

PROJECT NUMBER BORING NUMBER 160492.SA.03 MW-86

SOIL BORING LOG

LOGGER: Adam Kaiser (Jacobs)

Long Term Operational Areas - Memphis Depot LOCATION : Memphis, Tennessee PROJECT:

ELEVATION: 304.35 feet MSL (TOC); 304.89 feet MSL (ground)

DRILLING CONTE

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger 4.25 inch ID with CME Sampler

WATER LEVELS: 98.27 feet BTOC (11/2001) START: 09/18/2001 END: 09/24 DRILLING CONTRACTOR: Tri-State Testing Services, Inc.

09/24/2001

					09/10/2001 END. 09/24/2001	
Ī	ELOW SU	URFACE (I	FT)	STANDARD	SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)		PENETRATION			
	RECOVERY (%)		TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,	
		1	#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,
		1				
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.
		<u></u>	<u> </u>	(N)	MINERALOGY.	 Corrected FID (ppm):
		ī			ASPHALT	(Soil headspace)
_i		i		Used hollow-stem	Silty clay, moist, brown, low plasticity	
		80		auger		2.3
		!		drilling method no penetration test results		
		!		no penetration test		
		1		results		
		1			Silty clay, moist, brown, low plasticity	
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5		i				
J —		100				12.8
		100				12.0
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_						
I		I				
–i		4				
		i			Silty clay, moist, brown, low plasticity	
		:				
ļ		!				
10		!				
1		80				3.9
I		I				3.0
-î		I				
i		i				
-!		:				
!		:				
_		j			Cilty alay maint brown law plantiait:	
I		I			Silty clay, moist, brown, low plasticity	
-1						
Î		I				
5		i				-
		90				5.4
. !					SAND, very fine, Silty, moist, light brown	
_		!			• -	
I		I				
i		I				
_i		Í			SAND, very fine, Silty, moist, light brown	
:		i			o. 1.15, 101, 1110, Only, Molot, light brown	
-!		!				
0		!				
.0		60				
I		60				0.0
-		1				9.2
ī						9.2
		i				9.2
_i		<u>.</u>				9.2
-į		! ! !				9.2
-i -i		! ! !				9.2
- -		! ! ! !			Clay, Sandy, Silty, clay modules, moist, brown	9.2
- - - - -		 			Clay, Sandy, Silty, clay modules, moist, brown	9.2
- - - 		 			Clay, Sandy, Silty, clay modules, moist, brown	9.2
- - - 5		 			Clay, Sandy, Silty, clay modules, moist, brown	
- - - 5		 			Clay, Sandy, Silty, clay modules, moist, brown	9.2
- - - - 5		80			Clay, Sandy, Silty, clay modules, moist, brown	
- - - - 5 _ -		80			Clay, Sandy, Silty, clay modules, moist, brown	
- 		80			Clay, Sandy, Silty, clay modules, moist, brown	
- - 5 _ - -		80			Clay, Sandy, Silty, clay modules, moist, brown	
- - - - 25 - -		80			Clay, Sandy, Silty, clay modules, moist, brown	
- - - - - - -		80				
- - - 5 5 - -		80			Clay, Sandy, Silty, clay modules, moist, brown Sand, medium red/Brown well sorted - moist	
- - - - - - - - -		80				
_ _ 		80 80				
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		80 70				
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	 2.8
30		 			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	2.8
- - -		70			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	 2.8
_ _ 		 			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	 2.8
30		70			Sand, medium red/Brown well sorted - moist Clayey Sand, red moist, turning more silty sand	2.8



PROJECT NUMBER	BORING NUMBER
160492.SA.03	MW-86

SOIL BORING LOG

Long Term Operational Areas - Memphis Depot LOCATION : Memphis, Tennessee PROJECT:

DRILLING CONTRACTOR: Tri-State Testing Services, Inc.

 ELEVATION:
 304.35 feet MSL (TOC); 304.89 feet MSL (ground)
 DRILLING CONTE

 DRILLING METHOD AND EQUIPMENT USED:
 Hollow Stem Auger 4.25 inch ID with CME Sampler

 WATER LEVELS:
 98.27 feet BTOC (11/2001)
 START:
 09/18/2001
 END:
 09/24
 09/24/2001

					tem Auger 4.25 inch ID w					
			feet BTOC (1		09/18/2001	END: 09/24/2		LOGGER:	Adam Kaiser (Jacobs)	
DEPTH BEL			FT)	STANDARD		SOIL DESCRIP	TION		COMMENTS	1
IN ⁻	ITERVAI	L (FT) RECOVE	RY (%) #/TYPE	PENETRATION TEST RESULTS 6"-6"-6"-6"	SOIL NAME, USCS GROUMOISTURE CONTENT, ROR CONSISTENCY, SOIL	ELATIVE DENSITY,			DEPTH OF CASING, DRILL DRILLING FLUID LOSS, TESTS, AND INSTRUMEN	
				(N)	MINERALOGY.				Correc	ctea FID (ppm)
40 —		65		Used hollow-stem auger drilling method no penetration test results	Yellowish tan, molst mediun	n-well sorted sand				2.1
-i -i-	į				Medium sand - yellowish tar	n-moist				
45		50			Medium Sand, same as abo	ove with small angular	gravel - not skip			1.0
50	i 	60			Tannish, white/gray medium	n sand - moist with sm	all gravel			10.0
- - - -	- — - I									
55		60			same, more reddish					4.5
60		65			Reddish, yellowish, almost i	no gravel				2.2
65		65			Reddish sand Brown Clay (6"), stiff at 65' 29" of Red, white med. s		e			7.0
70	1 1 1 1	80			Same					2.8
_ 					Stiff, gray/tan silty clay at 71 medium fine sand, tan mois medium fine sand, tan mois	t				



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PROJECT: Long Term Operational Areas - Memphis Depot LOCATION : Memphis, Tennessee

DRILLING CONTRACTOR: Tri-State Testing Services, Inc.

ELEVATION: 304.35 feet MSL (TOC); 304.89 feet MSL (ground)

DRILLING CONTE

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger 4.25 inch ID with CME Sampler

WATER LEVELS: 98.27 feet BTOC (11/2001) START: 09/18/2001 END: 09/24

INTERVAL (FT) PENDETATION TEST SOIL NAME. USCS GROUP SYNDIOL COLOR. DEPTH OF CASING. DRILLING R DRIL		3: 98.27 feet BTOC			2 : Adam Kaiser (Jacobs)	
TEST RESULTS ON NAME, ISSCS GROUP SYMBOL, COLOR. RESULTS RESULTS RESULTS PARTY PER CASH PER CASH PARTY PER CASH PARTY PER CASH PER CASH PER CASH PER CASH PARTY PER CASH PER CAS			STANDARD	SOIL DESCRIPTION	COMMENTS	
Same with large gravel Same with large gravel Wer Clay Disy, 2** Samdy Clay - StrowniGrey 79.5 - 82 Sitty Sand Very Fine, light grey Clay grey with red motilies Clay, grey, fine, no gravel, moset Sand, red to grey, fine, no gravel, moset Sand, light grey to tan (reddish brown) 85 Sand, light grey to tan (reddish brown) 85 Sand, white/grey with small rocks-pebbles Very Slow down, hard surface. Difficulty removing spitt sporn 7.1 Reddish sand with large rocks (1 to 1.25*) at 98.5 Sand, white, grey - no rock top 24*- wet Water liable Sand with rocks (1/4 to 2 1/2*), bottom 4* of sampler Sand Fine, grey - 21* moset Sand, same rocks (1/2*) wet 87 Clay, grey Sand Fine, grey - 21* moset Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish brown to grey, firm Sity Clay with very fine sand, minist reddish prown to grey firm Sity Clay with very		RECOVERY (%)	TEST RESULTS 6"-6"-6"	MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE,	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. Corrected FID (pp	
Wet Clay Sample collected for VOCs	-	65		Grayish white sand some small gravel	1.9	
Clay, grey with red mottles Clay, stiff, brown 7.1 Sand, red to grey, fine, no gravet, moist Sample collected for VOCs Sand, light grey to tan (reddish brown) 9.6 Sand, white/grey with small rocks-pebbles Very Slow down, hard surface. Difficulty removing split sporn 7.1 Reddish sand with large rocks (1 to 1.25") at 96.5 Sand, white, grey - no rock top 24" - wet Water table Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand with rocks (1/4 to 2 1/2") bottom 4" of sampler Sand same rocks (1/2") wet Sample collected for TOC 8" Clay, grey Sand Fine, grey - 21" moist Sity Clay with very fine sand, moist reddish brown to grey, firm Sity Clay with very fine sand, same - transitions, stiff, sity clamp, damp at 110" Broken auger only bored 2.5	- - - - - - -			Wet Clay Clay, 1" Sandy Clay - Brown/Grey		
7.1 Sand, red to grey, fine, no gravel, moist Sample collected for VOCs Sand, light grey to tan (reddish brown) 9.6 Sand, white/grey with small rocks-pebbles Very Slow down, hard surface. Difficulty removing split sporn 7.1 Reddish sand with large rocks (1 to 1.25") at 96.5 Sand, white, grey - no rock top 24" - wet Water table 9/19/01 at 8:45 a.m. 5.5 Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand with rocks (1/2") wet Sample collected for TOC 6.5 Silfy Clay, grey Sand Fine, grey - 21" moist Silfy Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5		100		Clay-grey with red mottles	12.2	
Sand, white/grey with small rocks-pebbles Very Slow down, hard surface. Difficulty removing split sporn 7.1 Reddish sand with large rocks (1 to 1.25 ") at 96.5 Sand, white, grey - no rock top 24" - wet Water table 9/19/01 at 8:45 a.m. 5.5 Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand, same rocks (1/2") wet Sand Fine, grey - 21" moist Silly Clay with very fine sand, moist reddish brown to grey, firm Silly Clay with very fine sand, same - transitions, stiff, silly clamp, damp at 110' Broken auger only bored 2.5		90 1				
Sand, white/grey with small rocks-pebbles Very Slow down, hard surface. Difficulty removing split sporn 7.1 Reddish sand with large rocks (1 to 1.25 ") at 96.5 Sand, white, grey - no rock top 24" - wet Water table Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand, same rocks (1/2") wet Sand, same rocks (1/2") wet Sand Fine, grey - 21" moist 6.5 Sitly Clay with very fine sand, moist reddish brown to grey, firm Sitly Clay with very fine sand, same - transitions, stiff, sitly clamp, damp at 110' Broken auger only bored 2.5				Sand, light grey to tan (reddish brown)		
Reddish sand with large rocks (1 to 1.25 ") at 96.5 Sand, white, grey - no rock top 24" - wet Water table 9/19/01 at 8:45 a.m. 5.5 Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand, same rocks (1/2") wet 8" Clay, grey Sand Fine, grey - 21" moist Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5	 	65 		Sand, white/grey with small rocks-pebbles		
Sand, white, grey - no rock top 24" - wet Water table 9/19/01 at 8:45 a.m. 5.5 Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand, same rocks (1/2") wet 8" Clay, grey Sand Fine, grey - 21" moist 6.5 Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5	i -i -i	50 50		Reddish sand with large rocks (1 to 1.25 ") at 96.5	7.1	
Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler Sand, same rocks (1/2") wet Sample collected for TOC 8" Clay, grey Sand Fine, grey - 21" moist Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5	 			Sand, white, grey - no rock top 24" - wet	Done for 9/18/01 at 6:30 p.m. Water table	
8" Clay, grey Sand Fine, grey - 21" moist Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5	i 	45 45 		Sand with rocks (1/4 to 2 1/2"), bottom 4" of sampler	9/19/01 at 8:45 a.m. 5.5	
Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, moist reddish brown to grey, firm Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5	 - -				Sample collected for TOC	
Silty Clay with very fine sand, same - transitions, stiff, silty clamp, damp at 110' Broken auger only bored 2.5		100		Sand Fine, grey - 21" moist	6.5	
in boring. Later recovered					Lost approximately 45" of augers in boring.	



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 START:
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 END:
 09/24
 DRILLING CONTRACTOR: Tri-State Testing Services, Inc.

				tem Auger 4.25 inch ID with CM			
WATER LEVELS				09/18/2001 ENI		LOGGER:	Adam Kaiser (Jacobs)
DEPTH BELOW S	SURFACE (FT)	STANDARD	,	SOIL DESCRIPTION		COMMENTS
INTERV	RECOVERY	Y (%) E/TYPE	PENETRATION TEST RESULTS 6"-6"-6"-6"	SOIL NAME, USCS GROUP SYM MOISTURE CONTENT, RELATIV OR CONSISTENCY, SOIL STRU MINERALOGY.	VE DENSITY,		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. Corrected FID (ppm):
115	50			Silty Clay with very fine sand, dam 1' of solid clay, grey, hard, dry BORING TERMINATED @ 118 FE			Conected PID (ppin).
- 120 - - -							- - - - -
- - - -							_ - - -
130 <u> </u>							- - -
- 135 - - -							- - -
140							-