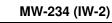


BORING NUMBER MW-234 (IW-2)

SHEET 1 of 6

PROJECT : Memphis Depot - Intermediate Aquifer Inv. LOCATION : Memphis, Tennessee   ELEVATION:	-	
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           WATER LEVELS:         XXX ft-bgs         START: 9/6/07 / END: 9/16/07         LOGGER: Derek Miller/ORO           DEPTH BELOW SURFACE (FT)         STANDABD         SOIL DESCRIPTION         COMMENTS           SAMPLE INTERVAL (FT)         BYTYPE         SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.         DEPTH OF CASING, DRILLING RAT 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 _         -         -         7-0-14.0: AS ABOVE         MAX FID ON CORE: 14.6           10 _         -         -         -         N/A         -           10 _         -         -         -         -         -           -         -         -         -         -         -           -         -         -         -         -         -           -         -         -         -         -         -           -         -         -         -         -         -    **TOTAL DEPTH OF		
WATER LEVELS : XXX ft-bgs   START: 9/6/07 / END: 9/16/07   SOIL DESCRIPTION   LOGGER : Derek Miller/ORO	ft-bas	
DEPTH BELOW SURFACE (FT)	3 -	
RECOVERY (FT) #/TYPE RESULTS SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. FID (ppm)  One consistency, Soil Structure, MINERALOGY.  One consistency, Soil Structure, MINERALOGY.  FID (ppm)  MAX FID ON CORE: 20.6  7.0-14.0: AS ABOVE  MAX FID ON CORE: 14.6		
#/TYPE RESULTS MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, TESTS, AND INSTRUMENTATION. FID (ppm)		
6°-6°-6° (N) MINERALOGY. TESTS, AND INSTRUMENTATION. FID (ppm)  0.0-7.0: SILT (ML), brown, sl. moist, soft to firm w/ depth  7.0-14.0: AS ABOVE  7.0-14.0: AS ABOVE  10	<u>=</u> ,	
(N) MINERALOGY. FID (ppm)  0.0-7.0: SILT (ML), brown, sl. moist, soft to firm w/ depth  AAX FID ON CORE: 20.6  7.0-14.0: AS ABOVE  MAX FID ON CORE: 14.6  7.0-14.0: AS ABOVE  10		
0.0-7.0: SILT (ML), brown, sl. moist, soft to firm w/ depth  MAX FID ON CORE: 20.6  10		
7.0-14.0: AS ABOVE  7.0-14.0: AS ABOVE  MAX FID ON CORE: 14.6		
5 _	-	
5 _		
5 _	_	
5 _	-	
5 _		
7.0-14.0: AS ABOVE  MAX FID ON CORE: 14.6  7.0-14.0: AS ABOVE  10	-	
10	_	
10	_	
10	_	
10		
7-17 10 / 10 C-2 N/A  14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	-	
7-17 10 / 10 C-2 N/A  14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	_	
7-17 10 / 10 C-2 N/A  14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	_	
7-17 10 / 10 C-2 N/A  14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	-	
14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish		
14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	-	
14.0-17.0: CLAYEY SILT W/ TRACE SAND (ML), light brown, sl. moist, firm and crumbly, common medium distinct reddish	_	
sl. moist, firm and crumbly, common medium distinct reddish	_	
sl. moist, firm and crumbly, common medium distinct reddish	-	
sl. moist, firm and crumbly, common medium distinct reddish		
	-	
	_	
	-	
17.0-22.2: AS ABOVE MAX FID ON CORE: 10.6		
-	-	
	_	
20 -	_	
	-	
_ 17-27 10 / 10 C-3 N/A 22.2-27.0: SANDY CLAY (CL), yellowish brown, moist, firm,	_	
_ common coarse distinct red mottles, ~25-30% fine-grained	_	
_ sand	-	
	_	
25	—	
	_	
-	_	
	-	
-		
_ _ _ 28.6-34.2: SILTY SAND W/ LITTLE GRAVEL (SM), reddish	-	
brown, sl. moist, firm to loose, fine-grained sand, gravel up to	_	
30 1/2", chert, subround, ~15%, ~20% silt		
-	-	
_ 27-37   10 / 10   C-4   N/A		
-	_	
_	-	
-		
_ 34.2-37.0: GRAVELLY SAND (SW), reddish brown, sl. moist, loose, sand fine-grained, gravel up to 3/4", subround, chert,	-	
- 1005e, sand line-grained, graver up to 3/4 , subround, criert, -10-15%		





DBO IEC	T · Momph	is Donot - I	ntormod	iate Aquifer Inv.	LOCATION : Memphis, Tennessee	ELEVATION:	
	G CONTRA			Boart Longyear	LOCATION: Memphis, Tennessee	NAME OF DRILLER : C. Herron SIZE/TYPE OF BIT : 4X6"; 9.25"	
	G METHOD		ENT:		ounted Rotasonic		
	IRDEN THI				D INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs	
	LEVELS :		gs	START: 9/6/07 /		LOGGER: Derek Miller/ORO	
	ELOW SURF			STANDARD	SOIL DESCRIPTION	COMMENTS	
	SAMPLE IN			PENETRATION			
		RECOVER		TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,	
			#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,	
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.	
				(N)	MINERALOGY.	FID (ppm)  MAX FID ON CORE: 200.5	
_	27-37	10 / 10	C-4	N/A		WAXT ID ON COTTE. 200.3	_
_	21-01	10 / 10	0-4	IV/A			-
_					37.0-42.0: AS ABOVE	MAX FID ON CORE: 87.5	
_							_
_							_
							_
40							_
_							
_							_
_	37-47	10 / 10	C-5	N/A	42.0-47.0: FINE SAND (SP), v. pale yellow, dry, loose, fluffy,		-
					clear contact		
_							-
_							_
45							
_							-
_							
_					47.0-52.8: SAND W/ SOME GRAVEL (SW), light brown, wet,	MAX FID ON CORE: 78.6	-
_					loose, medium to coarse-grained sand, gravel up to 1", sub-	WINCE ID GIV GOTTE: 76.0	_
_					round, chert, ~20% gravel		-
_							_
50							_
_							-
_							_
_	47-57	10 / 10	C-6	N/A			-
_					52.8-57.0: SAND W/ FEW GRAVELS (SW), light yellow, sl.		_
_					moist, loose, ~5-10% gravel up to 1", chert, subround		_
_							-
55							_
_							-
_							
_		-			57 0.67 0: AS AROVE maint to 64 0 hosping of maint -1	MAY FID ON CORE: 107.9	-[
_					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							
_							-[
_							_
_	57-67	10 / 10	C-7	N/A			-
_							
_							-
_							-[
65							
_							-[
_							
_		1			C7.0.74.4.AC.ADOVE transport become a second by	MAY FID ON CODE, 100.7	-
_					67.0-71.4: AS ABOVE, trace gravel, becoming wet at 71.0	MAX FID ON CORE: 168.7	-[
_	67-77	10 / 10	C-8	N/A			
_		,					-[
70 _							



BORING NUMBER MW-234 (IW-2)

SHEET 3 of 6

PROJECT : Memphis Depot - Intermed				ate Aquifer Inv.	LOCATION : Memphis, Tennessee	ELEVATION:	
	IG CONTRA			Boart Longyear	·	NAME OF DRILLER : C. Herron	
	IG METHOD		ENT:		ounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"	
	JRDEN THIC			DEPTH DRILLED INTO ROCK N/A START: 9/6/07 / END: 9/16/07		TOTAL DEPTH OF BORING 187 ft-bgs	
WATER LEVELS : XXX ft-bgs DEPTH BELOW SURFACE (FT)			js	START: 9/6/07 /	SOIL DESCRIPTION	LOGGER: Derek Miller/ORO COMMENTS	
DEFINE	SAMPLE INTERVAL (FT)		PENETRATION	SOIL DESCRIPTION	COMMENTS		
	SAIVII LL IIVI	RECOVER	,	TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,	
			#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,	
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.	
				(N)	MINERALOGY.	FID (ppm)	
_						MAX FID ON CORE: 168.7	_
_					71.4-77.0: CLAY (CL), light gray, sl. moist, firm, many coarse		_
_					prominent yellowish brown mottles		_
_							_
_	67-77	10 / 10	C-8	N/A			_
_		10710	00	1471			-
75							_
_							_
_							_
_					77 0 70 5 40 ADOVE	MAY FIR ON CORE OF	_
_					77.0-79.5: AS ABOVE	MAX FID ON CORE: 3.7	-
_	77-79.5	2.5 / 2.5	C-9	N/A			_
_							-
80					79.5-80.5: AS ABOVE, common fine distinct yellowish brown	MAX FID ON CORE: 0.0	_
_	79.5-82	2.5 / 2.5	C-10	N/A	mottles 80.5-82.0: CLAY (CL), dark gray, sl. moist, firm, gradual	Sample <i>MW234 SS 81</i> : VOC (8260B/5035A)	_
_	75.5 62	2.0 / 2.0	0 10	14/74	contact	TOC (415.1)	_
_						MAY FIR ON CORE NVA	_
-	00.04	0.40	OT 4	N1/A	82.0-84.0: AS ABOVE, becoming sl. sandy w/ depth	MAX FID ON CORE: N/A Sample MW234_ST_82-84: (Shelby tube)	_
_	82-84	2/2	ST-1	N/A	*LOGGED SHAVINGS FROM TUBE*	Vertical permeability and grain size analysis	_
_					84.0-92.0: CLAY W/ TRACE SAND (CL), dark gray, sl. moist,	MAX FID ON CORE: 1.0	_
85					hard, ~5% v. fine-grained sand	WWW. ID ON COME. 1.0	_
-							-
_							_
_							_
_	84-92	8/8	C-11	N/A			_
_		070	0-11	IN/A			_
							_
90							
-							-
_							_
_					0.0-92.0: 6" SCHEDULE 80 PERMANENT CASING 92.0-97.0: SILTY CLAY W/ TRACE SAND (CL), dark gray, sl.	MAX FID ON CORE: 2.8	_
_					moist, hard, common fine faint black mottles mottles through-	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	_
_					out, ~5% v. fine-grained sand in 1/4" thick lenses, ~5-10% silt		-
	92-97	5/5	C-12	N/A			_
95	02 07	0,0	J 12				_
I =						1	
_							-
I -					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	_
100						1	-
_	97-107	0 / 10	C-13	N/A			_
_	37.107	0 / 10	0-13	IN/A			-
I -						1	_
_							_
-						1	-
							_
105						1	



PROJEC	T · Mamphi	Denot - I	ntermedi	ate Aquifer Inv	LOCATION: Memphis, Tennessee	ELEVATION:	
PROJECT : Memphis Depot - Intermed DRILLING CONTRACTOR :				Boart Longyear	LOCATION: Memphis, remessee	NAME OF DRILLER : C. Herron	
					ounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"	
	IRDEN THIC				D INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs	
WATER LEVELS: XXX ft-bgs				START: 9/6/07 /		LOGGER: Derek Miller/ORO	
DEPTH BE	ELOW SURF	ACE (FT)		STANDARD	SOIL DESCRIPTION	COMMENTS	
	SAMPLE INT	ERVAL (FT	)	PENETRATION			
		RECOVER		TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,	
			#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,	
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.	
				(N)	MINERALOGY.	FID (ppm) MAX FID ON CORE: N/A	
_	97-107	0 / 10	C-13	N/A		IMAX FID ON GORE. IV/A	
_	37-107	0710	0-13	IN/A		-	
_					107.0-112.9: AS ABOVE, sand content increasing to ~15%	MAX FID ON CORE: 7.8	
_						-	
_						-	
110						_	
_							
_						-	
_	107-117	10 / 10	C-14	N/A			
_					112.9-113.1: SILTY CLAY (CL), v. light gray, dry, v. hard, gravels up to 2", subangular, gravels are highly weathered,	-	
_					gravels up to 2°, subangular, gravels are nignly weathered, distinct contact		
115 -					113.1-115.7: CLAYEY SAND (SC), dark gray, sl. moist, firm,	_	
115					crumbly, sl. plasticity, ~50% v. fine-grained sand	_	
_					115.7-117.0: SILTY CLAY (CL), dark gray, sl. moist, firm,		
_					crumbly	-	
_					117.0-122.7: SILTY CLAY W/ FEW SANDS (CL), dark gray, sl.	MAX FID ON CORE: 50.0	
_					moist, firm, ~10% v. fine-grained sand	-	
_							
120 -						-	
						_	
_						-	
_	117-127	10 / 10	C-15	N/A			
_	117-127	10 / 10	C-15	IN/A	400.7.400.0. MUDCTONE DOCK EDAC and continue to 0.4"	-	
_					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	-	
125 -					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		
_					127.0-134.7: AS ABOVE	MAX FID ON CORE: 12.0	
_							
_						-	
130							
_						-	
_							
_	127-137	10 / 10	C-16	N/A		-	
_							
_						-	
135					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		
_						-	
-					137.0-143.8: AS ABOVE, lignite seam at 139.3, v. dark	MAX FID ON CORE: 10.2	
_					brownish black, firm and crumbly, wood-like, sl. moist		
_	137-147	10 / 10	C-17	N/A		-	
140							
140		I					



BORING NUMBER MW-234 (IW-2)

SHEET 5 of 6

חחס ובס	T . Ma	. D 1		into Anniforda	LOCATION Manualia Tanana	ELEVATION:
	I: Memphis G CONTRAG	•		iate Aquifer Inv.	LOCATION : Memphis, Tennessee	ELEVATION:  NAME OF DRILLER: C. Herron
	G METHOD			Boart Longyear SB 120 Track-M	ounted Rotasonic	SIZE/TYPE OF BIT : 4X6"; 9.25"
	IRDEN THIC				D INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs
WATER LEVELS: XXX ft-bgs				START: 9/6/07 /		LOGGER: Derek Miller/ORO
	LOW SURF		,	STANDARD	SOIL DESCRIPTION	COMMENTS
	SAMPLE INT	ERVAL (F1	Γ)	PENETRATION		
		RECOVER	RY (FT)	TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,
			#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.
				(N)	MINERALOGY.	FID (ppm)
_						MAX FID ON CORE: 10.2
_						_
_						_
_						-
_	137-147	10 / 10	C-17	N/A		_
_	107 147	10710	0 17	14/74	143.8-146.8: SANDY CLAY (CL), dark gray, sl. moist, soft to	_
145 -					firm, sl. plasticity, ~25% v. fine-grained sand	_
_						_
_					146.8-147.0: SILTY SAND (SM), gray, moist, soft to loose, v.	-
_		<u> </u>			fine-grained sand, ~30-35% silt	
_					147.0-147.4: SANDY CLAY (CL), gray, (wet), firm, ~25% v.	MAX FID ON CORE: 3.7
_					fine-grained sand 147.4-157.0: CLAY (CL), dark gray, sl. moist, hard, ~5% silt,	-
_					trace fine distinct black organic staining throughout	_
150 -						-
130						_
_						
_						_
_	147-157	10 / 10	C-18	N/A		_
_						_
_						-
_						
155						_
-						-
_						_
_					157.0.160.2; CL. CANDV CLAV (CL) dork brownigh groved	MAY FID ON CODE: 0.7
_					157.0-160.3: SL. SANDY CLAY (CL), dark brownish gray, sl. moist, hard, v. fine-grained sand lenses up to 1/8" thick,	MAX FID ON CORE: 0.7
_					increasing w/ depth from ~20 to 30%	_
_						-
160						
_					160.3-166.2: SILTY SAND (SM), light gray, wet, soft,	_
_					crumbles w/ finger pressure, v. fine-grained sand, ~10-15% silt, trace clay	-
_	157-167	10 / 10	C-19	N/A	,	]
_		.5, .5	- 10			-
_						
_						-
165						-
_						
_					166 2-167 () SI SANDV CLAV (CL) dark browniah aray al	-
_		L			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,	MAX FID ON CORE: 11.0
_					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	
170						-
170						_
_	167-177	10 / 10	C-20	N/A		_
_	101-111	10/10	U-20	IN/A		-
_						-
_						_
_						-
175		1		Ī		_



**BORING NUMBER** 

MW-234 (IW-2)

SHEET 6 of

<b>PROJEC</b>	T: Memphis	Depot - I	ntermed	iate Aquifer Inv.	LOCATION: Memphis, Tennessee	ELEVATION:
DRILLIN	G CONTRAC	CTOR:		Boart Longyear		NAME OF DRILLER: C. Herron
DRILLIN	G METHOD/	EQUIPME	ENT:	SR 120 Track-M	ounted Rotasonic	SIZE/TYPE OF BIT: 4X6"; 9.25"
OVERBL	JRDEN THIC	KNESS:		DEPTH DRILLE	D INTO ROCK N/A	TOTAL DEPTH OF BORING 187 ft-bgs
WATER	LEVELS :	XXX ft-bo	gs	START: 9/6/07 /	END: 9/16/07	LOGGER: Derek Miller/ORO
DEPTH B	ELOW SURFA	ACE (FT)		STANDARD	SOIL DESCRIPTION	COMMENTS
	SAMPLE INT	ERVAL (F1	Γ)	PENETRATION		
		RECOVER	RY (FT)	TEST	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,
			#/TYPE	RESULTS	MOISTURE CONTENT, RELATIVE DENSITY,	DRILLING FLUID LOSS,
				6"-6"-6"	OR CONSISTENCY, SOIL STRUCTURE,	TESTS, AND INSTRUMENTATION.
				(N)	MINERALOGY.	FID (ppm)
	167-177	10 / 10	C-20	N/A	175.9-177.0: AS ABOVE, no clay, moist, loose	MAX FID ON CORE: 11.0
180	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
185 - - -						