HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G21

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 16 of 19 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)
600									
	143	NA: No recovery.	NA						143
	144	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with crosscutting calcite veining. Fractures: 143.5', 143.7', 144.1', 144.8', and 146.9' (10 degrees); 145.2', 146.0', and 146.4' (5 degrees); 147.8 - 148.4' (5 degree fractures every 0.2-0.3'); 147.8 - 148.0' is weathered with orange oxidation.			Organic Vapor = 0.0ppm			CD 143.4'	Run 14 (143.4-148.4' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 69% Water used 140 gal, rec>95% 144
	145					Box 5 of 8 (144.9 to 154.2' bgs)			145
	146		mdst						146
	147								147
595	148								148
	149	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with crosscutting calcite veining, from 151.0 - 152.2' the calcite veining is more contorted.			Organic Vapor = 0.0ppm			CD 148.4'	Run 15 (148.4-153.4' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 86% Water used 200 gal, rec>95% 149
	150								150
	151		mdst						151
	152								152

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G21

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 17 of 19 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)
590	153								
	154	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with abundant contorted calcite veins. Fractures: 153.4', 154.2', 154.3', and 154.9' (5 degrees).	mdst		Organic Vapor = 0.0ppm	Box 6 of 8 (154:2 to 163.4' bgs)		CD 153.4'	Run 16 (153.4-158.4' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.0' RQD 53% Water used 140 gal, rec>95%
	155	dol: DOLOMITE, hard, light gray with calcite veins and dark reddish brown Mudstone veins and grayish green Mudstone veins, orange oxidation in calcite veins. Fractures: 155.1' and 156.1' (5 degrees); 155.3 to 155.5' (broken up); 155.7 (30 degrees).	dol						
	156	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with abundant contorted calcite veins. Fractures: 156.3' (5 degrees); 156.5' (10 degrees); 157.0' (30 degrees).	mdst						
	157	dol: DOLOMITE, hard, light gray with calcite veins and dark reddish brown Mudstone veins and grayish green Mudstone veins, orange oxidation in calcite veins. Fractures: 157.5 (5 degrees).	dol						
585	158	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with abundant contorted calcite veins. Fractures: 158.2 (15 degrees).	mdst		Organic Vapor = 0.0ppm			CD 158.3'	Run 17 (158.4-163.4' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.0' RQD 96%
	159	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with crosscutting calcite veining. Fractures: 158.4 (15 degrees).	mdst						
		dol: DOLOMITE, hard, light gray with grayish green Mudstone veins. Fractures: 159.0' and 159.4' (5 degrees).	dol						
	160	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with crosscutting calcite veining. Fractures: 159.8' (10 degrees); 160.7' (5 degrees); 161.2' and 162.6' (30 degrees), 162.2' (45 degrees, broken up).	mdst						
	161								
	162								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G21

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 18 of 19 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)
580	163								
		mdst: MUDSTONE, hard, dark reddish brown to very dusky red, slightly weathered with crosscutting calcite veining, calcite crystalization in holes, light brown, moderately hard Sand filled veins, some layering. Fractures: 163.2 (45 degrees).	mdst		Organic Vapor = 0.0ppm	Box 7 of 8 (163.4 to 172.7' bgs)		CD 163.1'	Run 18 (163.4-168.4' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 100% Water used 220 gal, rec>95%
	164								
	165								
	166								
	167								
575	168								
		mdst: MUDSTONE, hard, dark reddish brown to very dusky red, weathered with crosscutting calcite veins, light brown, medium hard Sand infilled veins, some layering, highly to intensely fractured throughout.	mdst		Organic Vapor = 0.0ppm			CD 168.1'	Run 19 (168.4-173.4' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.2' RQD 53% Water used 200 gal, rec>95%
	169								
	170								
	171								
	172								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G21

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 19 of 19 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)
570	173	NA: No sample collected for lithologic description.	NA		Organic Vapor = 0.0ppm	Box 8 of 8 (172.7 to 175.3' bgs)		CD 173.3'	Run 20 (173.4-175.3' bgs) Ran 1.9' Rec 2.0' Gain 0.1' UL 0.0' RQD 40% Water used 200 gal, rec>95%
	174	mdst: MUDSTONE, hard, dark reddish brown to very dusky red, weathered, slightly contorted calcite veins, light brown, medium hard Sand infilled veins, highly to intensely fractured throughout.	mdst						
	175	NA: No sample collected for lithologic description.	NA						Bottom of borehole at 176' bgs
	176								

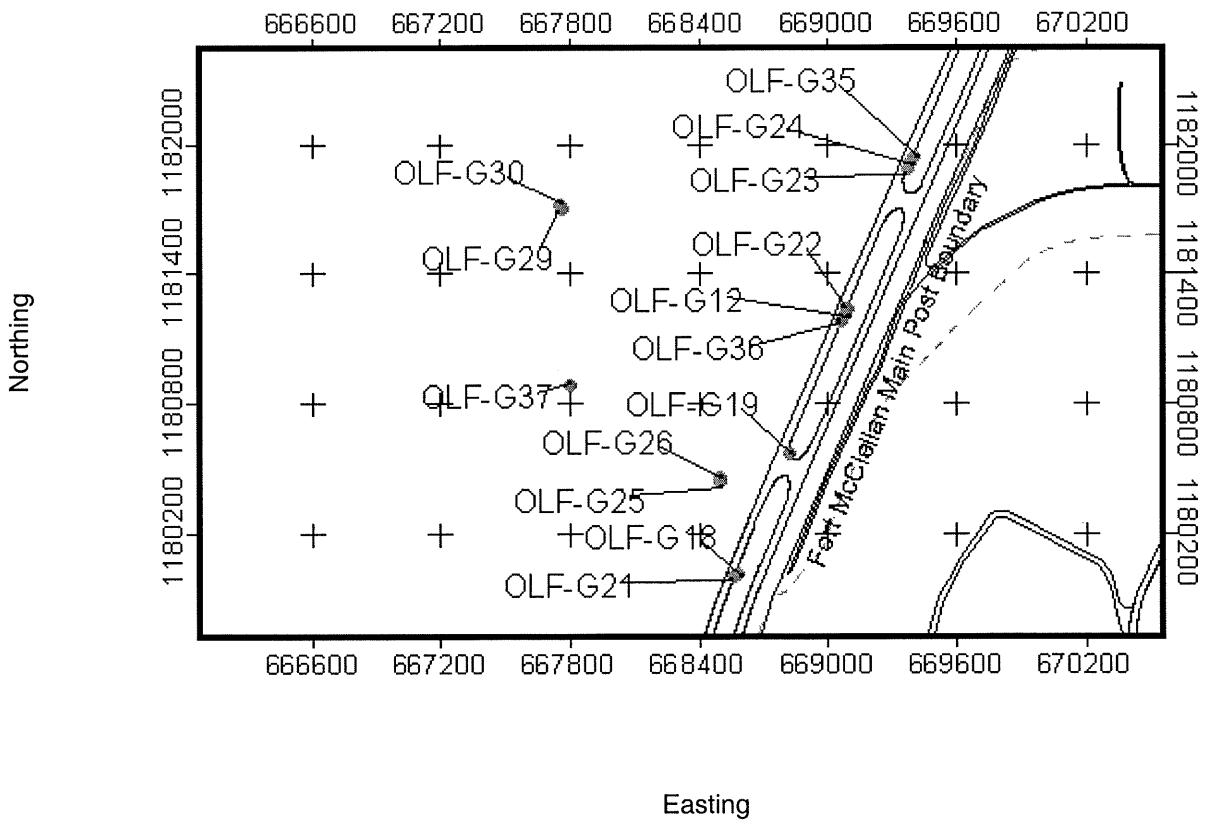
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G22
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 19 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith/Mike Mueller	6. Mfr. designation of drill: Rotosonic/Topkick D-120 Drill Rig
7. Sizes and types of drilling and sampling equipment: RS - 6" Sonic Core Barrel, 7 7/8" Sonic Bit 5" PQ3 Wireline Core Barrel	8. Hole location: Landfill #3, Parcel 80 9. Surface elevation (feet above mean sea level): 746.67 10. Date started: 06/06/01 — 11. Date completed: 06/24/01
12. Overburden thickness (feet bgs): 95	15. Depth groundwater encountered (feet bgs): 70
13. Depth drilled into rock (feet bgs): 80	16. Depth to water and elapsed time after drilling completed (feet bgs): 68.38 after 24 hours
14. Total depth of hole (feet bgs): 175	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 5		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	48.35
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	W.Cooper/D.Mayton/L.O'Hare		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 2 of 19 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: Damp, medium soft SILT, trace Clay, little fine Sand, mottled moderate yellowish brown to dark reddish brown.	ml		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (0-5' bgs) Sonic - Boart Longyear - 6/6/01
	1								
745									
	2								
	3	cl-ml: Damp, medium soft CLAY and SILT, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.	cl-ml		Organic Vapor = 0.0ppm				
	4								
	5	cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (5-10' bgs)
	6								
740									
	7								
	8								
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 3 of 19 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)
		cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (10-15' bgs)
	11								11
735									
	12								12
			cl						
	13								13
	14								14
	15	cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (15-20' bgs) 15
	16								16
730									
	17								17
			cl						
	18								18
	19								19
	20	cl: Damp, moderately stiff CLAY, little Silt,			Organic				Rec 5.0'/5.0' (20-25' bgs) 20

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 4 of 19 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)
		trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Vapor = 0.0ppm				
	21								21
725									
	22								22
			cl						
	23								23
	24								24
	25	cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (25-30' bgs) 25
	26								26
720									
	27								27
			cl						
	28								28
	29								29
	30	cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish			Organic Vapor				Rec 5.0'/5.0' (30-35' bgs) 30

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 5 of 19 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)
		brown to dark reddish brown.			= 0.0ppm				
	31								31
715									
	32								32
			cl						
	33								33
	34								34
	35	cl: Damp, moderately stiff CLAY, little Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (35-40' bgs) 35
	36								36
710									
	37								37
			cl						
	38								38
	39								39
	40	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor =				Rec 5.0'/5.0' (40-45' bgs) 40

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 6 of 19 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)
					0.0ppm				
	41								41
705									
	42								42
			cl						
	43								43
	44								44
	45	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, mottled moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (45-55' bgs) 45
	46								46
700									
	47								47
	48								48
	49		cl						49
	50								50

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 7 of 19 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								51
695									
	52								52
	53	cl: Stiff, dry CLAY, little Silt, trace fine Sand, little fine, angular mudstone Gravel, moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				53
	54		cl						54
	55	cl: Stiff, dry CLAY, little Silt, trace fine Sand, little fine, angular mudstone Gravel, moderate yellowish brown to dark reddish brown.			Organic Vapor = 0.0ppm				Rec 9.0'/10.0' (55-65' bgs) 55
	56								56
690									
	57		cl						57
	58								58
	59	cl: Damp, moderately stiff CLAY, little to some Silt, trace fine Sand, dark yellowish orange.			Organic Vapor = 0.0ppm				59
	60								60

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 8 of 19 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)
	61								61
685									
	62		cl						62
	63								63
	64	NA: No recovery.	NA						64
	65	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, dark reddish brown.			Organic Vapor = 0.0ppm				Rec 3.0'/5.0' (65-70' bgs) 65
	66								66
680			cl						
	67								67
	68	NA: No recovery.							68
	69		NA						69
	70	cl: Stiff, dry CLAY, trace Silt, some angular, weathered, fine to coarse mudstone Gravel, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (70-80' bgs) 70 Groundwater encountered ~70' bgs
	71								71

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 9 of 19 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)
675	71								
	72		cl						
	73								
	74	mdst: MUDSTONE, highly broken, moderately weathered, little Silt, trace Clay, some relict bedding present (5-10 degrees), moderate reddish brown.			Organic Vapor = 0.0ppm				
	75								
	76								
670			mdst						
	77								
	78								
	79	mdst: MUDSTONE, hard, moderately broken, moderately weathered, little Silt, trace Clay, relict bedding present (5-10 degrees), moderate reddish brown.			Organic Vapor = 0.0ppm				
	80								Rec 10.0'/10.0' (80-90' bgs)
			mdst						
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 10 of 19 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)
665									
	82	mdst: MUDSTONE, highly weathered, little Silt, little Clay, trace fine Sand, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm				82
	83								83
	84								84
	85		mdst						85
	86								86
660									
	87								87
	88	mdst: MUDSTONE, highly weathered, moderately hard, trace Silt, trace Clay, little fine to medium Sand, pale red to pale yellowish orange.			Organic Vapor = 0.0ppm				88
	89		mdst						89
	90	NA: No lithologic description provided.							Rec not logged (90-100' bgs) 90
	91								91

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 11 of 19 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)
655									
	92								
	93								
	94								
	95		NA						
	96								
650									
	97								
	98								
	99								8" casing at 100' bgs
	100	mdst: MUDSTONE, soft to moderately hard, moderately to highly weathered, highly fractured into fine to coarse Gravel, grayish red to very dusky red and dark reddish brown.	mdst		Organic Vapor = 0.0ppm	Box 1 of 5 (100.0 to 115.9' bgs)		CD 100.0'	Run 1 (100.0-103.2' bgs) Ran 3.2' Rec 1.3' Loss 1.9' UL 1.5' RQD 0% Water used 400 gal, rec>95%
	101								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 12 of 19 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)
645		NA: No recovery.							
	102		NA						
	103	mdst: MUDSTONE, soft to moderately hard, moderately to highly weathered, highly fractured into fine to coarse Gravel, grayish red to very dusky red and dark reddish brown.	mdst		Organic Vapor = 0.0ppm			CD 102.8'	Run 2 (103.2-108.2' bgs) Ran 5.0' Rec 3.7' Loss 1.3' UL 1.7' RQD 0% Water used 400 gal, rec>95%
	104	cl: Soft, grayish brown CLAY, little Silt.	cl						
	105	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, moderately hard, moderately weathered, dark yellowish orange.	mdst-sltst						
	106								
640		NA: No recovery.							
	107		NA						
	108								
	109	mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout at ~25 degrees, 109.1'-111.4' fracture zone fine to coarse Gravel, grayish red to very dusky red, few Silt laminae, dark reddish brown.	mdst		Organic Vapor = 0.0ppm			CD 108.2'	Run 3 (108.2-113.2' bgs) Ran 5.0' Rec 3.2' Loss 1.8' UL 1.8' RQD 0% Water used 400 gal, rec>95%
	110								
	111								
		NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 13 of 19 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)
635									
	112		NA						
	113								
		mdst-sltst: Interbedded MUDSTONE and SILTSTONE, soft to moderately hard, moderately to highly weathered into Clay, fractured throughout, dark yellowish orange, Silt and very fine Sand laminae highly contorted, laminae near vertical from 117.0 to 117.5', tight folding observed.			Organic Vapor = 0.0ppm			CD 113.2'	Run 4 (113.2-118.2' bgs) Ran 5.0' Rec 4.3' Loss 0.7' UL 0.5' RQD 0% Water used 400 gal, rec>95%
	114								
	115								
			mdst-sltst						
	116					Box 2 of 5 (115.9 to 133.2' bgs)			
630									
	117								
		NA: No recovery.	NA						
	118	mdst: MUDSTONE, moderately hard, slightly to moderately weathered, fractured throughout at ~20 degrees, grayish red to very dusky red and dark reddish brown, highly contorted and folded, Silt and very fine Sand laminae, near vertical laminae from 118.2' to 118.6.			Organic Vapor = 0.0ppm			CD 118.0'	Run 5 (118.2-123.2' bgs) Ran 5.0' Rec 2.5' Loss 2.5' UL 2.7' RQD 8% Water used 400 gal, rec>95%
	119								
			mdst						
	120								
		NA: No recovery.							
	121								
625									

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 14 of 19 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						
	123								
		mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout into fine to coarse Gravel, grayish red to very dusky red and dark reddish brown, Silt laminae present and contorted.			Organic Vapor = 0.0ppm			CD 123.2'	Run 6 (123.2-128.2' bgs) Ran 5.0' Rec 2.1' Loss 2.9' UL 2.9' RQD 0% Water used 250 gal, rec>95%
	124		mdst						
	125								
		NA: No recovery.							
	126								
620			NA						
	127								
	128								
		cl-ml: Soft, dusky red SILT and CLAY, some fine Sand, little highly weathered, fine to coarse mudstone Gravel.			Organic Vapor = 0.0ppm			CD 128.2'	Run 7 (128.2-133.2' bgs) Ran 5.0' Rec 3.4' Loss 1.6' UL 1.6' RQD 0% Water used 400 gal, rec>95%
	129		ml-cl						
	130								
		mdst: MUDSTONE, soft to moderately hard, moderately to highly weathered, fracture zone with fine to coarse Gravel, grayish red to very dusky red and dark reddish brown.							
	131		mdst						
615		NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 15 of 19 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		NA						132
	133								133
	134	mdst: MUDSTONE, hard, slightly to moderately weathered, fractured throughout into fine to coarse Gravel, fracture at ~50 degrees, vertical fracture 134.4'- 134.7', grayish red to very dusky red and dark reddish brown, few quartz veins, no reaction to 10% HCl.	mdst		Organic Vapor = 0.0ppm	Box 3 of 5 (133.2 to 145.3' bgs)		CD 133.2'	Run 8 (133.2-138.2' bgs) Ran 5.0' Rec 3.1' Loss 1.9' UL 1.9' RQD 0% Water used 450 gal, rec 83% 134
	135								135
	136								136
610	137	NA: No recovery.	NA						137
	138								138
	139	mdst: MUDSTONE, moderately hard to hard, slightly to moderately weathered, fractured throughout at horizontal to 10 degrees, vertical fracture 140.0'-140.2', 140.6'-141.0', 141.9'-142.8', fracture zone 141'-141.2 with fine to coarse Gravel, grayish red to very dusky red and dark reddish brown, few quartz veins present, no reaction to 10% HCl.	mdst		Organic Vapor = 0.0ppm			CD 138.2'	Run 9 (138.2-143.2' bgs) Ran 5.0' Rec 4.6' Loss 0.4' UL 0.0' RQD 19% Water used 400 gal, rec>95% 139
	140								140
	141								141
605	142								142

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 16 of 19 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)
	143	mdst: MUDSTONE, hard, slightly to moderately weathered, fractured throughout at horizontal and 30 degrees, slightly yellowish orange discoloration on fracture faces, few Silt laminae, grayish red to very dusky red and dark reddish brown.			Organic Vapor = 0.0ppm			CD 142.8'	Run 10 (143.2-146.8' bgs) Ran 3.6' Rec 3.6' Loss 0.0' UL 0.4' RQD 0% Water used 400 gal, rec>95%
	144								
	145		mdst			Box 4 of 5 (145.3 to 158.7' bgs)			
	146								
600		NA: No recovery.	NA						
	147	mdst: MUDSTONE, moderately hard to hard, slightly to moderately weathered, fractured throughout, grayish red to very dusky red and dark reddish brown.	mdst		Organic Vapor = 0.0ppm			CD 146.8'	Run 11 (146.8-148.2' bgs) Ran 1.4' Rec 0.85' Loss 0.55' UL 0.55' RQD 0% Water used 60 gal, rec 95%
	148	NA: No recovery.	NA						
	149	mdst: MUDSTONE, hard, moderately weathered, fractured throughout at horizontal to 30 degrees with orange/yellow discoloration on fracture surfaces, grayish red to very dusky red and dark reddish brown, most of core is coarse Gravel.	mdst		Organic Vapor = 0.0ppm			CD 148.2'	Run 12 (148.2-153.2' bgs) Ran 5.0' Rec 3.5' Loss 1.5' UL 1.6' RQD 0% Water used 400 gal, rec>95%
	150	cl-ml: Yellowish orange CLAY and SILT.	cl-ml						
	151	mdst: MUDSTONE, hard, moderately weathered, fractured throughout at horizontal to 30 degrees with orange/yellow discoloration on fracture surfaces, grayish red to very dusky red and dark reddish brown, most of core is coarse Gravel.	mdst						
595	152	NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 17 of 19 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						
	153								153
		cl: Yellowish orange CLAY, some fine to coarse mudstone Gravel, little Silt.	cl		Organic Vapor = 0.0ppm			CD 153.3'	Run 13 (153.2-158.2' bgs) Ran 5.0' Rec 3.3' Loss 1.7' UL 1.6' RQD 0% Water used 400 gal, rec>95%
	154								154
	155								155
		mdst: MUDSTONE, hard, moderately weathered, fractured throughout at nearly horizontal with some coarse Gravel, slight discoloration along fracture surfaces, grayish red to very dusky red and dark yellowish brown.	mdst						
	156								156
590		NA: No recovery.	NA						
	157								157
	158								158
		mdst: MUDSTONE, hard, slightly to moderately weathered, fractured to Gravel with slight discoloration, grayish red to very dusky red and dark reddish brown.	mdst		Organic Vapor = 0.0ppm	Box 5 of 5 (158.7 to 173.2' bgs)		CD 158.2'	Run 14 (158.2-163.2' bgs) Ran 5.0' Rec 1.4' Loss 3.6' UL 3.6' RQD 0% Water used 400 gal, rec>95%
	159								159
		NA: No recovery.	NA						
	160								160
	161								161
585									
	162								162

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 18 of 19 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								163
		mdst: MUDSTONE, hard, moderately weathered, fractured throughout at horizontal, 1 fracture at ~60 degrees, grayish red to very dusky red and dark reddish brown.			Organic Vapor = 0.0ppm			CD 163.2'	Run 15 (163.2-168.2' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.2' RQD 7% Water used 150 gal, rec>95%
	164								164
	165								165
			mdst						
	166								166
580									
	167								167
	168								168
		NA: No recovery.	NA						
		mdst: MUDSTONE, hard, moderately weathered, fractured throughout, 90% of core is fine to coarse Gravel, grayish red to very dusky red and dark reddish brown.			Organic Vapor = 0.0ppm			CD 168.2'	Run 16 (168.2-173.2' bgs) Ran 5.0' rec 2.7' Loss 2.3' UL 2.2' RQD 0% Water used 400 gal, rec>95%
	169								169
	170		mdst						170
	171	NA: No recovery.							171
575									
	172		NA						172

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G22

Project: Fort McClellan | Geologist: W.Cooper/D.Mayton/L.O'Hare | Sheet 19 of 19 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)
	173	NA: No recovery.	NA		Organic Vapor = 0.0ppm			CD 173.1'	
	174								
	175								Bottom of borehole at 175' bgs

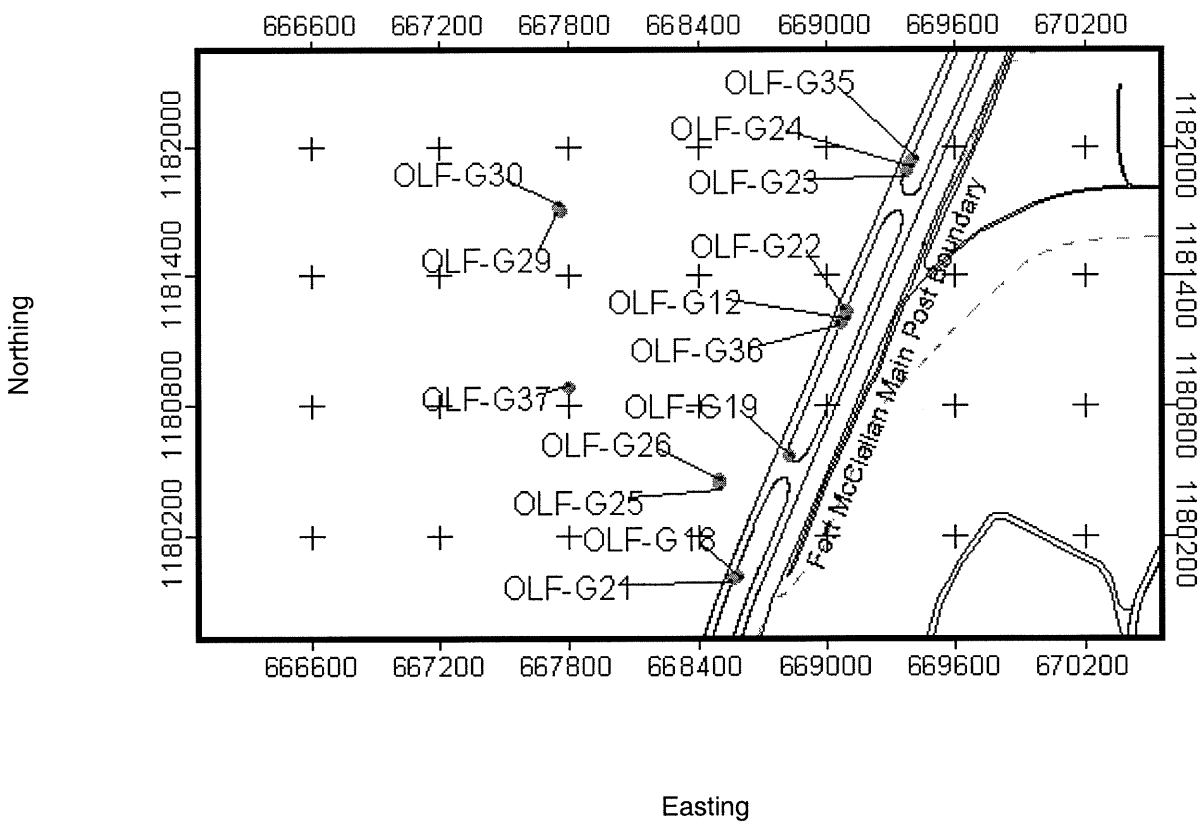
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G23
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 19 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith/Mike Mueller/Mark Biermier	6. Mfr. designation of drill: GP24-300RS/Topkick D-120 Drill Rig
7. Sizes and types of drilling and sampling equipment: RS - 6" Sonic Core Barrel, 7 7/8" Sonic Bit 5' PQ3 Wireline Core Barrel	8. Hole location: Landfill #3, Parcel 80 9. Surface elevation (feet above mean sea level): 744.17 10. Date started: 06/04/01 — 11. Date completed: 06/29/01
12. Overburden thickness (feet bgs): 96.0	15. Depth groundwater encountered (feet bgs): 67
13. Depth drilled into rock (feet bgs): 79.5	16. Depth to water and elapsed time after drilling completed (feet bgs): 65.77 after 4 days
14. Total depth of hole (feet bgs): 175.5	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 7		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	37.5'
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Wally Cooper/Dennis Mayton		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 2 of 19 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	cl: Stiff, damp CLAY, trace Silt, trace fine Sand, light brown to pale yellowish orange.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (0-5' bgs) Sonic - Boart Longyear - 6/4/01
	1								
	2								
	3								
740	4								
	5	cl: Stiff, damp CLAY, trace Silt, trace fine Sand, light brown to pale yellowish orange.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (5-10' bgs)
	6	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.	cl		Organic Vapor = 0.0ppm				
	7								
	8								
735	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 3 of 19 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)
		cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (10-15' bgs)
	11								11
	12								12
			cl						
	13								13
	14								14
730									
	15	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (15-25' bgs) 15
	16		cl						16
	17	cl: Stiff, moist CLAY, little Silt, slight plasticity, trace fine Sand, dusky red to dark yellowish orange.			Organic Vapor = 0.0ppm				17
	18								18
	19								19
725									
	20				Organic				20

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 4 of 19 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)
					Vapor = 0.0ppm				
	21		cl						21
	22								22
	23								23
	24								24
720									
	25	cl: Stiff, moist CLAY, trace to little Silt, slight to no plasticity, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (25-35' bgs) 25
	26								26
	27								27
	28								28
	29								29
715									
	30		cl						30

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 5 of 19 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								31
	32								32
	33								33
710	34								34
	35	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (35-40' bgs) 35
	36								36
	37								37
	38								38
705	39								39
	40	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor =				Rec 5.0'/5.0' (40-45' bgs) 40

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 6 of 19 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)
					0.0ppm				
	41								41
	42								42
			cl						
	43								43
	44								44
700									
	45	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (45-50' bgs) 45
	46								46
	47								47
			cl						
	48								48
	49								49
695									
	50	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.	cl		Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (50-60' bgs) 50

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 7 of 19 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	cl: Stiff, dry CLAY, little Silt, little angular, fine to medium mudstone Gravel, light yellowish orange to moderate reddish brown.	cl		Organic Vapor = 0.0ppm				
	52								
	53								
690	54								
	55								
	56								
	57								
	58								
685	59								
	60	cl: Stiff, dry CLAY, little Silt, little angular, fine to medium mudstone Gravel, light yellowish orange to moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (60-65' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 8 of 19 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)
	61								61
	62		cl						62
	63								63
680	64								64
	65	cl: Stiff, dry CLAY, trace Silt, little angular, fine to medium mudstone Gravel, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (65-67' bgs) 65
	66		cl						66 Groundwater encountered at 67' bgs
	67	cl: Stiff, damp CLAY, some Silt, slight plasticity, trace fine Sand, shaley texture, moderate reddish brown with thin layers of pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 6.0'/10.0' (67-77' bgs) 67
	68								68
675	69								69
	70								70
	71								71

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 9 of 19 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								
	72		cl						
	73	NA: No recovery.							
670	74								
	75		NA						
	76								
	77	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 8.0'/8.0' (77-85' bgs)
	78								
665	79								
	80								
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 10 of 19 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)
			cl						
	82								82
	83								83
	84								84
660									
	85	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (85-90' bgs) 85
	86								86
	87		cl						87
	88								88
	89								89
655									
	90	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 6.0'/6.0' (90-96' bgs) 90
	91								91

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 11 of 19 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)
	92								92
	93		cl						93
650	94								94
	95								95
	96	mdst: MUDSTONE, dark reddish brown with yellowish brown interbeds, very broken, moderately weathered, shaley texture, little Silt, dry.			Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (96-98' bgs) 96
	97		mdst						97
	98	NA: No recovery.							98
645	99								99
			NA						
	100								100
									8" steel casing set at 101.0' bgs
	101	mdst: MUDSTONE, moderately hard, moderately weathered, all of core is fine to coarse Gravel, grayish red.			Organic Vapor =	Box 1 of 7 (101.0		CD 101.0'	Run 1 (101-104.3' bgs) Ran 3.3' Rec 1.0' Loss 2.3' UL 2.3' 101

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 12 of 19 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)
			mdst		0.0ppm to 119.0' bgs)				RQD 0% Water used 225 gallons, rec>95%
	102	NA: No recovery.							
	103		NA						
640	104								
		NA: No recovery.						CD 104.3'	Run 2 (104.3-109.3' bgs) Ran 5.0' Rec 0.0' Loss 5.0' UL 5.0' RQD 0% Water used 425 gallons, rec>95%
	105								
	106								
	107		NA						
	108								
635	109								
									Run 3 (109.3-110.8' bgs) Ran 1.5' Rec 1.2' Loss 0.3' UL 0.0' RQD 0% Water used 425 gallons, rec>95%
	110	mdst-clst: MUDSTONE grading to CLAYSTONE, moderately hard, moderately weathered, fractured throughout bedding near horizontal, Mudstone grayish red, Claystone olive gray.	mdst-clst		Organic Vapor = 0.0ppm			CD 109.6'	
	111	mdst-sltst: MUDSTONE grading into SILTSTONE, soft to moderately hard, moderately to highly weathered, highly fractured throughout, moderate yellow, bedding at 5-10 degrees.			Organic Vapor = 0.0ppm			CD 110.8'	Run 4 (110.8-113.2' bgs) Ran 2.4' Rec 2.4' Loss 0.0' UL 0.0' RQD 0% Water used 425 gallons,

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 13 of 19 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)
									rec>95%
	112		mdst-sltst						
	113								
		mdst: MUDSTONE, soft to moderately hard, moderately to highly weathered, highly fractured throughout, moderate yellow.	mdst		Organic Vapor = 0.0ppm			CD 113.2'	Run 5 (113.2-115.2' bgs) Ran 2.0' Rec 0.5' Loss 1.5' UL 1.5' RQD 0% Water used 425 gallons, rec>95%
		NA: No recovery.	NA						
	114								
630									
	115								
		mdst-sltst: MUDSTONE interbedded with SILTSTONE, moderately hard, moderately weathered, fractured throughout at 10-20 degrees, dark brown to black discoloration along fracture faces, few quartz crystals along fractures faces, no reaction with 10% HCl, dark yellowish orange, bedding 10-15 degrees, Silt laminae present.	mdst-sltst		Organic Vapor = 0.0ppm			CD 115.2'	Run 6 (115.2-118.2' bgs) Ran 3.0' Rec 2.8' Loss 0.2' UL 0.2' RQD 13% Water used 400 gallons, rec>95%
	116								
	117								
	118								
		NA: No recovery.	NA						
		mdst-sltst: MUDSTONE interbedded with fine beds of SILTSTONE, moderately hard, moderately weathered, fractured throughout at 10-20 degrees, dark brown to black discoloration along fracture faces, dark yellowish orange, bedding 10-20 degrees, very fine Sand laminae present.			Organic Vapor = 0.0ppm			CD 118.2'	Run 7 (118.2-123.2' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 42% Water used 400 gallons, rec>95%
	119					Box 2 of 7 (119.0 to 129.1' bgs)			
625									
	120								
	121		mdst-sltst						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 14 of 19 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								
		mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout, dark brown to black discoloration along fracture faces, fracture at 10-20 degrees, 3 fractures at 80 degrees at 124.6', 125.5', 127.2', dark yellowish orange, Silt and very fine Sand laminae.	mdst		Organic Vapor = 0.0ppm			CD 123.2'	Run 8 (123.2-128.2' bgs) Ran 5.0' Rec 4.6' Loss 0.4' UL 0.4' RQD 36% Water rec >95%
620	124								
	125								
	126								
	127								
	128	NA: No recovery.	NA						
		mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout at 20 degrees, moderate yellowish brown, highly folded bedding at 129.4', last 0.9' of recovery is coarse mudstone Gravel, Silt and very fine Sand laminae.	mdst		Organic Vapor = 0.0ppm	Box 3 of 7 (129.1 to 148.2' bgs)		CD 128.2'	Run 9 (128.2-133.2' bgs) Ran 5.0' Rec 2.2' Loss 2.8' UL 2.4' RQD 12% Water used 400 gallons, rec>95%
615	129								
	130								
		NA: No recovery.	NA						
	131								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 15 of 19 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								132
	133	mdst: MUDSTONE, soft to moderately hard, moderately to highly weathered, fractured throughout with fine to coarse Gravel, grayish red, slightly contorted Silt and very fine Sand laminae.			Organic Vapor = 0.0ppm			CD 132.8'	133 Run 10 (133.2-138.2' bgs) Ran 5.0' Rec 2.1' Loss 2.9' UL 3.4' RQD 0% Water used 400 gallons, rec>95%
610	134		mdst						134
	135	NA: No recovery.							135
	136								136
			NA						
	137								137
	138								138
		cl-ml: Yellowish orange CLAY and SILT.	cl-ml		Organic Vapor = 0.0ppm			CD 138.3'	Run 11 (138.2-143.2' bgs) Ran 5.0' Rec 3.7' Loss 1.3' UL 1.2' RQD 0% Water used 400 gallons, rec>95%
605	139	mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout, 138.6 to 139.5 fracture zone with fine to coarse Gravel, fractures at ~25 degrees, fracture at ~80 degrees at 140.5, grayish red to very dusky red, and dark reddish brown, few Silt laminae.							139
	140								140
	141		mdst						141
	142								142

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 16 of 19 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: No recovery.	NA						
	143								143
		mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout, zone 143.2-143.6 fine to coarse Gravel, vertical fractures 144.4-144.6, grayish red to very dusky red, dark reddish brown, few Silt and very fine Sand laminae.	mdst		Organic Vapor = 0.0ppm			CD 143.2'	Run 12 (143.2-148.2' bgs) Ran 5.0' Rec 2.1' Loss 2.9' UL 2.7' RQD 7% Water used 400 gallons, rec>95%
	144								144
600									
		NA: VOID.	NA						
	145								145
	146								146
		mdst-sltst: MUDSTONE, interbedded with SILTSTONE, soft to moderately hard, moderately weathered, fine to coarse Gravel, grayish red and moderate yellowish brown.	mdst-sltst						
	147								147
		NA: No recovery.	NA						
	148								148
		mdst: MUDSTONE, moderately hard to hard, slightly to moderately weathered. Fractured throughout at 20 degrees; 40 degrees at 151.9', 152.5'; vertical fracture 150.4'- 150.8'; 148.8' to 149.2', grayish red to very dusky red, dark reddish brown; fracture zone 148.2' to 148.8'; 151.5'- 152.0' with fine to coarse Gravel, few Silt laminae, few quartz infilled veins, no reaction to 10% HCl.	mdst		Organic Vapor = 0.0ppm	Box 4 of 7 (148.2 to 161.5' bgs)		CD 148.0'	Run 13 (148.2-153.2' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 26% Water used 400 gallons, rec 75%
	149								149
595									
	150								150
	151								151
	152								152

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 17 of 19 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)
	153	mdst: MUDSTONE, hard, slightly weathered, fractured throughout at 25 degrees, grayish red to very dusky red, and dark reddish brown.	mdst		Organic Vapor = 0.0ppm			CD 153.0'	Run 14 (153.2-158.2' bgs) Ran 5.0' Rec 2.6' Loss 2.4' UL 2.6' RQD 21% Water used 575 gallons, rec ~74%
590	154								
	155								
	156	NA: No recovery.	NA						
	157								
	158				Organic Vapor = 0.0ppm				
	159	mdst: MUDSTONE, hard, slightly weathered, fractured throughout with fine to coarse Gravel, grayish red to very dusky red, dark reddish brown.	mdst					CD 158.2'	Run 15 (158.2-161.5' bgs) Ran 3.3' Rec 2.3' Loss 1.0' UL 1.0' RQD 0% Water used 400 gallons, rec 0%
585									
	160								
	161	NA: No recovery.	NA						Resume using 6" core barrel
	162	cl: Dark red brown, very stiff CLAY, some Silt, little fine to coarse mudstone Gravel.			Organic Vapor = 0.0ppm	Box 5 of 7 (161.5 to 166.3' bgs)		CD 161.5'	Rec 3.5'/3.5' (161.5-165' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 18 of 19 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		cl						163
580	164								164
	165	cl: Dark red brown, very stiff CLAY, some Silt, little fine to coarse mudstone Gravel.	cl		Organic Vapor = 0.0ppm				Rec 9.3'/10.0' (165-175' bgs) 165
	166	mdst: MUDSTONE, soft to moderately hard, highly weathered to decomposed, dark reddish brown.				Box 6 of 7 (166.3 to 170.8' bgs)			166
	167		mdst						167
	168								168
		cl: Yellowish orange and dark red brown, stiff to very stiff CLAY, some Silt, fine to coarse mudstone Gravel, trace fine Sand.							
575	169								169
	170								170
	171					Box 7 of 7 (170.8 to 175.0' bgs)			171
	172		cl						172

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G23

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 19 of 19 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)
	173								173
	174								174
570		NA: No recovery.	NA						
	175	NA: No sample collected for lithologic description.	NA						175 Bottom of borehole at 175.5' bgs

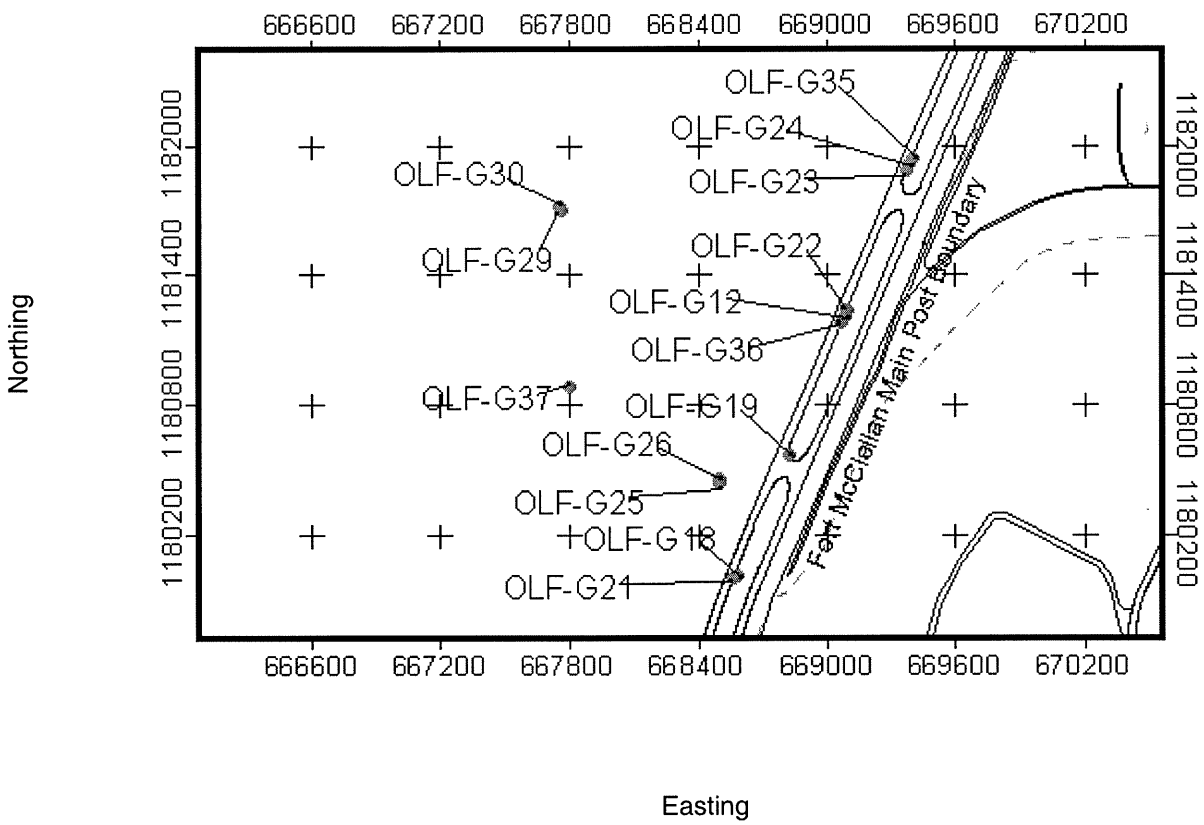
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G24
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 11 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith	6. Mfr. designation of drill: GP24-300RS Rotasonic Drill
7. Sizes and types of drilling and sampling equipment: RS - 4" and 6" Sonic Core Barrel, 7 7/8" Sonic Bit	8. Hole location: Landfill #3, Parcel 80
	9. Surface elevation (feet above mean sea level): 743.9
	10. Date started: 07/10/01 / 11. Date completed: 07/12/01
12. Overburden thickness (feet bgs): >95	15. Depth groundwater encountered (feet bgs): 67
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): 65.91 after 2 days
14. Total depth of hole (feet bgs): 95	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 19		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	93.6
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Dennis Mayton		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: OLF-G24

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 2 of 11 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	cl: Stiff, damp CLAY, trace Silt, trace fine Sand, light brown to pale yellowish orange.	cl		Organic Vapor = 0.0ppm	Box 1 of 19 (0 to 5.0' bgs)			Rec 5.0'/5.0' (0-5' bgs) Sonic - Boart Longyear - 7/10/01 Lithologic description from adjacent monitoring well OLF-G23 (0-95' bgs)
	1								
	2								
	3								
740	4								
	5	cl: Stiff, damp CLAY, trace Silt, trace fine Sand, light brown to pale yellowish orange.	cl		Organic Vapor = 0.0ppm	Box 2 of 19 (5.0 to 10.0' bgs)			Rec 8.6'/10.0' (5-15' bgs)
	6	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.	cl						
	7								
	8								
735	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 3 of 11 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)
		cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.				Box 3 of 19 (10.0 to 16.1' bgs)			
	11								11
	12								12
			cl						
	13								13
730	14								14
	15	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (15-25' bgs) 15
	16		cl			Box 4 of 19 (16.1 to 21.1' bgs)			16
	17	cl: Stiff, moist CLAY, little Silt, slight plasticity, trace fine Sand, dusky red to dark yellowish orange.							17
	18								18
725	19								19
	20								20

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 4 of 11 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			Box 5 of 19 (21.1 to 25.0' bgs)			
	22								
	23								
720	24								
	25	cl: Stiff, moist CLAY, trace to little Silt, slight to no plasticity, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm	Box 6 of 19 (25.0 to 30.0' bgs)			Rec 10.0'/10.0' (25-35' bgs)
	26								
	27								
	28								
715	29								
	30		cl			Box 7 of 19			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 5 of 11 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)
						(30.0 to 35.0' bgs)			
	31								31
	32								32
	33								33
710	34								34
	35	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm	Box 8 of 19 (35.0 to 40.0' bgs)			Rec 10.0'/10.0' (35-45' bgs) 35
	36								36
	37								37
			cl						
	38								38
705	39								39
	40	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor =	Box 9 of 19 (40.0 to			40

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 6 of 11 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)
					0.0ppm	45.0' bgs)			
	41								41
	42								42
			cl						
	43								43
700	44								44
	45	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.			Organic Vapor = 0.0ppm	Box 10 of 19 (45.0 to 50.0' bgs)			Rec 10.0'/10.0' (45-55' bgs) 45
	46								46
	47								47
			cl						
	48								48
695	49								49
	50	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, moderate reddish brown.	cl		Organic Vapor = 0.0ppm	Box 11 of 19 (50.0 to 55.0'			50

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 7 of 11 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)
						bgs)			
	51	cl: Stiff, dry CLAY, little Silt, little angular, fine to medium mudstone Gravel, light yellowish orange to moderate reddish brown.							51
	52								52
	53								53
690	54								54
	55		cl			Box 12 of 19 (55.0 to 60.0' bgs)			Rec 10.0'/10.0' (55-65' bgs) 55
	56								56
	57								57
	58								58
685	59								59
	60	cl: Stiff, dry CLAY, little Silt, little angular, fine to medium mudstone Gravel, light yellowish orange to moderate reddish brown.			Organic Vapor = 0.0ppm	Box 13 of 19 (60.0 to 65.0' bgs)			60

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 8 of 11 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)
	61								61
	62								62
			cl						
	63								63
680	64								64
	65	cl: Stiff, dry CLAY, trace Silt, little angular, fine to medium mudstone Gravel, moderate reddish brown.			Organic Vapor = 0.0ppm	Box 14 of 19 (65.0 to 70.0' bgs)			Rec 13.0'/13.0' (65-78' bgs) 65
	66		cl						66
	67	cl: Stiff, damp CLAY, some Silt, slight plasticity, trace fine Sand, shaley texture, moderate reddish brown with thin layers of pale yellowish orange.							Groundwater encountered at ~67' bgs 67
	68								68
675	69								69
	70					Box 15 of 19 (70.0 to 75.0' bgs)			70
	71								71

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 9 of 11 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								
	72		cl						
	73	NA: No recovery.							
670	74								
	75		NA			Box 16 of 19 (75.0 to 80.0' bgs)			
	76								
	77	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm				
	78								Rec 7.0'/7.0' (78-85' bgs)
665	79								
	80					Box 17 of 19 (80.0 to 85.0' bgs)			
	81		cl						