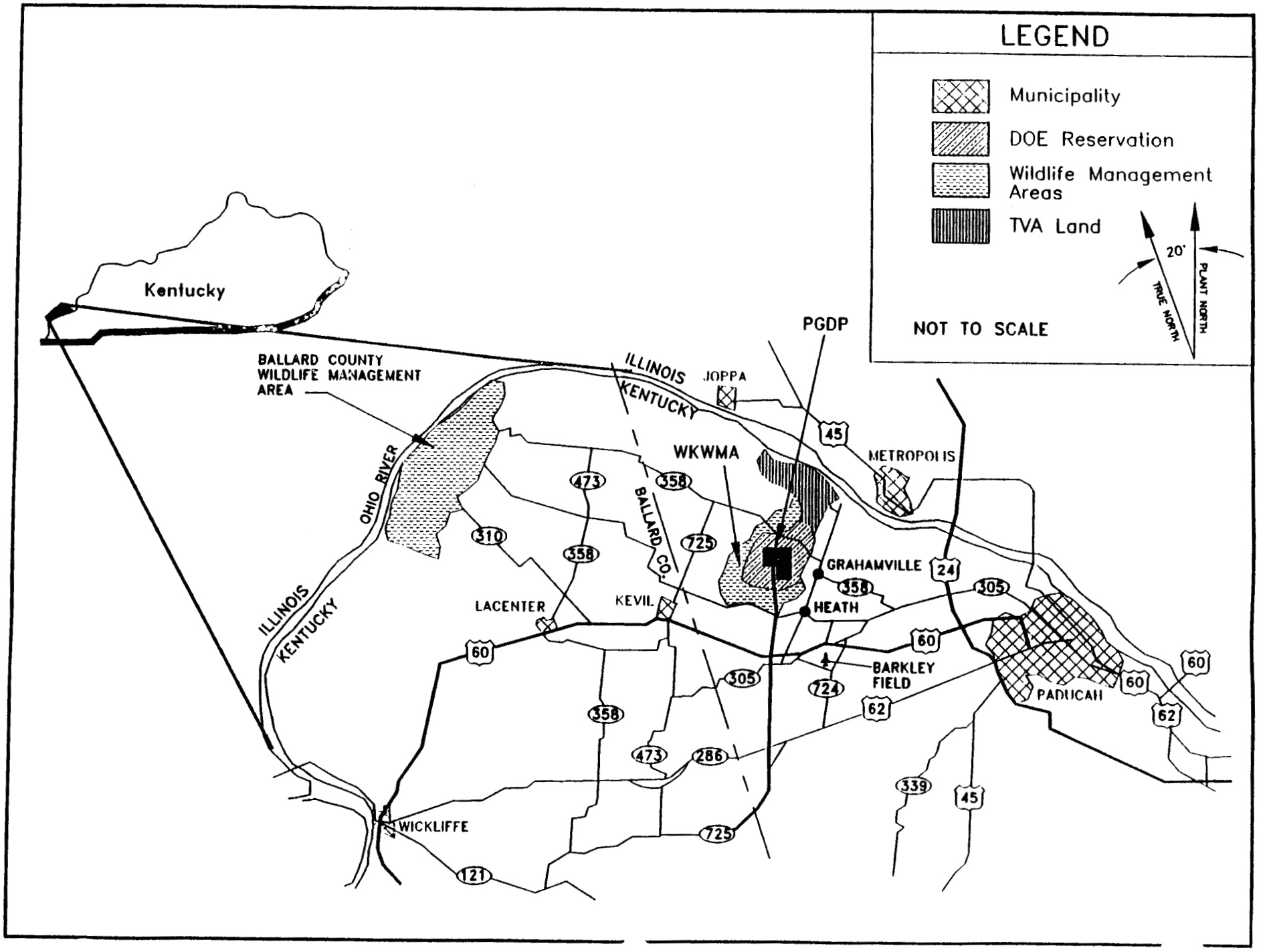


Fig. 1.1. Paducah Gaseous .usion Plant location map

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regularly as part of normal PGDP maintenance operations. The SWMU area is bounded by 4th Street to the east and perimeter ditches on the north, west, and south (see Fig. 1.3). The total area encompassed by SWMU 1 totals 96,300 ft^2. PGDP personnel familiar with disposal practices at the oil landfarm assisted the field team in describing the approximate location, depth, and construction of the former disposal trenches. They described two roughly parallel disposal trenches that were excavated into native soil to an approximate depth of 3–4 ft. A layer of sand and gravel was placed in the bottom of the trenches.

The landfarm was used from 1973 to 1979 for biodegradation of waste oils containing trichloroethene (TCE) 1,1,1-trichloroethane, uranium, and polychlorinated biphenyls (PCBs). It is estimated approximately 5000 gal of waste oils were applied to the landfarm. Previous sampling efforts have identified volatile and semivolatile compounds, radiogenic elements, and metals at SWMU 1.

1.3.2 SWMU 196—Septic Systems at C-746

SWMU 196 is located north of Building C-746-A and consists of two inactive septic systems that served the building. Building C-746-A once housed smelters for discarded aluminum and nickel metals and was used as a warehouse during construction of the main plant. An aluminum smelter was located in the western portion of the building from 1956 until 1985. The nickel smelter was operated in the east end of the building from 1975 until 1985. The building currently is a storage area for hazardous wastes and PCBs.

The septic tanks are located on the northeast and northwest corners (one on each side) of C-746-A and include associated leach fields (Fig. 1.4). The northeast septic system was operated from 1958 until 1980. It processed sanitary waste from a toilet, urinal, bathroom sink, and floor drain. The septic system was modified in 1975 with addition of the nickel smelting operations. Construction of a changehouse and break area added a kitchen sink, water cooler, two showers, a second urinal, and floor drains to the existing system. The septic system was plugged and abandoned in place when Building C-746-A was plumbed into the C-615 sewage treatment plant.

The septic system on the northeast corner of building C-746-A consisted of a 960-gal septic tank and a leach field measuring 60 ft by 20 ft. The leach field consisted of 4-in. drain tiles in shallow soil. The septic system at the northwest corner included a 500-gal septic tank and two vitreous clay pipes that run south and west from the tank.

The northwest septic system operated from 1956 until 1980. The system served a toilet, two showers, a sink, and water cooler. No floor drains were served by this system. The northwest C-746-A septic system was plugged and abandoned in 1980, with the northeast system. A portion of the abandoned system was destroyed during drainage ditch improvements in 1982.

1.3.3 SWMU 91—Cylinder Drop Test Area

SWMU 91, the UF_6 Cylinder Drop Test Area, was not included with this excavation program and will be investigated with the ongoing WAG 27 RI.

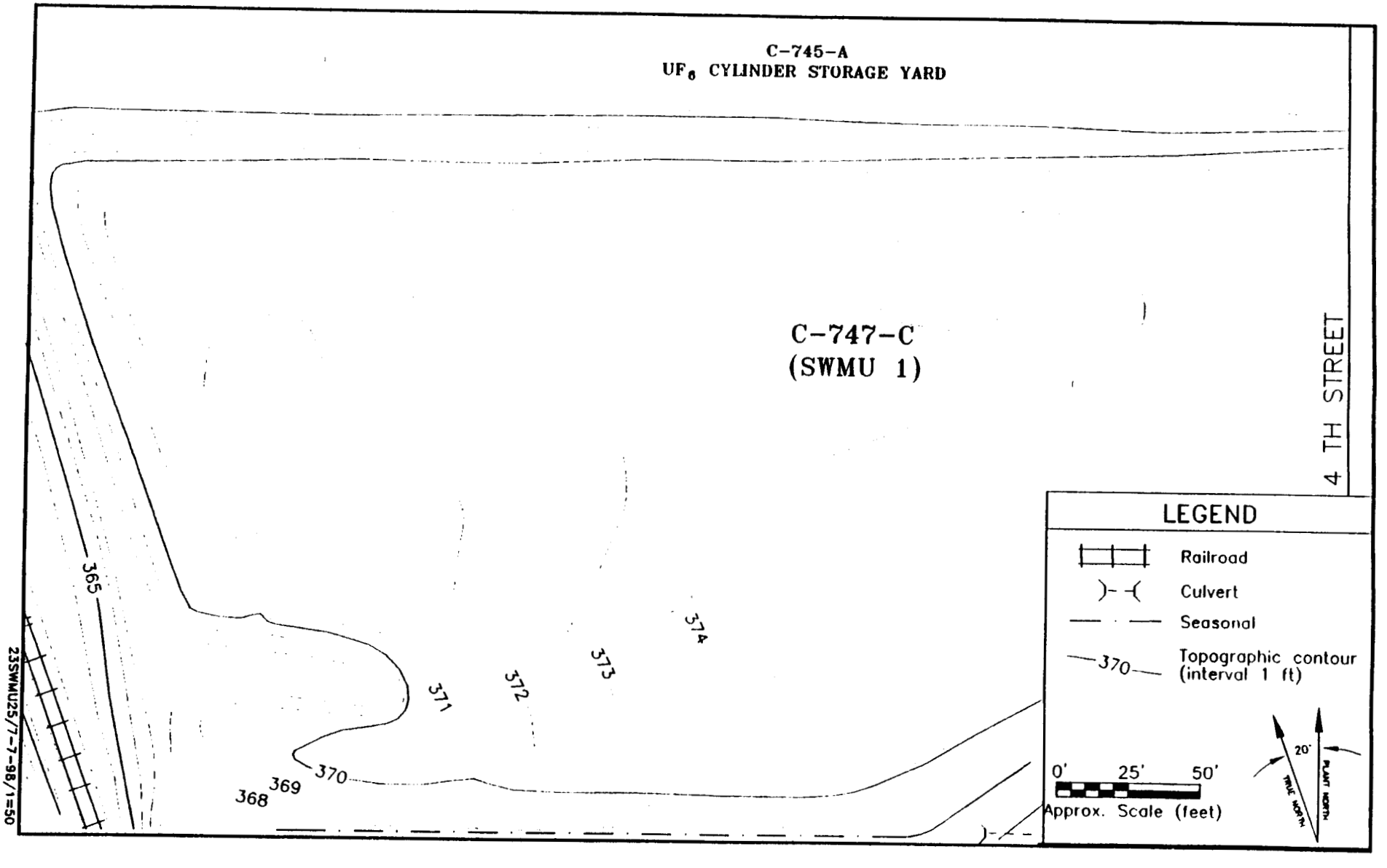


Fig. 1.3. Site location map for the C-747-C Oil Landfarm (SWMU 1)

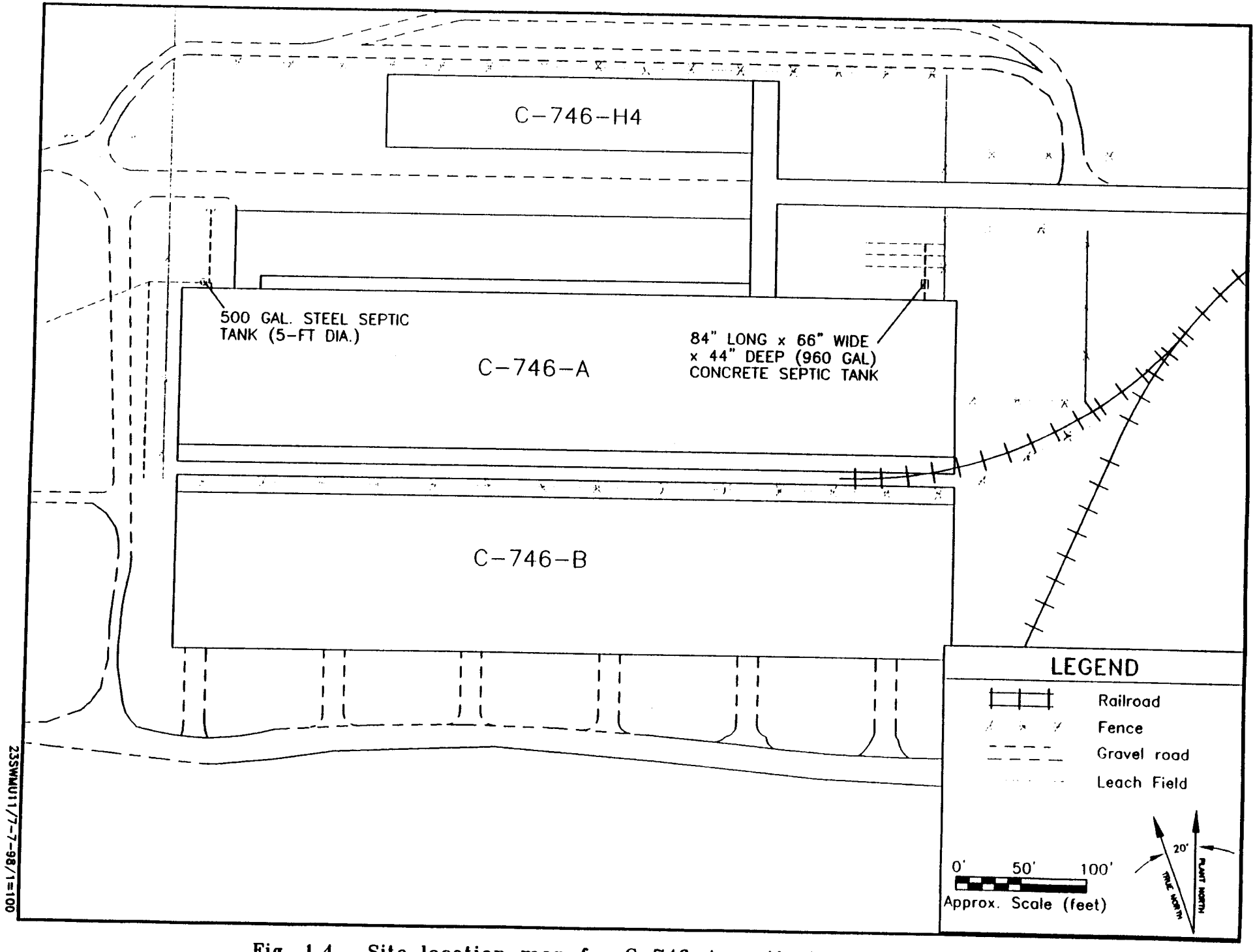


Fig. 1.4. Site location map for C-746-A septic tanks (SWMU 196)

1.4 PROJECT PLANNING

All field activity was conducted in accordance with the WAG 23 and WAG 27 Sampling, Quality Assurance, and Data Management Plan (LMES 1997). This document served as the project work plan, providing details of:

- project organization, responsibilities, and training;
- details of sampling and analysis procedures;
- data collection, review, validation, and usage;
- quality assurance/quality control;
- document control and records management; and
- waste management.

1.5 FIELD IMPLEMENTATION

RI activity was initiated at SWMU 1. Field activities began on January 20 and were completed on January 30, 1998. The geophysical survey was completed first to provide detailed locations of the magnetic anomalies to guide excavation of the test pits that followed. Section 2.2 discusses technical aspects of the geophysical survey. Excavation of the test pits at SWMU 1 is discussed in Sect. 3.2.

Excavation of the septic tanks at C-746-A was begun on February 2 and completed on February 6, 1998. The field effort entailed location and excavation of the tanks, removal and storage of the sludge, sampling and backfilling the excavation, and site reclamation. These activities are described in Sect. 4. All field activities were documented in the field logbook according to Paducah procedure PMSA-1201, "Logbooks".

1.5.1 Mobilization/Demobilization

Mobilization activities were initiated on December 2 and completed on December 19, 1997. Mobilization included:

- procurement of equipment, materials, and resources to conduct field activities;
- site-specific training;
- establishment and organization of project files;
- submittal and approval of key personnel;
- preparation and approval of the project-specific security plan; and
- initiation of excavation permit.

A Lockheed Martin Energy Systems, Inc. (LMES) operational readiness review was completed on December 10, 1997, at the LMES Environmental Management and Enrichment Facilities (EMEF) Office in Kevil, Kentucky. Conditional approval to begin field activities was granted at this meeting, subject to receipt of proper excavation permits. A field planning meeting was held on December 19, 1997, to discuss project requirements with site personnel and subcontractors.

A field support facility was established at the C-755 Support Facility, located on the east side of PGDP adjacent to Gate 48. This location was chosen because it provided more efficient access than was originally anticipated. Trailer C-755-T-1-3 was subleased from DKM Construction for the duration of the project.

1.5.2 Waste Management

All soil removed during excavation of the test pits and septic tanks was returned to the excavation following sampling, thus minimizing waste generation. LMUS Chemical Operations personnel removed the contents of the septic tank using a Keith-Hubner King-Vac vacuum pump truck. Sludge removed from the septic tanks was mixed with granular absorbent and placed in 55-gal drums. The absorbent was added to remove any excess liquid contained in the sludge. All drums were labeled according to Paducah EMEF procedure PMWM-1002 "On-Site Handling and Disposal of Waste Materials." Information recorded directly on the drums included the request for disposal number, contents, generation date, location, and weight of the filled container.

Other investigative derived wastes generated during this field exercise include disposable personal protective equipment (PPE), hypalon sheeting, and water collected from equipment decontamination. Table 1.1 summarizes the types and quantities of investigative derived wastes from this field effort.

Table 1.1. Summary of wastes generated during the SWMU 1 test pits and SWMU 196 septic tank closures

Quantity	Contents	Reference number
1 55-gal drum	Hypalon sheeting	RFD #58515
1 55-gal drum	PPE	RFD #58516
5 gal	Decontamination liquids	RFD #58517[a]
11 55-gal drums	Septic tank sludge (northeast tank)	RFD #58514
10 55-gal drums	Septic tank sludge (northwest tank)	RFD #58513

[a] All fluids contained in sample vessels for analysis—no fluid remained after sampling.

1.5.3 Decontamination Procedures

Test pits at SWMU 1 and septic tanks sampled at Building C-746-A were excavated with either a Nissan N21SS Mini-Giant excavator or a Case 580L backhoe. The excavator and backhoe buckets and miscellaneous hand tools were decontaminated between the two sites using EMEF procedure PTSA-5002, "Decontamination of Field Equipment." Decontamination was conducted using a portable basin to collect excess fluids. The fluids were sampled at the conclusion of the project.

Sampling equipment was decontaminated between samples using EMEF procedure PTSA-5002, "Decontamination of Field Equipment" and PTSA-5005, "Decontamination of Sampling Containers and Sampling Devices." The effectiveness of decontamination was verified by collecting equipment rinseate samples. Field sampling equipment used for this investigation consisted of stainless steel trowels, spoons, and bowls.

1.5.4 Health and Safety

The TN & Associates/CDM Federal Programs Corporation (TN&A/CDM Federal) Site Health and Safety Officer (SHSO) performed onsite monitoring for VOCs during all removal action activities using a MultiRae® photoionization detector (PID) and Geiger-Muller (GM) device to monitor for radioactivity. No elevated readings were recorded that required any modification of PPE. Daily tailgate safety meetings were conducted at the field office before the start of any field activity. These meetings were conducted by the SHSO to discuss health and safety issues and any special concerns

associated with the site. All activities were conducted in Level D PPE consisting of coveralls. hard hats, steel-toed boots, and safety glasses.

1.5.5 Audits/Surveillances

The TN&A/CDM Federal QA Coordinator conducted a field surveillance on February 3, 1998. The surveillance focused on sampling and decontamination procedures used during the C-746 field activities. There were no findings or nonconformances from the surveillance.

2. WAG 27 GEOPHYSICAL SURVEY AT SWMU 1

The geophysical survey at SWMU 1 within WAG 27 was conducted as part of the WAG 27 RI. The survey was performed by TN&A/CDM Federal personnel on January 20, 1998. The equipment used to conduct the survey was the Geonics™ EM-61 high sensitivity metal detector. The EM-61 electro-magnetometer is used to detect both ferrous and nonferrous metallic objects and is capable of detecting a single 55-gal drum at a depth of over 9 ft below ground surface (bgs) beneath the instrument, yet it is relatively insensitive to interference from nearby surface metal such as fences, buildings, cars, etc. In addition, the instrument is practically independent of the electrical conductivity of the subsurface material.

2.1 PURPOSE OF GEOPHYSICAL SURVEY

Previous geophysical investigations identified two small magnetic anomalies at SWMU 1 (CH2M HILL 1992). However, the original survey covered a large area with relatively few measurement points. The purpose of this geophysical survey was to better delineate the boundaries of the anomalies in two general areas within the former land farming area. Based on the data generated during the survey, the boundaries of anomalous areas were identified using red pinflags. A civil survey was performed to provide PGDP coordinates of the anomalies and primary grid stake locations. A copy of the survey data is included as Appendix A. After the coordinates were established, test pits were performed to confirm the depth and type of materials buried at SWMU 1.

2.2 GEOPHYSICAL SURVEY AT SWMU 1

Geophysical surveys were conducted at three areas at SWMU 1: (1) a background survey, (2) Grid A in the vicinity of a previously defined magnetic anomaly, and (3) Grid B in the vicinity of a second anomaly. The following sections discuss each of these surveys.

2.2.1 Background Survey

A background survey was performed in an area having no history of site activity, receiving no drainage from potentially impacted areas of the site, and representing natural soil conditions. The first area selected for the background survey was located immediately south of the areas to be surveyed; however, this location was determined to be unacceptable because of underground utilities discovered during a site walkover. An alternate location was selected immediately north of Grids A and B; the location of each survey area is shown on Fig. 2.1. The dimensions of the background survey area were 50 by 20 ft, resulting in 18 measurements (at 10-ft intervals). Measurements recorded at each grid node are presented in Fig. 2.2 and provided in Appendix B.

A base station was selected in the background area at the 20N + 20E location (see Fig. 2.2). Three base station measurements were recorded. The purpose of the base station measurements (one measurement three times per day) was to evaluate changes in instrument response and natural changes in the earth's magnetic field. Base station measurements are provided on Fig. 2.2 and in Appendix B.

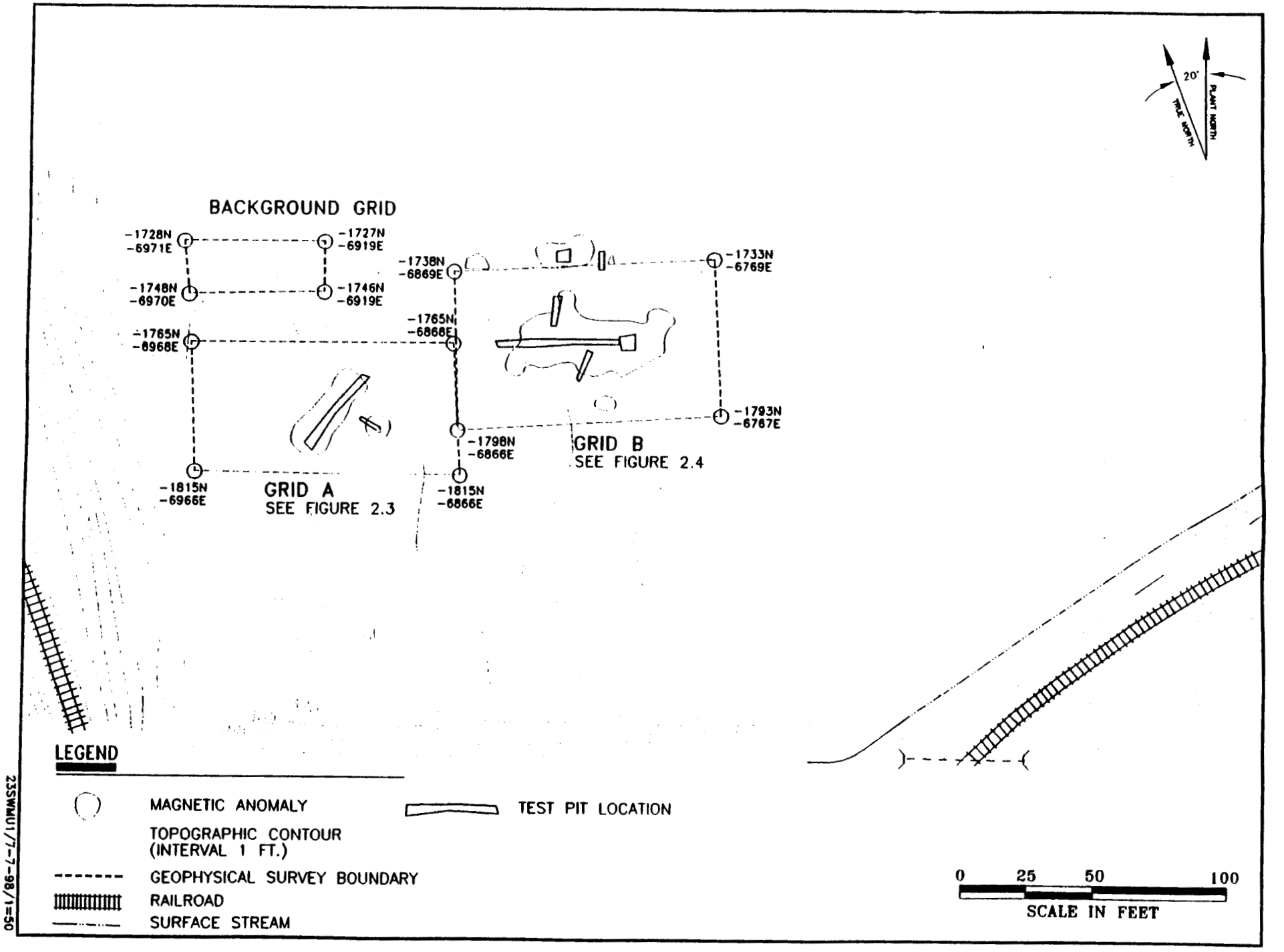


Fig. 2.1. Survey grids and identified anomalies at SWMU-1

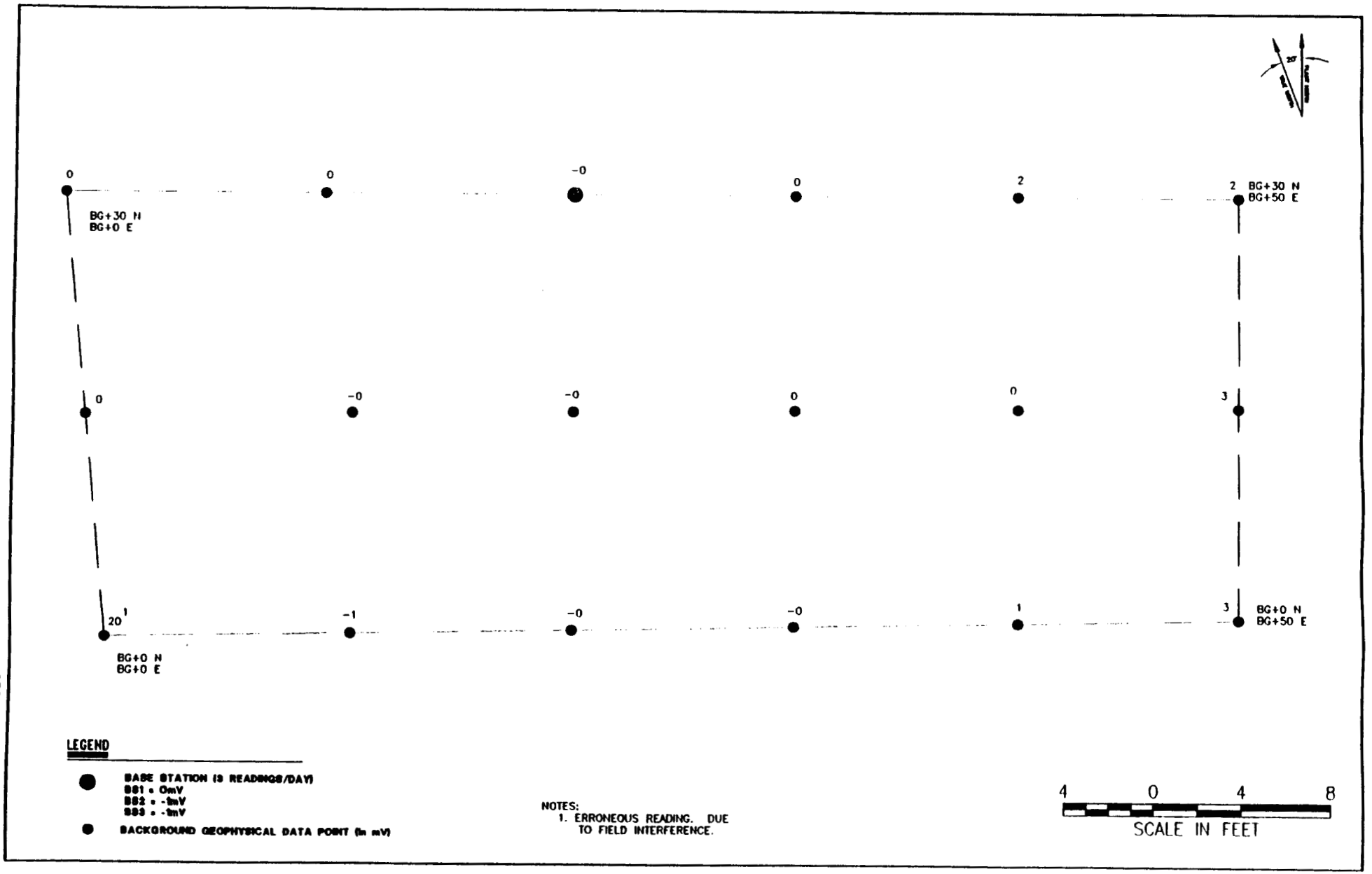


Fig. 2.2. Background Grid Geophysical Survey Measurements

23SWMU12/4-1-98/1=4

Background measurements ranged from -1 to 3 mV on Channel 1 (the top coil); one measurement of 20 mV was disregarded because of field interferences (e.g., a metal clipboard). For the purpose of identifying anomalies, background was considered to be 3 mV or less.

Base station measurements were 0 mV, -1 mV, and -1 mV measured at the beginning of the survey, at noon, and at the conclusion of the survey, respectively. It was concluded that changes in site conditions and instrument response throughout the day were negligible.

2.2.2 Grid A Survey

The geophysical survey of Grid A was performed across a 100 ft ×50 ft area. One person operated the EM-61 and one person transcribed data and other pertinent information in the geophysical logbook. Measurements were recorded only at grid nodes; however, the EM-61 is equipped with an audible mechanism that increases in intensity and volume as measurements increase. Therefore, as the survey was conducted, red pinflags were placed at all locations (on and between grid nodes) where the instrument indicated an increase in the magnetic field. Once a measurement was recorded at each grid node, the surveyor further refined the boundaries of anomalous areas and recorded maximum measurements within the anomalous areas. The dimensions and locations of each anomaly were documented in the geophysical logbook.

Two anomalous areas were identified within Grid A. These anomalies and measurements recorded at each grid node are shown on Fig. 2.3. The anomalies are located in the approximate center of the grid. That suggests the grid was properly placed where the earlier survey had identified metallic objects. A much smaller anomaly at the northeast corner is possibly part of the same anomaly. The contours surrounding the anomalies are approximately 10 mV contours. Maximum measurements were made within the boundaries to approximate the depth to the top of buried materials. Based on instrument measurements within the anomalies, they appear to be mounded with depths ranging from 2.25 to 4.8 ft bgs along the crest of the mound. Perimeter depths are estimated to be approximately 7.0 ft bgs.

2.2.3 Grid B Survey

The geophysical survey of Grid B was performed across an area 100 ft × 60 ft. This area was surveyed in the same manner as Grid A. Five anomalous areas were identified and are shown on Fig. 2.4.

Anomalies identified within Grid B consist of one large anomaly and four smaller anomalies. Again, perimeter contours represent approximately 10 mV and a depth of approximately 7.0 ft bgs. Maximum measurements within the largest anomaly ranged from 340 mV to 4000 mV for different portions of the anomaly. This anomaly also indicated a mounded shape with the crest lying approximately 0.45–2.4 ft bgs. The locations of the smaller anomalies are also shown on Fig. 2.4.

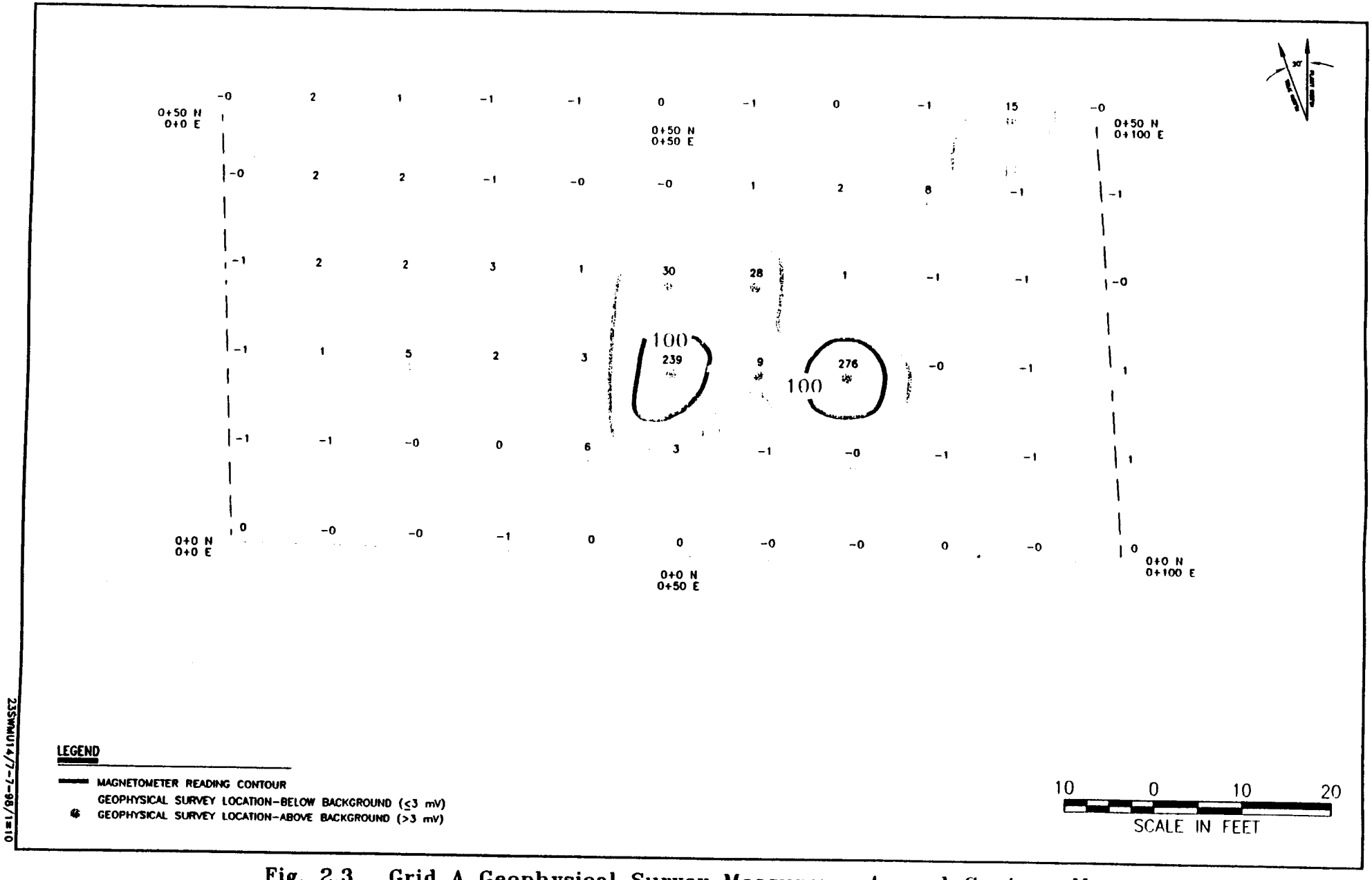


Fig. 2.3. Grid A Geophysical Survey Measurements and Contour Map

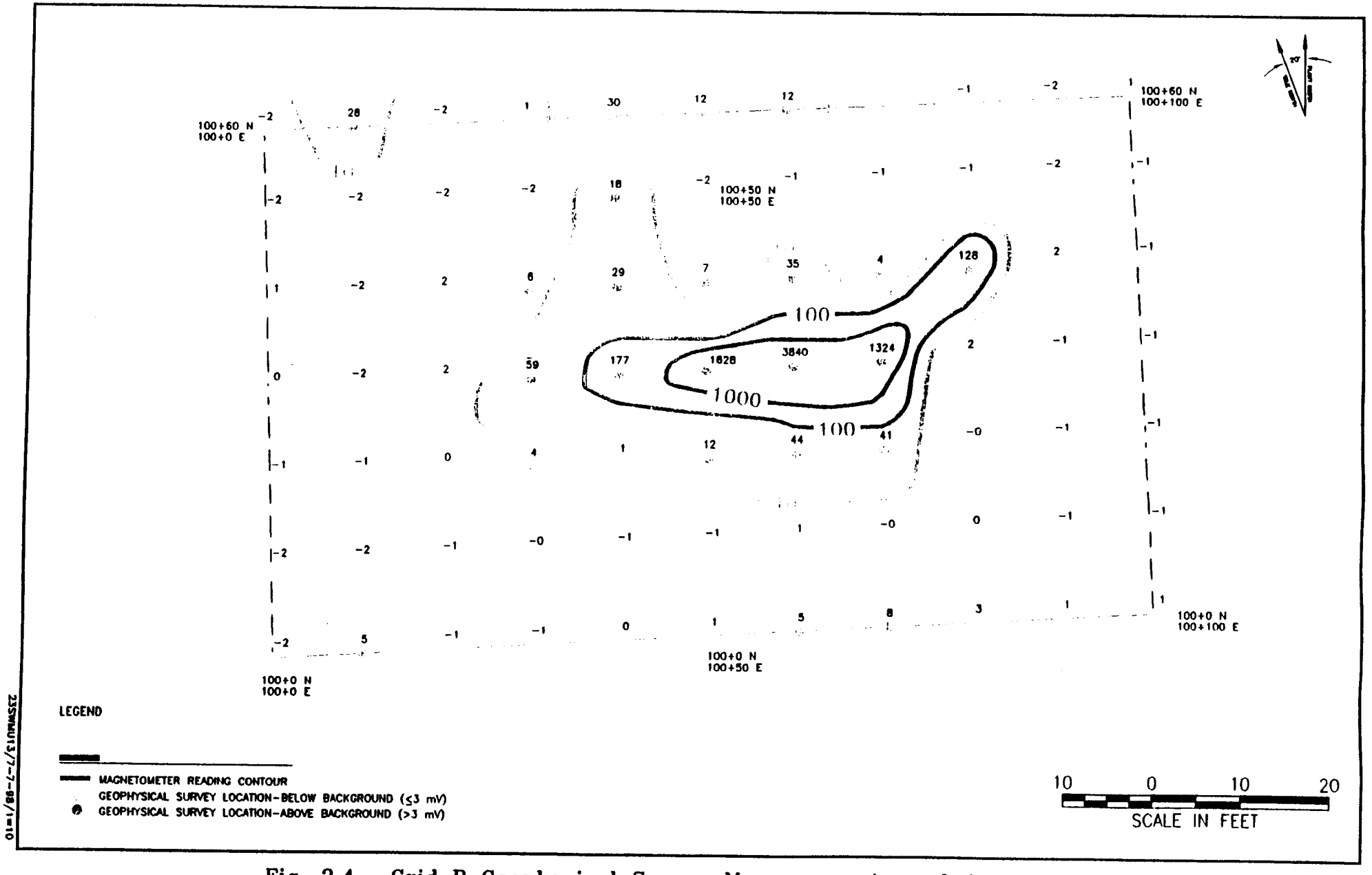


Fig. 2.4. Grid B Geophysical Survey Measurements and Contour Map

3. EXCAVATIONS AT SWMU 1

Test pits were excavated at SWMU 1 to investigate the source magnetic anomalies discerned from the geophysical survey. This section presents the results of the subsurface investigation.

3.1 PURPOSE OF TEST PITS AT SWMU 1

Test pits were required at SWMU 1 because the method allows removal of overburden and larger objects. Test pits are preferred in this type of application because they are less limited by subsurface obstructions and allow for completely uncovering buried objects so they can be identified. The purpose of the test pit program was to determine the nature of the metallic objects identified in the geophysical survey and determine if those objects have contributed to contamination at the SWMU.

3.2 TEST PIT PROGRAM AT SWMU 1

Interpretation of the magnetometer survey data identified and located the limits of seven anomalies within SWMU 1. In general, the magnetic anomalies approximated the location of two roughly parallel disposal trenches in (and immediately north of) Grid B, and a smaller area in Grid A. Test pits were positioned by field personnel to best characterize the geophysical anomalies. Test pits were excavated using a Nissan Mini-Giant® Excavator and a Case 580L backhoe.

The pits were not excavated in any particular order, but Grid B was investigated first followed by Grid A. Within each grid, the test pits were not sequenced by pit number (i.e., TB-5 was excavated first followed by TB-2, TB-4, TB-1, TB-3, and TB-6), following a strategy to first characterize the center of the anomaly, then determine the extent of material along the margins. The pits were often expanded to further investigate features observed by the field team. Soil samples were collected from select locations according to Paducah EMEF procedure PTSA-4201, "Surface Soil Sampling." Analytical requirements for the test pits included VOCs, SVOCs, PCBs, metals, and a selected suite suite of radiological analyses (^{60}Co, ^{235}U, ^{99}Tc, ^{239}Pu, ^{241}Am, ^{237}Np, ^{230}Th, ^{137}Cs, and total uranium). Table 3.1 summarizes the rationale employed for test pit locations and results of the investigation. Figure 3.1 illustrates the location of test pits in Grid B and Fig. 3.2 illustrates test pit locations in Grid A. Table 3.2 provides a summary of analytical samples collected in association with the SWMU 1 test pits.

3.3 GRID B INVESTIGATION

Test pit TB-5 was excavated first to investigate the northernmost magnetic anomaly. The pit was located in the approximate center of the anomaly within an area of a suspected trench at the former landfarm. The excavation was advanced to a depth of 3.5 ft where an interval of blue-grey silt was uncovered. The silty layer exhibited an oily appearance and had a noticeable odor. Field instrumentation detected organic vapors over 100 ppm and recorded elevated readings on the radiologic meter [1000 counts per minute (cpm)]. The pit was backfilled and marked as a radiological area by PGDP health physics personnel. The final dimensions of the test pit measured 2 ft by 2 ft by 3.5 ft (length by width by depth). No metallic objects were uncovered, only a plastic drum lid.

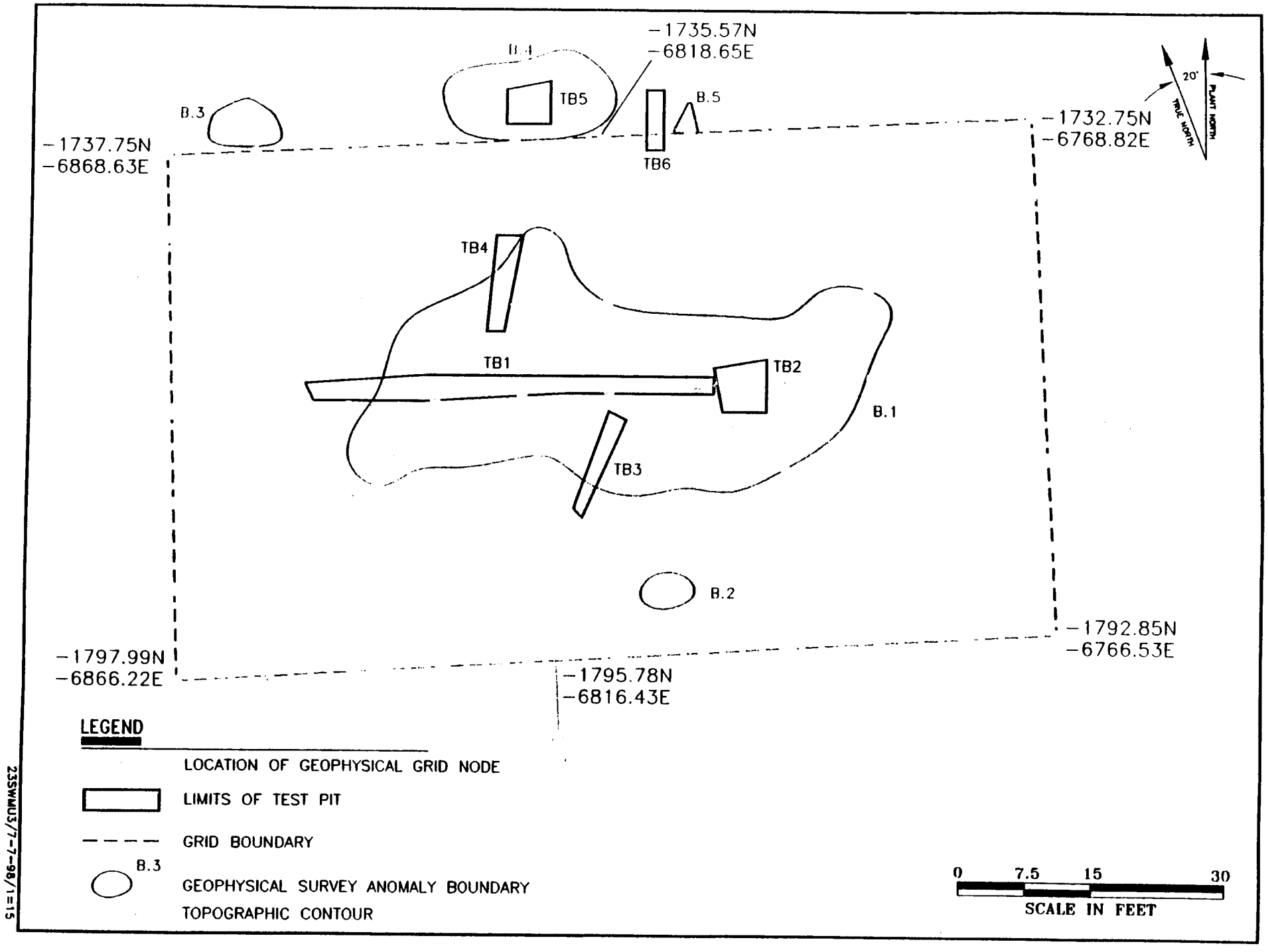


Fig. 3.1. Location of test pits at Grid B

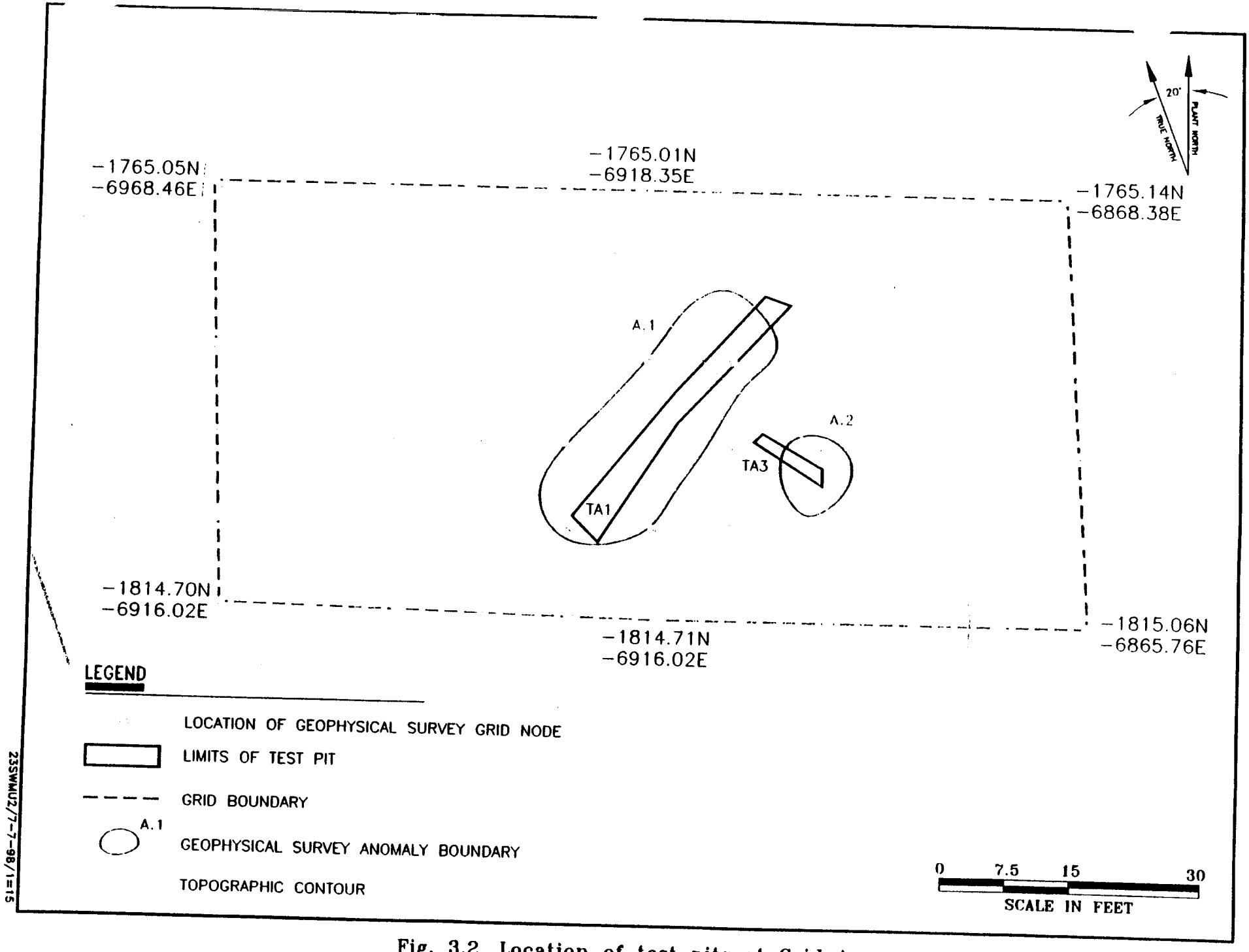
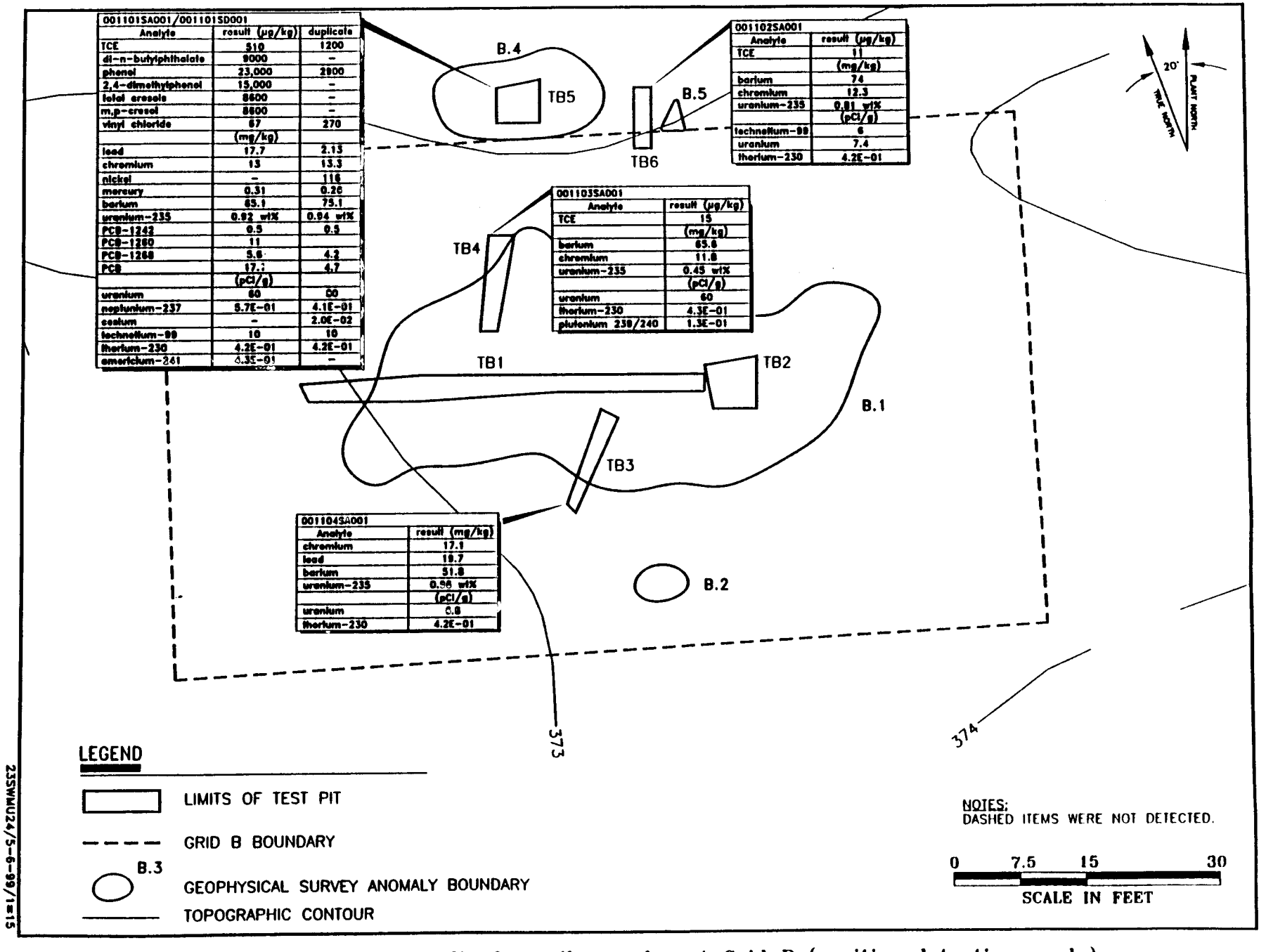


Fig. 3.2. Location of test pits at Grid A



001101SA001/001101SD001		
Analyte	result (µg/kg)	duplicate
TCE	510	1200
di-n-butylphthalate	9000	–
phenol	23,000	2900
2,4-dimethylphenol	15,000	–
total cresols	8600	–
m,p-cresol	8600	–
vinyl chloride	67	270
	(mg/kg)	
lead	17.7	2.13
chromium	13	13.3
nickel	–	116
mercury	0.31	0.26
barium	65.1	75.1
uranium-235	0.92 wt%	0.94 wt%
PCB-1242	0.5	0.5
PCB-1260	11	
PCB-1268	5.6	4.2
PCB	17.1	4.7
	(pCi/g)	
uranium	60	50
neptunium-237	5.7E-01	4.1E-01
cesium	–	2.0E-02
technetium-99	10	10
thorium-230	4.2E-01	4.2E-01
americium-241	6.3E-01	–

001102SA001	
Analyte	result (µg/kg)
TCE	11
	(mg/kg)
barium	74
chromium	12.3
uranium-235	0.81 wt%
	(pCi/g)
technetium-99	6
uranium	7.4
thorium-230	4.2E-01

001103SA001	
Analyte	result (µg/kg)
TCE	15
	(mg/kg)
barium	65.6
chromium	11.8
uranium-235	0.45 wt%
	(pCi/g)
uranium	60
thorium-230	4.3E-01
plutonium 239/240	1.3E-01

001104SA001	
Analyte	result (mg/kg)
chromium	17.1
lead	19.7
barium	51.8
uranium-235	0.56 wt%
	(pCi/g)
uranium	6.8
thorium-230	4.2E-01

Fig. 3.3. Analytical results for soil samples at Grid B (positive detections only)

Table 3.1. Rationale for location of test pits at SWMU 1—WAG 27

Test pit number	Rationale	Comments
TB-1	Located in center of magnetometer maxima at west end of anomaly. Expanded through long axis of largest anomaly.	Uncovered drum rings, rags, gloves, some asphalt or coal, and alumina pellets. Tube of grease uncovered near TB-1 location. PID 0 ppm GM <200 cpm
TB-2	Located at eastern geophysical maxima of largest anomaly.	Uncovered five drum lids and small, white pellets (alumina trap material). Insignificant PID/GM readings
TB-3	Located to determine the southern boundary of largest anomaly and the extent of former landfarm trench.	Determined edge of former trench corresponded well with edge of anomaly. PID <5 ppm GM <200 cpm (background 100 cpm) Sample # 001104SA001
TB-4	Located to verify the extent of landfarm trench as determined by magnetometer anomaly.	Clearly determined the edge of landfarm trench. Excellent correlation with edge as defined by magnetometer survey. PID <5 ppm GM 2000 cpm at edge of former trench. Sample # 001103SA001 collected
TB-5	Centered in small anomaly to determine presence or absence of metallic objects.	No metal discovered. Re-excavated on 1/30/98 to collect sample at area of high PID/GM readings. PID >100 ppm GM 1000 cpm Sample # 001101SA001 001101SD001
TB-6	Located along northern boundary of Grid B between TB-5 and smaller anomaly to the east to confirm presumed extent of former landfarm trench.	No metal discovered. Confirmed former landfarm trench extended through the area. PID 5 ppm GM 18,000 cpm Sample # 001102SA001
TA-1	Investigated long axis of Grid A anomaly.	Encountered 18-in. concrete (storm water?) pipe. Test pit extended along pipe. No PID or GM readings above background.
TA-2	Designed to investigate limits of anomaly.	Not excavated—determined to be unnecessary after TA-1 was extended.
TA-3	Investigated maximum magnetometer reading in Grid A.	Several pieces of carbon steel piping and/or steel plate at ~0.5 ft. No evidence of landfarm trenches. No readings above background with PID or GM.

Table 3.2. Summary of analytical samples collected for SWMU 1 test pits

Sample ID	Date/time	Analytical requirements	COC no.	Description
001101SA001	1-30-98 1130	VOCs, SVOCs, metals, PCBs, and full rad*	WAG23-030	Soil sample from SWMU 1 test pit (TB-5). Grid B.
001101SD001 (duplicate)	1-30-98 1145	VOCs, SVOCs, metals, PCBs, and full rad*	WAG23-030	Duplicate soil sample from SWMU 1 test pit (TB-5). Grid B.
001101SA002	1-28-98 1217	VOCs	WAG23-030	Trip blank for sample 001101SA001, 001101SD001, 001102SA001, 001103SA001, and 001104SA001.
001102SA001	1-30-98 1055	VOCs, SVOCs, metals, PCBs, and full rad*	WAG23-030	Soil sample from SWMU 1 test pit (TB-6). Grid B.
001103SA001	1-29-98 0859	VOCs, SVOCs, metals, PCBs, and full rad*	WAG23-030	Soil sample from SWMU 1 test pit (TB-4). Grid B.
001104SA001	1-29-98 1240	VOCs, SVOCs, metals, PCBs, and full rad*	WAG23-030	Soil sample from SWMU 1 test pit (TB-3). Grid B.
001000NR001	2-5-98 1650	VOCs, SVOCs, PCBs, metals, and full rad*	WAG23-031	Equipment rinseate sample for SWMU 1 test pits.
001000NR002	2-2-98 1100	VOCs	WAG23-030	Trip blank for sample 0011000NR001.

* Full rad consists of ^{60}Co, ^{235}U, ^{99}Tc, ^{239}Pu, ^{241}Am, ^{237}Np, ^{230}Th, ^{137}Cs, and uranium.

Test pit TB-2 was placed in the approximate center of the largest magnetic anomaly in Grid B. Five metal drum lids were unearthed in this pit, along with numerous small, white pellets. A grab sample of the pellets was collected and sent to the C-710 laboratory for analysis for uranium assay. The drum lids were found within 2 to 3 ft of one another at a depth of 0.5 ft. The pit was extended below the drum lids to a depth of 1.5 to 2.0 ft and extended laterally to confirm that no other metallic objects were present. A layer of crushed stone was encountered at the bottom of the excavation along with pieces of wood and some plastic tubing. Field instrumentation recorded little evidence of contamination. Final dimensions of TB-2 were approximately 4 ft by 5 ft by 3.5 ft. The pit was backfilled with native material.

TB-4 was excavated to verify the northern extent of the largest magnetic anomaly. The excavation uncovered a distinct interval of sand used during landfarm activities that allowed an accurate determination of the margins of the former landfarm. The extent of landfarm material corresponded very well with the edges of the magnetic anomaly. No metallic objects were found. No organic vapors were detected but the radiologic meter detected up to 2000 cpm in a layer of crushed stone at the base of the pit. TB-4 measured 2 ft by 10 ft by 3 ft. The pit area was marked as a radiological area and backfilled with the excavated material.

TB-1 was excavated as an elongate trench to encompass the long axis of the largest magnetic anomaly. The trench was excavated to the top of the gravel layer (2 to 3 ft) found in other test pits that presumably lined the bottom of the original landfarm area. Depth to the gravel layer increased from east to west. Alumina pellets, two drum rings, rags, gloves, and some pieces of asphalt or coal were unearthed in TB-1 at a depth of approximately 1 ft (± 0.5 ft). One of the drum rings was found directly below the highest reading on the EM-61. Some purple soil discoloration was observed on the trench walls. Physical evidence (i.e., crushed stone and soil discoloration) suggested the former oil landfarm trench extended beyond the magnetic anomaly. No organic vapors were detected and the radiologic meter detected <200 cpm in TB-1.

TB-3 was to determine the southern margin of the former oil landfarm. The pit was begun within the region of the anomaly and extended south until the edge of the former landfarm was discerned. The edge of the landfarm trench was determined to be approximately 3 ft south of the edge of the magnetic anomaly. TB-3 encountered brown to grey-brown sandy fill to 2–2.5 ft, where an interval (6 to 8 in.) of #3 crushed stone was encountered, underlain by mottled orange and grey silt. No metallic objects were recovered. Field monitoring instruments detected no organic vapors (<5 ppm) and radiological readings (200 cpm) were slightly above background (100 cpm). This area did not require posting as a radiologic area as determined by PGDP health physics personnel.

TB-6 was excavated to determine the extent of a suspected landfarm trench defined by three small anomalies detected north of Grid B and encountered at TB-5. The test pit encountered brown to grey-brown sand fill to a depth of 2.5 ft, underlain by 0.5 to 1 ft of #3 crushed stone, then blue-grey silt at the base. Organic vapors were detected up to 5 ppm and radiological activity up to 18,000 cpm were detected. This area was marked as a radiological area and backfilled with excavated material.

3.4 GRID A INVESTIGATION

Three test pits were planned within Grid A to investigate an anomaly detected during the site investigation. The anomaly was corroborated by the magnetometer survey conducted during this investigation, and found to be smaller than the largest anomaly in Grid B. Test pit TA-3 was excavated first, followed by TA-1. Test pit TA-2 was not necessary because TA-1 was extended to

cover most of the anomaly. Field screening instrumentation recorded no readings above background in either test pit and no samples were collected.

Several pieces of carbon steel piping and/or steel plate were uncovered in TA-3 at a depth of 2 ft. No other material was discovered. It is believed these small pieces of piping comprised the anomaly. No evidence of the landfarm was noted in TA-3 and no readings above background were recorded.

A large (18 in.) diameter concrete pipe along the axis of the magnetic anomaly was uncovered in TA-1. The line was not included on any PGDP utility maps. The approximate dimensions of the line were determined by probing with the excavating equipment and with a hand probe. The ends of the line were surveyed to determine the slope of the pipe. The survey determined the line dropped 1ft over 24 ft (0.042 ft/ft).

3.5 ANALYTICAL RESULTS FOR SWMU 1 TEST PIT SAMPLES

Analytical data from soils collected from the test pits suggest the former Oil Landfarm may contribute to groundwater contamination at PGDP. VOCs, SVOCs, PCBs, metals, and radionuclides were detected in the soil samples. Soil from test pit TB-5 contained the largest number of contaminants in the highest concentrations and was the only location that included SVOCs and PCBs. Other test pits contained low concentrations of VOCs, metals, and radionuclides. Figure 3.3 presents the distribution of contaminants detected in the analytical samples at SWMU 1.

Contamination from past disposal practices is evident in test pit TB-5. The soil sample (001101SA001) contained elevated concentrations of SVOCs including phenol (23,000 µg/kg), 2,4-dimethylphenol (15,000 µg/kg), di-n-butylphthalate (9000 µg/kg), and cresol (8600 µg/kg). PCB concentrations totaled 17.1 µg/kg. Two VOCs were detected: trichloroethene was detected at a concentration of 510 µg/kg and vinyl chloride at 67 µg/kg. Inorganics include barium (65.1 mg/kg), chromium (13 mg/kg), lead (17.7 mg/kg), and mercury (0.31 mg/kg). Radionuclides detected include uranium (67 pCi/g), ^{235}U (0.92 weight %), ^{237}Np (0.57 pCi/g), ^{99}Tc (10 pCi/g), ^{230}Th (0.42 pCi/g), and ^{241}Am (0.43 pCi/g). The duplicate sample contained similar contaminants at different concentrations, including phenol at 2900 µg/kg, but no other SVOCs. TCE was detected at a concentration of 1200 µg/kg and vinyl chloride at 270 µg/kg. Nickel was detected in the duplicate (but not in the original sample) at a concentration of 116 mg/kg.

Other test pits indicated few contaminants. TCE was detected in TB-6 (11 µg/kg) and TB-4 (15 µg/kg), but no other organics were detected. Barium and chromium were detected in TB-3, TB-4, and TB-6, with lead also detected in TB-3. Concentrations of these metals were all below 100 mg/kg. Radionuclides were detected in all samples. The highest concentrations were detected in TB-4, where uranium was detected at 63 pCi/g.

Whitish granular material or pellets uncovered at the former Oil Landfarm were sampled and analyzed by LMES. Results of these analyses revealed the material contained 295 pCi/g total uranium assayed at 1.062 wt% ^{235}U. The remainder of the material was largely alumina with other metals and silica. It is speculated the material was included in oil contaminated with alumina from the C-720 Instrument Shop (LMES 1998). A detailed discussion relating to the origin of the alumina uncovered during the excavation activities is included as Appendix D of this report.

4. EXCAVATIONS AT BUILDING C-746-A SEPTIC SYSTEM

Excavation activity at the C-746 area was necessary to uncover the septic tanks lids to facilitate sampling of the tank contents. Sampling is required at these tanks to confirm or deny their contents as sources of contamination. The tanks are recognized as a potential source of heavy metal and radiological contaminants.

4.1 NORTHEAST SEPTIC TANK

The septic tank at the northeast corner of Building C-746-A was excavated first, using a Case 580L backhoe. PGDP construction drawings indicate the tank dimensions at 84-in. by 66-in. by 44-in. The top of the tank was located approximately 1.5 to 1.8 ft bgs. The excavation uncovered two access ports on the top of the tank measuring 2 ft by 2 ft.

LMUS Chemical Operations (Chem Ops) removed the contents of the northeast Building C-746-A septic tank. The tank contained approximately 10 in. to 12 in. of liquid above the sludge at the bottom. A vacuum truck was used to remove the contents of the sump and pump the contents into 55-gal drums. Each drum used in these removals was fitted with a sorbent pad and a 10-mil plastic liner. A layer (1–2 lb) of absorbent material was placed in the bottom of each drum prior to filling, and additional absorbent material was added as the drum was filled. The sludge was largely saturated and appeared dark black and viscous.

Eleven drums of material were removed from the northeastern septic tank. Drums for this septic tank material were labeled #58514-01 through #58514-11. One drum of PPE was also collected and identified as #58516. The empty septic tank was abandoned by backfilling it with clean sand, and then grading the site at the surface.

4.2 NORTHWESTERN SEPTIC TANK

The septic tank at the northwestern corner of Building C-746-A was reported to be a 5-ft-diameter concrete tank. However, the excavation uncovered a 5-ft-diameter corroded steel tank at a depth of approximately 2.5 ft below ground surface. The tank cover contained several holes and was full of water. No organic vapors or radioactivity was detected with field instrumentation.

Since no access ports were found on the tank cover, the top of the tank was removed with a backhoe to facilitate sampling. Chem Ops personnel removed the contents of the tank with a vacuum truck. Tank contents were placed in 55-gal drums. The material (liquid and sludge) was placed in 55-gal drums and mixed with chemical absorbent to remove liquids. A total of ten 55-gal drums were filled with material from the C-746-A northwest tank. Three drums were filled with liquid, and the remaining seven with a mixture of sludge and liquid. None of the sludge exhibited organic vapors or radiological activity when screened with field instruments. The empty northwest tank was abandoned by backfilling it with clean sand, and then grading the site.

4.3 SLUDGE SAMPLE COLLECTION

Grab samples of sludge from 6 of the 21 drums filled during the investigation were collected and analyzed to characterize the material. A decontaminated stainless steel spoon was used to collect each sample in accordance with Paducah EMEF procedures PTSA-4201 and PTWM-5500 "Sampling of Containerized Waste." Samples were collected in appropriate containers for analyses for PCBs, metals, radionuclides, asbestos, and paint-filter test and transported to the LMUS analytical laboratory in Building C-710. Proper sample custody was maintained at all times. Table 4.1 summarizes the pertinent information for the sludge, waste characterization, and QC samples collected during the sludge removal operations.

4.4 ANALYTICAL RESULTS FOR C-746-A SEPTIC TANK SLUDGE SAMPLES

Analyses of six samples of the material removed from the septic tanks indicated metals were the only analyte detected. Metals were the only constituent detected in the samples. Results of these analyses are summarized on Fig. 4.1. Samples from the northeast tank contained (as maxima of three samples) barium (45 mg/kg), lead (22.6mg/kg), and nickel (326 mg/kg). Metals detected in the sludge from the west tank included barium (35.2 mg/kg), lead (55.1 mg/kg), nickel (78.1 mg/kg), and selenium (4.82 mg/kg).

4.5 DATA REVIEW, VALIDATION, AND ASSESSMENT

Analytical results were forwarded to the LMES Sample Manager. These data were electronically entered into the PGDP Project Environmental Measurement System (PEMS) database by the LMES Sample Manager. These data were be entered into the Paducah Oak Ridge Environmental Information System upon completion of the project. Analytical results are summarized in Appendix C.

Data were contractually screened, verified, validated, and assessed by LMES according to PMSA-1001 "Quality Assured Data." Contractual screening is designed to determine if all required documentation is intact as required for the proper analyses. Contractual screening includes (1) data delivery tracking and costing and (2) review of sample identification, signed chain-of-custody, required turnaround time, and verification (holding time, units, and either criteria as applicable).

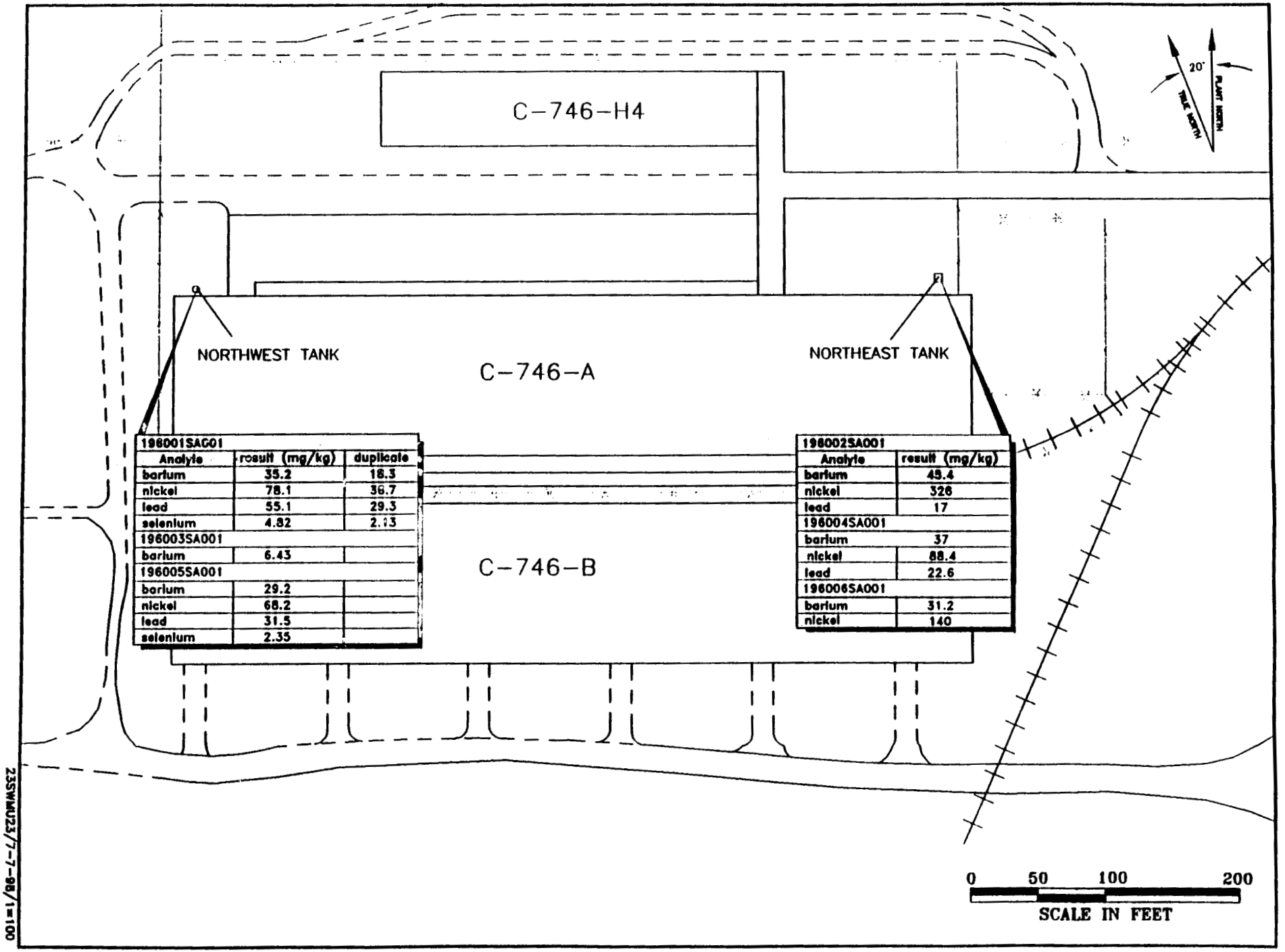
Validation procedures were conducted to screen the data against known criteria according to U.S. Environmental Protection Agency and LMES procedures. LMES procedures employed include ERWM/ER-P2209, "Radiochemical Data Verification and Validation"; ERWM/ER-P2211, "Pesticide and PCB Data Verification and Validation"; and ERWM/ER-P2210, "Inorganic Data Verification and Validation." No problems were encountered with the data for this project.

The data assessment process, conducted after the completion of data verification and validation, is performed to determine if the total set of environmental measurements data satisfies the requirements of the project data quality objectives (DQOs). Parameters reviewed during the data assessment process include sensitivity, precision, accuracy, representativeness, completeness, and comparability. The data assessment was completed in accordance with PMSA-1001, "Quality Assured Data". Data assessment results indicated that the data are precise, accurate, complete, comparable, and representative and met the project DQO's.

Table 4.1. Summary of analytical samples collected for C-746-A septic tanks.

Sample ID	Date/time	Analytical requirements	COC no.	Description
196001SA001	2-4-98 1340	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58513-01 (west end septic tank at C-746-A).
196001SD001 (duplicate)	2-4-98 1350	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Duplicate sludge sample from drum 58513-01 (west end septic tank at C-746-A).
196002SA001	2-4-98 1520	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58514-08 (east end septic tank at C-746-A).
196003SA001	2-4-98 1405	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58513-03 (west end septic tank at C-746-A).
196004SA001	2-4-98 1455	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58514-04 (east end septic tank at C-746-A).
196005SA001	2-4-98 1415	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58513-05 (west end septic tank at C-746-A).
196006SA001	2-4-98 1510	PCBs, metals, asbestos, paint filter test, and full rad*	WAG23-033	Sludge sample from drum 58514-06 (east end septic tank at C-746-A).
196000ND001	2-6-98 1530	VOCs, PCBs, metals, gross alpha/beta, oil and grease, ^{99}Tc, gamma spec, and total suspended solids	WAG23-036	Waste characterization sample of decon water used for SWMU 1 test pits and C-746-A septic tanks.
196000ND002	2-6-98 1230	VOCs	WAG23-036	Trip blank for sample 196000ND001.

* Full rad consists of ^{60}Co, ^{235}U, ^{99}Tc, ^{239}Pu, ^{241}Am, ^{237}Np, ^{230}Th, ^{137}Cs, and uranium.



196001SA001		
Analyte	result (mg/kg)	duplicate
barium	35.2	18.3
nickel	78.1	36.7
lead	55.1	29.3
selenium	4.82	2.13
196003SA001		
barium	6.43	
196005SA001		
barium	29.2	
nickel	68.2	
lead	31.5	
selenium	2.35	

196002SA001	
Analyte	result (mg/kg)
barium	45.4
nickel	326
lead	17
196004SA001	
barium	37
nickel	88.4
lead	22.6
196006SA001	
barium	31.2
nickel	140

Fig. 4.1. Analytical results for sludge samples at C-746-A septic tanks (positive detections only)

5. SUMMARY OF FINDINGS

A geophysical survey and a series of excavations were conducted at WAG 27 to investigate potential contaminant source areas within the former C-747-C Oil Landfarm (SWMU 1) and Building C-746 area of PGDP. These activities were part of the ongoing RI for WAG 27.

The geophysical survey was designed to guide the excavation of test pits within SWMU 1. The survey used a EM-61 magnetometer to clearly define the boundaries of magnetic anomalies. Magnetometer readings were obtained along a closely spaced grid, then augmented by continuous readings to define the perimeter of magnetic anomalies. The survey discovered one large and numerous smaller anomalies.

A series of test pits were excavated at the magnetic anomalies to determine if the anomalies contained material that may represent a source of contamination. Test pits at SWMU 1 uncovered no large metallic objects such as drums. Magnetic anomalies in Grid B were probably caused by small items (e.g., drum lids, drum bungs, metal shavings in waste oil) and/or residual metals from oils disposed in the landfarm. The magnetic anomalies at Grid B closely defined two roughly parallel landfarm trenches that were confirmed by the test pits. This suggests that residual metals in the former Oil Landfarm left a magnetic signature in the vicinity of the disposal trenches. Small metal items discarded in the trenches produced smaller anomalies and local maxima within the larger anomaly.

The anomaly in Grid A was caused by a large concrete drain pipe. The EM-61 can detect large nonmetallic objects, such as uncovered in Grid A. The source and purpose of this pipe are unknown, but the pipe does not appear to have contributed to groundwater contamination.

Sludge samples from the C-746-A septic tanks reveal they are probably not a source of contamination for the groundwater plumes at PGDP. The northeast tank contained sludge and liquid and was found intact and half full. Material in the tank was removed, placed in drums with absorbent material, and sampled. The tank was then abandoned in place by backfilling it with clean sand. The northwest tank was found to be of steel construction which was corroded, in poor condition, and completely full. The top of the tank was removed to allow access to the material in the tank. The northwest tank also contained fluid and sludge. The material was removed and placed in drums, and the tank was backfilled and abandoned in place.

Analytical results suggest the former Oil Landfarm may be a source of off-site goundwater contamination at PGDP. The presence of organic vapors with residual TCE and vinyl chloride in the soil in TB-5 suggest a release occurred in the vicinity of the test pit. Lower concentrations of TCE in adjacent test pits may be associated with this release. Radionuclides detected in the vicinity suggests past disposal practices may have included contaminated oils. This is substantiated by the presence of contaminated alumina pellets.

The C-746-A septic system does not appear to be a source of residual contamination. Metals detected in the sludge are consistent with past usage of Building C-746-A as a smelting operation. Concentrations of metals were not sufficiently elevated to suggest the septic system was a source of any large releases to the environment. The lack of any residual organic contaminants suggests that

solvents were not disposed in the septic system. The septic system should be removed from any further consideration as a source of contamination.

6. REFERENCES

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Appendix A

CIVIL SURVEY DATA

Prepared by: Dummer Surveying Company #CGDS06768
List-Coords/Brg-Azi 198018 1/29/98 11:25:13 Factor: 1.0000000

Pt.No.	Code	North	East	Elevation	Desc.
1		-1719.7035	-6538.1067	371.25	T.P.-27
2		-1848.7386	-6510.1785	373.04	T.P.-6
3		-1814.9206	-6965.9288	371.12	S.W.COR.
4		-1814.7072	-6916.0180	371.19	MIDPT.GRIDA
5		-1815.0607	-6865.7617	372.31	S.E.COR.GRID A
6		-1765.1424	-6868.3832	372.71	N.E.COR.GRID A
7		-1765.0079	-6918.3461	372.40	MIDPT.
8		-1765.0530	-6968.4637	371.92	N.W.COR.
9		-1806.7815	-6926.2078	371.35	A.1.1
10		-1805.3871	-6915.7482	371.50	A.1.2
11		-1799.8604	-6913.6883	371.71	A.1.3
12		-1795.4678	-6909.6194	372.06	A.1.4
13		-1787.4128	-6906.6175	372.01	A.1.5
14		-1785.4276	-6903.2278	372.15	A.1.6
15		-1782.3446	-6901.3845	372.32	A.1.7
16		-1777.6022	-6903.8308	372.39	A.1.8
17		-1775.0025	-6908.2984	372.24	A.1.9
18		-1777.6228	-6912.8366	372.01	A.1.10
19		-1781.9984	-6915.0739	371.88	A.1.11
20		-1788.5414	-6920.8454	371.67	A.1.12
21		-1795.7651	-6927.5892	371.57	A.1.13
22		-1801.3261	-6929.8027	371.46	A.1.14
23		-1802.8744	-6897.0055	371.82	A.2.1
24		-1800.1919	-6892.8909	371.93	A.2.2
25		-1795.6695	-6892.1171	372.12	A.2.3
26		-1792.6803	-6895.2872	372.12	A.2.4
27		-1793.3802	-6899.1146	372.08	A.2.5
28		-1795.5838	-6901.2327	372.08	A.2.6
29		-1799.4850	-6901.3891	371.86	A.2.7
30		-1801.9110	-6899.4532	371.86	A.2.8
31		-1797.9908	-6866.2247	372.54	S.W.COR.B
32		-1795.7801	-6816.4316	373.17	MIDPTB
33		-1792.8471	-6766.5288	373.93	S.E.B
34		-1732.7486	-6768.8152	373.89	N.E.B
35		-1735.5061	-6818.6452	372.83	MID.PT.B
36		-1737.7495	-6868.6304	373.07	N.W.B
37		-1772.9969	-6847.8013	372.90	B.1.1
38		-1776.5103	-6843.0364	373.03	B.1.2
39		-1772.9773	-6838.6561	373.29	B.1.3
40		-1774.2457	-6834.1075	373.36	B.1.4
41		-1772.5503	-6826.7119	373.37	B.1.5
42		-1772.3195	-6822.8402	373.28	B.1.6
43		-1775.7819	-6818.7123	373.25	B.1.7
44		-1776.6713	-6812.6538	373.10	B.1.8
45		-1775.2464	-6807.7907	373.23	B.1.9
46		-1776.7544	-6803.4061	373.20	B.1.10
47		-1773.2181	-6795.7920	373.31	B.1.11
48		-1768.7845	-6789.2378	373.42	B.1.12
49		-1760.1410	-6787.0829	373.84	B.1.13
50		-1755.9977	-6784.5059	373.90	B.1.14
51		-1753.1470	-6786.7263	373.80	B.1.15
52		-1752.5047	-6792.7833	373.68	B.1.16
53		-1756.6077	-6795.7478	373.63	B.1.17

54	-1756.4149	-6801.9146	373.75	B.1.18
55	-1756.0730	-6811.9435	373.61	B.1.19
56	-1754.8691	-6818.4324	373.46	B.1.20
57	-1751.3941	-6822.6200	373.48	B.1.21
58	-1747.5283	-6822.9448	373.30	B.1.22
59	-1745.2485	-6826.9329	373.36	B.1.23
60	-1752.4312	-6829.4276	373.39	B.1.24
61	-1754.9228	-6838.4729	373.35	B.1.25
62	-1757.8497	-6841.7754	373.14	B.1.26
63	-1765.0476	-6843.9395	373.01	B.1.27
64	-1768.7766	-6846.5331	373.03	B.1.28
65	-1788.0488	-6814.1879	373.12	B.2.1
66	-1790.1605	-6811.3329	373.22	B.2.2
67	-1788.8552	-6806.7017	373.27	B.2.3
68	-1785.1723	-6808.5185	373.24	B.2.4
69	-1785.3442	-6812.3660	373.11	B.2.5
70	-1737.5658	-6864.1034	373.13	B.3.1
71	-1737.8385	-6854.6132	373.12	B.3.2
72	-1733.5970	-6856.3000	372.95	B.3.3
73	-1731.1368	-6859.4596	373.00	B.3.4
74	-1733.4029	-6863.6245	373.06	B.3.5
75	-1736.2402	-6834.1315	372.91	B.4.1
76	-1736.3859	-6824.9991	372.75	B.4.2
77	-1735.6052	-6818.4925	372.88	B.4.3
78	-1730.6738	-6815.9276	372.65	B.4.4
79	-1724.6030	-6822.3113	372.79	B.4.5
80	-1727.5465	-6826.1159	372.97	B.4.6
81	-1727.2495	-6833.6368	372.90	B.4.7
82	-1729.1480	-6837.4536	373.01	B.4.8
83	-1733.0833	-6836.0831	372.86	B.4.9
84	-1735.1547	-6810.6651	372.93	B.5.1
85	-1735.6775	-6807.1873	373.19	B.5.2
86	-1731.8758	-6808.8990	372.97	B.5.3
87	-1747.6633	-6969.6416	371.96	S.W.B.G.
88	-1746.4256	-6918.9093	372.31	S.E.B.G
89	-1727.2470	-6918.9004	372.54	N.E.B.G.
90	-1727.5387	-6971.2749	372.36	N.W.B.G.
91	-1791.0729	-6914.1640	371.88	TA.1
92	-1786.7129	-6919.3727	371.77	T.A.2
93	-1794.2628	-6900.9244	372.06	T.A.3
94	-1764.3924	-6834.6625	373.33	T.B.1
95	-1766.9196	-6801.7653	373.39	T.B.2
96	-1775.4593	-6819.2252	373.25	T.B.3
97	-1751.1381	-6831.0981	373.50	T.B.4
98	-1731.5358	-6825.9003	372.82	T.B.5
99	-1733.0456	-6812.9391	372.92	T.B.6
100	-1848.7264	-6510.1811	373.04	CHECK

Prepared by: Dummer Surveying Company #CGDS06768
List-Coords/Brg-Azi 198018 1/30/98 12:00:16 Factor: 1.0000000

Pt.No.	Code	North	East	Elevation	Desc.
101		-1766.5385	-6851.9498	372.79	T.B.1.1
102		-1766.2211	-6838.4427	373.13	T.B.1.2
103		-1765.8088	-6822.3279	373.23	TB1.3
104		-1765.7960	-6805.7616	373.49	TB1.4
105		-1764.4515	-6852.2435	372.95	TB1.5
106		-1763.4401	-6838.4146	373.35	TB1.6
107		-1763.6341	-6822.1952	373.48	TB1.7
108		-1763.5820	-6805.9303	373.58	T.B1.8
109		-1767.2813	-6804.7907	373.47	TB2.1
110		-1767.2197	-6799.2439	373.42	TB2.2
111		-1761.9286	-6799.3296	373.63	TB2.3
112		-1762.2044	-6805.3521	373.63	TB2.4
113		-1779.3980	-6820.0527	373.30	TB3.1
114		-1768.9106	-6815.1662	373.43	T.B3.2
115		-1767.8712	-6817.1654	373.44	T.B3.3
116		-1778.6198	-6821.3194	373.34	T.B3.4
117		-1758.1330	-6829.0756	373.39	TB4.1
118		-1747.9558	-6827.4658	373.49	TB4.2
119		-1747.4850	-6830.0326	373.54	T.B4.3
120		-1758.0134	-6831.2900	373.39	T.B.4.4
121		-1734.3152	-6824.0619	372.78	TB5.1
122		-1729.8501	-6824.4648	372.93	TB5.2
123		-1730.2099	-6829.8251	373.01	TB5.3
124		-1734.2678	-6829.6511	372.88	T.B5.4
125		-1794.3793	-6904.0552	371.94	TA3.1
126		-1799.3742	-6896.9795	371.96	TA3.2
127		-1797.2039	-6896.0937	371.96	TA3.3
128		-1793.1095	-6903.1594	372.00	TA3.4
129		-1805.7037	-6922.8009	371.50	TA1.1
130		-1792.4821	-6913.4866	371.95	TA1.2
131		-1778.5670	-6900.9221	372.42	TA1.3
132		-1777.5064	-6903.1683	372.43	TA1.4
133		-1788.7466	-6913.7747	371.96	TA1.5
134		-1803.3335	-6925.4513	371.52	TA1.6
135		-1802.2643	-6924.3552	369.56	TOP 18IN.CONC.PI
136		-1789.8324	-6913.1839	370.26	TOP 18IN.CONC.PI
137		-1737.9413	-6811.7757	373.26	TB6.1
138		-1737.7436	-6813.7435	373.18	TB6.2
139		-1730.5379	-6813.8421	372.81	TB6.3
140		-1730.2584	-6811.8012	372.85	TB6.4
141		-1848.6910	-6510.1888	373.04	CHECK

Appendix B

GEOPHYSICAL SURVEY DATA

FILE NAME: BASE1-

EM61 V1.70
L 20 N M H S20.000
T 01/20/92 10:10:52 I 1.0000
P TBP BASE1 RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
20	20	6.19	2.25
0	20.000	6.19	2.25

FILE NAME: BASE2-

EM61 V1.70
L 20 N M H S2020.000
T 01/20/92 14:06:50 I 10.0000
P BDJ BASE2 RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
20	20	-0.55	-2.25

FILE NAME: BASE3-

EM61 V1.70
L 20 N M H S2020.000
T 01/20/92 16:02:16 I 10.0000
P BDJ BASE3 RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
20	20	-0.65	-2.1

FILE NAME: BASE1-

EM61 V1.70
L 20 N M H S2020.000
T 01/20/92 11:01:57 I .1000
P TBP BASEA RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
20	20	0	-0.18

FILE NAME: BKGD

E	M61 V1.70				
L	0	E M H S.000			
T	########	5:14 I 1.0			0
P	TBP	B RS61			
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
0	0	20.44	7.31		
0	10	-0.75	-0.75		
0	20	-0.37	-0.75		
0	30	-0.37	-0.75		
0	40	0.75	-0.18		
0	50	3	1.5		
L	10	W H S1.000			
T	########	8:12 I -10.			0
P	TBP	B RS61			
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
10	50	3	0		
10	40	0	-0.75		
10	30	0.19	-0.75		
10	20	-0.37	-0.75		
10	10	-0.18	-0.75		
10	0	0.19	-0.75		
L	20	E H S.000			
T	########	0:26 I 1.0			0
P	TBP	B RS61			
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
20	0	0.37	-0.75		
20	10	0.37	-0.75		
20	20	-0.37	-0.75		
20	30	0.19	-0.75		
20	40	1.87	0.75		
20	50	1.5	0.75		

FILE NAME: GRIDA-

E	M61	V1.70				
L		0	E M	H S.000		
T	01/	20/92	11:	1 I 1.000		0
P	TBP	GRID1		RS61		
LINE (N)		POSITION		CH1(mV)	CH2(mV)	
0		0		0	-0.75	
0		10		-0.37	-0.75	
0		20		-0.37	-0.93	
0		30		-0.55	-0.75	
0		40		0.37	-0.75	
0		50		0.37	-0.75	
0		60		-0.18	-0.75	
0		70		-0.37	-0.75	
0		80		0.19	-0.75	
0		90		-0.18	-0.75	
0		100		0.37	-0.75	
L		10	W M	H S100.000		
T	01/	20/92	11:	6 I -10.000		0
P	TBP	GRID1		RS61		
LINE (N)		POSITION		CH1(mV)	CH2(mV)	
10		100		0.75	0	
10		90		-0.55	-0.93	
10		80		-0.55	-0.93	
10		70		-0.37	-0.75	
10		60		-0.55	-0.93	
10		50		2.62	0.75	
10		40		6	2.25	
10		30		0	-0.75	
10		20		-0.37	-0.75	
10		10		-0.93	-1.5	
10		0		-0.75	-1.12	
L		20	E M	H S.000		
T	01/	20/92	11:	6 I 1.000		0
P	TBP	GRID1		RS61		
LINE (N)		POSITION		CH1(mV)	CH2(mV)	
20		0		-0.75	1.5	
20		10		1.12	-0.18	
20		20		4.5	3	
20		30		2.25	1.5	
20		40		2.81	0.75	
20		50		239.06	157.5	
20		60		8.62	3	
20		70		276	231	
20		80		-0.18	-0.75	
20		90		-0.55	-1.5	
20		100		0.75	0	
L		30	W M	H S1.000		

T	01/	20/92 11:	8 I -10.000		0
P	TBP	GRID1	RS61		
LINE (N)		POSITION	CH1(mV)	CH2(mV)	
30		100	-0.37	-0.75	
30		90	-0.75	-1.5	
30		80	-0.75	-0.93	
30		70	0.75	-0.75	
30		60	27.75	13.5	
30		50	30	15	
30		40	0.94	0	
30		30	3	1.5	
30		20	2.25	0.75	
30		10	2.06	1.5	
30		0	-0.75	-0.75	
L		40 E M	H S.000		
T	01/	20/92 11:	3 I 1.000		0
P	TBP	GRID1	RS61		
LINE (N)		POSITION	CH1(mV)	CH2(mV)	
40		0	-0.18	-0.75	
40		10	1.5	0.75	
40		20	1.5	0.75	
40		30	-0.75	-0.75	
40		40	-0.37	-0.75	
40		50	-0.37	-0.75	
40		60	0.75	-0.75	
40		70	1.5	0	
40		80	0	-0.75	
40		90	-0.75	-1.5	
40		100	-0.93	-1.5	
L		50 W M	H S1.000		
T	01/	20/92 11:	7 I -10.000		0
P	TBP	GRID1	RS61		
LINE (N)		POSITION	CH1(mV)	CH2(mV)	
50		100	-0.37	-0.75	
50		90	15.37	12	
50		80	-0.75	-0.75	
50		70	0.19	-0.75	
50		60	-0.75	-1.5	
50		50	0	-0.75	
50		40	-0.75	-1.5	
50		30	-0.93	-1.5	
50		20	0.75	-0.55	
50		10	1.87	0.75	
50		0	-0.37	-0.93	

FILE NAME: GRIDB-

E	M61 V1.70				
L	00	E	H S.000		
T	########	:41 I	1.00		0
P	BDJ	G	RS61		
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
0	0	-1.5	-2.25		
0	10	5.25	1.12		
0	20	-0.75	-2.25		
0	30	-0.75	-2.25		
0	40	0.37	-1.5		
0	50	0.94	-1.5		
0	60	4.87	0.75		
0	70	8.25	0.75		
0	80	3	-0.75		
0	90	1.12	-1.5		
0	100	0.94	-1.5		
L	10	W	H S1.000		
T	########	:53 I	-10.0		0
P	BDJ	G	RS61		
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
10	100	-1.12	-2.62		
10	90	-0.75	-2.25		
10	80	0.19	-1.5		
10	70	-0.18	-2.05		
10	60	0.75	-1.5		
10	50	-1.12	-2.43		
10	40	-1.3	-2.62		
10	30	-0.18	-1.5		
10	20	-0.75	-2.25		
10	10	-1.5	-2.43		
10	0	-1.5	-2.25		
L	20	E	H S.000		
T	########	:54 I	1.00		0
P	BDJ	G	RS61		
LINE (N)	POSITION	CH1(mV)	CH2(mV)		
20	0	-1.3	-2.43		
20	10	-0.75	-2.25		
20	20	0	-1.87		
20	30	4.31	0.56		
20	40	1.31	-0.75		
20	50	12.37	4.87		
20	60	44.25	26.25		
20	70	41.06	37.5		
20	80	-0.37	-1.5		
20	90	-1.12	-2.25		
20	100	-0.75	-2.25		
L	30	W	H S1.000		

T ######## :42 I -10.0 0
P BDJ G RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
30	100	-1.12	-2.25
30	90	-0.75	-1.5
30	80	2.06	-1.5
30	70	1323.75	972.56
30	60	3840	3082.5
30	50	1627.5	1335
30	40	177	104.06
30	30	58.5	36.56
30	20	2.25	0.75
30	10	-1.87	-2.25
30	0	0	-1.5

L 40 E H S.000
T ######## :57 I 1.00 0
P BDJ G RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
40	0	0.56	-0.75
40	10	-1.5	-2.25
40	20	2.44	1.5
40	30	6	5.25
40	40	28.5	15
40	50	7.12	4.5
40	60	35.25	30
40	70	3.75	1.5
40	80	127.5	80.25
40	90	1.5	0.75
40	100	-0.75	-1.5

L 50 W H S1.000
T ######## :34 I -10.0 0
P BDJ G RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
50	100	-0.75	-1.5
50	90	-2.05	-2.25
50	80	-1.12	-1.5
50	70	-1.12	-1.5
50	60	-0.75	-1.5
50	50	-1.5	-1.68
50	40	18.37	16.5
50	30	-1.87	-2.25
50	20	-1.5	-2.05
50	10	-1.5	-1.5
50	0	-1.5	-1.5

L 60 E H S.000
T ######## :35 I 1.00 0
P BDJ G RS61

LINE (N)	POSITION	CH1(mV)	CH2(mV)
60	0	-1.5	-1.5

60	10	27.75	23.25
60	20	-1.5	-1.5
60	30	0.75	0
60	40	30	15
60	50	11.62	6.94
60	60	11.81	12
60	70		
60	80	-0.75	-1.12
60	90	-1.68	-1.5
60	100	0.75	-0.75

Appendix C

SUMMARY OF ANALYTICAL RESULTS

Data Sun Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-6010	Metal	10	Nickel	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	UW	
SW846-6010	Metal	13	Chromium	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	UN	
SW846-6010	Metal	17 7	Lead	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	N	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	UN	
SW846-6010	Metal	65 1	Barium	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	UW	
SW846-7470	Metal	0 31	Mercury	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033		
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	1/30/98	001101SA001			NA		C980350033	UN*W	
SW846-8080	PPCB	500	PCB-1242	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	D	
SW846-8080	PPCB	5600	PCB-1268	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	D	
SW846-8080	PPCB	11000	PCB-1260	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	D	
SW846-8080	PPCB	17100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	D	
SW846-8260	VOA	10	1,1-Dichloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8260	VOA	10	1,2-Dichloroethane	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	100	Chlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	U	
SW846-8260	VOA	510	Trichloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	JE	
SW846-8270	SVOA	4800	1 4-Dichlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	2 4,5-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	2 4 6-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	2 4-Dinitrophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	Hexachlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	Hexachlorobutadiene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	Hexachloroethane	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	Nitrobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	2-Methylphenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	4800	Pentachlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8270	SVOA	8600	m,p-Cresol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	X	
SW846-8270	SVOA	8600	Total Cresols	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	JX	
SW846-8270	SVOA	9000	Di-n-butyl phthalate	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	X	
SW846-8270	SVOA	15000	2,4-Dimethylphenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	X	
SW846-8270	SVOA	23000	Phenol	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	X	
RL-7116	Rads	10	Technetium-99	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001	4 4		NA		C980350033		
RL-7120	Rads	0 01	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001			NA		C980350033	A	
RL-7120	Rads	0 42	Thorium-230	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001	0 14		NA		C980350033		
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001			NA		C980350033	A	
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001			NA		C980350033	A	
RL-7124	Rads	0 43	Americium-241	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001	0 15		NA		C980350033		
RL-7124	Rads	0 57	Neptunium-237	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001	0 06		NA		C980350033		
RL-7124	Rads	0 92	Uranium-235	PGDP	Soil	Reg	wt %	1/30/98	001101SA001	0 15		NA		C980350033		
RL-7124	Rads	60	Uranium	PGDP	Soil	Reg	pCi/g	1/30/98	001101SA001	1		NA		C980350033		

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8260	VOA	67	Vinyl chloride	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	JX	
SW846-8270	SVOA	4800	Pyridine	PGDP	Soil	Reg	ug/kg	1/30/98	001101SA001			NA		C980350033	UX	
SW846-8260	VOA	5	Chlorobenzene	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	1,1-Dichloroethene	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	UX	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	Trichloroethene	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-8260	VOA	10	Vinyl chloride	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	UX	
SW846-8260	VOA	10	1,2-Dichloroethane	PGDP	Soil	Reg	ug/L	1/28/98	001101SA002			NA		C980340072	U	
SW846-6010	Metal	3	Cadmium	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-6010	Metal	13.3	Chromium	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034		
SW846-6010	Metal	15	Antimony	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	UN	
SW846-6010	Metal	15	Lead	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	UN	
SW846-6010	Metal	75.1	Barium	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	N	
SW846-6010	Metal	116	Nickel	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	W	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	UW	
SW846-7470	Metal	0.26	Mercury	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034		
SW846-7740	Metal	1	Selenium	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	UNW*	
SW846-8080	PPCB	4200	PCB-1268	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	D	
SW846-8080	PPCB	4700	Polychlorinated biphenyl	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	D	
SW846-8260	VOA	10	1,1-Dichloroethene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	UX	
SW846-8260	VOA	10	1,2-Dichloroethane	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8260	VOA	10	Chlorobenzene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8260	VOA	270	Vinyl chloride	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	JE	
SW846-8260	VOA	1200	Trichloroethene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	JE	
SW846-8270	SVOA	2100	1,4-Dichlorobenzene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	2,4,5-Trichlorophenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	2,4,6-Trichlorophenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	2,4-Dinitrophenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Hexachlorobenzene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Hexachlorobutadiene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Hexachloroethane	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	m,p-Cresol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Nitrobenzene	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	2-Methylphenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Pentachlorophenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2100	Pyridine	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-8270	SVOA	2900	Phenol	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034		
SW846-8270	SVOA	4200	Total Cresols	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
RL-7116	Rads	10	Technetium-99	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001	4.9		NA		C980350034		
RL-7120	Rads	0.01	Plutonium-239/240	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001			NA		C980350034	A	
RL-7120	Rads	0.42	Thorium-230	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001	0.15		NA		C980350034		

Data Sur . Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
RL-7124	Rads	0 02	Cesium-137	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001	0 02		NA		C980350034		
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001			NA		C980350034	A	
RL-7124	Rads	0 22	Americium-241	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001			NA		C980350034	A	
RL-7124	Rads	0 41	Neptunium-237	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001	0 05		NA		C980350034		
RL-7124	Rads	0 94	Uranium-235	PGDP	Soil	FR	wt %	1/30/98	001101SD001	0 15		NA		C980350034		
RL-7124	Rads	80	Uranium	PGDP	Soil	FR	pCi/g	1/30/98	001101SD001	1		NA		C980350034		
SW846-6010	Metal	25	Thallium	PGDP	Soil	FR	mg/kg	1/30/98	001101SD001			NA		C980350034	UN	
SW846-8080	PPCB	500	PCB-1242	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	D	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	FR	ug/kg	1/30/98	001101SD001			NA		C980350034	U	
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-6010	Metal	10	Nickel	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UW	
SW846-6010	Metal	12 3	Chromium	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UN	
SW846-6010	Metal	15	Lead	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UN	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UN	
SW846-6010	Metal	74	Barium	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UW	
SW846-7470	Metal	0 2	Mercury	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	1/30/98	001102SA001			NA		C980350035	UNW*	
SW846-8260	VOA	10	1 1-Dichloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	UX	
SW846-8260	VOA	10	1 2-Dichloroethane	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8260	VOA	10	Vinyl chloride	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	UX	
SW846-8260	VOA	11	Trichloroethene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035		
SW846-8260	VOA	100	Chlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	1,4-Dichlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	2 4 5-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	2,4 6-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	2 4-Dinitrophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Hexachlorobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Hexachlorobutadiene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Hexachloroethane	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	m,p-Cresol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	2-Methylphenol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Pentachlorophenol	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Pyridine	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	4400	Total Cresols	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
RL-7116	Rads	6	Technetium-99	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001	4 3		NA		C980350035		
RL-7120	Rads	0 03	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001			NA		C980350035	A	
RL-7120	Rads	0 42	Thorium-230	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001	0 16		NA		C980350035		
RL-7124	Rads	0 02	Cesium-137	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001			NA		C980350035	A	
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001			NA		C980350035	A	
RL-7124	Rads	0 04	Neptunium-237	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001			NA		C980350035	A	
RL-7124	Rads	0 12	Americium-241	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001			NA		C980350035	A	
RL-7124	Rads	0 81	Uranium-235	PGDP	Soil	Reg	wt %	1/30/98	001102SA001	0 24		NA		C980350035		

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
RL-7124	Rads	7.4	Uranium	PGDP	Soil	Reg	pCi/g	1/30/98	001102SA001	0.7		NA		C980350035		
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-8270	SVOA	2200	Nitrobenzene	PGDP	Soil	Reg	ug/kg	1/30/98	001102SA001			NA		C980350035	U	
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-6010	Metal	10	Nickel	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UW	
SW846-6010	Metal	11.8	Chromium	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UN	
SW846-6010	Metal	15	Lead	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UN	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UN	
SW846-6010	Metal	65.6	Barium	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UW	
SW846-7470	Metal	0.2	Mercury	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	1/29/98	001103SA001			NA		C980350036	UNW*	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8260	VOA	10	1,1-Dichloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	1,2-Dichloroethane	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	Chlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	10	Vinyl chloride	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	UX	
SW846-8260	VOA	15	Trichloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	JX	
SW846-8270	SVOA	2300	1,4-Dichlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	2,4,5-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	2,4,6-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	2,4-Dinitrophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Hexachlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Hexachlorobutadiene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Hexachloroethane	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	m,p-Cresol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Nitrobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	2-Methylphenol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Pentachlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	2300	Pyridine	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
SW846-8270	SVOA	4600	Total Cresols	PGDP	Soil	Reg	ug/kg	1/29/98	001103SA001			NA		C980350036	U	
RL-7116	Rads	1.4	Technetium-99	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001			NA		C980350036	A	
RL-7120	Rads	0.13	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001	0.06		NA		C980350036		
RL-7120	Rads	0.43	Thorium-230	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001	0.16		NA		C980350036		
RL-7124	Rads	0.03	Cesium-137	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001			NA		C980350036	A	
RL-7124	Rads	0.03	Cobalt-60	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001			NA		C980350036	A	
RL-7124	Rads	0.06	Neptunium-237	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001			NA		C980350036	A	
RL-7124	Rads	0.24	Americium-241	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001			NA		C980350036	A	
RL-7124	Rads	0.45	Uranium-235	PGDP	Soil	Reg	wt %	1/29/98	001103SA001	0.07		NA		C980350036		
RL-7124	Rads	60	Uranium	PGDP	Soil	Reg	pCi/g	1/29/98	001103SA001	1		NA		C980350036		
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-6010	Metal	10	Nickel	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	UW	

Data Sum: Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	UN	
SW846-6010	Metal	17 1	Chromium	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037		
SW846-6010	Metal	19 7	Lead	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	N	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	UN	
SW846-6010	Metal	51 8	Barium	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	UW	
SW846-7470	Metal	0 2	Mercury	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	1/29/98	001104SA001			NA		C980350037	UNW*	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	1,1-Dichloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	UX	
SW846-8260	VOA	10	2-Butanone	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	UX	
SW846-8260	VOA	10	Benzene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	Carbon tetrachloride	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	Chlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	Chloroform	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	Tetrachloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8260	VOA	10	Trichloroethene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	UX	
SW846-8260	VOA	10	Vinyl chloride	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	UX	
SW846-8270	SVOA	2300	1,4-Dichlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	2,4,5-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	2,4,6-Trichlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	2,4-Dinitrophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Hexachlorobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Hexachlorobutadiene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Hexachloroethane	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	m,p-Cresol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Nitrobenzene	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Pentachlorophenol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	2300	Pyridine	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-8270	SVOA	4600	Total Cresols	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
RL-7116	Rads	0 6	Technetium-99	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7120	Rads	0 02	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7120	Rads	0 42	Thorium-230	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001	0 14		NA		C980350037		
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7124	Rads	0 03	Cobalt-60	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7124	Rads	0 05	Neptunium-237	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7124	Rads	0 13	Americium-241	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001			NA		C980350037	A	
RL-7124	Rads	0 96	Uranium-235	PGDP	Soil	Reg	wt %	1/29/98	001104SA001	0 29		NA		C980350037		
RL-7124	Rads	6 8	Uranium	PGDP	Soil	Reg	pCi/g	1/29/98	001104SA001	0 8		NA		C980350037		
SW846-8270	SVOA	2300	2-Methylphenol	PGDP	Soil	Reg	ug/kg	1/29/98	001104SA001			NA		C980350037	U	
SW846-6010	Metal	0 05	Silver	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	U	
SW846-6010	Metal	0 1	Cadmium	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	U	
IN7255	PHYSC	20 4	Oil & Grease	PGDP	Water	Reg	NA	2/6/98	196000ND001			NA		C980400123	X	
IN7475	PHYSC	2942	Suspended Solids	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123		
SW846-6010	Metal	0 25	Antimony	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	U	
SW846-6010	Metal	0 25	Lead	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	U	
SW846-6010	Metal	0 34	Chromium	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123		
SW846-6010	Metal	0 4	Thallium	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	UX	
SW846-6010	Metal	0 4	Barium	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123		
SW846-6010	Metal	0 53	Nickel	PGDP	Water	Reg	mg/L	2/6/98	196000ND001			NA		C980400123	N	

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8080	PPCB	2 38	Polychlorinated biphenyl	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	J	
SW846-8080	PPCB	2 38	PCB-1260	PGDP	Water	Reg	ug/l	2/6/98	196000ND001			NA		C980400123	J	
SW846-8260	VOA	100	1,1-Dichloroethene	PGDP	Water	Reg	ug/l	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	1,2-Dichloroethane	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	2-Butanone	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	Benzene	PGDP	Water	Reg	ug/l	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	Carbon tetrachloride	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	Chlorobenzene	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	U	
SW846-8260	VOA	100	Chloroform	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	Tetrachloroethene	PGDP	Water	Reg	ug/l	2/6/98	196000ND001			NA		C980400123	UX	
SW846-8260	VOA	100	Trichloroethene	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
RL-7111	Rads	170	Alpha activity	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001	30		NA		C980400123		
RL-7111	Rads	390	Beta activity	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001	40		NA		C980400123		
RL-7116	Rads	0	Technetium-99	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123	A	
RL-7120	Rads	7	Plutonium-239/240	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123	A	
RL-7120	Rads	9	Thorium-230	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123	A	
RL-7124	Rads	0	Uranium-234	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123		
RL-7124	Rads	0	Uranium-238	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123		
RL-7124	Rads	0 0000103	Uranium-235	PGDP	Water	Reg	gU235/L	2/6/98	196000ND001	5 43E-06		NA		C980400123		
RL-7124	Rads	30	Neptunium-237	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123	A	
RL-7124	Rads	1500	Uranium	PGDP	Water	Reg	pCi/L	2/6/98	196000ND001			NA		C980400123	A	
SW846-8260	VOA	100	Vinyl chloride	PGDP	Water	Reg	ug/L	2/6/98	196000ND001			NA		C980400123	UX	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196001SA001			NA		C980360077		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196001SA001			NA		C980360077		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196001SA001			NA		C980360077		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196001SA001			NA		C980360077		
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	U	
SW846-6010	Metal	9 19	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077		
SW846-6010	Metal	12 5	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	UN	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	UN	
SW846-6010	Metal	35 2	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	N	
SW846-6010	Metal	55 1	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	N	
SW846-6010	Metal	78 1	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	W	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	UW	
SW846-7470	Metal	0 54	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077		
SW846-7740	Metal	4 82	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196001SA001			NA		C980360077	N*W	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196001SA001			NA		C980360077		
RL-7116	Rads	30	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001	5 5		NA		C980360077		
RL-7120	Rads	0 02	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001			NA		C980360077	A	
RL-7120	Rads	0 14	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001			NA		C980360077	A	
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001			NA		C980360077	A	
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001	0 02		NA		C980360077		
RL-7124	Rads	0 15	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001			NA		C980360077	A	
RL-7124	Rads	0 29	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001	0 05		NA		C980360077		
RL-7124	Rads	0 44	Uranium-235	PGDP	Soil	Reg	wt %	2/4/98	196001SA001	0 07		NA		C980360077		
RL-7124	Rads	10	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196001SA001	1		NA		C980360077		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196001SA001			NA		C980360077		
IN7701	PHYSC	3	Cellulose	PGDP	Soil	FR	%	2/4/98	196001SD001			NA		C980360078		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	FR	%	2/4/98	196001SD001			NA		C980360078		

Data Summ[illegible]able for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
IN7701	PHYSC		Asbestos	PGDP	Soil	FR	%	2/4/98	196001SD001			NA		C980360078		
SW846-6010	Metal	4	Silver	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	U	
SW846-6010	Metal	5 42	Chromium	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078		
SW846-6010	Metal	6 77	Cadmium	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078		
SW846-6010	Metal	15	Antimony	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	UN	
SW846-6010	Metal	18 3	Barium	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	N	
SW846-6010	Metal	25	Thallium	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	UN	
SW846-6010	Metal	29 3	Lead	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	N	
SW846-6010	Metal	36 7	Nickel	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	W	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	UW	
SW846-7740	Metal	2 13	Selenium	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078	N*W	
SW846-8080	PPCB	200	Polychlorinated biphenyl	PGDP	Soil	FR	ug/kg	2/4/98	196001SD001			NA		C980360078		
SW846-8080	PPCB	200	PCB-1260	PGDP	Soil	FR	ug/kg	2/4/98	196001SD001			NA		C980360078		
RL-7116	Rads	40	Technetium-99	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001	6 1		NA		C980360078		
RL-7120	Rads	0 15	Thorium-230	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001			NA		C980360078	A	
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001			NA		C980360078	A	
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001	0 02		NA		C980360078		
RL-7124	Rads	0 16	Americium-241	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001			NA		C980360078	A	
RL-7124	Rads	0 29	Neptunium-237	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001	0 06		NA		C980360078		
RL-7124	Rads	0 45	Uranium-235	PGDP	Soil	FR	wt %	2/4/98	196001SD001	0 14		NA		C980360078		
RL-7124	Rads	10	Uranium	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001	1		NA		C980360078		
SA7003	PHYSC		Free Liquids	PGDP	Soil	FR	NA	2/4/98	196001SD001			NA		C980360078		
IN7701	PHYSC	92	Other micro	PGDP	Soil	FR	%	2/4/98	196001SD001			NA		C980360078		
SW846-7470	Metal	0 24	Mercury	PGDP	Soil	FR	mg/kg	2/4/98	196001SD001			NA		C980360078		
RL-7120	Rads	0 02	Plutonium-239/240	PGDP	Soil	FR	pCi/g	2/4/98	196001SD001			NA		C980360078	A	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196002SA001			NA		C980360079		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196002SA001			NA		C980360079		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196002SA001			NA		C980360079		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196002SA001			NA		C980360079		
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	U	
SW846-6010	Metal	5 32	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	UN	
SW846-6010	Metal	17	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	N	
SW846-6010	Metal	45 4	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	N	
SW846-6010	Metal	326	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	W	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	UW	
SW846-7470	Metal	2 14	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079		
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	UNW*	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196002SA001			NA		C980360079	U	
RL-7116	Rads	20	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001	5 3		NA		C980360079		
RL-7120	Rads	0 08	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001			NA		C980360079	A	
RL-7120	Rads	0 21	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001			NA		C980360079	A	
RL-7124	Rads	0 02	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001			NA		C980360079	A	
RL-7124	Rads	0 02	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001			NA		C980360079	A	
RL-7124	Rads	0 11	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001			NA		C980360079	A	
RL-7124	Rads	0 12	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001	0 35		NA		C980360079		
RL-7124	Rads	0 55	Uranium-235	PGDP	Soil	Reg	wt %	2/4/98	196002SA001	0 17		NA		C980360079		
RL-7124	Rads	7 4	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196002SA001	0 6		NA		C980360079		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196002SA001			NA		C980360079		
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	U	

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196002SA001			NA		C980360079	UN	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196003SA001			NA		C980360080		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196003SA001			NA		C980360080		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196003SA001			NA		C980360080		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196003SA001			NA		C980360080		
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	U	
SW846-6010	Metal	5	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	U	
SW846-6010	Metal	6.43	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	N	
SW846-6010	Metal	10	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UW	
SW846-6010	Metal	15	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UN	
SW846-6010	Metal	21	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080		
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UN	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UW	
SW846-7470	Metal	0.79	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080		
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UNW*	
SW846-8080	PPCB	300	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196003SA001			NA		C980360080		
SW846-8080	PPCB	300	PCB-1254	PGDP	Soil	Reg	ug/kg	2/4/98	196003SA001			NA		C980360080	U	
RL-7116	Rads	10	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001	4.9		NA		C980360080		
RL-7120	Rads	0.01	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001			NA		C980360080	A	
RL-7120	Rads	0.11	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001			NA		C980360080	A	
RL-7124	Rads	0.02	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001			NA		C980360080	A	
RL-7124	Rads	0.02	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001			NA		C980360080	A	
RL-7124	Rads	0.07	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001	0.03		NA		C980360080		
RL-7124	Rads	0.1	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001			NA		C980360080	A	
RL-7124	Rads	0.47	Uranium-235	PGDP	Soil	Reg	wt %	2/4/98	196003SA001	0.39		NA		C980360080		
RL-7124	Rads	3.5	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196003SA001	0.61		NA		C980360080		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196003SA001			NA		C980360080		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196003SA001			NA		C980360080	UN	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196004SA001			NA		C980360081		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196004SA001			NA		C980360081		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196004SA001			NA		C980360081		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196004SA001			NA		C980360081		
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	U	
SW846-6010	Metal	5	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	U	
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	UN	
SW846-6010	Metal	22.6	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	N	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	UN	
SW846-6010	Metal	37	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	N	
SW846-6010	Metal	88.4	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	W	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	UW	
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081	UN*W	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196004SA001			NA		C980360081	U	
RL-7116	Rads	9.6	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001	4.6		NA		C980360081		
RL-7120	Rads	0.16	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001	0.07		NA		C980360081		
RL-7120	Rads	0.32	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001	0.15		NA		C980360081		
RL-7124	Rads	0.02	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001			NA		C980360081	A	
RL-7124	Rads	0.06	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001			NA		C980360081	A	
RL-7124	Rads	0.12	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001			NA		C980360081	A	
RL-7124	Rads	0.56	Uranium-235	PGDP	Soil	Reg	wt %	2/4/98	196004SA001	0.17		NA		C980360081		

Data Sumr ble for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
RL-7124	Rads	10	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001	1		NA		C980360081		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196004SA001			NA		C980360081		
SW846-7470	Metal	0 52	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196004SA001			NA		C980360081		
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196004SA001			NA		C980360081	A	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196005SA001			NA		C980360082		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196005SA001			NA		C980360082		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196005SA001			NA		C980360082		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196005SA001			NA		C980360082		
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	U	
SW846-6010	Metal	9 18	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082		
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	UN	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	UN	
SW846-6010	Metal	29 2	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	N	
SW846-6010	Metal	31 5	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	UW	
SW846-7470	Metal	0 34	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082		
SW846-7740	Metal	2 35	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	NW*	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196005SA001			NA		C980360082	U	
RL-7116	Rads	40	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001	6		NA		C980360082		
RL-7120	Rads	0 02	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001			NA		C980360082	A	
RL-7120	Rads	0 17	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001			NA		C980360082	A	
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001			NA		C980360082	A	
RL-7124	Rads	0 03	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001			NA		C980360082	A	
RL-7124	Rads	0 14	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001	0 05		NA		C980360082		
RL-7124	Rads	0 48	Uranium-235	PGDP	Soil	Reg	wt %	2/4/98	196005SA001	0 13		NA		C980360082		
RL-7124	Rads	10	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001	1		NA		C980360082		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196005SA001			NA		C980360082		
SW846-6010	Metal	6 55	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082		
SW846-6010	Metal	68 2	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196005SA001			NA		C980360082	W	
RL-7124	Rads	0 17	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196005SA001			NA		C980360082	A	
IN7701	PHYSC	3	Cellulose	PGDP	Soil	Reg	%	2/4/98	196006SA001			NA		C980360083		
IN7701	PHYSC	5	Synthetic Fibers	PGDP	Soil	Reg	%	2/4/98	196006SA001			NA		C980360083		
IN7701	PHYSC	92	Other micro	PGDP	Soil	Reg	%	2/4/98	196006SA001			NA		C980360083		
IN7701	PHYSC		Asbestos	PGDP	Soil	Reg	%	2/4/98	196006SA001			NA		C980360083		
SW846-6010	Metal	3	Cadmium	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	U	
SW846-6010	Metal	4	Silver	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	U	
SW846-6010	Metal	5	Chromium	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	U	
SW846-6010	Metal	15	Antimony	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	UN	
SW846-6010	Metal	15	Lead	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	UN	
SW846-6010	Metal	25	Thallium	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	UN	
SW846-6010	Metal	31 2	Barium	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	N	
SW846-7060	Metal	5	Arsenic	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	UW	
SW846-7470	Metal	0 97	Mercury	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083		
SW846-7740	Metal	1	Selenium	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	UN*W	
SW846-8080	PPCB	100	Polychlorinated biphenyl	PGDP	Soil	Reg	ug/kg	2/4/98	196006SA001			NA		C980360083	U	
RL-7116	Rads	20	Technetium-99	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001	5 5		NA		C980360083		
RL-7120	Rads	0 26	Thorium-230	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001			NA		C980360083	A	
RL-7124	Rads	0 03	Cesium-137	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001			NA		C980360083	A	
RL-7124	Rads	0 03	Cobalt-60	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001			NA		C980360083	A	
RL-7124	Rads	0 11	Neptunium-237	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001	0 04		NA		C980360083		

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
RL-7124	Rads	0.18	Americium-241	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001			NA		C980360083	A	
RL-7124	Rads	0.64	Uranium-235	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001	0.17		NA		C980360083		
SA7003	PHYSC		Free Liquids	PGDP	Soil	Reg	NA	2/4/98	196006SA001			NA		C980360083		
SW846-6010	Metal	140	Nickel	PGDP	Soil	Reg	mg/kg	2/4/98	196006SA001			NA		C980360083	W	
RL-7120	Rads	3.16	Plutonium-239/240	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001	0.47		NA		C980360083		
RL-7124	Rads	10	Uranium	PGDP	Soil	Reg	pCi/g	2/4/98	196006SA001	9		NA		C980360083		
DNT	Rads	1.062	Uranium-235	PGDP	Soil	Reg	wt %	1/28/98	DLA-012998			NA		C980360061		
DNT	PHYSC	1.21	Density	PGDP	Soil	Reg	g/ml	1/28/98	DLA-012998			NA		C980360061		
RL-7116	Rads	12	Technetium-99	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998	4.2		NA		C980360061		
RL-7124	Rads	0.05	Cesium-137	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998	0.05		NA		C980360061		
RL-7124	Rads	0.06	Cobalt-60	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998			NA		C980360061	A	
RL-7124	Rads	0.1	Neptunium-237	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998			NA		C980360061	A	
RL-7124	Rads	0.53	Americium-241	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998			NA		C980360061	A	
RL-7124	Rads	295	Uranium	PGDP	Soil	Reg	pCi/g	1/28/98	DLA-012998	5		NA		C980360061		
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UXY	
SW846-8260	TCVOA	10	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	13	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	JY	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245		
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	U	
SW846-8270	TCSVL	25	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	X	
SW846-8270	TCSVL	69	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245		
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-01			NA		C980780245	UX	
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UXY	
SW846-8260	TCVOA	10	Chlorobenzene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	25	2-Butanone	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	JY	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	

Data Sum[illegible]able for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	m p-Cresol	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8270	TCSVL	49	1,4-Dichlorobenzene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246		
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	U	
SW846-8260	TCVOA	10	1 1-Dichloroethene	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	1 2-Dichloroethane	PGDP	Sludge	FR	ug/L	3/18/98	RCRFD58513-01D			NA		C980780246	UX	
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UXY	
SW846-8260	TCVOA	10	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8270	TCSVL	25	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	2 4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	2 4 6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	2 4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	m p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	U	
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	1 2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	UX	
SW846-8260	TCVOA	10	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-03			NA		C980780247	JY	
SW846-8260	TCVOA	10	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	JY	
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8270	TCSVL	25	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	U	
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-06			NA		C980780248	UX	
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UXY	
SW846-8260	TCVOA	10	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8270	TCSVL	25	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	UX	
SW846-8260	TCVOA	10	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58513-09			NA		C980780249	U	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780249	UXY	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UXY	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8260	TCVOA	15	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8260	TCVOA	20	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	J	
SW846-8260	TCVOA	510	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UXY	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	JE	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8270	TCSVL	40	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250		
SW846-8270	TCSVL	40	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	X	
SW846-8270	TCSVL	260	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250		

Data Sumr 'able for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	UX	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-01			NA		C980780250	U	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UXY	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	13	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	J	
SW846-8260	TCVOA	17	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	JY	
SW846-8260	TCVOA	400	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	JE	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	U	
SW846-8270	TCSVL	160	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251		
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-05			NA		C980780251	UX	
SW846-8260	TCVOA	10	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UXY	
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UXY	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	71	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	J	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8270	TCSVL	34	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252		
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	U	
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-09			NA		C980780252	UX	

Data Summary Table for WAG 27

Analytical Method	Anal. Type	Results	Chemical Name	Lab Code	Matrix	Sample Type	Units	Date Collected	Project Sample ID	Rad Err	Result Prefix Qualifier	Validation	Detection Limit	Lab Sample ID	Result Qualifier	Assessment
SW846-8260	TCVOA	10	Benzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	10	Carbon tetrachloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UXY	
SW846-8260	TCVOA	10	Chloroform	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	10	Tetrachloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	10	Trichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	10	Vinyl chloride	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	12	2-Butanone	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	JY	
SW846-8260	TCVOA	280	Chlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	JE	
SW846-8270	TCSVL	25	2,4,5-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	2,4,6-Trichlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	2,4-Dinitrotoluene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Hexachlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Hexachlorobutadiene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Hexachloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	m,p-Cresol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Nitrobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	2-Methylphenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Pentachlorophenol	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	25	Pyridine	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8270	TCSVL	50	Total Cresols	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	U	
SW846-8260	TCVOA	10	1,1-Dichloroethene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8260	TCVOA	10	1,2-Dichloroethane	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253	UX	
SW846-8270	TCSVL	56	1,4-Dichlorobenzene	PGDP	Sludge	Reg	ug/L	3/18/98	RCRFD58514-11			NA		C980780253		

Appendix D

ANALYSIS OF THE DEPOSITS IN THE C-747-C OIL LANDFARM

ANALYSIS OF THE DEPOSITS IN THE C-747-C OIL LANDFARM

Introduction

On Thursday, January 29, 1998, a subcontractor working on the Waste Area Grouping (WAG) 23/27 Removal Action uncovered several test pits at the former oil landfarm at the C-747-C facility. A deposit of particular interest was found at three sites. The granular material was analyzed to contain 295 pCi/g total uranium at an assay of 1.062 wt% ^{235}U. Analytical results confirm the material to be alumina contaminated predominantly with metals and silica.

Looking at the analyses and the parameters associated with the deposits at the oil landfarm, two situations were evaluated to determine the most likely source pathway: from large alumina traps in the cascade or from smaller traps associated with sample streams.

Following that review, bounding calculations were performed to determine if further Nuclear Criticality Safety (NCS) controls are indicated. Order of magnitude comparisons were also made to the threshold quantities of 40 CFR 302.4 to determine if further safety documentation is required.

Large Cascade Traps

Alumina is used for trapping low to moderate concentrations of uranium compounds (predominantly UF_6) in gas streams from the cascade enrichment facilities. Alumina is used in eal exhaust traps to remove the uranium compounds present in the exhaust stream prior to discharge to the atmosphere. At times, moderate concentrations are present in the seal exhaust stream due to compressor seal failure. When the alumina becomes saturated, it is removed in-situ from the trap and placed in drums. If the contaminated alumina comes from a seal exhaust system located where the uranium is enriched to greater than 1.0 wt% ^{235}U, movement of the drums is strictly controlled under a NCS Approval (NCSA).

Alumina is also is used in wet air traps to remove uranium compounds from purge gases prior to discharge to the atmosphere. Low concentrations are generated during activities associated with enrichment cell servicing. As with the seal exhaust traps, when the alumina is sufficiently saturated, it is removed into drums in-situ. If the alumina from a wet air trap is contaminated with fissionable assay uranium, it is strictly handled in accordance with applicable NCSAs.

Since the assay of the landfarm deposit was found to be greater than 1.0 but less than 2.0 wt% ^{235}U, the trap mix would most likely have come from either an 18-inch or a 24-inch diameter trap.

The 18-inch diameter traps, used at C-310, C-331, and C-333 for purge gas and wet air evacuation, were fabricated from 18-inch schedule 10 pipe with an overall length of 6.5 feet. The volume occupied by the alumina was slightly less than 8.0 cubic feet. Assuming a bulk density of not greater than 55 pounds for alumina and a maximum accumulation constant of one pound of UF_6 per pound of alumina, a trap is assumed to contain approximately 298 pounds anium for NCS purposes.[1] Since the volume of the trap exceeds the volume of a 55-gallon

drum, the alumina was usually placed in equal amounts in two drums. If the material was of fissionable assay, Chemical Operations would have transported this material to storage in a safe array. Also, since the assay was greater than 0.5 wt% ^{235}U (the threshold for an economically recoverable material), it would have been shipped off-site for recovery.

The 24-inch diameter traps, used at C-331, C-333, C-335, and C-337 in seal exhaust systems, contain approximately 13.2 cubic feet which, at the parameters assumed above, would yield a total of 490 pounds of uranium.[1] This material would fill two 55-gallon drums but could have been distributed equally into three. If this material was of fissionable assay, it too would have been stored in a safe array until final disposition.

In either case, a drum of material would have contained a maximum of 285 pounds of uranium which is safe in a 55-gallon drums when spaced appropriately.[1] This assessment is conservative when compared to actual experience. The average weight of contaminated alumina from all the traps measured historically is actually 121% the charged weight of alumina and the loading experienced to date seldom, if ever, exceeds 150%.[1]

Normally the traps are serviced in-place in their installed configuration. Multiple failures in the system could contaminate the alumina with oil. It is doubtful that the material would have been contaminated to the extent that the material would have been taken to the landfarm. If the uranium compounds had "broken through" to the vacuum pump, the oil would have thickened to the point of pump failure. This material would have been removed at the vacuum pump service shop in either C-720 or C-400; however, it would not have contained large amounts of alumina as observed in the landfarm.

The hydrocarbon oil from large vacuum pumps will absorb a maximum of 4.5 pounds of UF_6 per gallon. Consequently, if this oil is contaminated with fissionable assay uranium, its movement, storage, and disposition is also controlled strictly by NCSA to maintain a safe array. Consolidation of the contents of drums contaminated with fissionable assay uranium is prohibited.

The uranium activity in the landfarm sample indicates that it is 150 to 435 times less concentrated than would be expected from the spent material removed from a large cascade trap. (See calculations below.)

Small Sampling Traps

Alumina is also found in smaller traps on sample buggies or assay machines. The size may range from 2 to 6 inches in diameter and up to 18 inches in length. These traps are usually installed in conjunction with small vacuum pumps called "rough pumps" which remove uranium compounds from extremely dilute sample streams. These pumps were serviced in the C-720 Instrument Shop. It is conceivable that the used oil and small amounts of contaminated alumina were accumulated in a single drum since the dilute concentrations required no special NCS controls at any assay. The concentration of uranium in the waste material would be commensurate with that observed in the land farm. It is also conceivable that this material would be selected for disposal in the landfarm.

The negligible uranium concentration is the reason that these drums were not treated with the same NCS controls as alumina from the larger traps. Also, the alumina from the small traps would appear as clumps contaminating the drum of oil instead of oil contaminating a drum of alumina as might be possible given the "break through" failure of a large trap.

Landfarm Deposit Parameters

The volume of a single pocket of alumina (5.5 cubic feet) indicates that was probably poured from a 55-gallon drum. The pellet-like appearance is consistent with the form of alumina used in charging traps at the plant. The assay of the deposit indicates that the alumina was used to trap fissionable assay gas streams. Either the large or the small traps could have be exposed to the 1.1 wt% assay as analyzed for the deposit.

It is possible, but not probable, that alumina taken from large cascade traps would have inadvertently be placed in the landfarm. However, due to the criticality controls and recoverable value, the likelihood is remote. The activity of the sample, 295 pCi/g, indicates a uranium concentration much less than would be predicted by historical data.

Calculations using guidance from DOE 5480.24 and the ANSI/ANS 8 Series, indicates that approximately 170,000 pounds of the deposit material at the measured assay and concentration would be required to exceed the 700 g ^{235}U threshold for NCS controls. Estimates predict that there is less than 50 cubic feet of the trap material in the three deposits; providing an ample margin of safety. Conservatively assuming that the deposit is trap mix loaded with an equivalent amount of UF_6, there would be approximately 5400 pounds in the three deposits.

DOE-EM-STD-5502-94 requires safety analysis documentation for all facilities having quantities of nuclear or non-nuclear materials exceeding the threshold amounts cited in 40 CFR 302.4. Using the same assumed density for the deposit and the analyzed activity, the calculated amount of total uranium in the oil landfarm would be 0.000729 Ci. This is far less than the threshold quantity of 0.1 Ci established for the uranuium nuclides present in 40 CFR 302.4.

Conclusion

The size and the activity of the deposits indicate that the source of the material uncovered is from accumulation of oil contaminated with alumina from the C-720 Instrument Shop. Calculations show that there is insufficient quantities of uranium contamination to warrant NCS controls, even at the assay measured. Since the threshold quantity cited by 40 CFR 302.4 is not challenged, no further safety documentation would be required.

REFERENCE

KY-L-673, *Paducah Plant Criticality Approvals*. December 21, 1973.

CALCULATIONS

Predicted activity from a drum of alumina from a large trap

If an 18-inch diameter trap is emptied equally into two drums, the total uranium content assuming an average 121% loading would be-

$$\frac{4\ ft^3 \times 55\ lb/ft^3 \times 21\% \times 238\ lb\ U}{352\ lb\ UF_6} = \mathbf{31.2\ lb\ or\ 14{,}200\ gU}$$

Assuming all activity in the drum is due to ^{235}U and ^{238}U, the activity produced at an assay of 1.1 wt% is-

$$\frac{0.011\ g^{235}U}{gU} \times \frac{14{,}200\ gU}{} \times \frac{2.16\times10^{-6}\ Ci}{g^{235}U} = \mathbf{3.37\times10^{-4}\ Ci}$$

$$\frac{0.989\ g^{238}U}{gU} \times \frac{14{,}200\ gU}{} \times \frac{3.36\times10^{-7}\ Ci}{g^{238}U} = \mathbf{4.72\times10^{-3}\ Ci}$$

$$3.37\times10^{-4}\ Ci + 4.72\times10^{-3}\ Ci = \mathbf{5.09\times10^{-3}\ Ci\ total\ activity}$$

Since the alumina charged weighs 100,000 g, the activity by weight for this lower bounding condition would be-

$$5.09\times10^{-3}\ Ci\ /\ 114{,}000\ g = \mathbf{4.46\times10^{-8}\ Ci/g}$$

If a 24-inch diameter trap is emptied equally into two drums, the total uranium content assuming a maximum 150% loading would be-

$$\frac{6.6\ ft^3 \times 55\ lb/ft^3 \times 50\% \times 238\ lb\ U}{352\ lb\ UF_6} = \mathbf{123\ lb\ or\ 55{,}700\ gU}$$

Assuming all activity in the drum is due to ^{235}U and ^{238}U, the activity produced at an assay of 1.1 wt% is-

$$\frac{0.011\ g^{235}U}{gU} \times \frac{55{,}700\ gU}{} \times \frac{2.16\times10^{-6}\ Ci}{g^{235}U} = \mathbf{1.32\times10^{-3}\ Ci}$$

$$\frac{0.989\ g^{238}U}{gU} \times \frac{55{,}700\ gU}{} \times \frac{3.36\times10^{-7}\ Ci}{g^{238}U} = \mathbf{1.85\times10^{-2}\ Ci}$$

$$1.32\times10^{-3}\ Ci + 1.85\times10^{-2}\ Ci = \mathbf{2.00\times10^{-2}\ Ci\ total\ activity}$$

Since the alumina charged weighs 100,000 g, the activity by weight for this upper bounding condition would be-

$$2.00\times10^{-2}\ Ci\ /\ 155{,}000\ g = \mathbf{1.29\times10^{-7}\ Ci/g}$$

The activity of the deposit was analyzed to be **2.95×10^{-10} Ci/g.** This activity is a factor of 150 to 435 times lower than the bounding conditions evaluated in the above calculations.

Determination of mass of alumina required for implementation of NCS controls

Assuming all activity in the deposit is due to ^{235}U and ^{238}U, 1.0 g of material at an assay of 1.1 wt% ^{235}U would produce a total activity of-

$$0.011 \text{ g} \times 2.16\times10^{-6} \text{ Ci/g} = 2.38\times10^{-8} \text{ Ci due to } ^{235}U$$

$$0.989 \text{ G} \times 3.36\times10^{-7} \text{ Ci/g} = 3.36\times10^{-7} \text{ Ci due to } ^{238}U$$

$$3.36\times10^{-7} \text{ Ci} + 2.38\times10^{-8} \text{ Ci} = 3.60\times10^{-7} \text{ Ci per gram total}$$

The activity at 1.1 wt% ^{235}U due to the ^{235}U isotope alone would be-

$$2.38\times10^{-8} \text{ Ci} / 3.60\times10^{-7} \text{ Ci} = 0.066 \text{ of the total activity}$$

If the activity of the sample from the deposit is 295×10^{-12} Ci/g, then the activity due to ^{235}U is-

$$0.066 \times 295\times10^{-12} \text{ Ci/g} = 1.95\times10^{-11} \text{ Ci/g}$$

With optimum configuration, moderation, and reflection, greater than 700 g ^{235}U is required for criticality. This corresponds to an activity of-

$$700 \text{ g} \times 2.16\times10^{-6} \text{ Ci/g} = 1.51\times10^{-3} \text{ Ci } ^{235}U \text{ for criticality}$$

The mass of the deposit required to produce an activity equivalent to 700 g ^{235}U at the sample assay and activity is-

$$1.51\times10^{-3} \text{ Ci} / 1.95\times10^{-11} \text{ Ci/g} = 7.74\times10^{7} \text{ g or } 170{,}000 \text{ lb}$$

Assuming a 200% loading of the trap material, the conservative mass of the three deposits is-

$$110 \text{ lb/ft}^3 \times 49.5 \text{ ft}^3 = 5400 \text{ lb}$$

Since there is an undetermined activity in the sample due to ^{238}U, the actual fraction of activity in the sample due to ^{235}U would actually be less than, making the above calculations conservative.

Comparison of predicted quantities of uranium to 40 CFR 264.4 thresholds

Assuming a 200% loading of the trap material, the total activity due to uranium is-

$$\frac{110 \text{ lb}}{\text{ft}^3} \times 49.5 \text{ ft}^3 \times \frac{454 \text{ g}}{\text{lb}} \times \frac{2.93\times10^{-10} \text{ Ci}}{\text{g}} = 7.29\times10^{-4} \text{ Ci}$$

This compares with 0.1 Ci established for the uranium nuclides present.

Poor Quality Original

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