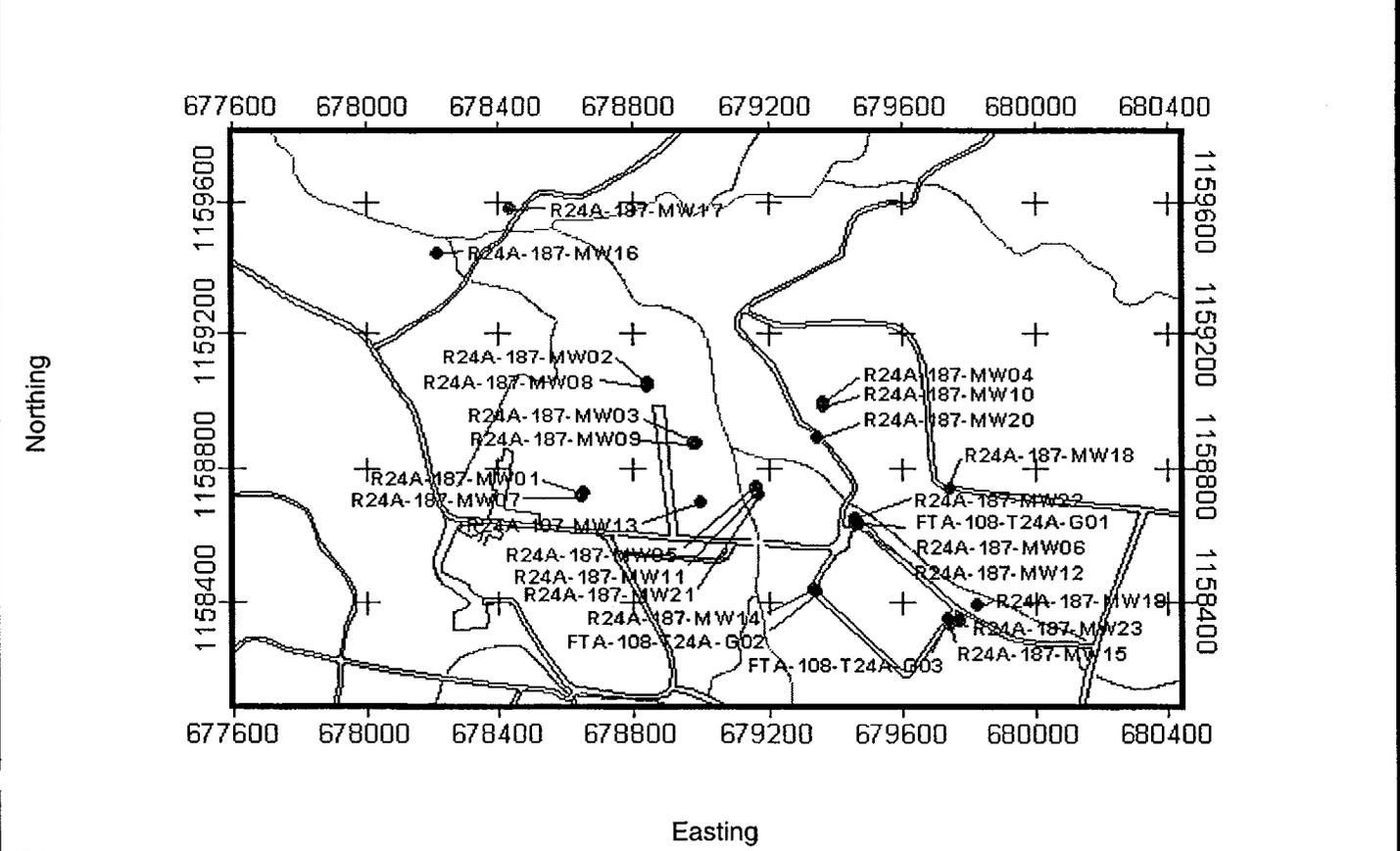


HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW15	
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 12 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Red McNeil, Ken Gobell		6. Mfr. designation of drill: Schramm T450W, CME-750			
7. Sizes and types of drilling and sampling equipment: Air Percussion, Air Rotary, PQ Rock Coring AR - 12 1/4" Rotary Bit, 7 7/8" Percussion Bit PQ - 5'x4" PQ3 wireline core barrel		8. Hole location: Training Area T-24A, parcel 187			
		9. Surface elevation (feet above mean sea level): 1032.35			
12. Overburden thickness (feet bgs): 45		10. Date started: 11/15/00		11. Date completed: 12/12/00	
13. Depth drilled into rock (feet bgs): 65		15. Depth groundwater encountered (feet bgs): Unknown			
14. Total depth of hole (feet bgs): 110		16. Depth to water and elapsed time after drilling completed (feet bgs): 14.4' on 12/13/00			
17. Other water level measurements (specify): NA					
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 6	
	NA				
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
					21. Total core recovery: 52.6
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		X		J. Bond/D. Mayton/D. Allan	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan bgs= below ground surface NA =Not applicable
 CD= Corrected Depth psi= pounds per square inch
 HP= Hydraulic Pressure WP= Water Pressure Hole no.: R24A-187-MW15

HTRW DRILLING LOG (Continuation Sheet)

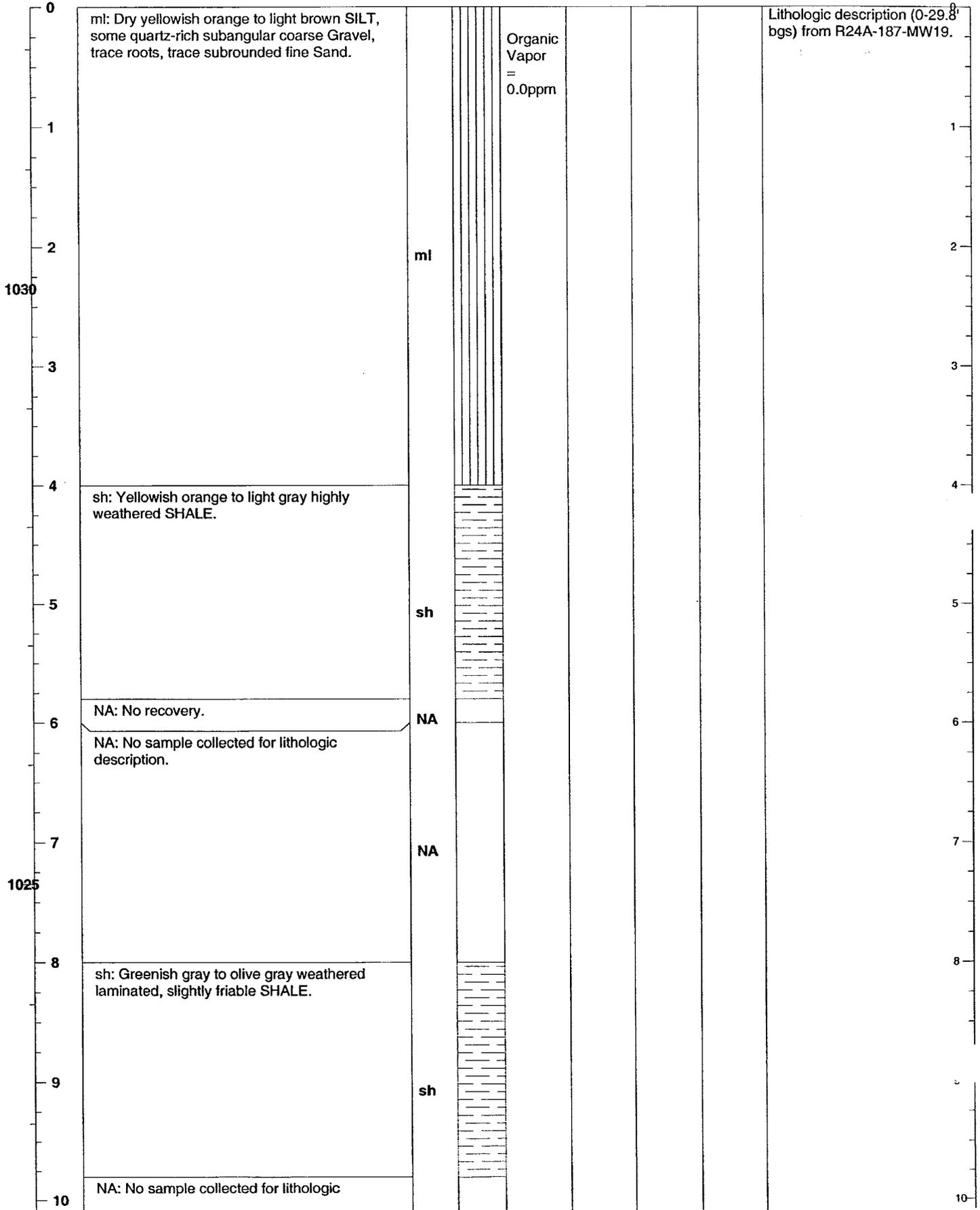
HOLE NUMBER: R24A-187-MW15

Project: Fort McClellan

Geologist: J. Bond/D. Mayton/D. Allan

Sheet 2 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW15

Project: Fort McClellan

Geologist: J. Bond/D. Mayton/D. Allan

Sheet 4 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
	21								
	22		NA						
1010	23								
	24	sh: Medium gray, laminated, fissile, friable SHALE.	sh						
	25	NA: No recovery. NA: No sample collected for lithologic description.	NA						
	26								
	27		NA						
1005	28								
	29	sh: Medium gray laminated friable fissile SHALE.	sh						
		NA: No recovery.	NA						
	30	sh: Pale brown to light gray SHALE, becoming gray with increased depth.							

Vapor = 0.0ppm

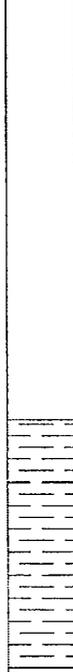
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW15

Project: Fort McClellan

Geologist: J. Bond/D. Mayton/D. Allan

Sheet 6 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	41								Water at 41'
990	42								
	43								
	44								
	45	sh: SHALE moderately hard, slightly weathered, broken along bedding (45 degrees) quartz filled veins parallel to bedding, dark gray. NA: No recovery.	sh			Box 1 of 6 (45 to 63' bgs)			Bottom of 8" casing at 45' Run 1 (45-48' bgs) Ran 3.0' Rec 0.6' Loss 2.6' UL 2.4' Water used 200 gallons, rec 100 gals, light gray Time 7 mins RQD 0 %
	46								
	47		NA						
985	48	sh: SHALE, moderately hard, slightly weathered, quartz filled veins, dark gray.	sh						Run 2 (48-53' bgs) Ran 5.0' Rec 1.4' Loss 3.6' UL 3.6' Water used 700 gallons, rec 0 gals Time 39 mins RQD 0 %
	49								
	50	NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW15

Project: Fort McClellan

Geologist: J. Bond/D. Mayton/D. Allan

Sheet 9 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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960	72								
	73	NA: No recovery.	NA			Box 3 of 6 (72.3' to 82' bgs)			Run 7 (73-78' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 400 gallons, rec 350 gals, gray Time 20 mins RQD 22 %
	74	sh: SHALE, moderately hard, moderately weathered, especially around fractures, convoluted veins infilled with quartz throughout core, associated with pyrite, fracture zones at 73 ft to 74.3 ft 45 degrees, fine to coarse gravel sized fragments), 75.1 ft to 75.9 ft (70 degrees and horizontal, coarse gravel sized fragments), 77 ft to 78 ft (horizontal and 60 degrees, fine to coarse gravel sized fragments), dark gray, evidence of solution within quartz veins.							
	75		sh						
	76								
	77								
955	78	sh: SHALE, moderately hard, moderately weathered, quartz filled veins throughout, some horizontal some convoluted, fracture zones at 78.3' to 78.6' (fine to coarse gravel sized fragments, horizontal), 79.1' to 79.4' (fine to coarse gravel sized fragments horizontal and vertical), 80' to 80.4' (fine to coarse gravel sized fragments), 81.3' to 82.8' (highly fractured clay to coarse gravel sized fragments), bedding at 0 to 45 degrees, dark gray.							Run 7 (78-83' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.2' Water used 300 gallons, rec 150 gals, gray Time 18 mins RQD 0 %
	79								
	80								
	81		sh						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW15

Project: Fort McClellan

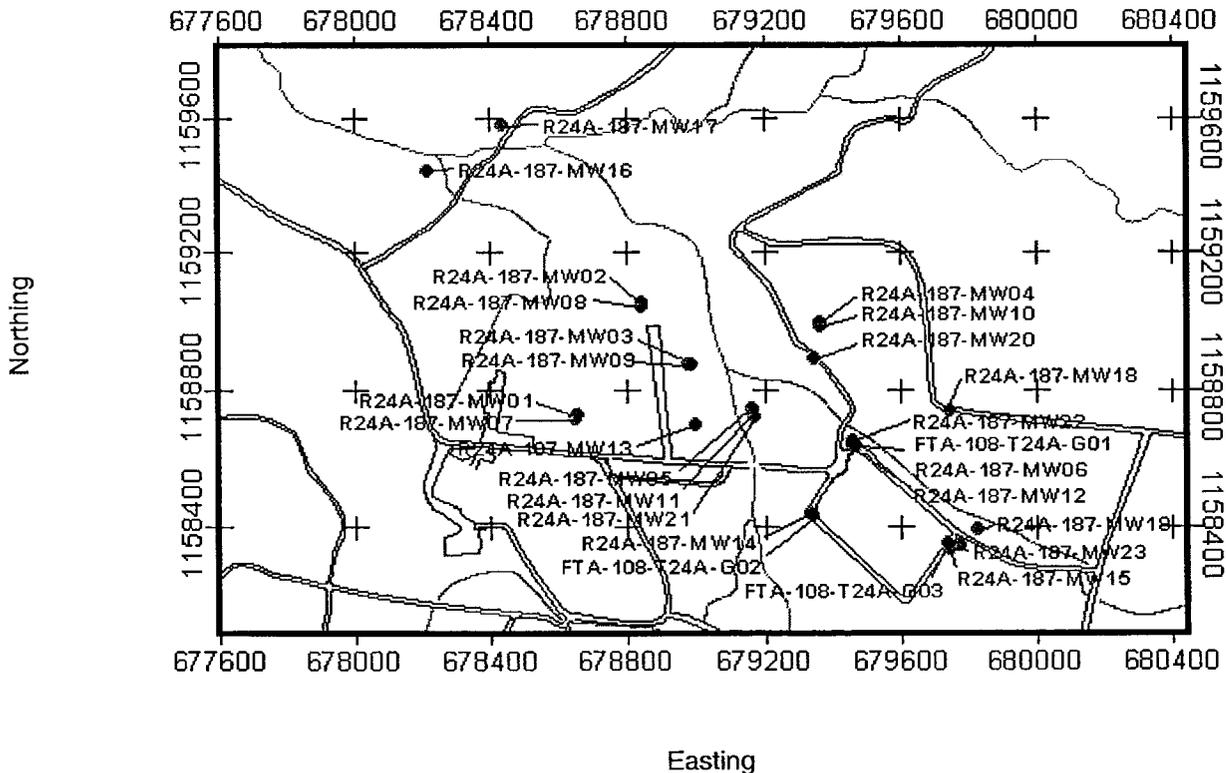
Geologist: J. Bond/D. Mayton/D. Allan

Sheet 12 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
930	102								
	103	NA: No recovery.	NA						
	104	sh: SHALE, moderately hard, moderately weathered around fractures, fracture zones at 103.4' (horizontal) 103.8' (30 degrees, fine to coarse gravel sized fragments), 104 (horizontal, gravel sized fragments), 104.8-104.9 (30 degrees), 105.6' to 106.3' (30 degrees, fine to coarse gravel sized fragments), 106.8' to 108' (approximately 30 degrees and vertical, fine to coarse gravel sized fragments), bedding is banded width at 30 degrees, some beds silty, quartz filled veins throughout, slightly convoluted, micro faulting offsetting bedding and veins, dark gray.	sh			Box 6 of 6 (103 to 110' bgs)			Run 13 (103-108' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 500 gallons, rec 100 gals, gray Time 18 mins RQD 48 %
	105								
	106								
	107								
925	108	sh: SHALE, moderately hard, moderately weathered, broken along bedding planes (30 degree banded), quartz filled veins coincident with bedding planes, dark gray.	sh						Run 14 (108-110' bgs) Ran 2.0' Rec 2.0' Loss 0.0' UL 0.0' Water used 100 gallons, rec 50 gals, gray Time 7 mins RQD 0 %
	109								
	110								Bottom of borehole at 110' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW16	
1. Company name: IT Corporation		2. Drill Subcontractor: ESN/Miller Drilling Company		Sheet 1 of 4 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Sammy McDaniel, Ken Gobell		6. Mfr. designation of drill: Thunder Probe, CME-750			
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP - 24"x2" Acetate-Lined Sampler HSA - 5"x4.25" ID Augers, 24"x2" Steel Split Spoons		8. Hole location: Training Area T-24A, Parcel 187			
		9. Surface elevation (feet above mean sea level): 954.65			
		10. Date started: 10/05/00		11. Date completed: 10/26/00	
12. Overburden thickness (feet bgs): >24		15. Depth groundwater encountered (feet bgs): 9			
13. Depth drilled into rock (feet bgs): 0		16. Depth to water and elapsed time after drilling completed (feet bgs): 6.2 on 10/27/00			
14. Total depth of hole (feet bgs): 24		17. Other water level measurements (specify): NA			
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
	NA				
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	21. Total core recovery:
	X	X	CWM Breakdown Products	Nitroaromatics	SVOCs
					NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		X		Leslie O'Hare/Dennis Mayton	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan bgs= below ground surface NA =Not applicable
 CD= Corrected Depth psi= pounds per square inch
 HP= Hydraulic Pressure WP= Water Pressure Hole no.: R24A-187-MW16

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW16

Project: Fort McClellan

Geologist: Leslie O'Hare/Dennis Mayton

Sheet 2 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Dark brown SILT, some fine to medium Sand, little subangular coarse Gravel, trace Roots, trace Clay.	ml		Organic Vapor = 18.3ppm		JG0013		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Light brown to orange SILT, little Sand, trace Clay, trace fine subrounded Gravel.			Organic Vapor = 0.0ppm				Rec 3.0'/3.0' (1-4' bgs)
	2		ml						
	3								
	4	ml: Light brown SILT, some Sand, trace Clay.			Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (4-6' bgs)
950	5		ml				JG0014		
	6	NA: No sample collected for lithologic description.							Direct push refusal at 6' bgs
	7		NA						
	8								
	9	ml: Dry yellowish orange to light gray SILT, some Clay, trace subrounded fine Sand.			Organic Vapor = 0.0ppm			9 28 50/0.3'	Groundwater encountered at 9' bgs Rec 1.3'/1.3' (9-10.3' bgs)
945	10		ml						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW16

Project: Fort McClellan

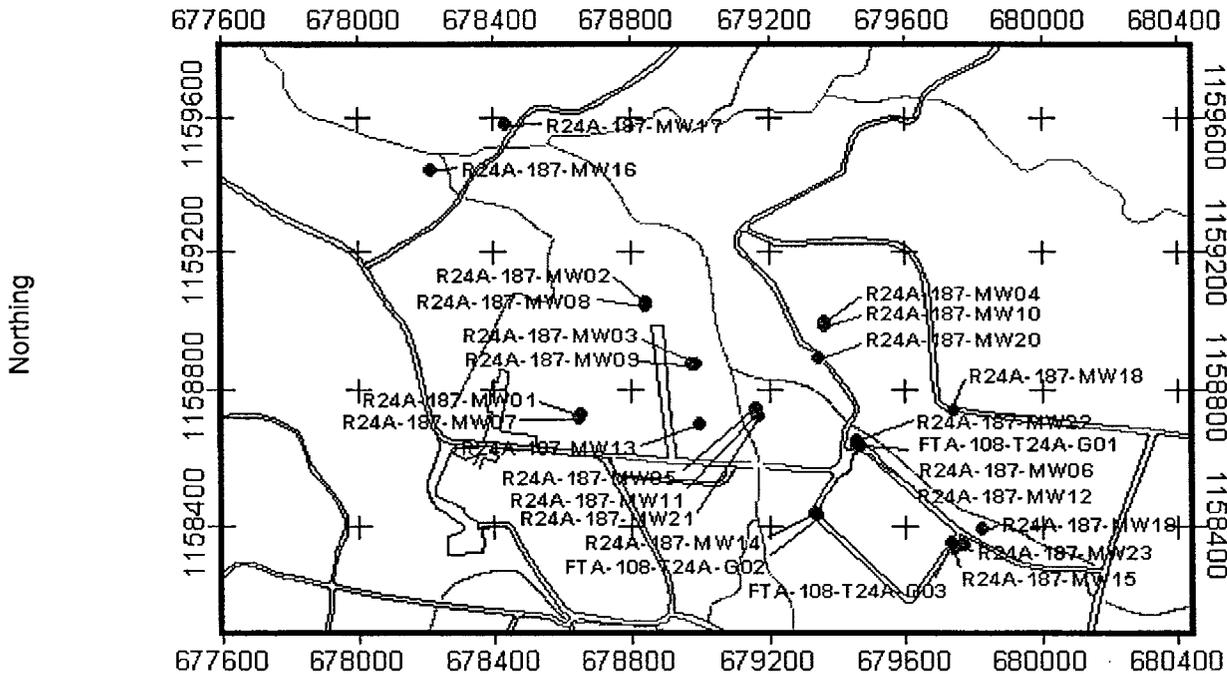
Geologist: Leslie O'Hare/Dennis Mayton

Sheet 4 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	21	cl-mi: Wet yellowish orange to medium gray SILT and CLAY, little subrounded medium Sand.	cl-mi						Description from HSA drill cuttings Bottom of borehole at 24' bgs
	22								
	23								
	24								

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW17	
1. Company name: IT Corporation		2. Drill Subcontractor: ESN/Miller Drilling Company		Sheet 1 of 5 sheets	
. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Sammy McDaniel, Ken Gobell		6. Mfr. designation of drill: Thunder Probe, CME-750			
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP - 24"x2" Acetate-Lined Sampler HSA - 5"x4.25" ID Augers, 24"x2" Steel Split Spoons		8. Hole location: Training Area T-24A, Parcel 187			
		9. Surface elevation (feet above mean sea level): 956.27			
12. Overburden thickness (feet bgs): >38		10. Date started: 10/05/00		11. Date completed: 10/25/00	
13. Depth drilled into rock (feet bgs): 0		15. Depth groundwater encountered (feet bgs): 22.75			
14. Total depth of hole (feet bgs): 38		16. Depth to water and elapsed time after drilling completed (feet bgs): 10' on 10/26/00			
17. Other water level measurements (specify): NA					
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
	NA				
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
	X	X	CWM Breakdown products	Nitroaromatics	SVOCs
21. Total core recovery:	NA				
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		X		Leslie O'Hare/Dennis Mayton	

LOCATION SKETCH/COMMENTS:



Easting

Project: Fort McClellan

bgs= below ground surface
 CD= Corrected Depth
 HP= Hydraulic Pressure

NA =Not applicable
 psi= pounds per square inch
 WP= Water Pressure

Hole no.: R24A-187-MW17

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW17

Project: Fort McClellan

Geologist: Leslie O'Hare/Dennis Mayton

Sheet 2 of 5 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Brown SILT, some medium Sand, little subrounded quartz-rich Gravel.	ml		Organic Vapor = 20.8ppm		JG0015		Rec 1.0'/1.0' (0-1' bgs)
955	1	ml: Brown SILT, some Sand, little subangular Gravel.	ml		Organic Vapor = 0.0ppm		JG0016		Rec 3.0'/3.0' (1-4' bgs)
	2								
	3								
	4	NA: No sample collected for lithologic description.	NA						Direct push refusal at 4' bgs
	5								
950	6								
	7								
	8								
	9	ml: Moist, yellowish orange to light gray SILT, some subrounded medium Sand, some Clay.	ml		Organic Vapor = 0.0ppm			23 50/0.4'	Rec 0.9'/0.9' (9-9.9' bgs)
	10	NA: No sample collected for lithologic							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW17

Project: Fort McClellan

Geologist: Leslie O'Hare/Dennis Mayton

Sheet 3 of 5 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
945	11								
	12		NA						
	13								
	14	ml: Moist yellowish orange to light gray SILT, some subrounded fine Sand, some Clay.	ml		Organic Vapor = 0.0ppm			21 50/0.5'	Rec 1.0'/1.0' (14-15'bgs)
	15	NA: No sample collected for lithologic description.							
940	16								
	17		ml						
	18								
	19	ml: Lightly moist yellowish orange to light gray SILT, little Clay, trace subrounded fine Sand.	ml		Organic Vapor = 0.0ppm			24 23 50/0.4'	Rec 1.4'/1.4' (19-20.4' bgs)
	20		ml						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW17

Project: Fort McClellan

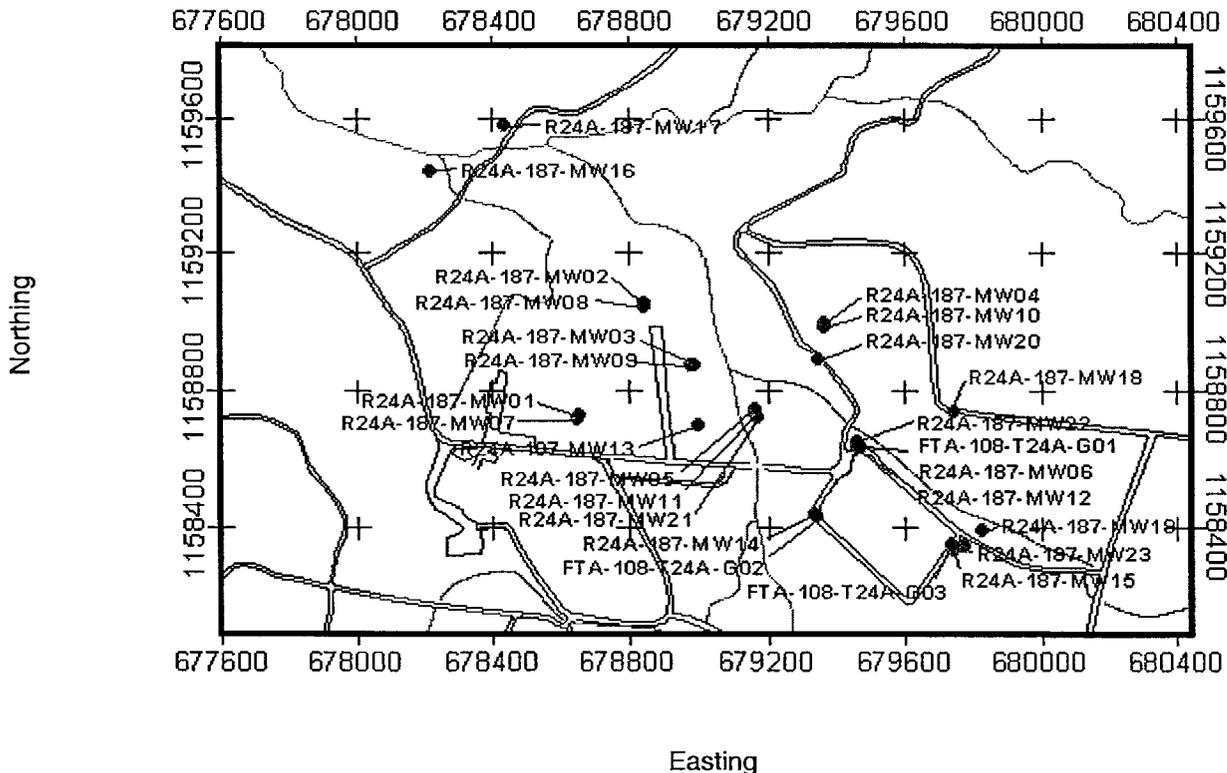
Geologist: Leslie O'Hare/Dennis Mayton

Sheet 5 of 5 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
925	31		NA						
	32								
	33								
	34	cl-ml: Moist light gray to yellowish orange CLAY and SILT.	cl-ml		Organic Vapor = 0.0ppm			23 50/0.5'	Rec 1.0'/1.0' (34-35' bgs)
	35	cl-ml: Wet yellowish orange CLAY and SILT.							Description from HSA drill cuttings
	36								
920	37		cl-ml						
	38								Bottom of borehole at 38' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW18	
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 12 sheets	
3. Project: Fort McClellan			4. Location: Calhoun County, Alabama		
5. Name of driller: Red McNeil, E. Hopper			6. Mfr. designation of drill: Schramm T450W, Mobile B-59		
7. Sizes and types of drilling and sampling equipment: Air Percussion, Air Rotary, PQ Rock Coring AR - 12 1/4" Rotary Bit, 7 7/8" Percussion Bit PQ - 5'x4" PQ3 wireline core barrel			8. Hole location: Training Area T-24A, Parcel 187		
			9. Surface elevation (feet above mean sea level): 1049.99		
12. Overburden thickness (feet bgs): 40.5			15. Depth groundwater encountered (feet bgs): 40		
13. Depth drilled into rock (feet bgs): 70.5			16. Depth to water and elapsed time after drilling completed (feet bgs): 35.5 on 01/15/01		
14. Total depth of hole (feet bgs): 111			17. Other water level measurements (specify): NA		
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 5	
	NA				
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
					21. Total core recovery: 38.7'
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:	
		X		D. Mayton/A. Barnes/D. Allan	

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan	bgs= below ground surface	NA =Not applicable	Hole no.: R24A-187-MW18
	CD= Corrected Depth	psi= pounds per square inch	
	HP= Hydraulic Pressure	WP= Water Pressure	

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 2 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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0	ml: Yellowish orange, dry, very stiff SILT. Trace of organics.	ml		Organic Vapor = 0.0ppm				Lithological description (0-40.5' bgs) from FTA-108-GP10
1								
2	sltst: Yellowish orange, dry, highly weathered SILTSTONE and SHALE.	sltst						
3								
4	sltst: Interbedded SILTSTONE and SHALE.	sltst						
1045 5								
6	sltst: SILTSTONE, dry brown.	sltst		Organic Vapor = 0.0ppm				Description from HSA cuttings
7								
8	sltst: Interbedded SILTSTONE and QUARTZITE, highly weathered.	sltst						
1040 10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 4 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	21								Auger refusal at 21' bgs. Description from air rotary cuttings.
	22								
	23								
	24	qrtzt: QUARTZITE, fractured, significant oxidation.	qrtzt		Organic Vapor = 0.0ppm				
1025	25								
	26	sltst: Interbedded SILTSTONE and SHALE, gray, fissile.	sltst		Organic Vapor = 0.0ppm				
	27								
	28								
	29								
1020	30								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 5 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	31		siltst	[Pattern]					
	32		siltst	[Pattern]					
	33		siltst	[Pattern]					
	34	qrtzt: QUARTZITE, highly weathered, fractured, red.	qrtzt	[Pattern]					
1015	35		qrtzt	[Pattern]					
	36	siltst: Interbedded SILTSTONE and SHALE, red to tan.	siltst	[Pattern]					
	37		siltst	[Pattern]	Organic Vapor = 0.0ppm				
	38		siltst	[Pattern]					
	39		siltst	[Pattern]					
1010	40		siltst	[Pattern]					Groundwater encountered at 40' bgs Set 8" steel casing at 40.5'.

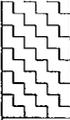
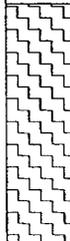
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 6 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	41	<p>qrtzt: QUARTZITE, very hard, moderately weathered, fine to medium grained, highly fractured throughout, quartz filled veins, yellowish orange to light brown and black discoloration along fractures, light brownish gray to light olive gray, no swelling evidence.</p> <p>NA: No recovery.</p>	qrtzt			Box 1 of 5 (40.5 to 56.4' bgs)			<p>Run 1 (40.5-45.2' bgs) Ran 4.7' Rec 0.7' Loss 3.8' UL 2.7' Water used 1375 gallosn, rec 670 gals HP 425 psi WP 0 psi Time 121 mins RQD 0%</p>
	42		NA		Organic Vapor = 0.0ppm				
	43		NA						
	44		NA						
1005	45		NA						
	46	<p>qrtzt: Interbedded SILTSTONE and QUARTZITE and MUDSTONE, siltstone interval at 45.8' to 46.1', moderately hard, very fine grained, quartzite interval 45.2' to 45.4', 46.1' to 47.2', 47.6' to bottom of core, hard to very hard, fine to medium grained mudstone interval 47.2' to 47.6', microcrystalline, moderately hard, transition between quartzite and siltstone at 45.4' to 45.8', moderately weathered and fractured throughout core, greenish gray.</p>	qrtzt			Organic Vapor = 0.0ppm			<p>Run 2 (45.2-49.3' bgs) Ran 4.1' Rec 2.9' Loss 1.2' UL 1.2' Water used 515 gallons, rec 250 gals HP 500 psi WP 0 psi Time 63 mins RQD 0 %</p>
	47		NA						
	48	NA: No recovery.	NA						
	49		NA						
1000	50	<p>qrtzt: Interbedded QUARTZITE and SILTSTONE, hard to very hard, moderately weathered, weathered surface reddish brown. SILTSTONE very fine grained, QUARTZITE fine to medium grained, predominantly fine grained, fractured throughout, orangish red to reddish brown and black discoloration along fracture surface (greenish gray).</p>	qrtzt					CD 49.2'	<p>Run 3 (49.3-53.3' bgs) Ran 4.0' Rec 2.6' Loss 1.4' UL 2.0' Water used 435 gallons, rec 250 gals HP 500 psi WP 0 psi Time 45 mins</p>

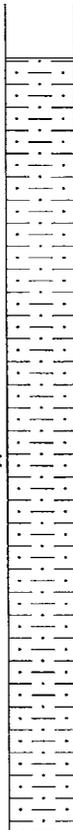
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 9 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	71.3	mdst: MUDSTONE, soft, highly weathered, microcrystalline, 3 fractures at 30 degree angles, one at 50 degrees, closed fractures throughout, reddish brown discoloration along fracture surfaces and closed fractures, closed fractures at 30 degree angle, some evidence of swelling, light greenish gray to greenish gray.			Organic Vapor = 0.0ppm			CD 71.3'	Run 7 (71.5-81.5' bgs) Ran 10.0' Rec 4.4' Loss 5.6' UL 5.7' Water used 325 gallons, rec 250 gals HP 350 psi WP 50 psi Time 84 mins RQD 19%
	76	NA: No recovery.		mdst					
	79			NA					

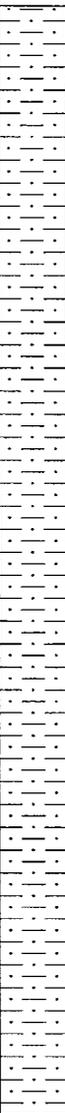
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 10 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	82	mdst: MUDSTONE, interbedded Shale, soft, highly weathered, microcrystalline, fractures throughout core, both open and closed fractures with approximately 30 degree to 50 degree angles, some quartz filled, reddish brown discoloration along fracture surfaces and within closed fractures, yellowish gray, evidence of swelling.						CD 81.4' Run 8 (81.5-91.5' bgs) Ran 10.0' Rec 6.3' Loss 3.7' UL 3.8' Water used 295 gallons, rec 225 gals HP 365 psi WP 35 psi Time 75 mins RQD 33%	
	83				Organic Vapor = 0.0ppm				
	84			mdst					
965	85					Box 4 of 5 (84.9 to 103.9' bgs)			
	86								
	87								
	88	NA: No recovery.							
	89								
960	90		NA						
	91								

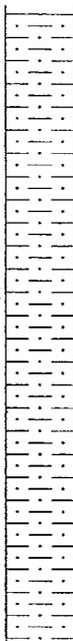
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW18

Project: Fort McClellan

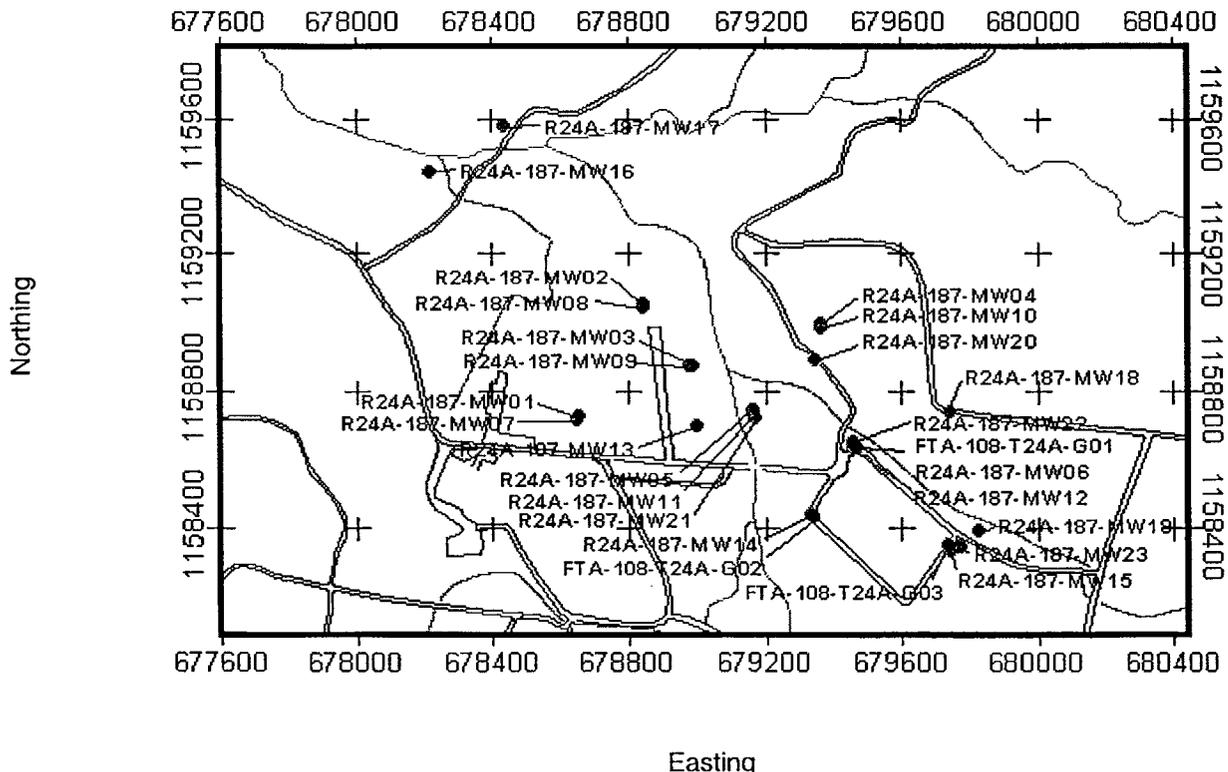
Geologist: D. Mayton/A. Barnes/D. Allan

Sheet 12 of 12 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	102	mdst: MUDSTONE with interbedded SHALE and CLAY, soft highly weathered to decomposed, clay was last 1' of core, microcrystalline, fractured throughout core, open and closed fractures with approximately 10 degree to 20 degree angles, some quartz filled, reddish brown discoloration along fracture surfaces and closed fractures, fresh surface, yellowish gray, some evidence of swelling.	mdst					CD 101.5'	Run 10 (101.5-110.5' bgs) Ran 9.0' Rec 4.6' Loss 4.4' UL 4.4' Water used 270 gallons, rec 250 gals HP 365 psi WP 35 psi Time 54 mins RQD 0 %
	103								
	104								
	105	cl: CLAY, yellowish gray.	cl						
	106	NA: No recovery.	NA						
	107								
	108								
	109								
945	110					Box 5 of 5 (103.9 to 110.5' bgs)			
	111								Bottom of corehole 110.5' bgs Bottom of borehole 111' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW19	
1. Company name: IT Corporation		2. Drill Subcontractor: ESN/Miller Drilling Company		Sheet 1 of 4 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Sammy McDaniel, Steven Gautney		6. Mfr. designation of drill: Thunder Probe, CME-75			
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP - 2'x2" Acetate-Lined Sampler HSA - 5'x4.25" ID Augers, 2'x2" Steel Split Spoons		8. Hole location: Training Area T-24A, Parcel 187		9. Surface elevation (feet above mean sea level): 1030.71	
12. Overburden thickness (feet bgs): >29.8		15. Depth groundwater encountered (feet bgs): 26.2		10. Date started: 10/04/00 11. Date completed: 10/24/00	
13. Depth drilled into rock (feet bgs): 0		16. Depth to water and elapsed time after drilling completed (feet bgs): 9.9 after 3 days			
14. Total depth of hole (feet bgs): 29.8		17. Other water level measurements (specify): NA			
18. Geotechnical samples:	Collected: NA	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA	
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
	X	X	CWM Breakdown Products	Nitroaromatics	SVOCs
21. Total core recovery:	NA				
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist: Leslie O'Hare/Dennis Mayton	
		X			

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan bgs= below ground surface NA =Not applicable
 CD= Corrected Depth psi= pounds per square inch Hole no.: R24A-187-MW19
 HP= Hydraulic Pressure WP= Water Pressure

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW19

Project: Fort McClellan

Geologist: Leslie O'Hare/Dennis Mayton

Sheet 2 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
0	0	ml: Dry yellowish orange to light brown SILT, some quartz-rich subangular coarse Gravel, trace roots, trace subrounded fine Sand.			Organic Vapor = 0.0ppm		JG0017		Rec 2.5'/4.0' (0-4' bgs)
1030	1						JG0018		
	2		ml						
	3								
	4	sh: Yellowish orange to light gray highly weathered SHALE.			Organic Vapor = 0.0ppm			17 14 13 9	Direct push refusal at 4' bgs Rec 1.8'/2.0' (4-6' bgs)
	5		sh						
1025	6	NA: No recovery. NA: No sample collected for lithologic description.	NA		Organic Vapor = 0.0ppm				
	7		NA						
	8	sh: Greenish gray to olive gray weathered laminated, slightly friable SHALE.			Organic Vapor = 0.0ppm			20 48 48 50/0.3'	Rec 1.8'/1.8' (8- 9.8' bgs)
	9		sh						
	10	NA: No sample collected for lithologic							

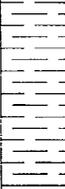
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW19

Project: Fort McClellan

Geologist: Leslie O'Hare/Dennis Mayton

Sheet 3 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
1020	11								
	12		NA						
	13								
	14	sh: Medium gray laminated friable fissile SHALE.			Organic Vapor = 0.0ppm			13 20 29 37	Rec 2.0'/2.0' (14-16' bgs)
	15		sh						
1015	16	NA: No sample collected for lithologic description.							
	17		NA						
	18								
	19	sh: Medium gray laminated friable fissile SHALE.			Organic Vapor = 0.0ppm			35 50/0.5'	Rec 1.0'/1.0' (19-20' bgs)
	20	NA: No sample collected for lithologic							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW19

Project: Fort McClellan

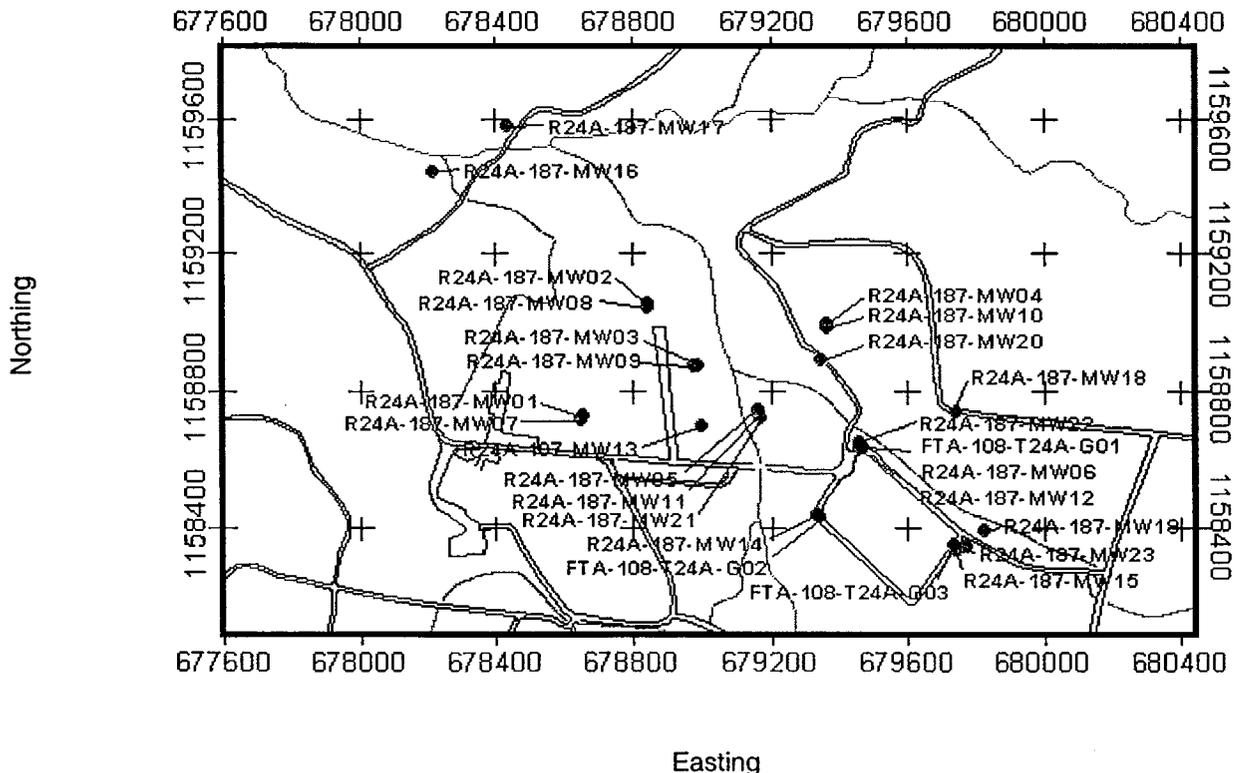
Geologist: Leslie O'Hare/Dennis Mayton

Sheet 4 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
1010	21	description.							
	22		NA						
	23								
	24	sh: Medium gray, laminated, fissile, friable SHALE.	sh		Organic Vapor = 0.0ppm			25 50/0.5'	Rec 0.8'/1.0' (24-25' bgs)
	25	NA: No recovery. NA: No sample collected for lithologic description.	NA						
1005	26								Groundwater encountered at 26.2' bgs
	27		NA						
	28								
	29	sh: Medium gray laminated friable fissile SHALE.	sh		Organic Vapor = 0.0ppm			19 50/0.3'	Rec 0.5'/0.8' (29-29.8' bgs) Bottom of borehole at 29.1 bgs
		NA: No recovery.	NA						

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW20	
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 16 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Al Davis/Glen Bilbrey/Todd Neel		6. Mfr. designation of drill: CME-550X/Schramm T40WS			
7. Sizes and types of drilling and sampling equipment: Hollow Stem Auger, Air Rotary, PQ Barrel Coring HSA - 5'x4.25" ID Augers, 2'x2" Steel Split Spoons; PQ - 5'x 4" PQ3 wireline core barrel; AR - 7 7/8" tricone roller bit		8. Hole location: Training Area T24A, Parcel 187			
		9. Surface elevation (feet above mean sea level): 1002.75			
		10. Date started: 07/23/01		11. Date completed: 08/10/01	
12. Overburden thickness (feet bgs): 20		15. Depth groundwater encountered (feet bgs): 20			
13. Depth drilled into rock (feet bgs): 131.7		16. Depth to water and elapsed time after drilling completed (feet bgs): 48.4 on 08/14/01			
14. Total depth of hole (feet bgs): 151.7		17. Other water level measurements (specify): NA			
18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 13	
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)
					21. Total core recovery: 116.9'
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist: D.Allan/J.Remo/N.Badon	
		4" Permanent			

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan	bgs= below ground surface	NA =Not applicable	Hole no.: R24A-187-MW20
	CD= Corrected Depth	psi= pounds per square inch	
	HP= Hydraulic Pressure	WP= Water Pressure	

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 2 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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0	0	NA: No sample collected for lithologic description.							
1	1								
2	2		NA						
1000	3								
4	4	cl: Yellowish orange, stiff to very stiff CLAY; trace Silt; trace quartz-rich Gravel; dry.			Organic Vapor = 0.0ppm			4 11 15 17	Rec 2.0'/2.0' (4-6' bgs)
5	5		cl						
6	6	NA: No sample collected for lithologic description.							
7	7								
995	8		NA						
9	9								
10	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 3 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11	cl: Yellowish orange, stiff CLAY; trace Silt; some Gravel composed of weathered Shale.	cl		Organic Vapor = 0.0ppm			5 21 50/0.2'	Rec 1.2'/1.2' (10-11.2' bgs)
	12	NA: No sample collected for lithologic description.	NA						
990	13								
	14	sh: Weathered SHALE; light gray, Silt, sand and gravel sized fragments; dry.	sh		Organic Vapor = 0.0ppm			7 9 50/0.3'	Rec 0.8'/1.3' (14-15.3' bgs)
	15	NA: No recovery.	NA						
	16	NA: No sample collected for lithologic description.	NA						
	17		NA						
985	18								
	19	sh: Weathered SHALE; light gray, Silt sand and gravel-sized fragments; dry.	sh		Organic Vapor = 0.0ppm			11 33	Rec 1.0'/1.0' (19-20' bgs)
	20	ss: SANDSTONE; moderately hard; slightly							Auger refusal at 20' bgs Groundwater encountered at 20' bgs Run 1 (20.0-23.0' bgs)

Box 1

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 4 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	21	weathered; fine to medium grained; closed fractures at 20.1-20.4 (infilled with quartz at ~45 degree angle), 21.6-21.9 (infilled with quartz at ~45 degree angle), 22.3 (infilled with quartz at ~45 degree angle), 22.7 (infilled with quartz at ~45 degree angle) also quartz infilled vertical fractures throughout; massive bedding; pale yellowish brown; no swelling, slaking or solution.	ss		Organic Vapor = 0.0ppm	of 13 (20 to 28.4' bgs)			Ran 3.0' Rec 3.0' Loss 0.0' UL 0.0' Water used 75 gallons, rec 100%, grayish orange HP 400 psi WP 40-60 psi Time 11 min RQD 80%
980	23	ss/sh: Interbedded SANDSTONE and SHALE; hard; slightly weathered; fine to medium grained; fractures at 24.0 to 25.0 (~45 degrees and vertical, sand to gravel sized particles); quartz infilled fractures throughout; light olive gray; no solution, swelling or slaking.	ss_sh		Organic Vapor = 0.0ppm			CD 23.0'	Run 2 (23.0-28.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 175 gallons, rec 100%, grayish orange HP 480 psi WP 90 psi Time 6 min RQD 48%
	26	sh: SHALE; soft; highly weathered; fractures from 20.5-28.0 (at ~ horizontal and 45 degrees, sand to gravel sized particles); medium dark gray; no solution, swelling, or slaking.	sh						
975	28	ss: SANDSTONE; moderately hard; slightly weathered; fractures at 28.4 (~45 degrees), 29.2-29.6 (~45 degrees), 31.5-31.7 (~45 degrees, iron staining on sides of fractures); pale olive, no solution, swelling or slaking.	ss		Organic Vapor = 0.0ppm	Box 2 of 13 (28.4 to 39.8' bgs)		CD 28.0'	Run 3 (28.0-33.0' bgs) Ran 5.0' Rec 4.1' Loss 0.9' UL 0.4' Water used 150 gallons, rec 100%, yellowish gray HP 480 psi WP 80 psi Time 7 min RQD 38%
	29								
	30		ss						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 5 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	31								
	32	NA: No recovery.	NA						
970	33	ss/sh: Interbedded SHALE and SANDSTONE; soft to moderately hard; moderately weathered; SANDSTONE is fine grained; fractures at 32.5-33.2 (45 degree angle) 33.5-33.8 (~ horizontal, gravel and sand-sized fragments), 34.5 (~ horizontal) 35.1- 35.6 (sand to gravel-sized fragments, at ~45 degrees); medium bedding at ~45 degrees; pale olive and medium dark gray, no solution, slaking or swelling.	ss_sh		Organic Vapor = 0.0ppm			CD 32.5'	Run 4 (33.0-38.0' bgs) Ran 5.0' Rec 4.0' Loss 1.0' UL 0.5' Water used 150 gallons, rec 100%, light olive gray HP 450 psi WP 85 psi Time 7 min RQD 51%
	34								
	35								
	36								
	37	NA: No recovery.	NA						
965	38	sh: SHALE; soft; moderately weathered; fractures at 37.4 (~ horizontal) 37.9 (~ horizontal) 38.7-38.9 (~ horizontal, iron stained) 39.8 (~80 degrees) 40.3-42.0 (~45 degrees and horizontal, sand and gravel sized fragments), thinly bedded; some thinly bedded Sands throughout; dark gray, no swelling, slaking or solution.	sh		Organic Vapor = 0.0ppm			CD 37.0'	Run 5 (38.0-43.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.9' Water used 75 gallons, rec 100%, light gray HP 480 psi WP 90 psi Time 8 min RQD 53%
	39								
	40					Box 3 of 13 (39.8 to 49.0' bgs)			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 6 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	41								
	42	NA: No recovery.	NA						
960	43	sh: SHALE; soft; moderately weathered; fractures at 43.0 to 45.5 (~20 degrees and horizontal, sand to gravel sized fragments, iron staining), 46.9-47.4 (~45 degrees and horizontal, iron staining); thinly bedded, some Silt beds throughout; dark gray; no swelling, slaking or solution.			Organic Vapor = 0.0ppm			CD 42.9'	Run 6 (43.0-48.0' bgs) Ran 5.0' Rec 5.0' Loss 0' UL 0.1' Water used 125 gallons, rec 100%, light gray HP 480 psi WP 90 psi Time 11 min RQD 24%
	44								
	45		sh						
	46								
	47								
955	48	NA: No recovery.	NA		Organic Vapor = 0.0ppm			CD 48.0'	Run 7 (48.0-53.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.4' Water used 180 gallons, rec 100%, light gray HP 470 psi WP 90 psi Time 8 min RQD 48%
	49	sh: SHALE; soft; moderately weathered; fractures at 48.3 (~45 degrees), 48.6-48.9 (~45 degrees, sand to gravel sized fragments); 49.7-49.8 (~45 degrees), 50.8 (gravel sized fragments) 51.8-52.4 (~45 degrees and horizontal), thinly bedded, some Silt beds, dark gray; no swelling, slaking or solution.							
	50		sh			Box 4 of 13 (49.0 to 59.6' bgs)			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 7 of 16 sheets

clev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	51		sh						
	52		sh						
950	53	NA: No recovery.	NA						Run 8 (53.0-58.0' bgs) Ran 5.0' Rec 3.8' Loss 1.2' UL 1.3'
	54	sh: SHALE; soft; highly weathered; fractures at 53.6 (~ horizontal), 53.8-54.2 (~ horizontal and 45 degrees, sand to gravel sized fragments) 56.1-57.0 (very highly weathered, clay to gravel sized fragments); thinly bedded, some Silt beds, contorted beds at 55.7-57.0, dark gray, no swelling, slaking or solution.	sh		Organic Vapor = 0.0ppm			CD 53.4'	Water used 180 gallons, rec 100%, light gray HP 470 psi WP 80-90 psi Time 13 min RQD 12%
	55		sh						
	56		sh						
	57		sh						
945	58	NA: No recovery.	NA						Run 9 (58.0-63.0' bgs) Ran 5.0' Rec 4.2' Loss 0.8' UL 0.2'
	59	sh: SHALE; soft; highly weathered; fractured (moderately to highly throughout core), infilled with clay to sand sized fragments, fractures at ~45 degrees, horizontal and ~ vertical; thinly bedded, contorted 60-60.5, some Silt beds throughout, dark gray, no swelling, slaking or solution.	sh		Organic Vapor = 0.0ppm			CD 58.5'	Water used 370 gallons, rec 100%, light gray HP 480-520 psi WP 120 psi Time 20 min RQD 14%
	60		sh			Box 5 of 13 (59.6 to 69.6' bgs)			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 9 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
930	72	sltst: SILTSTONE; soft; highly fractured throughout, clay to gravel sized fragments in ~45 degree fracture zones, 71.6-72.5' large vertical fracture infilled with Mudstone; moderate yellowish brown; no swelling, slaking or solution.	slt	[Graphic: Horizontal lines with dots]					
930	73				Organic Vapor = 0.0ppm			CD 73.3'	Run 12 (73.0-78.0' bgs) Ran 5.0' Rec 3.9' Loss 1.1' UL 1.3' Water used 280 gallons, rec 100%, yellowish brown HP 480 psi WP 110 psi Time 10 min RQD 21%
930	74	sltst: SILTSTONE; soft; highly weathered; fractures at 74.0-75.0 (horizontal, possible fault breccia), 75.3-75.7 (~45 degrees, clay to gravel sized fragments); bedding (at ~45 degrees, banded); yellowish gray to light olive gray, also some iron staining; pale yellowish orange, no swelling, slaking or solution.	slt	[Graphic: Horizontal lines with dots]					
930	75								
930	76								
930	77								
925	78	NA: No recovery.	NA						
925	79	sltst: SILTSTONE; soft; slightly weathered, fractures at 79.2-79.3 (~45 degrees, gravel sized fragments), 79.8 (~ horizontal, sand to gravel sized fragments), 80.5-80.7 (~45 degrees, sand to gravel sized fragments), 81.3-81.5 (~45 degrees), bedding at ~45 degrees, banded, slightly contorted. Some beds more shaley; iron staining especially on fracture faces and bedding planes. Greenish gray; no swelling, slaking or solution.	slt	[Graphic: Horizontal lines with dots]	Organic Vapor = 0.0ppm			CD 78.5'	Run 13 (78.0-83.0' bgs) Ran 5.0' Rec 4.2' Loss 0.8' UL 0.8' Water used 75 gallons, rec 100%, pale gray HP 490 psi WP 70 psi Time 10 min RQD 48%
925	80								
925	81					Box 7 of 13 (80.6 to			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 10 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
						94.7' bgs)			
	82								
920	83	NA: No recovery.	NA						Run 14 (83.0-88.0' bgs) Ran 5.0' Rec 3.6' Loss 1.4' UL 1.0'
	84	sltst: SILTSTONE; soft, slightly weathered; fractures at 83.5-84.2 (~30 degrees, sand to gravel sized fragments), 84.5 (~15 degrees, Clay along fracture and iron staining), 86.2 (~horizontal, sand to gravel sized fragments) 86.6-87.1 (highly fractured, clay to gravel sized); bedding at ~45 degrees, banded, contorted throughout, greenish gray; no swelling, slaking or solution.	slt		Organic Vapor = 0.0ppm			CD 83.5'	Water used 200 gallons, rec 100%, pale gray HP 500 psi WP 60 psi Time 18 min RQD 52%
	85								
	86								
	87								
915	88	NA: No recovery.	NA						Run 15 (88.0-93.0' bgs) Ran 5.0' Rec 2.1' Loss 2.9' UL 2.6'
	89	sltst: SILTSTONE; soft; slightly weathered; highly fractured into gravel sized fragments, iron staining, greenish gray; no swelling, slaking or solution.	slt		Organic Vapor = 0.0ppm			CD 88.1'	Water used 275 gallons, rec 100%, pale gray HP 500 psi WP 60 psi Time 7 min RQD 85%
	90								
	91	NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 11 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
			NA						
910	93	sltst: SILTSTONE; moderately hard; moderately weathered; fracture zones at 93.0-93.4 (~45 degrees, weathered, Clay fragments), 94.1 (~ horizontal), 95.3-95.5 (~45 degrees clay to gravel sized fragments), closed at 45 degrees fractures throughout infilled with quartz, bedding ~45 degrees, some more shaley beds, thinly bedded, some disturbed beds (bioturbation), greenish gray, no swelling, slaking or solution.			Organic Vapor = 0.0ppm	Box 8 of 13 (94.7 to 104.9' bgs)		CD 92.8'	Run 16 (93.0-98.0' bgs) Ran 5.0' Rec 5.2' Gain 0.2' UL 0.8' Water used 100 gallons, rec 100%, pale gray & yellowish orange brown HP 490 psi WP 90 psi Time 11 min RQD 60%
	94								
	95		slt						
	96								
	97								
905	98	NA: No recovery.	NA						Run 17 (98.0-103.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 175 gallons, rec 100%, pale gray HP 500 psi WP 100 psi Time 9 min RQD 92%
	99	sltst: SILTSTONE; soft; moderately weathered; fracture zones at 99.2 (~45 degrees, clay to gravel sized fragments), 100.7 (~ horizontal and ~45 degrees, gravel in fracture, iron stained), 101.3 (~ horizontal) 101.8 (~45 degrees, Sand, Gravel, and Clay) 102.3-102.5 (~45 degrees, more weathered in fractures) 103.3-103.8 (~45 degrees, highly fractured, clay to gravel sized fragments) thinly bedded at ~45 degrees, contorted; greenish gray, no swelling, slaking or solution.			Organic Vapor = 0.0ppm			CD 98.8'	
	100								
	101		slt						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 12 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	102								
	900								
	103				Organic Vapor = 0.0ppm				Run 18 (103.0-108.0' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.1' Water used 135 gallons, rec 100%, pale gray HP 500 psi WP 60 psi Time 6 min RQD 8%
	104	sltst: SILTSTONE; moderately hard; slightly to moderately weathered; fractures at 103.8-104.2 (~45 degrees, clay to fine sand sized fragments), 104.6-108.5 (highly fractured, ~horizontal and 60 degrees, weathering along fractures, iron staining, white clay in many fractures, clay to gravel sized fragments), thinly bedded at ~30 degrees, color greenish gray, no swelling, slaking or solution.						CD 103.8'	
	105					Box 9 of 13 (104.9 to 113.8' bgs)			
	106		slt						
	107								
	895								
	108				Organic Vapor = 0.0ppm				Run 19 (108.0-113.0' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.2' Water used 100 gallons, rec 100%, yellowish orange brown HP 480 psi WP 80 psi Time 9 min RQD 36%
	109	sltst: SILTSTONE; dark yellowish orange. NA: No recovery.	slt NA					CD 108.8'	
	110	ss: SANDSTONE; moderately hard; moderately weathered; fractures at 108.8-109.0 (at ~45 degrees and 30 degrees), 110.0-110.3 (at ~45 degrees, clay to gravel sized fragments), 111.3 (at ~55 degrees) 112.5 (~ horizontal) closed fractures throughout infilled with quartz; fine grained, round to subangular; massive bedding; iron staining throughout; medium light gray to dark yellowish orange.							
	111		ss						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 13 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
112			ss	[Dotted pattern]					
890	113				Organic Vapor = 0.0ppm				Run 20 (113.0-118.0') Ran 5.0' Rec 4.3' Loss 0.7' UL 0.6'
		NA: No recovery.	NA	[White box]		Box 10 of 13 (113.8 to 123.4' bgs)		CD 113.8'	Water used 100 gallons, rec 100%, yellowish orange brown HP 480 psi WP 80 psi Time 6 min RQD 12%
	114	ss: SANDSTONE; moderately hard; moderately to highly weathered; fine grained, rounded to subangular; fractures at 113.8-114.0 (severely fractured, clay to gravel sized) 115.6- 118.1 (highly fractured, ~45 degrees and 60 degrees, clay to gravel sized fragments) massive bedding, iron staining throughout; medium light gray to dark yellowish orange.	ss	[Dotted pattern]					
	115								
	116		ss	[Dotted pattern]					
	117								
885	118		NA	[White box]					Run 21 (118.0-123.0') Ran 5.0' Rec 4.5' Loss 0.5' UL 0.2'
		NA: No recovery.	NA	[White box]					Water used 230 gallons, rec 77%, yellowish orange brown HP 480 psi WP 80 psi Time 7 min RQD 23%
	119	siltst: Interbedded SILTSTONE and SANDSTONE; moderately hard; moderately weathered; fine grained; fracture zones at 119.3 (~ horizontal), 120.6-121.2 (~45 degrees, iron stained) 121.6 (~45 degrees), 121.8-123.2 (severely fractured, clay to gravel sized fragments) thinly bedded ~45 degrees, medium light gray to dark yellowish orange.	siltst	[Horizontal lines with dots]	Organic Vapor = 0.0ppm			CD 118.7'	
	120								
	121		siltst	[Horizontal lines with dots]					

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 14 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
122									
880			sltst						
123		NA: No recovery.	NA						Run 22 (123.0-128.0' bgs) Ran 5.0' Rec 4.2'
124		ss: SANDSTONE; soft; moderate to highly weathered; fine grained, fracture zones at 123.4-123.7 (highly fractured, clay to gravel sized fragments), 125.4-126.4 (~30 degrees, clay to gravel sized fragments, highly weathered), 126.8- 127.3 (highly fractured, ~20 degrees, clay to gravel sized fragments), bedding, 123.4-126.7 (medium) 126.7-127.6 (banded ~45 degrees); medium light gray to dark yellowish orange.			Organic Vapor = 0.0ppm	Box 11 of 13 (123.4 to 133.4' bgs)		CD 123.4'	Loss 0.8' UL 0.9' Water used 300 gallons, rec 84%, grayish yellow HP 500 psi WP 60 psi Time 6 min RQD 35%
125			ss						
126									
127									
875		NA: No recovery.	NA						Run 23 (128.0-133.0' bgs) Ran 5.0' Rec 5.1'
128		ss: SANDSTONE; moderately hard; moderately to highly weathered; fine grained; fracture zones at 128.5-129.3 (~ horizontal and 60 degrees, highly fractured), 129.5 (~45 degrees), 130.3 (~ horizontal), 130.6 (~45 degrees), 130.8-131.8 (highly fractured, sand and gravel sized fragments, ~15 degrees and 80 degrees), 132.3-132.6 (~45 degrees); thinly to banded bedding at ~45 degrees, iron and manganese staining, medium light gray to dark yellowish orange.			Organic Vapor = 0.0ppm			CD 128.5'	Gain 0.1' UL 0.0' Water used 310 gallons, rec 100%, dark yellowish orange HP 490 psi WP 60 psi Time 13 min RQD 24%
129									
130									
131			ss						

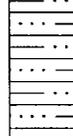
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW20

Project: Fort McClellan

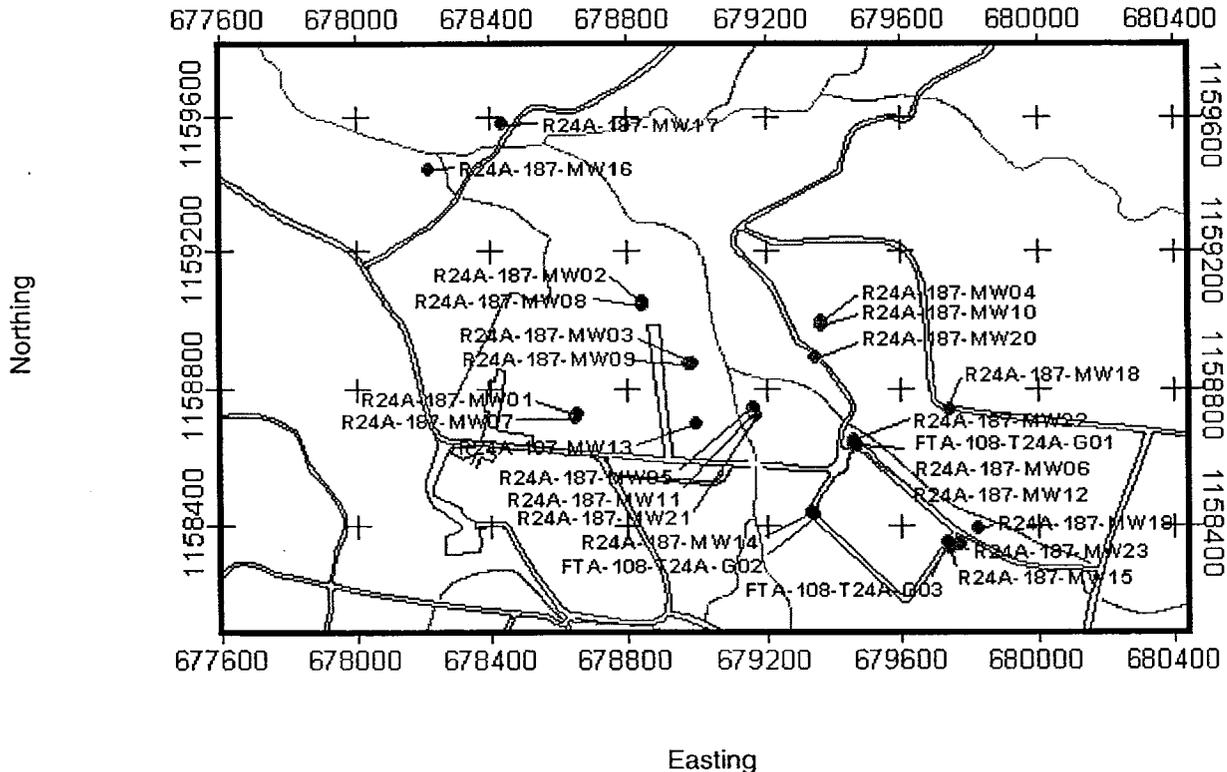
Geologist: D.Allan/J.Remo/N.Badon

Sheet 16 of 16 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
860	143								
	143.5				Organic Vapor = 0.0ppm	Box 13 of 13 (143.4 to 150.0' bgs)		CD 143.4'	Run 26 (143.0-148.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.1' Water used 175 gallons, rec 100%, light gray to yellowish brown HP 500 psi WP 60 psi Time 7 mins RQD 67%
	144	ss: SANDSTONE; moderately hard; moderately weathered; fine grained; fractures at 143.5 (at 45 degrees), 143.9 (~45 degrees, Clay in fracture), 144.4 (~30 degrees, Clay in fracture) 144.7-144.9 (~30 degrees, clay to gravel sized fragments), 145.3-145.5 (~45 degrees, clay to sand sized fragments), 145.7-146.8 (~80 degrees, manganese staining, clay to sand sized fragments), 147.6-147.9 (~45 degrees, sand and clay in fracture), bedding, 143.4-144.9 (banded), 144.9-148.4 (massive) medium light gray to dark yellowish orange.	ss						
	145								
	146								
	147								
855	148	NA: No recovery.	NA		Organic Vapor = 0.0ppm			CD 148.5'	Run 27 (148.0-150.0' bgs) Ran 2.0' Rec 1.5' Loss 0.5' UL 0.0' Water used 160 gallons, rec 100%, light gray HP 500 psi WP 60 psi Time 3 mins RQD 33%
	149	siltst: Interbedded SILTSTONE and SANDSTONE; soft to moderately hard; moderately weathered, fractures at 148.5-149.3 (~60 degrees, Clay, possible slickensides), 149.8 (~30 degrees) bedding ~45 degrees, banded; medium light gray to dark yellowish orange.	siltst					CD 150.0'	
	150	NA: No sample collected for lithologic description.	NA						
	151								Bottom of borehole at 151.7' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW21	
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 15 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: Rick Bilbrey/AI Davis/Glen Bilbrey		6. Mfr. designation of drill: CME-550X/Schramm T450WS			
7. Sizes and types of drilling and sampling equipment: Air Rotary, PQ Barrel Coring AR - 7 7/8" Tricone roller bit PQ - 5'x4" PQ3 wireline core barrel		8. Hole location: Training Area T24A, Parcel 187			
		9. Surface elevation (feet above mean sea level): 983.06			
		10. Date started: 07/24/01		11. Date completed: 08/10/01	
12. Overburden thickness (feet bgs): 7		15. Depth groundwater encountered (feet bgs): 30			
13. Depth drilled into rock (feet bgs): 126		16. Depth to water and elapsed time after drilling completed (feet bgs): NA			
14. Total depth of hole (feet bgs): 133		17. Other water level measurements (specify): NA			
18. Geotechnical samples:		Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 6
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	Other (specify) Other (specify) 21. Total core recovery: 54.7'
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist: D. Allan/J. Remo/N. Badon
			4" Permanent		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan
 bgs= below ground surface
 CD= Corrected Depth
 HP= Hydraulic Pressure
 NA =Not applicable
 psi= pounds per square inch
 WP= Water Pressure
 Hole no.: R24A-187-MW21

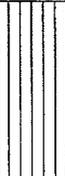
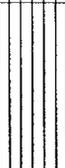
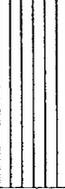
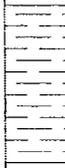
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 2 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Brown SILT, little Sand, some coarse to fine quartz-rich Gravel, trace roots.	ml						Lithologic description from 0'-68.5' bgs from R24A-187-MW11
	1	ml: Brown SILT, little Sand, little quartz-rich coarse angular gravel.	ml						
	2		ml						Air rotary drilled from 0'-68.5' and installed 6" carbon steel temporary outer casing.
980	3	NA: No sample collected for lithologic description.							
	4	sh: Dry olive gray to yellowish orange SHALE.	sh						
	5	NA: No sample collected for lithologic description.							
	6		NA						
	7		NA						
975	8		NA						
	9	sh: Dry dark gray SHALE.	sh						
	10	NA: No sample collected for lithologic description.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 3 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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		description.							
	11								
	12								
970	13		NA						
	14	sh: Lightly moist dark gray SHALE.	sh						
	15	NA: No sample collected for lithologic description.							
	16								
	17		NA						
965	18								
	19	sh: Dry dark gray SHALE.	sh						
	20	NA: No sample collected for lithologic							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 4 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
	21								
	22								
960	23								
	24								
	25		NA						
	26								
	27								
955	28								
	29								
	30								Groundwater encountered at 30' bgs

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 5 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
31									
32									
950	33								
34									
35			NA						
36									
37									
945	38								
39		sh: Moist cuttings, dark gray SHALE.	sh						
40		NA: No sample collected for lithologic description.	NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 9 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
					Organic Vapor = 0.0ppm				
	72	NA: No recovery.	NA						
910	73		NA						
	74	ss/sh: Interbedded SHALE and SANDSTONE; soft; highly weathered; highly fractured throughout; fractures dip at 0 degrees and 45 degrees, noted microfaults throughout. Bedding parted in SHALE and banded in SANDSTONE; dip of bedding is ~ 45 degrees, medium dark gray.	ss/sh		Organic Vapor = 0.0ppm			CD 73.5'	Run 2 (73.3-78.3' bgs) Ran 5.0' Rec 4.0' Loss 1.0' UL 0.6' Water used 225 gallons, rec 74 100%, grayish blue Time 25 min
	75		ss/sh		Organic Vapor = 0.0ppm				
	76								
	77								
	78	NA: No recovery.	NA						
905	79	qrtzt: QUARTZITE, very hard, slightly weathered, coarse grained to crystalline. Highly fractured with fractures dipping at 20 degrees and 90 degrees, pale yellowish brown to yellowish brown.	qrtzt		Organic Vapor = 0.0ppm			CD 78.1'	Run 3 (78.3-83.3' bgs) Ran 5.0' Rec 4.1' Loss 0.9' UL 0.9' Water used 1425 gallons, rec 95%, medium gray HP 510 psi WP 120 psi Time 97 min RQD 0%
	80	NA: No recovery.	NA						
	81	qrtzt: QUARTZITE, very hard, slightly weathered, crystalline, highly fractured				Box 2 of 6 (80.5 to 91.2')			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 10 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		throughout; dip of fractures ~ 45 degrees, pale to dark yellowish brown.							
	82		qrtzt						
	83	NA: No recovery.	NA						
906	83	ss: SANDSTONE and QUARTZITE, soft to very hard; highly weathered SANDSTONE fine to coarse grained, intensely fractured throughout with dips of fractured at 45 degrees. Thinly bedded with a dip of 45 degrees, pale yellowish brown to dark yellowish brown. Noted manganese infilling of fractures.	ss		Organic Vapor = 0.0ppm			CD 83.1'	Run 4 (83.3-87.6' bgs) Ran 4.3' Rec 3.0' Loss 1.3' UL 1.2' Water used 600 gallons, rec 100%, gray to yellowish orange Time 45 min RQD 24%
	84								
	85	ss: SANDSTONE, hard, slightly weathered, fine grained, moderately fractured, with a dip of 30 degrees, moderate yellowish brown to dusky red; noted manganese infilling of fractures.							
	86								
	87	NA: No recovery.	NA						
	88	qrtzt: QUARTZITE, very hard, slightly weathered, intensely fractured with fractures dipping at 30 degrees and 90 degrees; noted manganese infilling of fractures; light brownish gray.	qrtzt		Organic Vapor = 0.0ppm			CD 87.3'	Run 5 (87.6-92.6' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.0' Water used 1270 gallons, rec 100%, dark yellowish orange HP 500 psi WP 80 psi Time 79 min RQD 25%
895	88								
	89								
	90								
	91	cl: CLAY, medium light gray (possible fault gouge).	cl						
	91	ss: SANDSTONE, very hard, slightly weathered, intensely fractured with fractures dipping at 30 degrees, 45 degrees and 90							

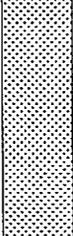
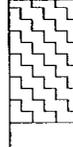
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 12 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	102								
880	103	ss: SANDSTONE, moderately hard, fine to medium grained, highly fractured with dips of fractures at 0 degrees and 45 degrees. Noted manganese staining in some fractures while others filled with sand to gravel size particles. Bedding banded to parted. Iron staining throughout, grayish orange.	ss		Organic Vapor = 0.0ppm			CD 102.8'	Run 10 (102.8-107.8' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.2' Water used 250 gallons, rec 100%, yellowish orange HP 600 psi WP 30 psi Time 12 min RQD 6%
	104								
	105								
	106								
	107	sltst: SILTSTONE, soft, moderately weathered, highly fractured. Dip of fractures are 45 degrees and 0 degrees. Clay to gravel sized fragments in some fractures, light olive gray. Noted some iron staining.	sltst						
	107	qrtzt: QUARTZITE, very hard, slightly weathered, moderately fractured with dips of 0 degrees and 45 degrees. Note some manganese infilling on some fractures, light brownish gray.	qrtzt						
875	108	NA: No recovery. qrtzt: QUARTZITE, very hard, slightly weathered, moderately fractured with dips of 0 degrees and 45 degrees. Note some manganese infilling on some fractures, light brownish gray.	NA qrtzt		Organic Vapor = 0.0ppm			CD 107.8'	Run 11 (107.8-112.8' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 250 gallons, rec 100%, grayish orange HP 400 psi WP 80 psi Time 9 min RQD 22%
	109	ss: SANDSTONE, moderately hard, fine-grained 109 to 109.6 fractured with clay to gravel size fragments in fractures. Thick bedded with a dip of 45 degrees 109.6 to 112.6 highly fractured.							
	110					Box 5 of 6 (109.6 to 119.4' bgs)			
	111		ss		Organic Vapor = 0.0ppm				

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 13 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
112									
870	113	slst: Interbedded SILTSTONE and SANDSTONE, soft, moderately weathered, fine grained SANDSTONE, highly fractured with a dip of 0 degrees; bedding banded with a dip of 45 degrees; grayish orange.	slst		Organic Vapor = 0.0ppm			CD 112.8'	Run 12 (112.8-117.8' bgs) Ran 5.0' Rec 3.4' Loss 1.6' UL 1.4' Water used 500 gallons, rec 100%, grayish orange HP 400 psi WP 40 psi Time 22 min RQD 0%
	114	qrtzt: QUARTZITE, slightly weathered, very hard, intensely fractured with fractures dipping at 0 degrees and 45 degrees; noted iron staining and manganese staining throughout fractures; light brownish gray.	qrtzt		Organic Vapor = 0.0ppm				
	115								
	116	NA: No recovery.	NA						
	117								
865	118	ss: SANDSTONE, soft, moderately weathered, fine grained, 117.6- 118.6 intensely fractured with fractures dipping at ~ 0 degrees; fractures filled in with clay to gravel size fragments. 119.4 fracture with a dip of 0 degrees; 120.0 fracture with a dip of 0 degrees; 120.8 fracture with a dip of 0 degrees with sand to gravel size fragments; also noted some fractures with iron staining and manganese infilling; yellowish gray.	ss		Organic Vapor = 0.0ppm			CD 117.6'	Run 13 (117.8-122.8' bgs) Ran 5.0' Rec 4.3' Loss 0.7' UL 1.0' Water used 300 gallons, rec 100%, pale yellowish gray HP 450 psi WP 80 psi Time 12 min RQD 60%
	119								
	120					Box 6 of 6 (119.4 to 130.0' bgs)			
	121				Organic Vapor = 0.0ppm				

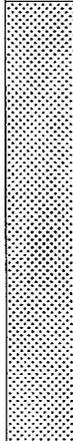
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

Sheet 14 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	122	NA: No recovery.	NA						
860	123	ss: SANDSTONE, moderately hard, moderately weathered, fine grained. Highly fractured with fractures dipping at 30 degrees and 75 degrees; noted clay to gravel size fragments in some fractures; most fractures have iron staining, yellowish orange.	ss		Organic Vapor = 0.0ppm			CD 122.9'	Run 14 (122.8-127.8' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.0' Water used 125 gallons, rec 100%, pale yellowish gray HP 420 psi WP 80 psi Time 5 min RQD 27%
	124								
	125		ss		Organic Vapor = 0.0ppm				
	126								
	127								
855	128	ss: SANDSTONE, moderately hard, moderately weathered, fine grained, highly fractured with fractures dipping at 0 degrees, 45 degrees and 80 degrees. Bedding banded with a dip of 80 degrees noted some microfaulting; clay to gravel size pieces in some fractures; iron staining and manganese infilling of some fractures; grayish orange pink.	ss		Organic Vapor = 0.0ppm			CD 127.8'	Run 15 (127.8-130.0' bgs) Ran 2.2' Rec 2.2' Loss 0.0' UL 0.0' Water used 200 gallons, rec 100%, pale yellowish gray HP 400 psi WP 80 psi Time 9 min RQD 0%
	129	qrtzt: QUARTZITE, very hard, slightly weathered, intensely fractured with dips of 0 degrees and 45 degrees; note some manganese infilling of fractures; light brownish gray.	qrtzt		Organic Vapor = 0.0ppm				
	130	NA: No sample collected for lithologic description.	NA					CD 130.0'	130 to 133' bgs reamed with air rotary drill rig
	131		NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW21

Project: Fort McClellan

Geologist: D. Allan/J. Remo/N. Badon

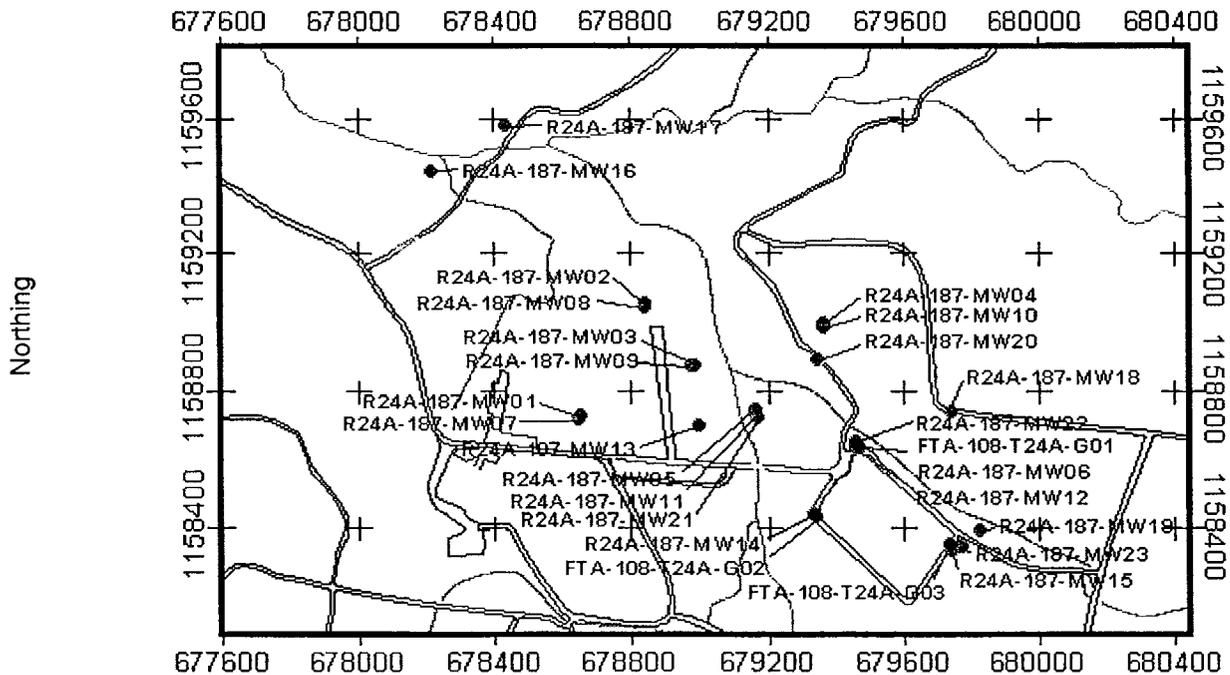
Sheet 15 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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132									
133									Bottom of borehole at 133' bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW22	
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 26 sheets	
3. Project: Fort McClellan		4. Location: Calhoun County, Alabama			
5. Name of driller: A.Davis/G.Bilbrey/B.Goodrich		6. Mfr. designation of drill: CME-550X/Schramm T450WS			
7. Sizes and types of drilling and sampling equipment: Air Rotary, Hollow Stem Auger, PQ Rock coring HSA -5"x4.25" ID Augers, 2"x2" Steel Split Spoons; PQ -5"x4" PQ3 Wireline Core Barrel; AR -6, 8, 10 & 12" Air Rotary Bits		8. Hole location: Training Area T24A, Parcel 187			
		9. Surface elevation (feet above mean sea level): 1004.67			
12. Overburden thickness (feet bgs): 80		10. Date started: 07/25/01		11. Date completed: 08/28/01	
13. Depth drilled into rock (feet bgs): 165.3		15. Depth groundwater encountered (feet bgs): 71			
14. Total depth of hole (feet bgs): 245.3		16. Depth to water and elapsed time after drilling completed (feet bgs): NA			
17. Other water level measurements (specify): NA		18. Geotechnical samples:			
19. Total no. of core boxes: 8		Collected:	Disturbed:	Undisturbed:	
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	Other (specify) Other (specify)
21. Total core recovery: 64.4'					
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist: D.Allan/J.Remo/N.Badon
			4" Permanent		

LOCATION SKETCH/COMMENTS:



Easting

Project: Fort McClellan
 bgs= below ground surface
 CD= Corrected Depth
 HP= Hydraulic Pressure
 NA =Not applicable
 psi= pounds per square inch
 WP= Water Pressure
 Hole no.: R24A-187-MW22

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 4 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	21								
	22								
	23								
	24								
980	25		NA						
	26								
	27								
	28								
	29								
975	30	sh: Dry dark gray SHALE.	sh						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 6 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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	41								
	42								
	43								
	44								
960	45		NA						
	46				Organic Vapor = 0ppm				
	47								
	48								
	49								
955	50	sh: Dry dark gray SHALE.	sh						
		NA: No recovery.	NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 7 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	51	NA: No sample collected for lithologic description.	NA						
	52	sh: Dark gray SHALE.							
	53								
	54								
950	55								
	56		sh						
	57								
	58								
	59	sh: Dark gray SHALE.							
945	60		sh						

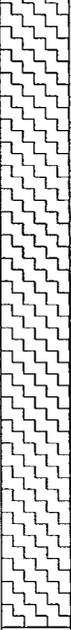
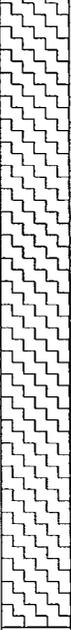
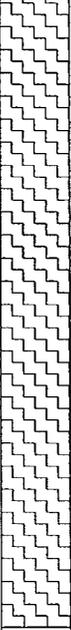
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

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Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	102								
	103								
	104								
900	105	NA: No lithologic description due to no recovery.							
	106		NA						
	107								
	108	qrtzt: QUARTZITE and MUDSTONE interbedded, quartzite is hard, slightly weathered, fine grain, highly fractured, horizontal and vertical, orange color evidence of oxidation on fractures, multiple quartz filled fractures, greenish gray, no swelling, claystone is moderately hard, moderately weathered, possible vertical fracture due to orange oxidation on side, dark greenish gray, no swelling, core is highly fractured and broken.	qrtzt						
895	109								
	110	NA: No recovery.							
	111		NA						

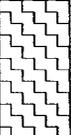
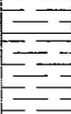
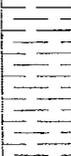
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 14 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	122								
	123	NA: No recovery.							
	124								
880	125		NA						
	126								
	127	qrtzt: QUARTZITE, hard, slightly weathered, fine to medium grain (predominately fine grain), fracture zone at 28.7' and 29.2', 30 degree angle at 28.7' and horizontal at 29.2', greenish gray.							
	128		qrtzt						
	129	NA: No recovery.							
875	130		NA						
	131	sh: CLAY and SHALE, soft, highly weathered, clay size grains, unable to determine fractures due to weathering, medium gray, shale weathered into clay.	sh						
	131	sh: SHALE, moderately hard, slightly weathered clay size grains, fractures at 131 ft at 40 degree angle, 131.5' at 20 degree angle, fracture zone 131.8 to 132.1 at 60 degree angle, fracture at 132.4' horizontal, some clay in filling of fractures, multiple veins throughout, medium dark gray, bedding near 25 degree	sh						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 15 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
132		angle.							
133		sh: SHALE (layer of quartzite at 136.2 to 136.5') shale is moderately hard, slightly weathered, clay size grains, some clay filled veins throughout, few quartz veins, fractures at 133.2', 133.5', 134' near horizontal, fractures at 134.5' at 30 degree angle, fracture zone 135.2' to 135.5' and 135.7' to 136', medium gray, bedding 30 degrees, quartzite layer (136.2' to 136.5') hard, slightly weathered, fine to medium grain (predominately fine), quartz veins, greenish gray, 136.5' to 137.5' shale fragments (fine gravel size).	sh						
134									
135									
136									
137									
138		NA: No recovery.							
139			NA						
140		NA: No recovery.							
141									
142			NA						

870

865

132

133

134

135

136

137

138

139

140

141

142

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 18 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
163			qztz			Discrete GW Sample JG30474 (0 to 178.5' bgs)			
164		NA: No recovery.	NA			Box 1 of 8 (163.8 to 174.4' bgs)			Run 1 (163.8-166.9' bgs) Ran 3.1' Rec 1.0' Loss 2.1' UL 2.1' Water used 630 gallons, rec 100%, yellowish brown HP 480 psi WP 60 psi Time 22 min RQD 0%
165			NA						
166		ss: SANDSTONE, very hard, slightly weathered; coarse quartz Sand; highly fractured with dips of 0 degrees, 45 degrees and 90 degrees; some fractures infilled with quartz; light brown. Noted iron staining throughout.	ss						
167		congl: CONGLOMERATE, very hard, slightly weathered, matrix supported; highly fractured, fractures dipping at 0 degrees, 45 degrees and 90 degrees; some fractures infilled with quartz, other fractures open, some fractures filled with manganese or iron; moderate yellow.	congl		Organic Vapor = 0.0ppm			CD 166.9'	Run 2 (166.9-168.8' bgs) Ran 1.9' Rec 1.9' Loss 0.0' UL 0.0' Water used 180 gallons, rec 80%, yellowish brown HP 480 psi WP 60 psi Time 4 min RQD 0%
168			congl						
169		congl: Interbedded CONGLOMERATE and SANDSTONE; very hard; slightly weathered; CONGLOMERATE matrix supported; SANDSTONE fine to coarse grain; highly fractured; fractures dipping at 45 degrees and 80 degrees; some fractures infilled with quartz, manganese or iron; moderate yellow; noted iron staining throughout.	congl		Organic Vapor = 0.0ppm			CD 168.8'	Run 3 (168.8-173.8' bgs) Ran 5.0' Rec 4.6' Loss 0.4' UL 0.0' Water used 300 gallons, rec 100%, yellowish brown HP 480 psi WP 80 psi Time 9 min RQD 0%
170			congl						
171			congl						
172			congl						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 20 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
183		NA: No recovery.	NA						
184		ss: SANDSTONE; hard; slightly weathered; fine to coarse grained; highly fractured with fractures dipping at 45 degrees; some fractures infilled with Quartz; other infilled with clay to gravel sized fragments; iron staining throughout fractures; yellowish gray.	ss		Organic Vapor = 0.0ppm	Box 3 of 8 (183.5 to 198.6' bgs)		CD 183.5'	Run 6 (183.8-188.8' bgs) Ran 5.0' Rec 4.3' Loss 0.7' UL 0.8' Water used 300 gallons, rec 90%, grayish orange HP 480 psi WP 40 psi Time 10 min RQD 12%
185									
186		sltst: SILTSTONE, very soft, decomposed, yellowish gray.	sltst						
187		ss: SANDSTONE; hard; slightly weathered; fine to coarse grained; highly fractured with fractures dipping at 45 degrees; some fractures infilled with quartz, other infilled with clay to gravel size pieces; iron staining throughout fractures; yellowish gray.	ss						
188		NA: No recovery.	NA						
189		ss: Interbedded SANDSTONE, SILTSTONE and CONGLOMERATE; moderately hard to soft; highly weathered; CONGLOMERATE matrix supported; SANDSTONE coarse to fine grained, intensely fractured fractures dipping at 45 degrees and 80 degrees, iron stained throughout, yellowish gray.	ss		Organic Vapor = 0.0ppm			CD 188.6'	Run 7 (188.8-193.5' bgs) Ran 4.7' Rec 2.0' Loss 2.7' UL 1.5' Water used 330 gallons, rec 80%, pale yellowish orange HP 480 psi WP 90 psi Time 15 min RQD 0%
190									
191		NA: No recovery.	NA						
192		NA: No recovery.	NA					CD 192.1'	

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 21 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
193			NA		Organic Vapor = 0.0ppm				Run 8 (193.5-195.2' bgs) Ran 1.7' Rec 0.5' Loss 1.2' UL 2.6' Water used 500 gallons, rec 100%, yellowish brown HP 450 psi WP 220 psi Time 14 min RQD 0%
194									
810									
195		cong: CONGLOMERATE, very hard; slightly weathered; matrix supported; noted manganese staining, yellowish gray.	cong						
		NA: No recovery.	NA		Organic Vapor = 0.0ppm			CD 195.2'	Run 9 (195.2-196.8' bgs) Ran 1.6' Rec 0.0' Loss 1.6' UL 1.2' Water used 550 gallons, rec 100%, light gray HP 400 psi WP 60 psi Time 17 min RQD 0%
196			NA						
		ss: SANDSTONE, very hard, slightly weathered; fine to coarse grained, highly fractured at 0 degrees and 45 degrees; clay to gravel sized fragments; some quartz infilled closed fractures throughout; massive bedding; yellowish gray; iron staining throughout.	ss		Organic Vapor = 0.0ppm			CD 196.4'	Run 10 (196.8-198.8' bgs) Ran 2.0' Rec 2.1' Gain 0.1' UL 0.1' Water used 150 gallons, rec 100%, light gray HP 480 psi WP 90 psi Time 5 min RQD 0%
197			ss						
198			NA						
		NA: No recovery.	NA						
199		ss: Interbedded SANDSTONE, CONGLOMERATE, and SILTSTONE; moderately hard to hard; slightly weathered, fine to coarse, CONGLOMERATE is matrix supported; very quartz rich, massive with bands of Silt at 199.1 to 199.9; highly fractured at 45 degrees and 60 degrees, clay to gravel sized fragments infilling fractures; yellowish gray, iron staining throughout.	ss		Organic Vapor = 0.0ppm	Box 4 of 8 (198.6 to 207.8' bgs)		CD 198.6'	Run 11 (198.8-201.0' bgs) Ran 2.2' Rec 2.6' Gain 0.4' UL 0.0' Water used 800 gallons, rec 80%, light gray HP 300 psi WP 80 psi Time 20 min RQD 33%
805			ss						
200			ss						
201		qrtzt: QUARTZITE; very hard; slightly weathered; quartz filled veins at 45 degrees, light gray.	qrtzt		Organic Vapor = 0.0ppm	Discrete GW Sample JG3047 C (201.0 to 217.6' bgs)		CD 201.2'	Run 12 (201.0-203.8' bgs) Ran 2.8' Rec 2.3' Loss 0.5' UL 0.0' Water used ~3500 gallons, rec 84%, light gray HP 400 psi WP 70 psi Time 83 min RQD 35%
202		qrtzt: QUARTZITE; very hard; slightly weathered; massive; fractures at 202.0-203.5 (~45 degrees and 60 degrees, sand and gravel sized fragments); light gray, iron staining and trace pyrite.	qrtzt						

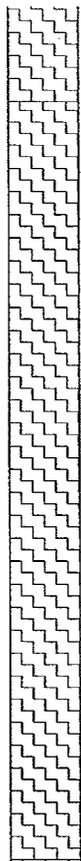
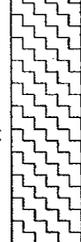
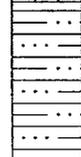
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 22 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USGS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
203									
	203.8	qrtzt: QUARTZITE; very hard; slightly weathered; fine to coarse crystalline; highly fractured; fractures at 0 degrees, 90 degrees and 45 degrees, open fractures infilled with silt to gravel sized fragments, iron staining along fractures; light gray.			Organic Vapor = 0.0ppm			CD 203.5'	Run 13 (203.8-208.3' bgs) Ran 4.5' Rec 4.3' Loss 0.2' UL 0.0' Water used 2800 gallons, rec 70%, light gray HP 250 psi WP 80 psi Time 61 min RQD 60%
800	205								
	206								
	207								
	208	qrtzt: QUARTZITE; very hard; slightly weathered; fine to coarse crystalline; highly fractured; fractures at 0 degrees and 45 degrees, fractures filled with Silt; light gray.			Organic Vapor = 0.0ppm	Box 5 of 8 (207.8 to 218.7' bgs)		CD 207.8'	Run 14 (208.3-213.5' bgs) Ran 5.2' Rec 4.9' Loss 0.3' UL 0.0' Water used 2000 gallons, rec 75%, light gray/light brown HP 400 psi WP 60 psi Time 55 min RQD 47%
	209								
795	210	siltst: SILTSTONE; soft; slightly weathered; very fine grained; bedding parted at ~0 degrees, intensely fractured at 70 degrees silt to gravel sized fragments; light olive gray; iron staining.							
	211	qrtzt: QUARTZITE; very hard; slightly weathered; fine to coarse crystalline; highly fractured at 0 degrees, 45 degrees and 90 degrees, sand to gravel sized fragments in open fractures, some Silt filled closed fractures; light gray.							
	212								
	213	qrtzt: QUARTZITE; very hard; slightly weathered; fine to coarse crystalline; highly						CD 212.7'	

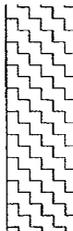
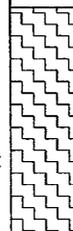
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 23 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
790	214	fractured at 0 degrees, 30 degrees, 45 degrees, 60 degrees and 90 degrees, sand to gravel sized fragments in open fractures, closed fractures - some filled with Silt; iron and manganese staining along fractures; light gray.	qrtzt		Organic Vapor = 0.0ppm				Run 15 (213.5-217.6' bgs) Ran 5.0' Rec 3.5' Loss 1.5' UL 1.4' Water used 1500 gallons, rec 8%, light gray HP 500 psi WP 90 psi Time 36 min RQD 16%
	215					Discrete GW Sample JG2047 D (226.0 to 244.4' bgs)			
	216	NA: No recovery.							
	217		NA						
	218	qrtzt: QUARTZITE; very hard; slightly weathered; fine to coarse crystalline; intensely fractured at 0 degrees, 30 degrees, 45 degrees and 90 degrees; sand to gravel sized fragments in open fractures, some closed silt filled fractures; light gray.	qrtzt		Organic Vapor = 0.0ppm			CD 217.6'	Run 16 (217.6-219.4' bgs) Ran 1.8' Rec 1.6' Loss 0.2' UL 0.2' Water used 1200 gallons, rec 80%, light gray/light brown HP 250 psi WP 160 psi Time 9 min RQD 0%
	219	NA: No recovery.				Box 6 of 8 (218.7 to 230.0' bgs)			
785	220	qrtzt: QUARTZITE; very hard; slightly to moderately weathered (especially along fractures); fine to coarse crystalline, intensely fractured at 0 degrees, 45 degrees and 90 degrees, sand to gravel sized fragments in open fractures; closed fractures, some containing Silt; iron staining along fractures; light gray.	qrtzt		Organic Vapor = 0.0ppm			CD 219.4'	Run 17 (219.4-223.8' bgs) Ran 4.4' Rec 2.8' Loss 1.6' UL 1.6' Water used 4000 gallons, rec 32%, light gray to light brown HP 150 psi WP 70 psi Time 55 min RQD 0%
	221								
	222	NA: No recovery.							
	223		NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 25 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
770	234	ss: SANDSTONE; hard; slightly to moderately weathered; medium to coarse grains in a finer matrix; intensely fractured at 0 degrees, 30 degrees, 45 degrees, 60 degrees, 234.6-234.9 fracture zone infilled with Siltstone; other fractures contain sand to gravel sized fragments; closed fractures contain Silt or quartz, iron staining on fracture faces; bedding massive, yellowish gray.	ss		Organic Vapor = 0.0ppm			CD 234.3'	Run 20 (234.4-239.4' bgs) Ran 5.0' Rec 4.4' Loss 0.6' UL 0.0' Water used 770 gallons, rec 53%, light brown HP 250 psi WP 100 psi Time 7 min RQD 15%
765	239	ss: SANDSTONE; hard; slightly to moderately weathered; medium to coarse grains in a finer matrix; intensely fractured at 0 degrees, 30 degrees, 45 degrees, 60 degrees, silt to gravel sized fragments in open fractures, quartz in closed fractures, iron staining on fracture faces; massive bedding; yellowish gray.	ss		Organic Vapor = 0.0ppm	Box 8 of 8 (239.4 to 244.4' bgs)		CD 238.7'	Run 21 (239.4-244.4' bgs) Ran 5.0' Rec 4.0' Loss 1.0' UL 1.7' Water used 1400 gallons, rec 50%, light gray/brown HP 150 psi WP 60 psi Time 22 min RQD 0%
	243	qrtzt: QUARTZITE; very hard; slightly weathered; intensely fractured, sand to gravel sized fragments; light gray. NA: No recovery.	qrtzt						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW22

Project: Fort McClellan

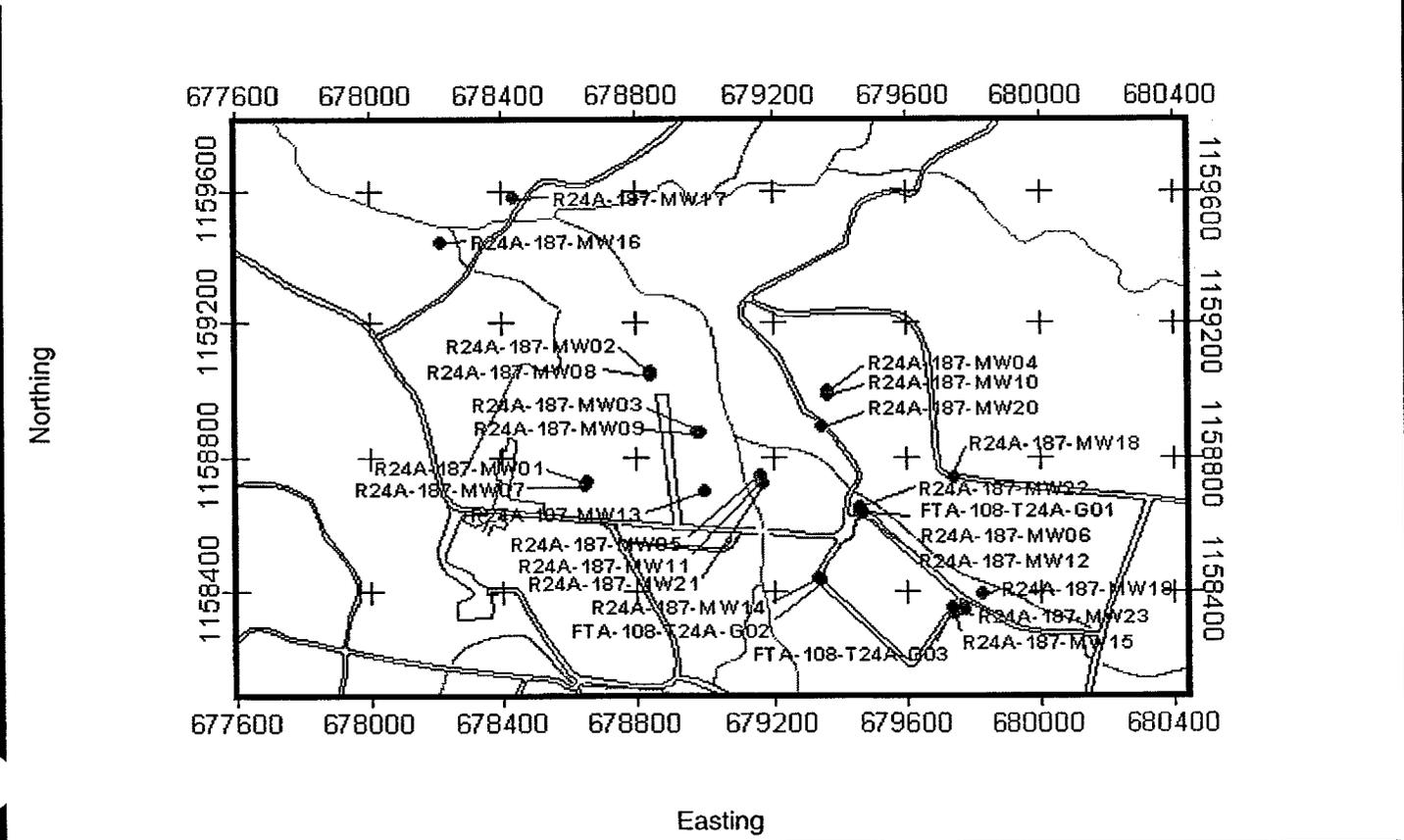
Geologist: D.Allan/J.Remo/N.Badon

Sheet 26 of 26 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	244		NA						
760		NA: No recovery.						CD 244.4'	Drilled 244.4-245.3' with air rotary when reaming hole
	245		NA						Bottom of borehole at 245.3' 245 bgs

HTRW DRILLING LOG		District: Mobile USACE		HOLE NUMBER R24A-187-MW23		
1. Company name: IT Corporation		2. Drill Subcontractor: Miller Drilling Company		Sheet 1 of 18 sheets		
3. Project: Fort McClellan			4. Location: Calhoun County, Alabama			
5. Name of driller: Rick Bilbrey/Glen Bilbrey			6. Mfr. designation of drill: CME-550X/Schramm T450WS			
7. Sizes and types of drilling and sampling equipment: Air Rotary, PQ Rock Coring AR - 7 7/8" tri-cone roller bit PQ - 5'x4" PQ3 wireline core barrel			8. Hole location: Training Area T24A, Parcel 187			
			9. Surface elevation (feet above mean sea level): 1032.56			
12. Overburden thickness (feet bgs): 45			15. Depth groundwater encountered (feet bgs): 50			
13. Depth drilled into rock (feet bgs): 126			16. Depth to water and elapsed time after drilling completed (feet bgs): NA			
14. Total depth of hole (feet bgs): 171			17. Other water level measurements (specify): NA			
18. Geotechnical samples:		Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 7	
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	Other (specify)	Other (specify)
						21. Total core recovery: 56'
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist: D.Allan/J.Remo/N.Badon	
			4" Permanent			

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan	bgs= below ground surface	NA =Not applicable	Hole no.: R24A-187-MW23
	CD= Corrected Depth	psi= pounds per square inch	
	HP= Hydraulic Pressure	WP= Water Pressure	

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 2 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Dry yellowish orange to light brown SILT, some quartz-rich subangular coarse Gravel, trace roots, trace subrounded fine Sand.							Lithologic description 0-103.3' bgs from R24A-187-MW15 Air rotary drilled from 0-103.3' and installed 6" ID carbon steel temporary outer casing.
	1								
	2		ml						
1030	3								
	4	sh: Yellowish orange to light gray highly weathered SHALE.							
	5		sh						
	6	NA: No recovery. NA: No sample collected for lithologic description.	NA						
	7		NA						
1025	8	sh: Greenish gray to olive gray weathered laminated, slightly friable SHALE.							
	9		sh						
	10	NA: No sample collected for lithologic							

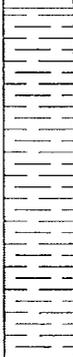
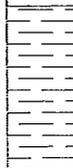
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 3 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
	11								
	12		NA						
1020	13								
	14	sh: Medium gray laminated friable fissile SHALE.							
	15		sh						
	16	NA: No sample collected for lithologic description.							
	17								
1015	18		NA						
	19	sh: Medium gray laminated friable fissile SHALE.							
	20	NA: No sample collected for lithologic							

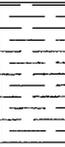
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 4 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
		description.							
	21								
	22		NA						
1010	23								
	24	sh: Medium gray, laminated, fissile, friable SHALE.	sh						
	25	NA: No recovery. NA: No sample collected for lithologic description.	NA						
	26								
	27		NA						
1005	28								
	29	sh: Medium gray laminated friable fissile SHALE.	sh						
		NA: No recovery.	NA						
	30	sh: Pale brown to light gray SHALE, becoming gray with increased depth.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 6 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	41								
	42								
990	43								
	44								
	45	sh: SHALE moderately hard, slightly weathered, broken along bedding (45 degrees) quartz filled veins parallel to bedding, dark gray.	sh						
	46	NA: No recovery.							
	47		NA						
985	48	sh: SHALE, moderately hard, slightly weathered, quartz filled veins, dark gray.							
	49		sh						
	50	NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 14 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
122		NA: No recovery.							
910			NA						
123		sh: SHALE; soft; moderately weathered; fractures at 122.8 to 123.6 (highly fractured at 45 degrees, clay to gravel sized fragments, slickensides), 124.0-124.7 (highly fractured at ~45 degrees, clay to gravel sized fragments), 125.1-126.1 (highly fractured at ~45 degrees, clay to gravel sized fragments), 126.7-127.3 (highly fractured at ~45 degrees, clay to gravel sized fragments), bedding, parted to banded, some indication of offsetting (microfaulting), slightly convoluted at ~45 degrees; dark gray.			Organic Vapor = 0.0ppm	Box 3 of 7 (123.7 to 137.3' bgs)		CD 122.8'	Run 5 (123.3-128.3' bgs) Ran 5.0' Rec 4.5' Loss 0.5' UL 0.0' Water used 300 gallons, req ₂₄ 100%, bluish gray HP 400 psi WP 90 psi Time 15 min RQD 22%
124			sh						
125									
126									
127									
905									
128		sh: SHALE; soft; moderately to highly weathered; fracture zones at 127.3 to 128.8 (intensely fractured at ~45 degrees, clay to gravel sized fragments), 128.8-129.9 (moderately fractured at ~45 degrees and 0 degrees, sand to gravel sized fragments, slickensides), 129.9 to 130.7 (intensely fractured, clay to gravel sized fragments); bedding, banded to parted, convoluted in places (especially where more silty); dark gray.			Organic Vapor = 0.0ppm			CD 127.3'	Run 6 (128.3-133.3' bgs) Ran 5.0' Rec 3.4' Loss 1.6' UL 1.4' Water used 300 gallons, req ₂₉ 100%, bluish gray HP 400 psi WP 90 psi Time 18 min RQD 0%
129			sh						
130									
131		NA: No recovery.							
			NA		Organic Vapor				

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 15 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
900	132	sh: SHALE, soft, moderately weathered, fractures throughout with a dip of ~45 degrees; clay to gravel size fragments; bedding parted to banded; dark gray.	sh		= 0.0ppm			CD 132.1'	
	133		sh		Organic Vapor = 0.0ppm				Run 7 (133.3-138.3' bgs) Ran 5.0' Rec 1.6' Loss 3.4' UL 3.6' Water used 375 gallons, rec ₁₃₄ 100%, bluish gray HP 450 psi WP 90 psi Time 25 min RQD 0%
	134	NA: No recovery.	NA						
	135		NA						
	136		NA						
	137		NA						
895	138	sh: SHALE, soft, highly weathered; highly fractured throughout with fractures dipping at ~45 degrees and 80 degrees, clay to gravel size fragments in some fractures, others have slickensides (suggesting faulting), others have quartz infilling, bedding parted with a dip of ~35 degrees; dark gray; also noted pyrite in Shale.	sh		Organic Vapor = 0.0ppm	Box 4 of 7 (137.7 to 146.5' bgs)		CD 137.3'	Run 8 (138.3-143.3' bgs) Ran 5.0' Rec 5.2' Gain 0.2' UL 0.0' Water used 340 gallons, rec ₁₃₉ 100%, bluish gray HP 400 psi WP 80 psi Time 13 min RQD 10%
	139		sh						
	140		sh						
	141		sh		Organic Vapor = 0.0ppm				
	142		sh						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 16 of 18 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
890	143	sh: SHALE, soft, moderately weathered, highly to intensely fractured with fractures dipping at 0 degrees, 30 degrees, and 45 degrees. Some fractures have quartz infilling, others have slickensides, others have clay to gravel size fragments; bedding parted to banded with a dip of ~45 degrees, note some beds were contorted, dark gray.			0.0ppm			CD 142.5'	
	144				Organic Vapor = 0.0ppm				Run 9 (143.3-148.3' bgs) Ran 5.0' Rec 4.7' Loss 0.3' UL 0.0' Water used 200 gallons, req ₁₄₄ 100%, bluish gray HP 480 psi WP 80 psi Time 11 min RQD 28%
	145		sh						
	146								
	147					Box 5 of 7 (146.5 to 155.5' bgs)			
885	148	sh: SHALE, soft, moderately to highly weathered, intensely fractured; dip of fractures are ~30 degrees and 90 degrees. Some fractures contain clay to gravel size fragments, other fractures open and some fractures have slickensides. Bedding parted to banded with a dip of ~30 degrees, dark gray.						CD 147.2'	
	149				Organic Vapor = 0.0ppm				Run 10 (148.3-153.3' bgs) Ran 5.0' Rec 4.6' Loss 0.4' UL 0.0' Water used 250 gallons, req ₁₄₉ 45%, bluish gray HP 480 psi WP 80 psi Time 10 min RQD 10%
	150		sh						
	151								
	152	sh: SHALE, soft, moderately to highly weathered, highly to intensely fractured, 151.8						CD 151.8'	

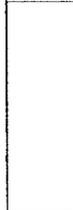
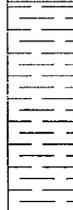
HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: R24A-187-MW23

Project: Fort McClellan

Geologist: D.Allan/J.Remo/N.Badon

Sheet 17 of 18 sheets

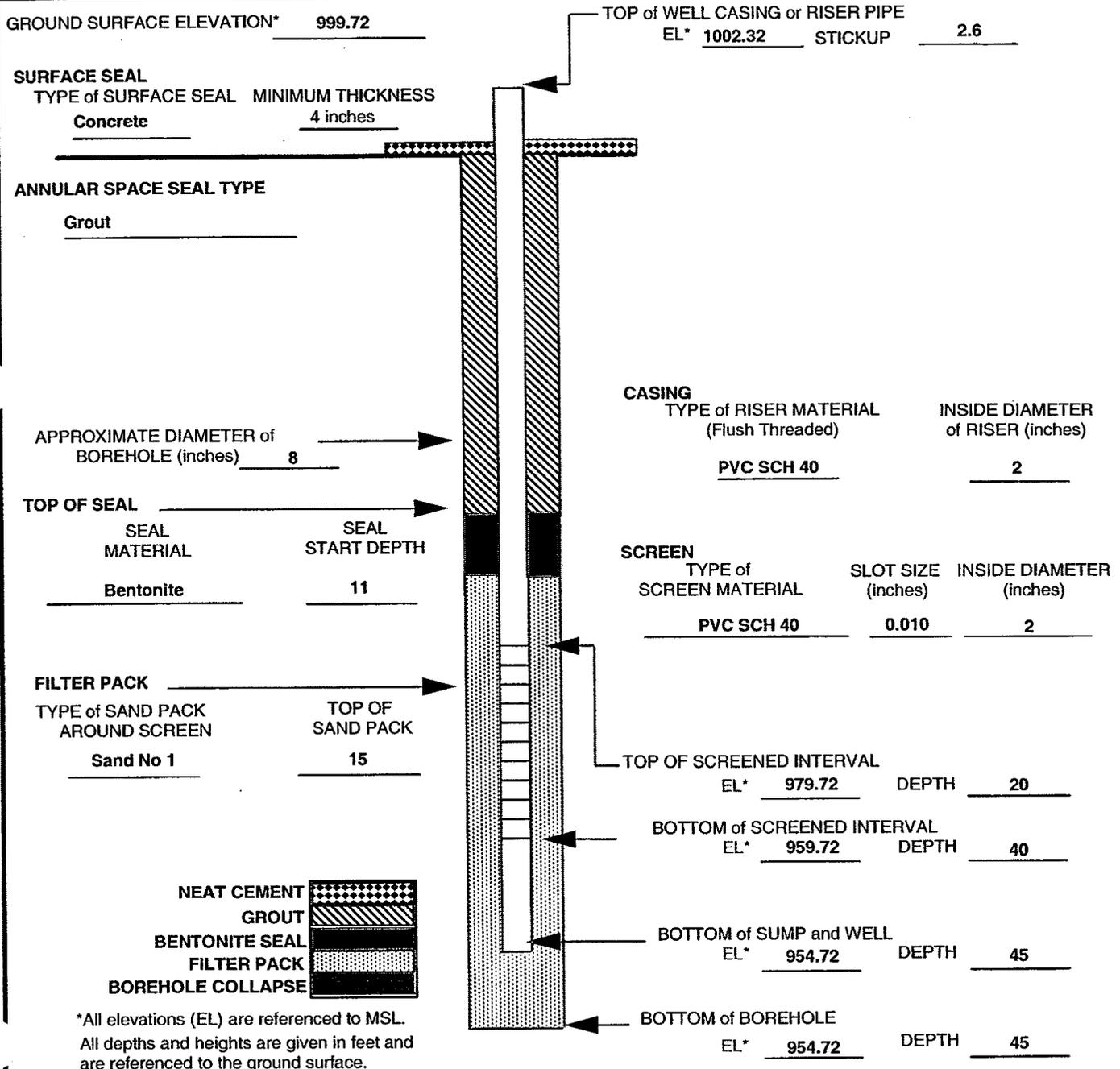
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
880	153	to 152.6 possible fault gouge; dip of fractures 25 degrees and 45 degrees. Noted clay to gravel size fragments in some fractures, also noted slickensides in some fractures; bedding parted and dipping at ~45 degrees, dark gray.	sh		Organic Vapor = 0.0ppm				Run 11 (153.3-158.3' bgs) Ran 5.0' Rec 3.7' Loss 1.3' UL 1.2' Water used 200 gallons, req 54 100%, bluish gray HP 480 psi WP 70 psi Time 12 min RQD 8%
	154								
	155								
	156	NA: No recovery.	NA			Box 6 of 7 (155.5 to 166.8' bgs)			
	157	sh: SHALE, soft, moderately weathered, intensely fractured at 156.7 to 157.7 with gravel to clay fragments in fractures, dip of fractures are ~45 degrees and 80 degrees. From 157.7 to 159.7 moderately fractured with dips of ~45 degrees and 80 degrees. Fractures are open. 159.7 -160.3 intensely fractured with clay to gravel size fragments in fractures. Dip of fractures: 45 degrees and 80 degrees, fractures generally open; however some have clay to gravel size fragments; bedding parted and dipping at ~45 degrees, dark gray.	sh		Organic Vapor = 0.0ppm			CD 156.7'	Run 12 (158.3-163.3' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' Water used 200 gallons, req 59 100%, bluish gray HP 480 psi WP 80 psi Time 10 min RQD 28%
875	158								
	159								
	160								
	161								
	162	sh: SHALE, soft, moderately weathered, 161.7-162.0 moderately fractured; 162.0-162.5 - intensely fractured with a dip of ~ 45 degrees with quartz infilling; 162.5 to 163.5 moderately			Organic Vapor = 0.0ppm			CD 161.7'	

WELL CONSTRUCTION LOGS

MONITORING WELL INSTALLATION DETAIL

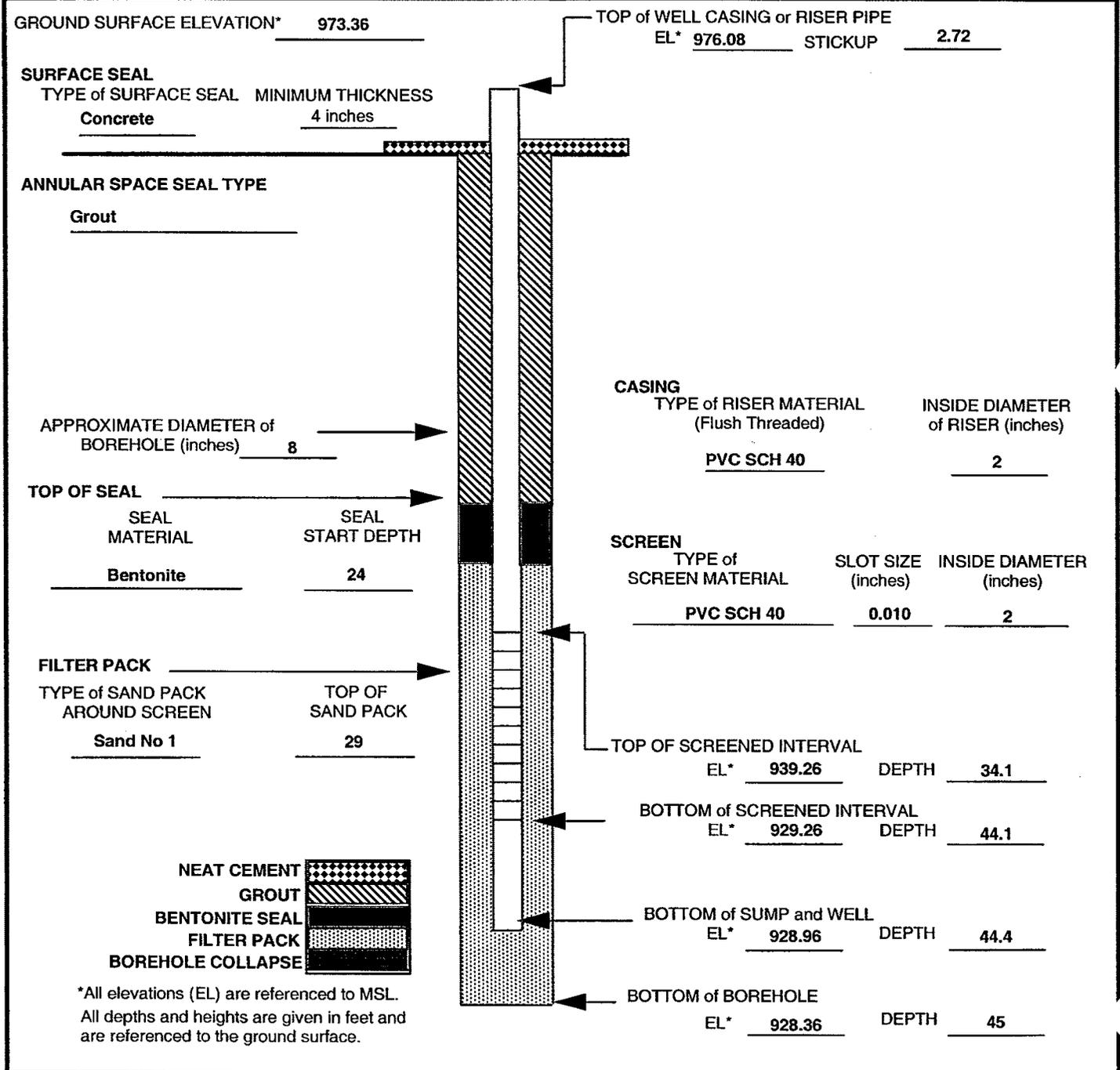
PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: Steven Gautney
IT FIELD REPRESENTATIVE: Leslie O'Hare

WELL NO: R24A-187-MW01
DRILLING METHOD: Hollow Stem Auger
INSTALLATION DATE: 19-OCT-00
NORTHING: 1158720.59
EASTING: 678650.55
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



MONITORING WELL INSTALLATION DETAIL

PROJECT: <u>Fort McClellan</u> LOCATION: <u>Anniston, AL</u> CLIENT: <u>USACE Mobile District</u> CONTRACTOR: <u>Miller Drilling Co.</u> DRILLER: <u>R. McNeil</u> IT FIELD REPRESENTATIVE: <u>J. Bond</u>	WELL NO: <u>R24A-187-MW02</u> DRILLING METHOD: <u>Hollow Stem Auger</u> INSTALLATION DATE: <u>02-NOV-00</u> NORTHING: <u>1159046.52</u> EASTING: <u>678840.85</u> HORIZONTAL SURVEY DATUM: <u>NAD83</u> VERTICAL SURVEY DATUM: <u>NAVD88</u> JOB NO: <u>796887</u>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: Steven Gautney
IT FIELD REPRESENTATIVE: Leslie O'Hare

WELL NO: R24A-187-MW03
DRILLING METHOD: Hollow Stem Auger
INSTALLATION DATE: 23-OCT-00
NORTHING: 1158872.39
EASTING: 678989.97
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 978.02

TOP of WELL CASING or RISER PIPE
EL* 980.36 STICKUP 2.34

SURFACE SEAL
 TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

ANNULAR SPACE SEAL TYPE
Grout

APPROXIMATE DIAMETER of BOREHOLE (inches) 8

CASING
 TYPE of RISER MATERIAL (Flush Threaded) PVC SCH 40 INSIDE DIAMETER of RISER (inches) 2

TOP OF SEAL
 SEAL MATERIAL Bentonite SEAL START DEPTH 14

SCREEN
 TYPE of SCREEN MATERIAL PVC SCH 40 SLOT SIZE (inches) 0.010 INSIDE DIAMETER (inches) 2

FILTER PACK
 TYPE of SAND PACK AROUND SCREEN Sand No 1 TOP OF SAND PACK 20

TOP OF SCREENED INTERVAL
EL* 952.02 DEPTH 26

BOTTOM of SCREENED INTERVAL
EL* 937.02 DEPTH 41

BOTTOM of SUMP and WELL
EL* 934.02 DEPTH 44

BOTTOM of BOREHOLE
EL* 934.02 DEPTH 44

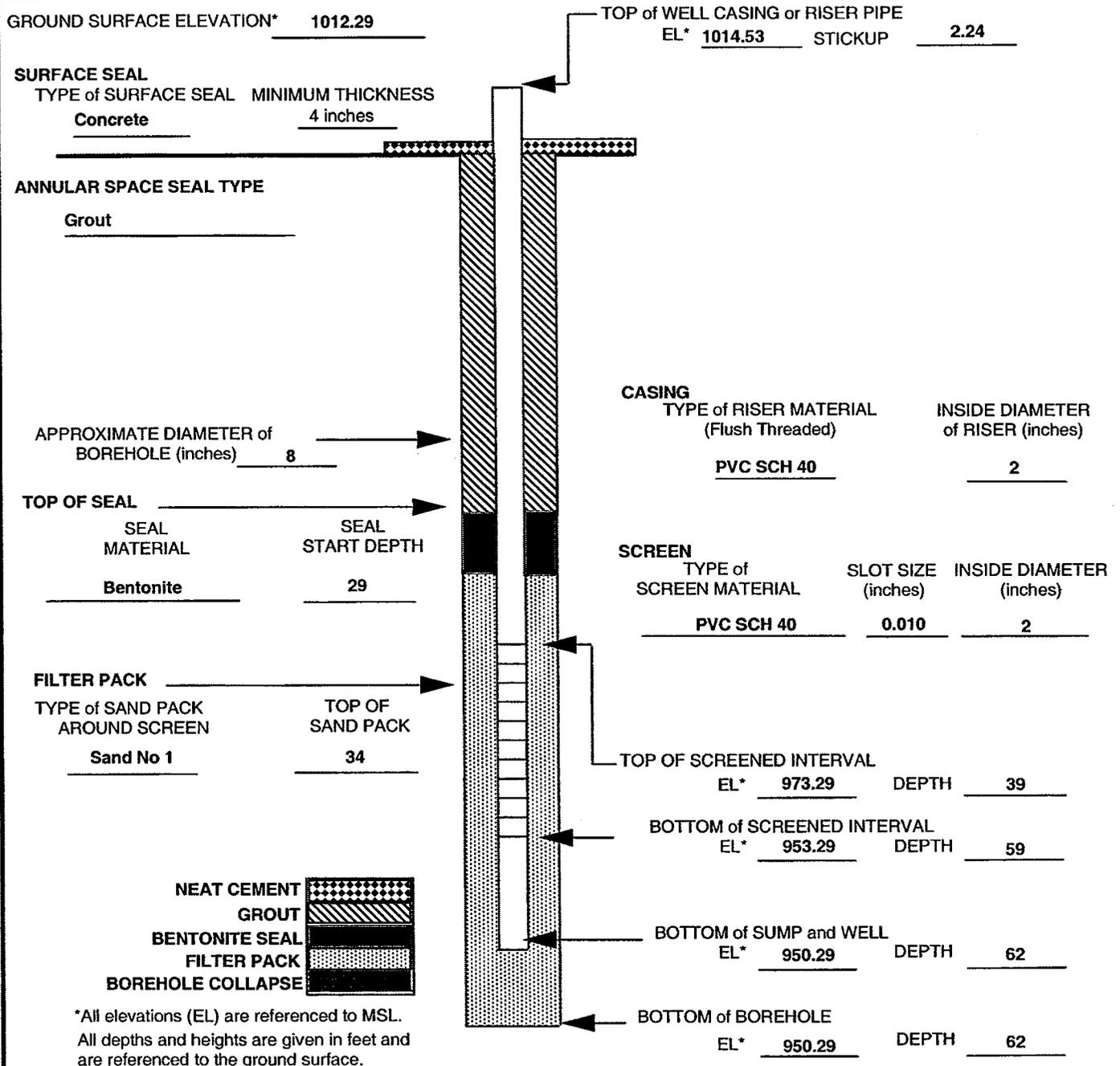


*All elevations (EL) are referenced to MSL. All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

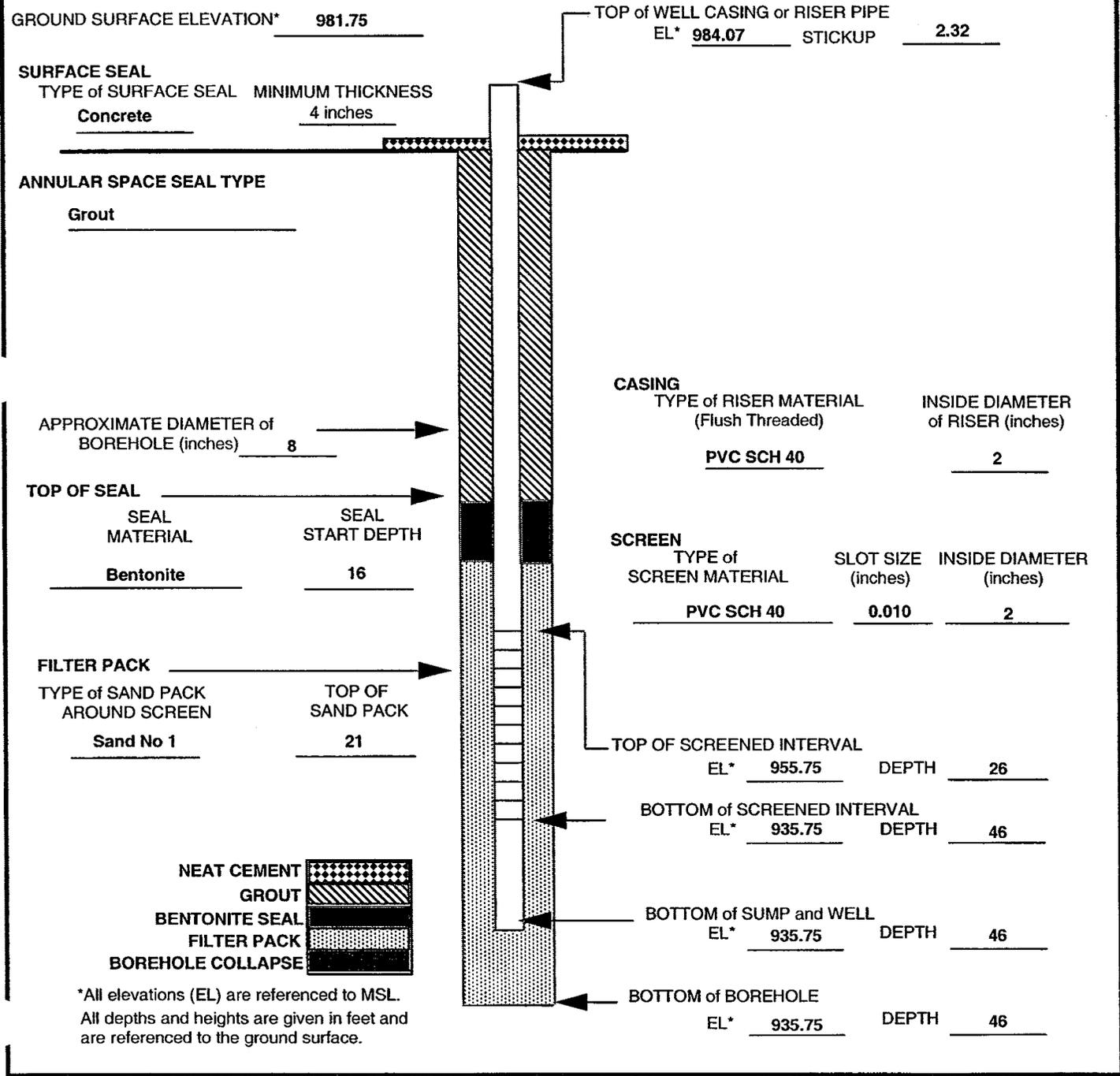
PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: Ken Gobell
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW04
DRILLING METHOD: Hollow Stem Auger
INSTALLATION DATE: 18-OCT-00
NORTHING: 1158990.14
EASTING: 679364.66
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



MONITORING WELL INSTALLATION DETAIL

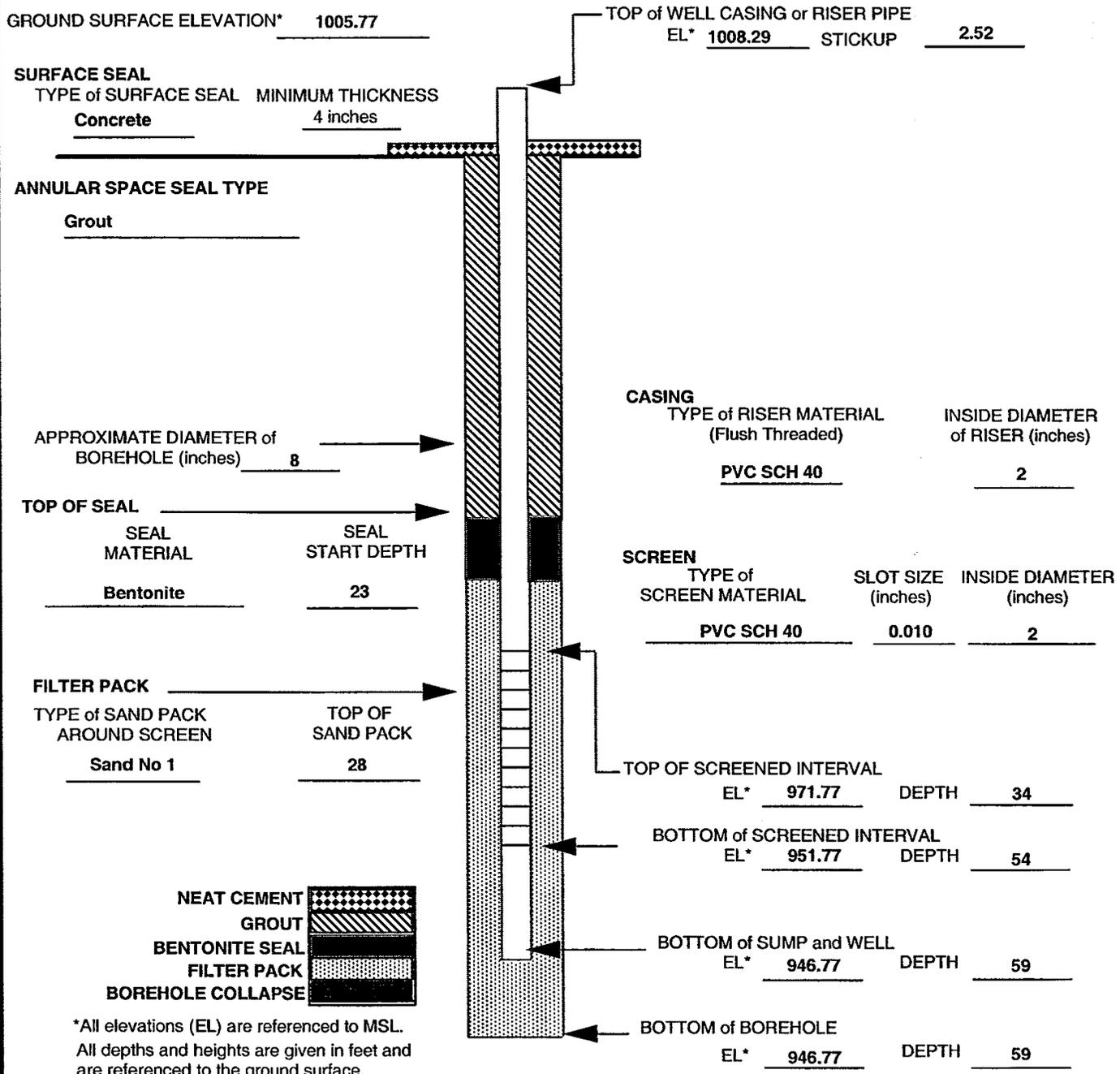
PROJECT: <u>Fort McClellan</u> LOCATION: <u>Anniston, AL</u> CLIENT: <u>USACE Mobile District</u> CONTRACTOR: <u>Miller Drilling Co.</u> DRILLER: <u>Ken Gobell</u> IT FIELD REPRESENTATIVE: <u>Dennis Mayton</u>	WELL NO: <u>R24A-187-MW05</u> DRILLING METHOD: <u>Hollow Stem Auger</u> INSTALLATION DATE: <u>27-OCT-00</u> NORTHING: <u>1158741.28</u> EASTING: <u>679160.65</u> HORIZONTAL SURVEY DATUM: <u>NAD83</u> VERTICAL SURVEY DATUM: <u>NAVD88</u> JOB NO: <u>796887</u>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: Ken Gobell
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW06
DRILLING METHOD: Hollow Stem Auger
INSTALLATION DATE: 20-OCT-00
NORTHING: 1158627.81
EASTING: 679469.15
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

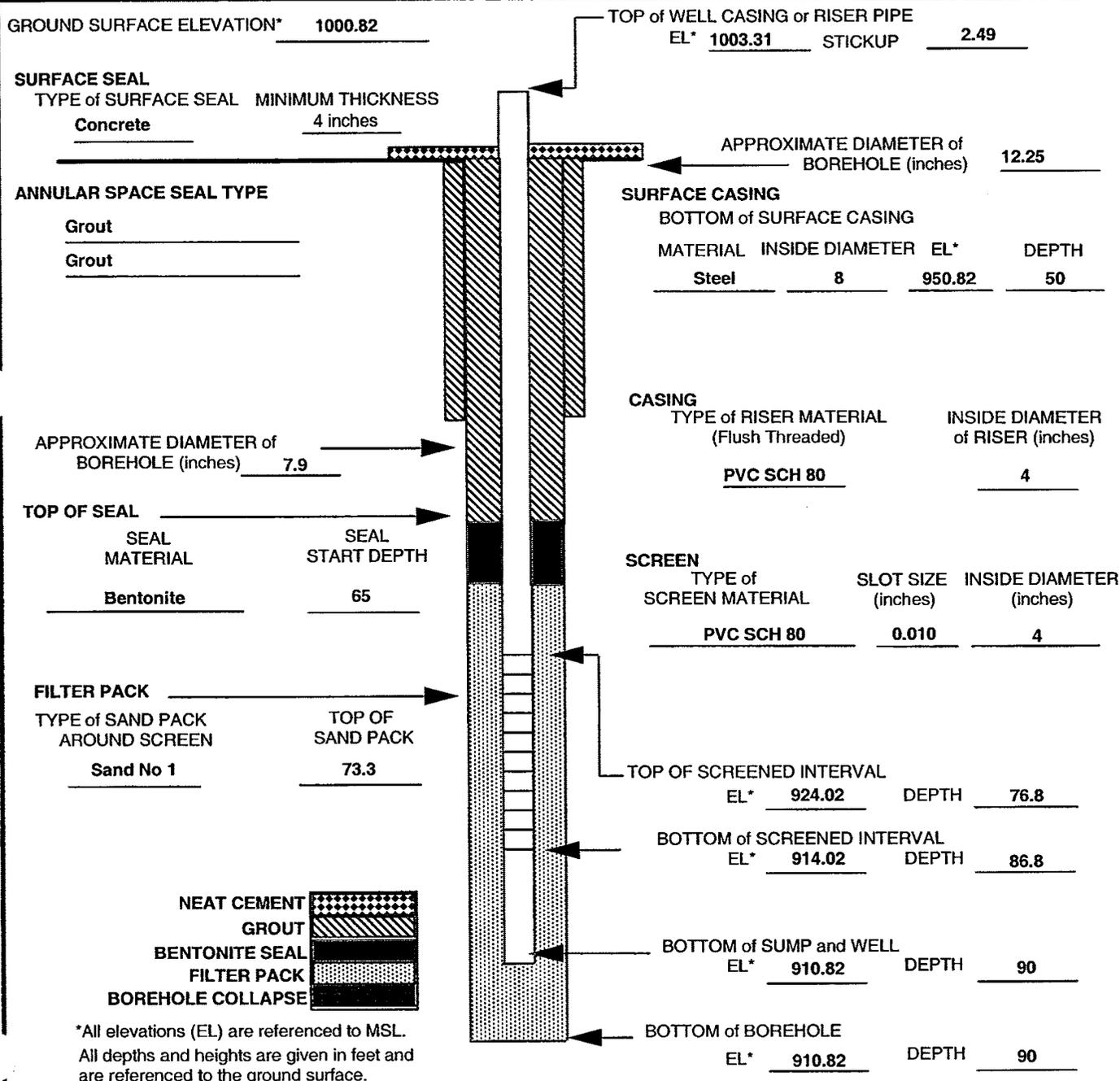


*All elevations (EL) are referenced to MSL. All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

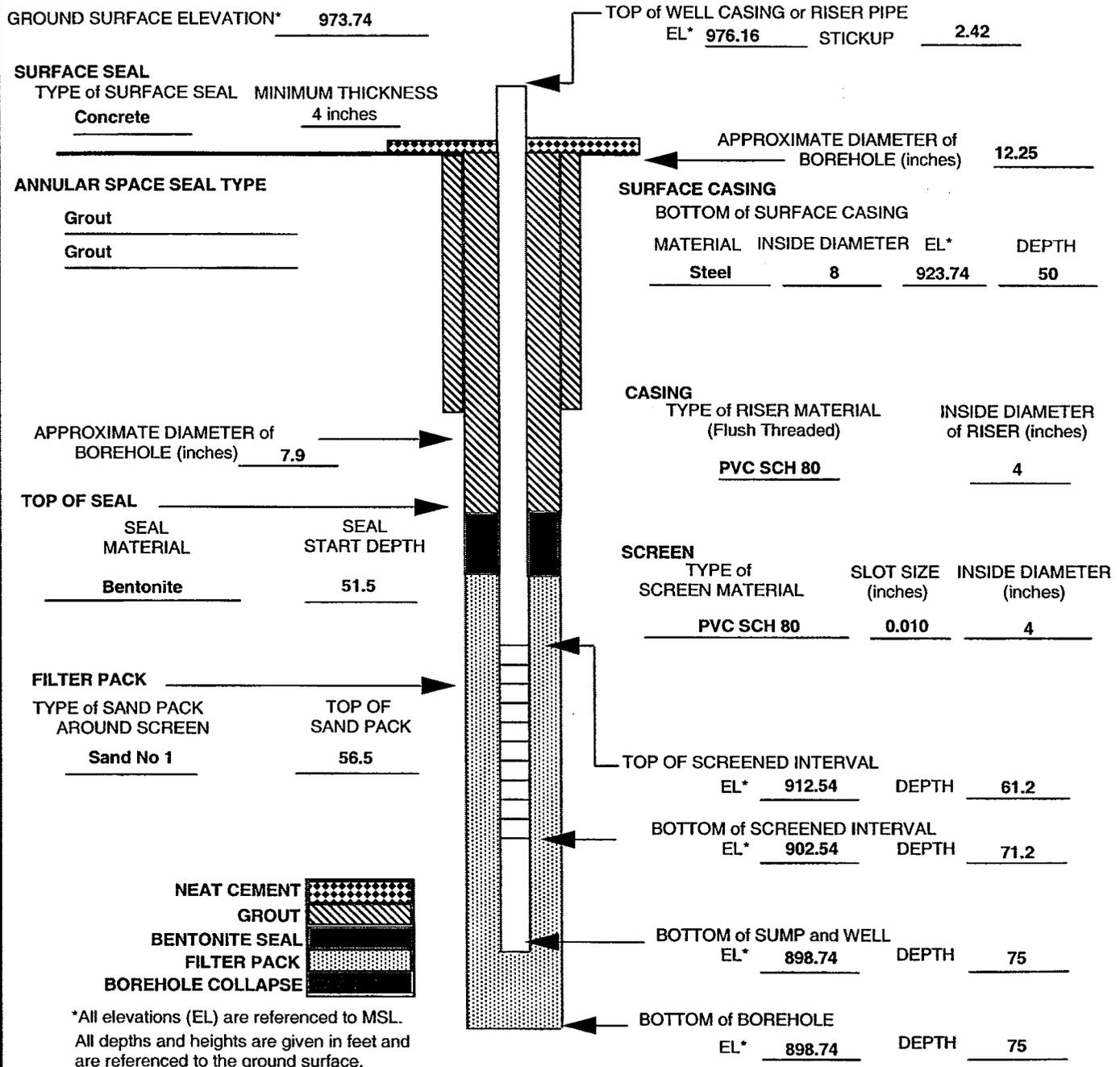
WELL NO: R24A-187-MW07
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 01-DEC-00
NORTHING: 1158710.08
EASTING: 678648.2
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW08
DRILLING METHOD: Air Percussion and Air Rotary
INSTALLATION DATE: 21-NOV-00
NORTHING: 1159036.76
EASTING: 678841.57
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW09
DRILLING METHOD: Air Percussion and Air Rotary
INSTALLATION DATE: 21-NOV-00
NORTHING: 1158867.33
EASTING: 678977.31
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 978.22

TOP of WELL CASING or RISER PIPE
EL* 980.53 STICKUP 2.31

SURFACE SEAL
 TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

APPROXIMATE DIAMETER of BOREHOLE (inches) 12.25

ANNULAR SPACE SEAL TYPE

Grout
Grout

SURFACE CASING

BOTTOM of SURFACE CASING
 MATERIAL INSIDE DIAMETER EL* DEPTH
Steel 8 928.22 50

APPROXIMATE DIAMETER of BOREHOLE (inches) 7.9

CASING

TYPE of RISER MATERIAL (Flush Threaded) INSIDE DIAMETER of RISER (inches)
PVC SCH 80 4

TOP OF SEAL
 SEAL MATERIAL SEAL START DEPTH
Bentonite 51.3

SCREEN

TYPE of SCREEN MATERIAL SLOT SIZE (inches) INSIDE DIAMETER (inches)
PVC SCH 80 0.010 4

FILTER PACK
 TYPE of SAND PACK AROUND SCREEN TOP OF SAND PACK
Sand No 1 56.3

TOP OF SCREENED INTERVAL
 EL* 916.42 DEPTH 61.8

BOTTOM of SCREENED INTERVAL
 EL* 906.42 DEPTH 71.8



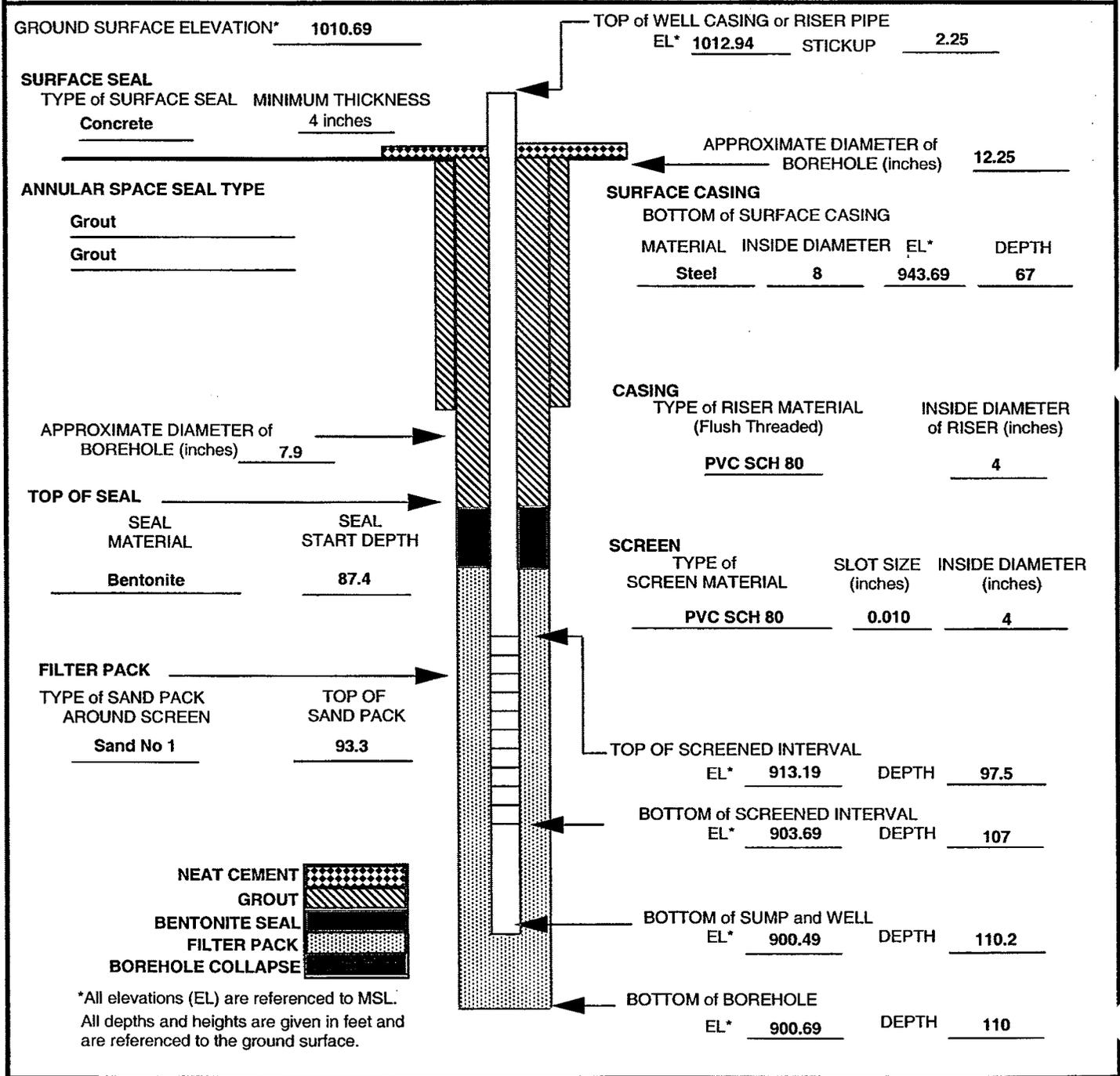
BOTTOM of SUMP and WELL
 EL* 903.22 DEPTH 75

BOTTOM of BOREHOLE
 EL* 903.22 DEPTH 75

*All elevations (EL) are referenced to MSL.
 All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

<p>PROJECT: <u>Fort McClellan</u></p> <p>LOCATION: <u>Anniston, AL</u></p> <p>CLIENT: <u>USACE Mobile District</u></p> <p>CONTRACTOR: <u>Miller Drilling</u></p> <p>DRILLER: <u>R. McNeil</u></p> <p>IT FIELD REPRESENTATIVE: <u>Dennis Mayton</u></p>	<p>WELL NO: <u>R24A-187-MW10</u></p> <p>DRILLING METHOD: <u>Air Rotary</u></p> <p>INSTALLATION DATE: <u>12-DEC-00</u></p> <p>NORTHING: <u>1158975.42</u></p> <p>EASTING: <u>679361.05</u></p> <p>HORIZONTAL SURVEY DATUM: <u>NAD83</u></p> <p>VERTICAL SURVEY DATUM: <u>NAVD88</u></p> <p>JOB NO: <u>796887</u></p>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW11
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 22-NOV-00
NORTHING: 1158731.1
EASTING: 679163.44
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 982.12

TOP of WELL CASING or RISER PIPE
EL* 984.22 STICKUP 2.1

SURFACE SEAL
 TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

APPROXIMATE DIAMETER of BOREHOLE (inches) 12.25

ANNULAR SPACE SEAL TYPE
Grout
Grout

SURFACE CASING
 BOTTOM of SURFACE CASING
 MATERIAL INSIDE DIAMETER EL* DEPTH
Steel 8 931.12 51

APPROXIMATE DIAMETER of BOREHOLE (inches) 7.9

CASING
 TYPE of RISER MATERIAL (Flush Threaded) INSIDE DIAMETER of RISER (inches)
PVC SCH 80 4

TOP OF SEAL
 SEAL MATERIAL SEAL START DEPTH
Bentonite 51.2

SCREEN
 TYPE of SCREEN MATERIAL SLOT SIZE (inches) INSIDE DIAMETER (inches)
PVC SCH 80 0.010 4

FILTER PACK
 TYPE of SAND PACK AROUND SCREEN TOP OF SAND PACK
Sand No 1 55.5

TOP OF SCREENED INTERVAL
EL* 923.32 DEPTH 58.8

BOTTOM of SCREENED INTERVAL
EL* 913.32 DEPTH 68.8



BOTTOM of SUMP and WELL
EL* 912.12 DEPTH 70

BOTTOM of BOREHOLE
EL* 912.12 DEPTH 70

*All elevations (EL) are referenced to MSL. All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW12
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 20-NOV-00
NORTHING: 1158628.13
EASTING: 679460.13
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 1005.72

TOP of WELL CASING or RISER PIPE
EL* 1007.93 STICKUP 2.21

SURFACE SEAL
 TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

APPROXIMATE DIAMETER of BOREHOLE (inches) 12.25

ANNULAR SPACE SEAL TYPE

Grout
Grout

SURFACE CASING

BOTTOM of SURFACE CASING
 MATERIAL INSIDE DIAMETER EL* DEPTH
Steel 8 900.72 105

APPROXIMATE DIAMETER of BOREHOLE (inches) 7.9

CASING
 TYPE of RISER MATERIAL (Flush Threaded) INSIDE DIAMETER of RISER (inches)
PVC SCH 80 4

TOP OF SEAL
 SEAL MATERIAL SEAL START DEPTH
Bentonite 126.8

SCREEN
 TYPE of SCREEN MATERIAL SLOT SIZE (inches) INSIDE DIAMETER (inches)
PVC SCH 80 0.010 4

FILTER PACK
 TYPE of SAND PACK AROUND SCREEN TOP OF SAND PACK
Sand No 1 132.8

TOP OF SCREENED INTERVAL
 EL* 869.92 DEPTH 135.8

BOTTOM of SCREENED INTERVAL
 EL* 859.92 DEPTH 145.8



BOTTOM of SUMP and WELL
 EL* 858.72 DEPTH 147

BOTTOM of BOREHOLE
 EL* 858.72 DEPTH 147

*All elevations (EL) are referenced to MSL. All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW13
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 30-NOV-00
NORTHING: 1158694.62
EASTING: 678998.65
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 982.48

TOP of WELL CASING or RISER PIPE
EL* 984.64 STICKUP 2.16

SURFACE SEAL
TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

ANNULAR SPACE SEAL TYPE

Grout
Grout

APPROXIMATE DIAMETER of BOREHOLE (inches) 12.25

SURFACE CASING
BOTTOM of SURFACE CASING
MATERIAL Steel INSIDE DIAMETER 8 EL* 952.48 DEPTH 30

APPROXIMATE DIAMETER of BOREHOLE (inches) 7.9

CASING
TYPE of RISER MATERIAL (Flush Threaded) PVC SCH 80 INSIDE DIAMETER of RISER (inches) 4

TOP OF SEAL
SEAL MATERIAL Bentonite SEAL START DEPTH 54

SCREEN
TYPE of SCREEN MATERIAL PVC SCH 80 SLOT SIZE (inches) 0.010 INSIDE DIAMETER (inches) 4

FILTER PACK
TYPE of SAND PACK AROUND SCREEN Sand No 1 TOP OF SAND PACK 59

TOP OF SCREENED INTERVAL
EL* 918.48 DEPTH 64

BOTTOM of SCREENED INTERVAL
EL* 908.48 DEPTH 74



BOTTOM of SUMP and WELL
EL* 907.48 DEPTH 75

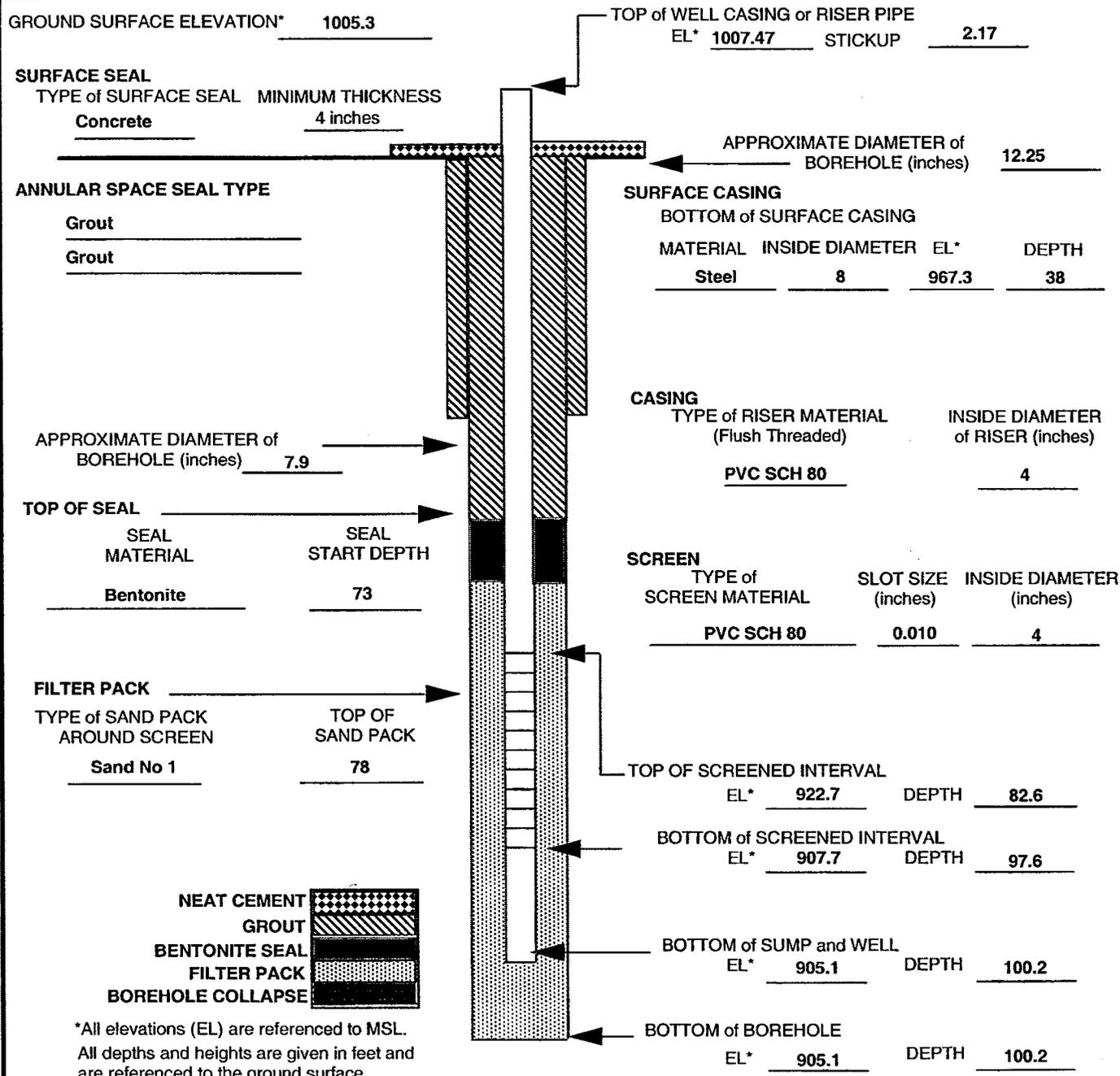
BOTTOM of BOREHOLE
EL* 907.48 DEPTH 75

*All elevations (EL) are referenced to MSL.
All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Dennis Mayton

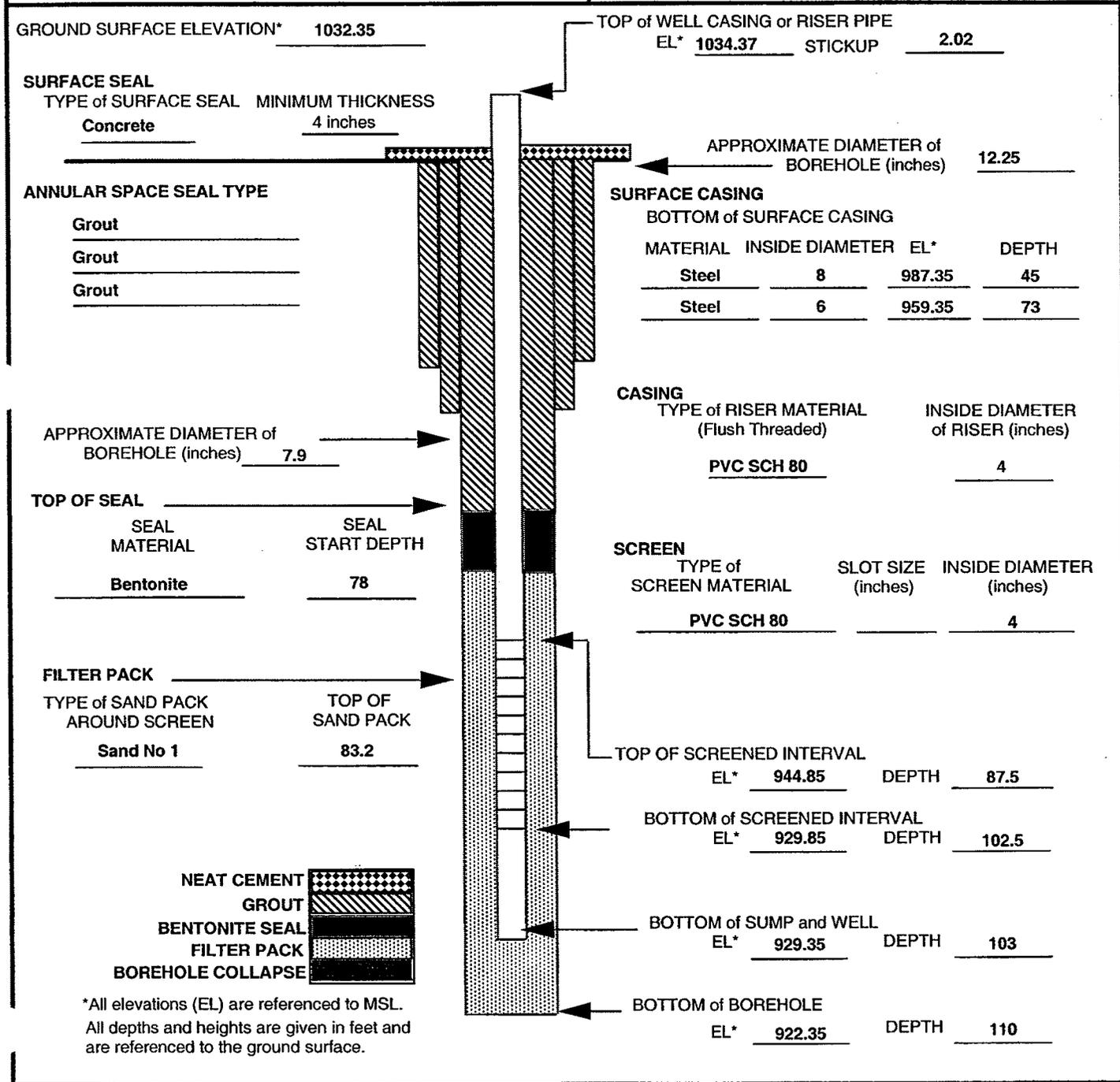
WELL NO: R24A-187-MW14
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 20-NOV-00
NORTHING: 1158433.56
EASTING: 679334
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



*All elevations (EL) are referenced to MSL.
All depths and heights are given in feet and are referenced to the ground surface.

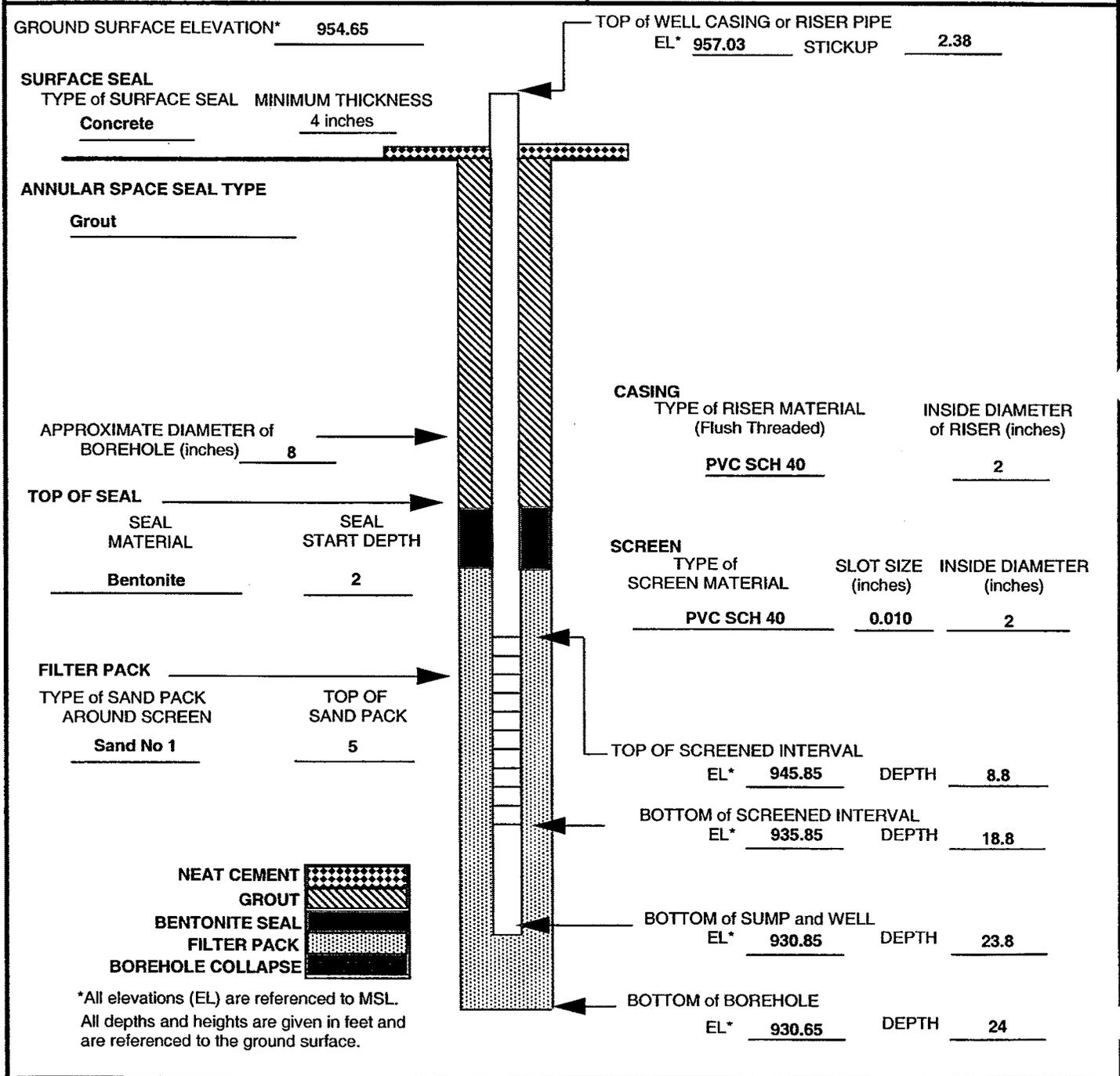
MONITORING WELL INSTALLATION DETAIL

<p>PROJECT: <u>Fort McClellan</u></p> <p>LOCATION: <u>Anniston, AL</u></p> <p>CLIENT: <u>USACE Mobile District</u></p> <p>CONTRACTOR: <u>Miller Drilling Co.</u></p> <p>DRILLER: <u>R. McNeil</u></p> <p>IT FIELD REPRESENTATIVE: <u>Dennis Mayton</u></p>	<p>WELL NO: <u>R24A-187-MW15</u></p> <p>DRILLING METHOD: <u>Air Rotary</u></p> <p>INSTALLATION DATE: <u>12-DEC-00</u></p> <p>NORTHING: <u>1158323.47</u></p> <p>EASTING: <u>679745.34</u></p> <p>HORIZONTAL SURVEY DATUM: <u>NAD83</u></p> <p>VERTICAL SURVEY DATUM: <u>NAVD88</u></p> <p>JOB NO: <u>796887</u></p>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: <u>Fort McClellan</u> LOCATION: <u>Anniston, AL</u> CLIENT: <u>USACE Mobile District</u> CONTRACTOR: <u>Miller Drilling Co.</u> DRILLER: <u>Ken Gobell</u> IT FIELD REPRESENTATIVE: <u>Dennis Mayton</u>	WELL NO: <u>R24A-187-MW16</u> DRILLING METHOD: <u>Hollow Stem Auger</u> INSTALLATION DATE: <u>26-OCT-00</u> NORTHING: <u>1159439.39</u> EASTING: <u>678212.64</u> HORIZONTAL SURVEY DATUM: <u>NAD83</u> VERTICAL SURVEY DATUM: <u>NAVD88</u> JOB NO: <u>796887</u>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling Co.
DRILLER: Ken Gobell
IT FIELD REPRESENTATIVE: Dennis Mayton

WELL NO: R24A-187-MW17
DRILLING METHOD: Hollow Stem Auger
INSTALLATION DATE: 25-OCT-00
NORTHING: 1159574.96
EASTING: 678431.68
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 956.27

TOP of WELL CASING or RISER PIPE
EL* 958.76 STICKUP 2.49

SURFACE SEAL
 TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

ANNULAR SPACE SEAL TYPE
Grout

APPROXIMATE DIAMETER of BOREHOLE (inches) 8

CASING
 TYPE of RISER MATERIAL (Flush Threaded) PVC SCH 40 INSIDE DIAMETER of RISER (inches) 2

TOP OF SEAL
 SEAL MATERIAL Bentonite SEAL START DEPTH 8

SCREEN
 TYPE of SCREEN MATERIAL PVC SCH 40 SLOT SIZE (inches) 0.010 INSIDE DIAMETER (inches) 2

FILTER PACK
 TYPE of SAND PACK AROUND SCREEN Sand No 1 TOP OF SAND PACK 13

TOP OF SCREENED INTERVAL
 EL* 938.27 DEPTH 18

BOTTOM of SCREENED INTERVAL
 EL* 923.27 DEPTH 33

BOTTOM of SUMP and WELL
 EL* 918.27 DEPTH 38

BOTTOM of BOREHOLE
 EL* 918.27 DEPTH 38

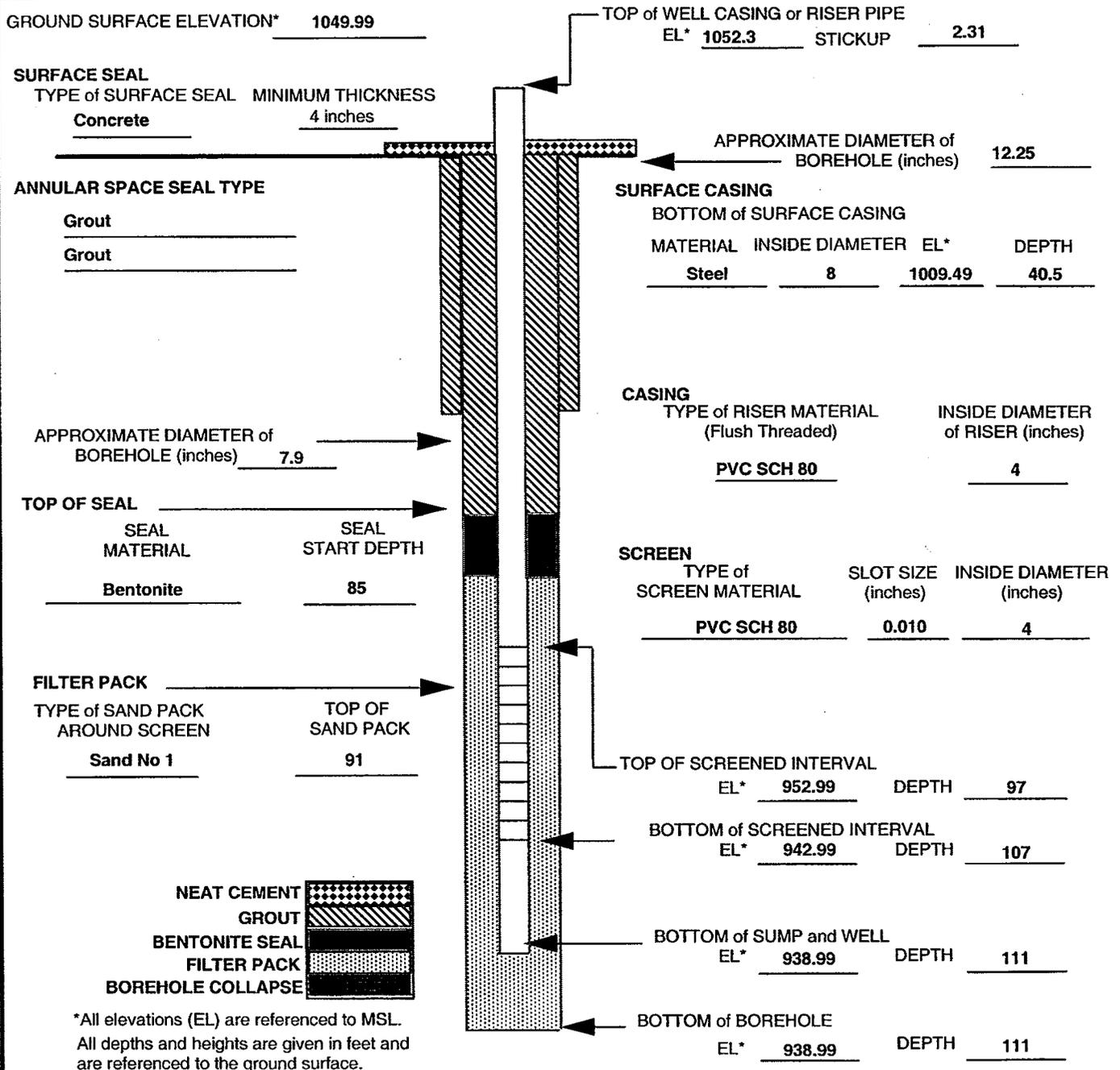


*All elevations (EL) are referenced to MSL.
 All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: Miller Drilling
DRILLER: R. McNeil
IT FIELD REPRESENTATIVE: Deborah Allan

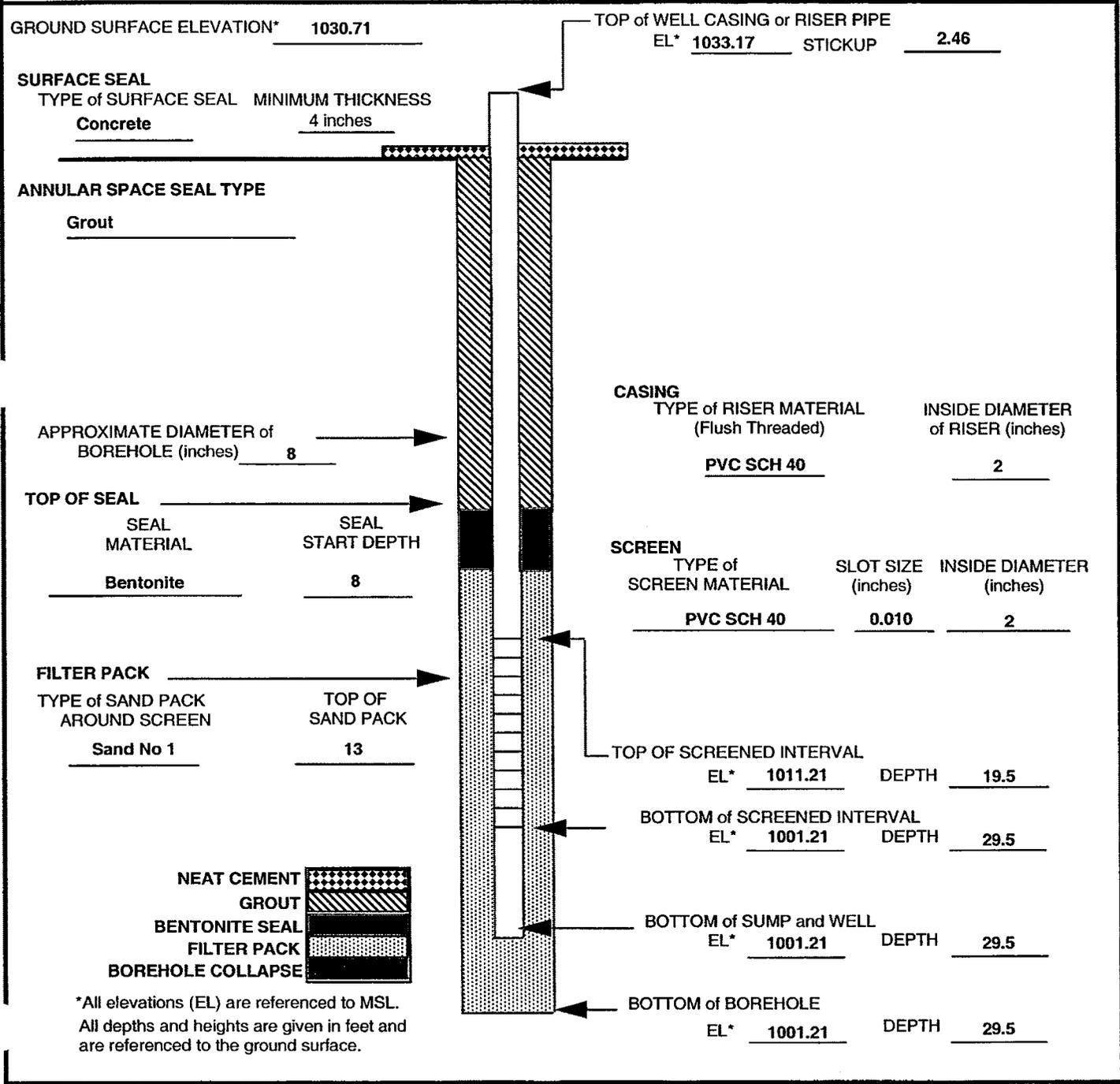
WELL NO: R24A-187-MW18
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 10-JAN-01
NORTHING: 1158734.29
EASTING: 679740.47
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887



*All elevations (EL) are referenced to MSL. All depths and heights are given in feet and are referenced to the ground surface.

MONITORING WELL INSTALLATION DETAIL

PROJECT: <u>Fort McClellan</u> LOCATION: <u>Anniston, AL</u> CLIENT: <u>USACE Mobile District</u> CONTRACTOR: <u>Miller Drilling Co.</u> DRILLER: <u>Steven Gautney</u> IT FIELD REPRESENTATIVE: <u>Leslie O'Hare</u>	WELL NO: <u>R24A-187-MW19</u> DRILLING METHOD: <u>Hollow Stem Auger</u> INSTALLATION DATE: <u>24-OCT-00</u> NORTHING: <u>1158383.98</u> EASTING: <u>679825.99</u> HORIZONTAL SURVEY DATUM: <u>NAD83</u> VERTICAL SURVEY DATUM: <u>NAVD88</u> JOB NO: <u>796887</u>
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MONITORING WELL INSTALLATION DETAIL

PROJECT: Fort McClellan
LOCATION: Anniston, AL
CLIENT: USACE Mobile District
CONTRACTOR: MILLER DRILLING CO.
DRILLER: A. DAVIS / T. NEEL
IT FIELD REPRESENTATIVE: N. BADON

WELL NO: R24A-187-MW20
DRILLING METHOD: Air Rotary
INSTALLATION DATE: 08-AUG-01
NORTHING: 1158888.4
EASTING: 679345.95
HORIZONTAL SURVEY DATUM: NAD83
VERTICAL SURVEY DATUM: NAVD88
JOB NO: 796887

GROUND SURFACE ELEVATION* 1002.75

TOP of WELL CASING or RISER PIPE
EL* 1004.83 STICKUP 2.08

SURFACE SEAL
TYPE of SURFACE SEAL Concrete MINIMUM THICKNESS 4 inches

APPROXIMATE DIAMETER of BOREHOLE (inches) 8.25

ANNULAR SPACE SEAL TYPE

Grout
Grout

SURFACE CASING

BOTTOM of SURFACE CASING
MATERIAL Steel INSIDE DIAMETER 8 EL* 995.75 DEPTH 7

APPROXIMATE DIAMETER of BOREHOLE (inches) 7.9

CASING
TYPE of RISER MATERIAL (Flush Threaded) PVC SCH 80 INSIDE DIAMETER of RISER (inches) 4

TOP OF SEAL

SEAL MATERIAL	SEAL START DEPTH
<u>Bentonite</u>	<u>122</u>
<u>Sand No 0</u>	<u>128.5</u>

SCREEN

TYPE of SCREEN MATERIAL	SLOT SIZE (inches)	INSIDE DIAMETER (inches)
<u>PVC SCH 80</u>	<u>0.010</u>	<u>4</u>

FILTER PACK

TYPE of SAND PACK AROUND SCREEN	TOP OF SAND PACK
<u>Sand No 1</u>	<u>134.5</u>

TOP OF SCREENED INTERVAL
EL* 864.45 DEPTH 138.3

BOTTOM of SCREENED INTERVAL
EL* 854.45 DEPTH 148.3



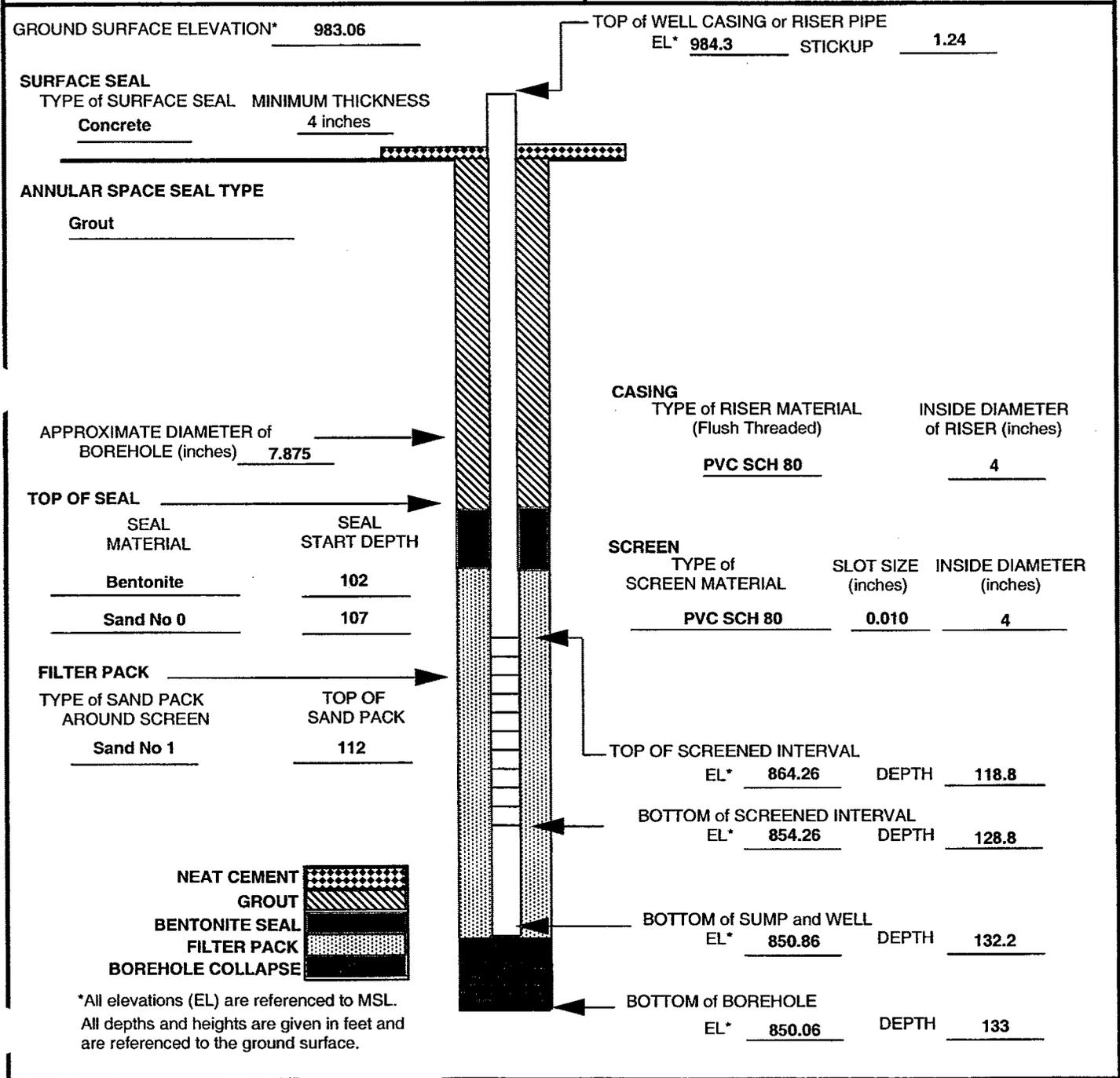
BOTTOM of SUMP and WELL
EL* 851.05 DEPTH 151.7

BOTTOM of BOREHOLE
EL* 851.05 DEPTH 151.7

*All elevations (EL) are referenced to MSL.
All depths and heights are given in feet and are referenced to the ground surface.

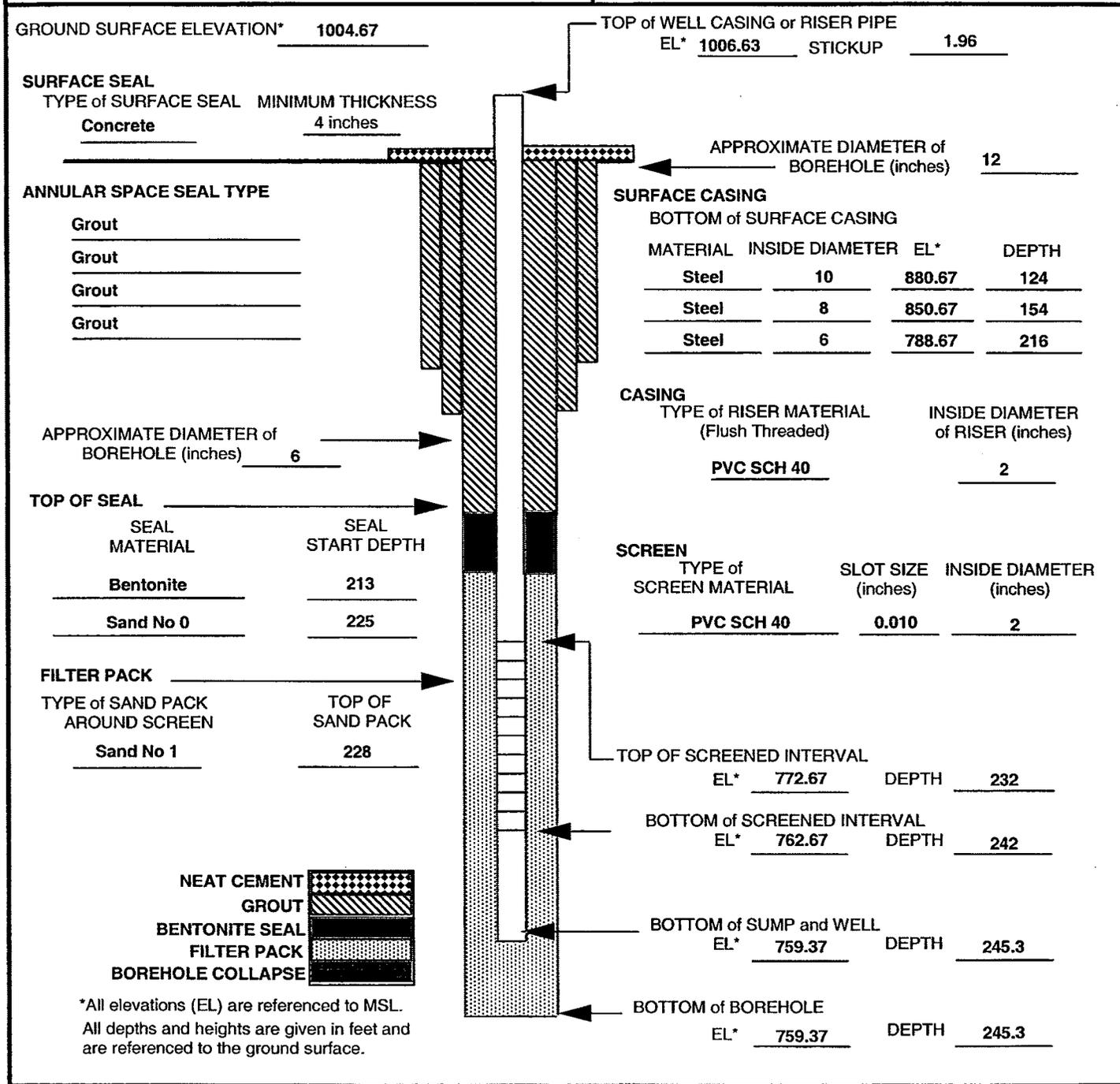
MONITORING WELL INSTALLATION DETAIL

<p>PROJECT: Fort McClellan</p> <p>LOCATION: Anniston, AL</p> <p>CLIENT: USACE Mobile District</p> <p>CONTRACTOR: MILLER DRILLING CO.</p> <p>DRILLER: A. DAVIS</p> <p>IT FIELD REPRESENTATIVE: N. BADON</p>	<p>WELL NO: R24A-187-MW21</p> <p>DRILLING METHOD: Air Rotary</p> <p>INSTALLATION DATE: 09-AUG-01</p> <p>NORTHING: 1158717.76</p> <p>EASTING: 679170.3</p> <p>HORIZONTAL SURVEY DATUM: NAD83</p> <p>VERTICAL SURVEY DATUM: NAVD88</p> <p>JOB NO: 796887</p>
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MONITORING WELL INSTALLATION DETAIL

<p>PROJECT: <u>Fort McClellan</u></p> <p>LOCATION: <u>Anniston, AL</u></p> <p>CLIENT: <u>USACE Mobile District</u></p> <p>CONTRACTOR: <u>MILLER DRILLING CO.</u></p> <p>DRILLER: <u>BRUCE GOODRICH</u></p> <p>IT FIELD REPRESENTATIVE: <u>D. ALLAN / N. BADON</u></p>	<p>WELL NO: <u>R24A-187-MW22</u></p> <p>DRILLING METHOD: <u>Air Rotary</u></p> <p>INSTALLATION DATE: <u>28-AUG-01</u></p> <p>NORTHING: <u>1158644.15</u></p> <p>EASTING: <u>679455.77</u></p> <p>HORIZONTAL SURVEY DATUM: <u>NAD83</u></p> <p>VERTICAL SURVEY DATUM: <u>NAVD88</u></p> <p>JOB NO: <u>796887</u></p>
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MONITORING WELL INSTALLATION DETAIL

<p>PROJECT: <u>Fort McClellan</u></p> <p>LOCATION: <u>Anniston, AL</u></p> <p>CLIENT: <u>USACE Mobile District</u></p> <p>CONTRACTOR: <u>MILLER DRILLING CO.</u></p> <p>DRILLER: <u>AL DAVIS</u></p> <p>IT FIELD REPRESENTATIVE: <u>NICOLE BADON</u></p>	<p>WELL NO: <u>R24A-187-MW23</u></p> <p>DRILLING METHOD: <u>Air Rotary</u></p> <p>INSTALLATION DATE: <u>10-AUG-01</u></p> <p>NORTHING: <u>1158333.48</u></p> <p>EASTING: <u>679770.34</u></p> <p>HORIZONTAL SURVEY DATUM: <u>NAD83</u></p> <p>VERTICAL SURVEY DATUM: <u>NAVD88</u></p> <p>JOB NO: <u>796887</u></p>
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