CH2MHILL

PROJECT NUMBER	BORING NUMBER	
334469.SA.HS	MW-234 (IW-2)	SHEET 1 of 6

SOIL BORING LOG

PROJECT : Memphis Depot - Intermediate Aquifer Inv.	LOCATION : Memphis, Tennessee	ELEVATION:
DRILLING CONTRACTOR :	Boart Longyear	NAME OF DRILLER : C. Herron
DRILLING METHOD/EQUIPMENT:	SR 120 Track-Mounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"
OVERBURDEN THICKNESS :	DEPTH DRILLED INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs
WATER LEVELS : XXX ft-bgs	START: 9/6/07 / END: 9/16/07	LOGGER : Derek Miller/ORO

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	RECOVERY (FT)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. FID (ppm)
5	0-7	7 / 7	C-1	N/A	0.0-7.0: SILT (ML), brown, sl. moist, soft to firm w/ depth	MAX FID ON CORE: 20.6
10	7-17	10 / 10	C-2	N/A	7.0-14.0: AS ABOVE	MAX FID ON CORE: 14.6
15					14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish brown mottles, coarse-grained sand	
20	17-27	10 / 10	C-3	N/A	17.0-22.2: AS ABOVE	MAX FID ON CORE: 10.6
25					22.2-27.0: SANDY CLAY (CL), yellowish brown, moist, firm, common coarse distinct red mottles, ~25-30% fine-grained sand	
30	27-37	10 / 10	C-4	N/A	27.0-28.6: AS ABOVE	MAX FID ON CORE: 200.5
					28.6-34.2: SILTY SAND W/ LITTLE GRAVEL (SM), reddish brown, sl. moist, firm to loose, fine-grained sand, gravel up to 1/2", chert, subround, ~15%, ~20% silt	
35					34.2-37.0: GRAVELLY SAND (SW), reddish brown, sl. moist, loose, sand fine-grained, gravel up to 3/4", subround, chert, ~10-15%	

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SOIL BORING LOG

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DRILLING METHOD/EQUIPMENT:	SR 120 Track-Mounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"
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	27-37	10 / 10	C-4	N/A		MAX FID ON CORE: 200.5
40					37.0-42.0: AS ABOVE	MAX FID ON CORE: 87.5
	37-47	10 / 10	C-5	N/A	42.0-47.0: FINE SAND (SP), v. pale yellow, dry, loose, fluffy, clear contact	
45						
	47-57	10 / 10	C-6	N/A	47.0-52.8: SAND W/ SOME GRAVEL (SW), light brown, wet, loose, medium to coarse-grained sand, gravel up to 1", sub-round, chert, ~20% gravel	MAX FID ON CORE: 78.6
50						
					52.8-57.0: SAND W/ FEW GRAVELS (SW), light yellow, sl. moist, loose, ~5-10% gravel up to 1", chert, subround	
55						
	57-67	10 / 10	C-7	N/A	57.0-67.0: AS ABOVE, moist to 64.0, becoming sl. moist at 64.0-67.0	MAX FID ON CORE: 107.8
60						
65						
	67-77	10 / 10	C-8	N/A	67.0-71.4: AS ABOVE, trace gravel, becoming wet at 71.0	MAX FID ON CORE: 168.7
70						

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SOIL BORING LOG

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DRILLING CONTRACTOR :	Boart Longyear	NAME OF DRILLER : C. Herron
DRILLING METHOD/EQUIPMENT:	SR 120 Track-Mounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"
OVERBURDEN THICKNESS :	DEPTH DRILLED INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs
WATER LEVELS : XXX ft-bgs	START: 9/6/07 / END: 9/16/07	LOGGER : Derek Miller/ORO

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	RECOVERY (FT)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. FID (ppm)
75	67-77	10 / 10	C-8	N/A	71.4-77.0: CLAY (CL), light gray, sl. moist, firm, many coarse prominent yellowish brown mottles	MAX FID ON CORE: 168.7
	77-79.5	2.5 / 2.5	C-9	N/A	77.0-79.5: AS ABOVE	MAX FID ON CORE: 3.7
80	79.5-82	2.5 / 2.5	C-10	N/A	79.5-80.5: AS ABOVE, common fine distinct yellowish brown mottles 80.5-82.0: CLAY (CL), dark gray, sl. moist, firm, gradual contact	MAX FID ON CORE: 0.0 Sample *MW234 SS 81*: VOC (8260B/5035A) TOC (415.1)
	82-84	2 / 2	ST-1	N/A	82.0-84.0: AS ABOVE, becoming sl. sandy w/ depth *LOGGED SHAVINGS FROM TUBE*	MAX FID ON CORE: N/A Sample *MW234_ST_82-84: (Shelby tube)* Vertical permeability and grain size analysis
85	84-92	8 / 8	C-11	N/A	84.0-92.0: CLAY W/ TRACE SAND (CL), dark gray, sl. moist, hard, ~5% v. fine-grained sand	MAX FID ON CORE: 1.0
90					**0.0-92.0: 6" SCHEDULE 80 PERMANENT CASING**	
95	92-97	5 / 5	C-12	N/A	92.0-97.0: SILTY CLAY W/ TRACE SAND (CL), dark gray, sl. moist, hard, common fine faint black mottles mottles through-out, ~5% v. fine-grained sand in 1/4" thick lenses, ~5-10% silt	MAX FID ON CORE: 2.8
100	97-107	0 / 10	C-13	N/A	97.0-107.0: NO RECOVERY	MAX FID ON CORE: N/A 97.0-107.0: NO RECOVERY, CORE BARREL FELL 10 FT WITHOUT ROTATION, PRESSURE OR VIBE
105						

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SOIL BORING LOG

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DRILLING METHOD/EQUIPMENT:	SR 120 Track-Mounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"
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	97-107	0 / 10	C-13	N/A		MAX FID ON CORE: N/A
110	107-117	10 / 10	C-14	N/A	107.0-112.9: AS ABOVE, sand content increasing to ~15% 112.9-113.1: SILTY CLAY (CL), v. light gray, dry, v. hard, gravels up to 2", subangular, gravels are highly weathered, distinct contact 113.1-115.7: CLAYEY SAND (SC), dark gray, sl. moist, firm, crumbly, sl. plasticity, ~50% v. fine-grained sand 115.7-117.0: SILTY CLAY (CL), dark gray, sl. moist, firm, crumbly	MAX FID ON CORE: 7.8
115						
120	117-127	10 / 10	C-15	N/A	117.0-122.7: SILTY CLAY W/ FEW SANDS (CL), dark gray, sl. moist, firm, ~10% v. fine-grained sand 122.7-123.0: MUDSTONE ROCK FRAG, pale yellow, up to 3-4" subangular, dry, v. hard, broke apart w/ hammer, resembles surrounding clay units, distinct contact 123.0-124.8: SILTY CLAY W/ FEW SANDS (CL), dark gray, sl. moist, firm, ~10% v. fine-grained sand 124.8-125.8: SILTY SAND (SM), dark gray, sl. moist, soft and crumbly, v. fine-grained sand, ~40% silt 125.8-127.0: SILTY CLAY (CL), dark gray, sl. moist, firm, few coarse prominent black organic staining, ~10-15% silt	MAX FID ON CORE: 50.0
125						
130	127-137	10 / 10	C-16	N/A	127.0-134.7: AS ABOVE 134.7-135.4: SANDY CLAY (CL), dark gray, sl. moist, soft 135.4-137.0: SILTY CLAY (CL), dark gray, sl. moist, firm, few coarse prominent black organic staining, ~10-15% silt	MAX FID ON CORE: 12.0
135						
140	137-147	10 / 10	C-17	N/A	137.0-143.8: AS ABOVE, lignite seam at 139.3, v. dark brownish black, firm and crumbly, wood-like, sl. moist	MAX FID ON CORE: 10.2

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145	137-147	10 / 10	C-17	N/A	143.8-146.8: SANDY CLAY (CL), dark gray, sl. moist, soft to firm, sl. plasticity, ~25% v. fine-grained sand 146.8-147.0: SILTY SAND (SM), gray, moist, soft to loose, v. fine-grained sand, ~30-35% silt	MAX FID ON CORE: 10.2
150	147-157	10 / 10	C-18	N/A	147.0-147.4: SANDY CLAY (CL), gray, (wet), firm, ~25% v. fine-grained sand 147.4-157.0: CLAY (CL), dark gray, sl. moist, hard, ~5% silt, trace fine distinct black organic staining throughout	MAX FID ON CORE: 3.7
155						
160	157-167	10 / 10	C-19	N/A	157.0-160.3: SL. SANDY CLAY (CL), dark brownish gray, sl. moist, hard, v. fine-grained sand lenses up to 1/8" thick, increasing w/ depth from ~20 to 30% 160.3-166.2: SILTY SAND (SM), light gray, wet, soft, crumbles w/ finger pressure, v. fine-grained sand, ~10-15% silt, trace clay	MAX FID ON CORE: 0.7
165						
170	167-177	10 / 10	C-20	N/A	166.2-167.0: SL. SANDY CLAY (CL), dark brownish gray, sl. moist, hard, massive, highly plastic, ~5% v. fine-grained sand 167.0-175.9: SILTY SAND (SM), light gray, wet, soft, crumbles w/ finger pressure, fine-grained sand, ~5-10% silt, one clay lense at 169.6-170.0, dark brownish gray, sl. moist, firm, massive	MAX FID ON CORE: 11.0
175						

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SOIL BORING LOG

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	167-177	10 / 10	C-20	N/A	175.9-177.0: AS ABOVE, no clay, moist, loose	MAX FID ON CORE: 11.0
	177-187	10 / 10	C-21	N/A	177.0-180.1: AS ABOVE, (wet) 180.1-181.8: SANDY CLAY (CL), gray, moist, firm, medium plasticity, ~5-10% v. fine-grained sand 181.8-187.0: SILTY SAND (SM), light gray, moist, soft, lenses of reddish brown discoloration up to 4" thick	MAX FID ON CORE: 12.2 TD @ 187.0 FT-BGS
180						
185						