



**U.S. Army
Environmental
Center**

REVISED DRAFT FINAL

**REMEDIAL INVESTIGATION/
RISK ASSESSMENT**

**Iowa Army Ammunition Plant
Middletown, Iowa**

Contract No.: DAAA15-90-D-0006
Task Order No. 002

VOLUME 5 OF 11

**Appendix C Through F
Analytical Data
Pages 1 Through 300**

Prepared For:

U.S. Army Environmental Center
SFIM-AEC-IRA; Building E4480
Aberdeen Proving Ground, MD 21010-5401

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APPENDIX C
WELL LOGS AND WELL
DIAGRAMS

2



SOIL BORING LOG

PAGE: 1

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PROJECT NO: 2659
 DATE BEGAN: 4/16/93
 TIME BEGAN: 0925
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-02
 DATE FINISHED: 4/16/93
 TIME FINISHED: 1010
 NORTH: 302998
 GWL DATE/TIME: NA
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R25

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2636346.1
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY CLAY: soft, dk gray, little fine sand, tr organics and roots, wet			Fill Topsoil, buried, top 1" possibly burnt.
2				CLAYEY SILT: stiff, yellowish-brown and dk gray, little fine to med sand, moist		ND	
4				SILT: stiff, dk gray, some organics, moist			
6				SILTY CLAY: stiff, strong brown mottled w/ lt gray, little fine to med sand, tr gravel, moist		7 ppm	
8				SILTY CLAY: stiff, gray, little fine to med sand, tr gravel, moist			
10				SILTY CLAY: stiff, strong brown mottled w/ tr lt gray, little fine to med sand, tr gravel, moist		1 ppm	
12							
14							
16				Total Depth @ 14.5'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/20/93
 TIME BEGAN: 0840
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-03
 DATE FINISHED: 4/20/93
 TIME FINISHED: 1000
 NORTH: 302494.3
 GWL DATE/TIME: NA
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R25

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2636110.1
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY CLAY: stiff, dk brown and yellowish-brown, tr fine sand, some organics in to 6", moist			Fill, Rec 3.0' out at 5.0'
2							
4				CLAYEY SILT: 1" black layer over yellowish-brown, tr fine sand, moist		5 ppm	Burnt Zone
6				SILTY CLAY: stiff, yellowish-brown, tr gray mottling, little fine sand, tr gravel, moist		5 ppm	Strong fuel odor
8							
10				SILTY CLAY: stiff, strong, brown w/ tr gray mottling, tr black manganese nodules, moist			
12				SILTY CLAY: stiff, lt gray, little fine sand, tr sand, moist		ND	
14							
16				Total Depth @ 15.0'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 1500
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-04
 DATE FINISHED: 4/14/93
 TIME FINISHED: 1554
 NORTH: 301086.10
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2636455
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		DL		SILTY CLAY: (2.5y/3/2) very dk gray, soft, low plasticity, moist		ND	HCI-
2		OL		CLAYEY SILT: (10yr/4/6) dk yellowish-brown, soft, med plasticity, moist		ND	HCI-
4		MOL		CLAYEY SILT: (2.5y/4/2) dk yellowish-brown w/ olive-brown, very soft, low plasticity, moist			
6		RL		SANDY CLAYEY SILT: (2.5y/4/4) olive-brown, very soft, low plasticity, moist		ND	HCI-
8		OL		SILTY CLAY: (7.5yr/5/6) strong brown, firm, no plasticity, dry		ND	HCI-
10		OL		SILTY CLAY: soft, dry-moist		ND	HCI-
14		OL		SILTY CLAY: strong brown, firm, low plasticity, moist		ND	HCI-
16				Total Depth @ 15.0'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/15/93
 TIME BEGAN: 1045
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-05
 DATE FINISHED: 4/15/93
 TIME FINISHED: 1130
 NORTH: 301585.8
 GWL DATE/TIME: NA
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2636211
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SANDY SILTY CLAY: stiff, dk gray, tr gravel, moist		ND	
2				SANDY SILTY CLAY: stiff, yellow-brown and lt gray mottled, tr. gravel			
4				Limestone at 4.0'			
6				Total depth @ 5.0'			
8							
10							
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 1623
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-06
 DATE FINISHED: 4/14/95
 TIME FINISHED: 1735
 NORTH: 301986.4
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2636046.6
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAYEY SILT: (7.5yr/4/4) strong brown, soft, low plasticity, dry-moist		ND	HCl-
2				SILTY CLAY: (10yr/5/2) strong brown, soft, low plasticity, dry-moist, friable		ND	HCl-
4				CLAYEY SILT: (10yr/5/2) grayish-brown, tr yellowish-red		ND	HCl-
				(5yr/5/8) s. sand, firm, low plasticity			
6				CLAYEY SILT: fine grain sand, subrounded, low plasticity, dry-moist CLAYEY SILT: tr fine gravel			
8				CLAY: (56/6/1), greenish-gray, rock (chert), inclusions, very firm, low plasticity, dry			HCl-
10				Total Depth @ 9.0' Auger Refusal			
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-09
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1130
 NORTH: 295083.2
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615837.9
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		RU		SANDY SILT: black, organic			HCl+
		RU		SILT: dk brown, brown and gray-black, dry, slightly plastic, firm, grades to more clay content			HCl+
2		OU		SILTY CLAY: orangish-brown, moist, oxidized w/ black manganese staining			HCl+
4							
6		MOU		CLAYEY SILT: brown to orange-brown, tr gray and black mottled, tr fine sand			HCl+
8				SILTY CLAY: brown and orange-brown to gray and black manganese staining, mottled, med plasticity, fine, tr sand			
10		MOU MOL		SANDY SILT: brown and orange-brown, fine Total Depth @ 10.0'			HCl+ HCl- 1" Water bearing zone between 9.0' - 10.0'
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-10
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1030
 NORTH: 295484
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615673.7
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		SILTY SAND: black, organic			HCl-
		RL		CLAY: dk brown, moist			HCl-
2		MOL		CLAYEY SILT: brown and orange-brown, mottled, moist, oxidized			HCl-
4						.25ppm	
6		OL		SANDY CLAY: brown, moist, fine			HCl-
8				SANDY CLAY: brown, moist, fine w/ black manganese staining, med plasticity, firm			
10		OU		SANDY CLAYEY SILT: brown, moist, fine-med plasticity, stiff Total Depth @ 10.0'		1 ppm	HCl+ Becomes dry at 9.5'.
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-12
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1900
 NORTH: 297493.6
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615083.8
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		Acid Reaction		SILT: crushed stone, gray			
2		MOL		SILTY SAND: dk brown, fine-med, tr clay, wet SILTY SAND: brown and orangish-brown w/ black mottling, tr coarse gravel, med plasticity, very stiff, moist			HCl-
4						1 ppm	
6				CLAYEY SILT: brown and orange-brown w/ gray mottling, w/ tr sand			HCl-
8		OL		SILTY SAND: brown, fine-med tr clay, wet			
10				SILTY CLAY: brown, plastic, very stiff Total Depth @ 10.0'		.4 ppm	
12							
14							
16							

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PROJECT NO: 2659
 DATE BEGAN: 4/18/95
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-13
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1830
 NORTH: 296989.70
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615173.6
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY SAND: brown, organic, fine, moist, med-low plasticity			
2				SANDY CLAY: brown and orangish-brown, med plasticity, moist SANDY SILT: brown and orangish-brown mottled, firm, fine-med, med plasticity, dry			
4				SANDY CLAYEY SILT: brown and orange-brown and gray mottled			
6				CLAYEY SANDY SILT: fine-med orangish-brown and brown, w/ little gray, mottled, oxidized, dry			
10				Total Depth @ 10.0'			
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/28/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-14
 DATE FINISHED: 4/18/95
 TIME FINISHED: 1750
 NORTH: 296474
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2614802.1
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		CLAYEY SILT: Brown and orange-brown, tan and gray mottled, very moist, w/ little fine-med sand, med plasticity firm, w/ manganese staining			HCl- Top 6" is crushed stone
2							
4							
6				SILT: gray-brown and orange-brown, mottled, moist, med plasticity, firm			Run has manganese staining
8				CLAYEY SILT: gray-brown and orange-brown mottled, moist, med plasticity, firm CLAY: brown and orange-brown and grayish-tan mottled w/fine sand med plasticity, stiff, moist		1.4ppm	
10				SILTY CLAY: orange-brown and brown, tr gray mottled very oxidized, med plasticity, stiff		1.2ppm	
12				Total Depth @ 10.0'			
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: 1545
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-15
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1705
 NORTH: 301057.5
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: R27

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2635204
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		DL		SILTY CLAY: (10yr/2/1) black, soft, low plasticity, moist, 1" gravel, s/m subangular		.4ppm	HCl-
2		MOL		SILTY CLAY: (7.5yr/5/1) gray w/ strong brown (7.5yr/4/6) mottling, soft, low plasticity, dry		.6ppm	HCl-
4							
6		MOL		SILTY CLAY: (2.5y/5/1) w/ strong brown mottling, soft, low plasticity, manganese staining, friable, moist		.4ppm	HCl-
8						.4ppm	HCl-
10						.6ppm	
12		MOL		SANDY SILTY CLAY: iron and manganese staining, blocky, very soft, wet		4 ppm	HCl-
14		MOL		SILTY CLAY: (n51) w/ bluish gray (sb/511) mottling, firm, low plasticity, dry		3 ppm	
16		UL	SANDY SILT: dk greenish-gray (5bg/4/1), s/m sand, moist		4 ppm	HCl-	
					8 ppm	HCl-	

SOIL BORING LOG

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BORING NO: JAB-15

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				SANDY SILT: dk greenish-gray (5bg/4/1), s/m sand, moist			
18		UL		SANDY SILTY CLAY: olive (5y/4/4) soft, med plasticity, moist		19 ppm	HCl-
20		OU		SANDY SILTY CLAY: strong brown, stiff, low plasticity, dry		6 ppm	HCl+
22				SANDY SILTY CLAY: blue		1 ppm	HCl+
24				Total Depth @ 25.0'		ND	HCl+
26							
28							
30							
32							
34							

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SOIL BORING LOG


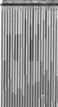


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PROJECT NO: 2659
 DATE BEGAN: 4/19/93
 TIME BEGAN: 1223
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-17
 DATE FINISHED: 4/19/93
 TIME FINISHED: 1250
 NORTH: 301042.5
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: R27

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2635108
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		DL		CLAYEY SILT: black, soft, med plasticity, tr organic, moist			
2		MOL		CLAYEY SILT: (7.5yr/4/2) brown w/gray (10yr/5/1) mottling, firm, low plasticity, iron and magnesium staining, dry to moist	1.5 ppm		HCl-
4				SILTY CLAY (10yr/6/1) gray w/ yellowish-brown (10yr/5/8) mottling, soft, med plasticity, moist to dry	ND		HCl-
6		MOL			ND		HCl-
8				SANDY SILTY CLAY: gray w/ yellowish-red (5yr/5/8) mottling, firm, low plasticity, moist to dry	ND		HCl-
10		MOL			ND		HCl-
12				SANDY SILTY CLAY: gray w/ yellowish-red (5yr/5/8), mottling, firm, low plasticity, moist to dry			
14		MOL					
16		MOL		SANDY SILTY CLAY: very soft, moist to dry			

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BORING NO: JAB-17

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				SANDY SILTY CLAY: very soft, moist to dry		ND	Collected sample to inspect bottom. Looking for top of tile layer.
18				SANDY SILTY CLAY: very soft, moist to dry			
20		MOL		Total Depth @ 20.0'			Pushed Shelby Tube 20.0' - 22.0'
22							
24							
26							
28							
30							
32							
34							

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PROJECT NO: 2659
 DATE BEGAN: 4/19/93
 TIME BEGAN: 1500
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAB-18
 DATE FINISHED: 4/19/93
 TIME FINISHED: 1550
 NORTH: 301044.5
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: R27

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2635124
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0			DL		SILTY CLAY: black soft, med plasticity, tr organics, moist		.4ppm	HCI-
2			OL		CLAYEY SILT: grayish-brown w/ iron and magnesium staining, soft, low plasticity, moist to dry		ND	HCI-
4								
6			OL		CLAYEY SILT: med plasticity, firm to soft, friable, dry to moist		.6ppm	HCI-
8							.2ppm	
10			OL		SANDY CLAYEY SILT: soft to firm, low plasticity, magnesium staining, moist to dry		3 ppm	HCI-
12							.2ppm	HCI-
14			OL				ND	HCI-
16					Total Depth @ 15.0'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/28/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 676.99'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-01
 DATE FINISHED: 4/28/93
 TIME FINISHED: 0943
 NORTH: 296962.2
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 57
 BORING LOCATION: R15

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2614097.1
 GWL DEPTH: 10.23'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		OL		SANDY CLAY: brown, fine, tr clay, moist, med plasticity, firm			
2		MOL		SANDY SILT: brown with some dk brown and gray mottled clayey f-c, moist, med plasticity, firm, w/ some black manganese staining, moist to very moist			
4						12 ppm	
6							
8							
10		MOU		LIMESTONE: hard, fine grained, white to cream colored, dry		1 ppm	Bedrock at 10.0'
12				LIMESTONE: hard, fine grained white to cream colored, wet soft zone			
14				LIMESTONE glauconitic blue green cuttings, wet			
16							

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				LIMESTONE: hard, fine grained, brown to tan			
18							
20							
				Total Depth @ 20.0'			
22							
24							
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/29/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 670.69'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-02
 DATE FINISHED: 4/29/93
 TIME FINISHED: 1700
 NORTH: 297472
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 57
 BORING LOCATION: R15

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2614238
 GWL DEPTH: 17.61'
 GWL EQUIP: WLM
 CHECKED BY: TB

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		SILT: dk brown, gray and black, very moist, fine sand, clay, tr fine gravel, med plasticity, firm			
2							
4							
6		MOL		SANDY SILT: olive brown and reddish-brown, mottled, dry to slightly moist, tr clay, med plasticity, firm			
8							
10		RU		SANDY SILT: dk brown, gray, black, slightly waist fine med plasticity, firm			
12		OU		SANDY SILT: med plasticity, very stiff, dry, little black and maroon mottling			
14		MOU		SANDY SILT: brown and gray mottled, dry, very stiff, med plasticity			
16							

SOIL BORING LOG		PAGE: 2		OF: 2			
BORING NO: JAW-02		PROJECT NO: 2659		PROJECT: IAAP			
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)	
				FID	PID		
16							
18				SANDY SILT: brown and gray mottled, dry, very stiff, med plasticity			
20			[Brick pattern]				
22				LIMESTONE: white to creamy colored, fine grained, dry, all acid reactive			
24							
26							
28							
30							
32							
34							
				Total Depth @ 27.0'			
					6 ppm	Air rotary 18.0' - 27.0' Bedrock at 18.0'	

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: NA
 TIME BEGAN: NA
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: Surface
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-03
 DATE FINISHED: NA
 TIME FINISHED: NA
 NORTH: NA
 GWL DATE/TIME: NA
 DRILL EQUIP: CME 75
 BORING LOCATION: NA

PROJECT NAME: IAAP
 FIELD GEOLOGIST: NA
 EAST: NA
 GWL DEPTH: NA
 GWL EQUIP: NA
 CHECKED BY: NA

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0			UU		SILT: dk brown and gray, moist to very moist clays			
2								
4							14 ppm	
6								
8								Very moist to wet at 8.0'
10			MOU		CLAYEY SILT: gray, tr brown voek particles			
					Total Depth @ 10.0'			Note: This boring was advanced by UXO representatives. No well was installed in this boring per JAYCOR direction
12								
14								
16								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 1335
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 686.41'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-04
 DATE FINISHED: 4/14/93
 TIME FINISHED: 1930
 NORTH: 301107.8
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R12

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2637780
 GWL DEPTH: 20.6'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAYEY SILT: stiff, dk gray, tr fine sand, moist			Alluvium
2					ND		
4				SILTY CLAY: stiff, brown, tr fine sand, wet SILTY CLAY: stiff dk brown, some fine to med sand, tr to little gravel, tr limestone fragments in tip of spoon, wet			Dense obstruction at 4.0'. Rec: 1.0' from 4.0' to 8.0'
6					ND		
8				LIMESTONE: fossiliferous, interbedded with shale and argillaceous limestone calcite crystals at 19.0'			Roller bitted down with air rotary
10							
12							
14							
16							

SOIL BORING LOG

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BORING NO: JAW-04

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16							
18							
20							
22							
24				Total Depth @ 23.5'			Boring located in stream channel.
26							
28							
30							
32							
34							

21

SOIL BORING LOG

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PROJECT NO: 2659	BORING NO: JAW-05	PROJECT NAME: IAAP
DATE BEGAN: 4/13/93	DATE FINISHED: 4/13/93	FIELD GEOLOGIST: RLT
TIME BEGAN: 0910	TIME FINISHED: 1100	EAST: 2637060
DRILLER: AQUADRILL	NORTH: 302003.80	GWL DEPTH: 3.8'
GROUND SURFACE ELEV: 661.21'	GWL DATE/TIME: 5/12/93	GWL EQUIP: WLM
DRILLING METHOD: HSA	DRILL EQUIP: CME 75	CHECKED BY: TDM
CONTRACTOR: JAYCOR	BORING LOCATION: R12	

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0			OL		SILTY CLAY: (5y/2.5/1) black, low plasticity, moist tr organic			
2					SILTY CLAY: (2.5y/5/4) lt olive-brown mottled w/ brownish-yellow (10yr/6/8) low plasticity, moist		ND	HCl-
4			MDL		SILTY CLAY: (5y/6/1) gray w/ brownish-yellow, soft, low plasticity, moist		ND	HCl-
6								
8			OL		SILTY CLAY: (7.5yr/3/3) few fine sand, very soft, low plasticity, laminated, wet			Sampled at 7.5 - 8.0'.
10			OL		CLAYEY SILT: (10yr/5/8) yellowish-brown w/ gray (5y/6/1) firm, low plasticity, dry		ND	HCl-
12								
14			OL		CLAYEY SILT: yellowish-brown, tr fine sand, soft, med plasticity, moist		ND	HCl-
16					GRAVEL			

SOIL BORING LOG

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BORING NO: JAW-05



PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					CLAYEY SILT			
					GRAVEL: subangular, blocky gravel, large, fine sand, wet		ND	
					CLAYEY SILT: yellowish-brown, firm, magnesium and iron staining on vertical plane		ND	
18					Total Depth @ 17.5'			
20								
22								
24								
26								
28								
30								
32								
34								

SOIL BORING LOG PAGE: 1 OF: 2

PROJECT NO: 2659 BORING NO: JAW-06 PROJECT NAME: IAAP
 DATE BEGAN: 4/13/93 DATE FINISHED: 4/13/93 FIELD GEOLOGIST: JET
 TIME BEGAN: 1000 TIME FINISHED: 1500 EAST: 2637712.01
 DRILLER: AQUADRILL NORTH: 301208.4 GWL DEPTH: 5.0'
 GROUND SURFACE ELEV: 679.4' GWL DATE/TIME: 5/25/93 GWL EQUIP: WLM
 DRILLING METHOD: HSA DRILL EQUIP: MOBIL B57 RV CHECKED BY: TDM
 CONTRACTOR: JAYCOR BORING LOCATION: R12

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)	
						FID	PID		
0					SILT: very dk gray, some clay, tr fine sand, tr gravel, moist				
2			OL		SILTY CLAY: yellowish-brown, stiff, tr fine sand, tr gravel, plastic, moist, some of the gravel is coal		ND		
4			OL					ND	
6									
8									
10									
12									
14					CLAYEY SANDY SILT: gray, little fine to med sand and clay, moist				
16			ORL						

SOIL BORING LOG

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BORING NO: JAW-06

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16			ORL		CLAYEY SANDY SILT: gray, little fine to med sand and clay, moist		ND	Pushed Shelby Tube 22.0' - 24.0'.
18								
20						Sand Seams 0.5' sand seams at 20.5' and 21.0'		
22			ORL		CLAYEY SANDY SILT: (10%, 40%, 50%)			
24								
26					Total Depth @ 26.0'			
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/13/93
 TIME BEGAN: 1315
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 689.55'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-07
 DATE FINISHED: 4/13/93
 TIME FINISHED: 1700
 NORTH: 301194.3
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 75
 BORING LOCATION: R12

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2637800.01
 GWL DEPTH: 6.82'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY CLAY: (5y/2.5/1) low plasticity, moist tr organic		ND	HCl-
2				SILTY CLAY: olive-brown, (2.5y/5/4), low plasticity, sand, moist, tr organics		ND	HCl-
4				SILTY CLAY: grayish-brown, (2.5y/5/2) w/ brownish-yellow (10yr/6/8), very soft, med plasticity, moist, slightly blocky		ND	HCl-
6							
8				CLAYEY SILT: grayish-brown, soft, low plasticity, dry-moist, grades to dk yellow-brown (10yr/4/4), soft, low plasticity, moist, tr organics, blocky		ND	HCl-
10							
12				SILTY CLAY: strong brown (7.5yr/5/8) w/ grayish-brown (2.5y/3/2), soft, low plasticity, moist, tr organic, tr fine sand		ND	HCl-
14							
14.5				SILTY SAND: W/ GRAVEL: yellowish-brown (10yr/5/8), saturated		ND	Sampled at 14.5'
16				SILTY CLAY		ND	HCl+

SOIL BORING LOG

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BORING NO: JAW-07

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16								
18					SILTY CLAY: strong brown (7.5yr/5/8), firm, low plasticity, dry-moist			
20					Total Depth @ 19.5'		ND	HCl+
22								Abandoned hole due to loss of bentonite into borehole prior to sand pack
24								
26								
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/19/93
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 686.68'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-08
 DATE FINISHED: 4/19/93
 TIME FINISHED: NA
 NORTH: 294808.3
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R20

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2624690.30
 GWL DEPTH: 8.53
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		CLAYEY SILT: brown-black and gray mottled, moist, and organic			
		MOL		CLAY: dk brown to very brown, mottled, plastic, and firm			
2		UL		SILT: black and gray, med plasticity, firm and moist			
		MOL		CLAY: blue and gray-brown mottled, med plasticity, firm w/ black weathered inorganic, staining, moist		.6 ppm	
4				CLAYEY SILT: gray and tan w/ tr orangish-brown, mottled med plasticity, firm			
6							
8		RL					
		MOL		CLAYEY SILT: brown to orangish-brown, mottled, med plasticity, firm		.8 ppm	Wet at top of sample spoon
10				SILT: brown to slightly orange brown, tr fine sand, very moist, med plasticity, firm			
12							
14		OL		CLAY: gray and orange-brown mottled w/ tr fine sand, very moist, med plasticity, firm, wet at 15.0'		.9 ppm	
16		MOL		SILTY SAND			

SOIL BORING LOG

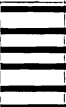


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BORING NO: JAW-08

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					SILTY SAND: brown, gray and orange-brown mottled, tr clay, med plasticity, firm, wet			
18			MOU		SANDY SILT: brown and orange-brown, and gray, mottled, tr clay, wet.			
20			MOU		SANDY SILT: brown and orange-brown and gray, mottled, tr clay, med-low plasticity, very stiff, dry Total Depth @ 20.0'		1.0ppm	
22								
24								
26								
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/19/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 683.52'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-09
 DATE FINISHED: 4/19/93
 TIME FINISHED: NA
 NORTH: 295203.20
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R20

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2624520.02
 GWL DEPTH: 8.15'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		SILT: black, very moist, organic			
2		MOL		CLAY: brown to orange-brown, tan and gray mottled w/ tr fine sand, plastic, very stiff, very moist			
4		MOL					
6		MOL		SILT: gray and tan with little orange-brown, mottled, very moist, low plasticity, firm, w/ black weathered organics		1.2 ppm	
8		MOL		CLAYEY SILT: orange-brown, brown and gray mottled w/ tr sand, low plasticity, firm			
10		MOL				1.2 ppm	
12				CLAYEY SILT: grades to a more organic brown and gray mottled w/ fine to course gravel			
14						1.2 ppm	
16		MOL		SILT: brown and slightly orange-brown, very moist w/ tr sand, med plasticity, firm CLAYEY SILT			

SOIL BORING LOG

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BORING NO: JAW-09

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				CLAYEY SILT: brown and orange-brown mottled, moist fine sand, med plasticity, stiff			
18				SANDY SILT: orange-brown moist to dry, tr clay, med to low plasticity, very stiff w/ black manganese staining			
20		OU		Total Depth @ 20.0'		1 ppm	
22							
24							
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/10/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 678.33'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-10
 DATE FINISHED: 4/20/93
 TIME FINISHED: NA
 NORTH: 295304.2
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R20

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2624600.02
 GWL DEPTH: 17.17'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		SANDY SILT: gray-black and brown mottled, wet, med plasticity, firm			
2							
4							
6		MOL OL		CLAY: brown, orange-brown and gray mottled, moist w/ tr sand, plastic, firm CLAY: brown, dry, firm		.7 ppm	HCl-
8		MOL OL		SANDY SILT: orange-brown to brown mottled, dry, firm SILT: dk brown, dry			
10		MOL MOL		SANDY SILT: brown, orange-brown and gray mottled, med to low plasticity, hard, dry SANDY SILT: brown and orangish-brown, tan mottled, dry, stiff		.6 ppm	
12							
14							
16		MOL		SANDY SILT: brown w/ little orange-brown, dry stiff, fine-medium		.5 ppm	HCl+

SOIL BORING LOG







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BORING NO: JAW-10

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				CLAYEY SAND: gray, tan, dry, mottled, very stiff			HCl-
18		MOL OL		SANDY SILT: dk brown, dry, hard			HCl+
		UU		SANDY SILT: brown, dry hard, slightly acid reactive			HCl+
20		MOL MOU		SANDY SILT: gray and tan mottled, slightly moist, hard SANDY SILT: brown and orange-brown, mottled, hard, slightly acid reactive	1 ppm		HCl-
22		MOL		SANDY SILT: tan and gray mottled, hard, slightly clayey			HCl+
24		MOU		SANDY SILT: orangish-brown and gray mottled, hard, strongly acid reactive, tr course rounded rock	1 ppm		HCl+
26				Total Depth @ 25.0'			
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/17/93
 TIME BEGAN: 1605
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 691.01'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-11
 DATE FINISHED: 4/17/93
 TIME FINISHED: 1800
 NORTH: 302091.7
 GWL DATE/TIME: 5/11/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R25

PROJECT NAME: IAAP
 FIELD GEOLOGIST: BMG
 EAST: 2636197.67
 GWL DEPTH: 5.1'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				ORGANIC: black silt			
2				CLAYEY SILT: soft, yellow-brown, w/ many nodules			
4							
6				CLAYEY SILT: stiff, dry, heavy staining, gravel			
8				CLAYEY SILT: moist to wet, soft			
10							
12							
14							
16				CLAYEY SILT: dense, yellow-brown w/ gray mottled, dry			

SOIL BORING LOG


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BORING NO: JAW-11

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				CLAYEY SILT: dense, yellow-brown w/ gray mottled, dry			Caused by surging during well installation
18							
20							
22					SILTY SAND - 7FT.		
24				SILTY CLAY: dense			
26				Total Depth @ 25.0'			
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: 1010
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 676.51'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-12
 DATE FINISHED: 4/18/93
 TIME FINISHED: 1930
 NORTH: 302391.1
 GWL DATE/TIME: 5/11/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R25

PROJECT NAME: IAAP
 FIELD GEOLOGIST: BMG
 EAST: 2636035.90
 GWL DEPTH: 17.8'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAYEY SILT: dk brown and organic			
2				SANDY CLAYEY SILT: yellow-brown, plastic, magnesium and iron staining, moist to dry, increase sand at 10.0'			
4							
6							
8							
10							
12							
14							
16				SILTY SAND: coarse			Sample obtained from 15.0' to 16.0'
				CLAYEY SILT: yellow-brown w/ gray mottling			

SOIL BORING LOG



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BORING NO: JAW-12

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				CLAYEY SILT: yellow-brown with gray mottling			
18							
20				SILTY SANDY CLAY: with gravel			
22							
24				BEDROCK - LIMESTONE Total Depth @ 23.0'			
26							
28							
30							
32							
34							

SOIL BORING LOG		PAGE: 1	OF: 2
PROJECT NO: 2659	BORING NO: JAW-13	PROJECT NAME: IAAP	
DATE BEGAN: 4/17/93	DATE FINISHED: 4/17/93	FIELD GEOLOGIST: JET	
TIME BEGAN: 1155	TIME FINISHED: 1600	EAST: 2635105.42	
DRILLER: AQUADRILL	NORTH: 302670.2	GWL DEPTH: 14.3'	
GROUND SURFACE ELEV: 69.38'	GWL DATE/TIME: 5/11/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: MOBIL B-57 RV	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R25		

ELEV (FT)	DEPTH BELOW SURF (FT)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0					CLAYEY SANDY SILT: dk gray, soft, tr gravel, some organics			
2					SILTY SANDY CLAY: stiff, strong brown, lt. gray mottling, tr gravel, some oxidation, wet to moist			
4								
6								
8								
10								
12								
14								
16					LIMESTONE: w/ tr thin shale lamina			Air rotary down to 18.5'

SOIL BORING LOG

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BORING NO: JAW-13

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					LIMESTONE: w/ tr thin shale lamina			
18					dk gray shale			
					Total Depth @ 18.5'			
20								
22								
24								
26								
28								
30								
32								
34								

SOIL BORING LOG



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BORING NO: JAW-14

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16								
18					SILTY SANDY CLAY: strong brown, mottled, stiff, tr gravel moist			Encountered sampler refusal on rock at 18.5'. Augured to 19.0' with remaining bit. Air rotary to 30.0'
20					LIMESTONE AND SHALE: interbedded shale and argillaceous/fossiliferous limestone			
22					fossiliferous limestone			
24								
26								
28								
30					Total Depth @ 30.0'			
32								
34								

45

SOIL BORING LOG		PAGE: 1	OF: 2
PROJECT NO: 2659	BORING NO: JAW-15	PROJECT NAME: IAAP	
DATE BEGAN: 4/13/93	DATE FINISHED: 4/13/93	FIELD GEOLOGIST: WC	
TIME BEGAN: NA	TIME FINISHED: NA	EAST: 2611624.01	
DRILLER: LAYNE	NORTH: 294368.4	GWL DEPTH: 8.8'	
GROUND SURFACE ELEV: 102.42'	GWL DATE/TIME: 5/25/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: CME 550	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R04		

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAY: dk gray, moist, med plasticity, firm			
2		OL					
4		MOL		SILTY CLAY: gray w/ some brown mottling, moist, med plasticity, stiff		ND	
6							
8		MOL		SILTY CLAY: grades to brown, orange-brown w/ gray mottling			Sampled at 8.0'.
10				SILTY CLAY: grades from orange-brown w/gray mottling to predominantly gray		ND	
12		UL					
14							
16		MOL		CLAY: grades to brown and gray mottled, w/ few sub-angular .25"-.5" particles		ND	

SOIL BORING LOG

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BORING NO: JAW-15

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16							
18				CLAY: color grades to predominately gray		ND	
20		UL		Total Depth @ 20.0'		ND	
22							
24							
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/26/93
 TIME BEGAN: 1640
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 102.53'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-16
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1700
 NORTH: 2995983.22
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: NA
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: DK
 EAST: 2611429.11
 GWL DEPTH: 12.55'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				ORGANIC: black			
2		MOL		SILTY CLAY: tan to gray w/ reddish-brown mottling, moderately, plastic, firm, damp		ND	HCI-
4							
6							
8				SILTY CLAY: tan to gray/ reddish-brown mottling, moderately, plastic, firm, damp			
10		MOL		SILTY CLAY: gray w/ reddish-brown mottling, moderately plastic, stiff, damp to wet		ND	HCI-
12							
14							
16				SILTY CLAY: gray w/ reddish-brown mottling, moderately plastic, stiff, damp to wet		ND	HCI-

SOIL BORING LOG

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BORING NO: JAW-16

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					SILTY CLAY: gray w/ reddish-brown mottling, moderately plastic, stiff, damp to wet			
18			UL		SANDY CLAY: gray, w/ tr gravel, slightly plastic, very stiff, dry			HCl-
20							ND	
22					SANDY CLAY: gray w/ reddish-brown mottling subrounded, slightly plastic, dense, very stiff, dry			HCl-
24							ND	
26								
28			MOL		SANDY CLAY: tan w/ reddish-brown mottling, subangular to subrounded, nonplastic, very stiff, damp to dry			HCl-
30			MOL					HCl-
32								
34								

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)			
					FID	PID				
34				SANDY CLAY: tan w/ reddish-brown mottling, subangular to subrounded, nonplastic, very stiff, damp to dry		ND	HCl-			
36		MOL				ND				
38										
40										
42										
44		MOL						ND	HCl-	
46		MOL								
48		MOU MOU MOU				SILTY SAND: tan to brown, med to coarse, tr gravel, subangular to subrounded, loose				HCl+ HCl+ HCl+
50						SANDY CLAY: tan to lt brown mottling, slightly plastic, very stiff, damp			ND	
52						SILTY CLAYEY SAND: lt brown, subangular to subrounded, loose, saturated SANDY CLAY: gray w/ reddish-brown mottling, slightly plastic, very stiff, damp				

SOIL BORING LOG

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BORING NO: JAW-16

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
52					SANDY CLAY			
					WEATHERED SHALE			
54					LIMESTONE		ND	
56								
58					Total Depth @ 58.0'			
60								
62								
64								
66								
68								
70								

SOIL BORING LOG		PAGE: 1	OF: 2
PROJECT NO: 2659	BORING NO: JAW-17	PROJECT NAME: IAAP	
DATE BEGAN: 4/13/93	DATE FINISHED: 4/13/93	FIELD GEOLOGIST: WC	
TIME BEGAN: NA	TIME FINISHED: 1130	EAST: 2611739.25	
DRILLER: LAYNE	NORTH: 295889.9	GWL DEPTH: 7.85'	
GROUND SURFACE ELEV: 99.81'	GWL DATE/TIME: 5/25/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: CME 550	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R04		

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0			UL		CLAY: gray-black, moist med plasticity, firm			
2			MOL		CLAY: gray, brown, orange-brown mottled, moist, w/ little sand, moderately plastic, firm		ND	
4				CLAY: brown, orange-brown, gray mottled, moist, w/ little fine sand, black manganese staining, moderately plastic, firm				
6			MOL				ND	Sampled at 7.0'.
8								
10			MOL		CLAY: brown, orange-brown, gray mottled, very moist, w/ little fine sand, black manganese, staining and little (<.25) rounded and angular particles, moderately plastic, firm		ND	Very moist at 10'.
12								
14								
16								

SOIL BORING LOG

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BORING NO: JAW-17

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					CLAY			
18					Total Depth @ 15.0'		ND	
20								
22								
24								
26								
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 1415
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 99.95'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-18
 DATE FINISHED: NA
 TIME FINISHED: NA
 NORTH: 295193.4
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 75
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: DK
 EAST: 2612218.62
 GWL DEPTH: 44.15'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		SILT: black w/ organics moderately plastic, wet, firm			
2		MOL		SILT: tan to brown, mottled organics, moderately plastic, damp, firm, mottled			
4							
6							
8							Groundwater encountered at 8.9'.
10		MOL		CLAY: tan to brown w/ gray mottling, some silt, moderately plastic, saturated			
12		MOL		CLAY: tan to brown w/ gray mottling, some silt, moderately plastic, firm, saturated			
14							
16		MOL					

SOIL BORING LOG

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BORING NO: JAW-18

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				CLAY: tan to brown w/ gray mottling, some silt, moderately plastic, firm, saturated			
18							
20		MUL		CLAY: tan to brown mottled, tr silt and angular to subangular sand and gravel, poorly graded, slightly plastic, firm, dry		ND	
22		MRL		CLAY: gray, tr silt and subangular sand, poorly graded, slightly plastic, firm dry			
24							
26		RU MOU		CLAY: tan to brown mottled, tr silt and subangular sand, poorly graded, slightly plastic, firm, dry			
28							
30							
32		MOU		CLAY: tan to brown mottled, tr silt and subangular sand poorly graded, firm, dry		ND	
34							

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SOIL BORING LOG		PAGE: 3		OF: 3			
BORING NO: JAW-18		PROJECT NO: 2659		PROJECT: IAAP			
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)	REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID		
34							
36							
38							
40		MOU		CLAY: tan to brown mottled, tr silt and subangular sand, poorly graded, firm, dry		ND	
42							
44							
46		OU		SAND: med. to fine grained, dense, subangular to subrounded, poorly graded, saturated LIMESTONE			Second groundwater encountered Sampled at 47.5'.
48							
50							
52				Total Depth @ 51.2'			

SOIL BORING LOG


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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 103.62'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-19
 DATE FINISHED: 4/14/93
 TIME FINISHED: NA
 NORTH: 2995093.118
 GWL DATE/TIME: 5/14/93
 DRILL EQUIP: CME550
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2612451.88
 GWL DEPTH: 5.4'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		OL		SILTY CLAY: black, moist, med plasticity, soft			
2		MOL OL		CLAY: black and brown mottled, moist, med plasticity, firm SILT: black, moist, med plasticity, firm			
4		MOL		CLAY: gray and orange-brown mottled, moist, med plasticity, tr black manganese staining		ND	
6		MOU		CLAY: brown and orangish-brown mottled, med plasticity, stiff, with iron staining and black manganese staining			Wet at 5.0' Sampled at 7.0'
10		MOU		CLAY: brown and orangish-brown and gray mottled, med plasticity, very stiff w/ tr black manganese staining, wet. Grades to a more orangish-brown clay w/ tr fine sand, very stiff		ND	10' - 12' section is wet at sample tube base.
16				Total Depth @ 15.0'		ND	

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 103.12'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-20
 DATE FINISHED: 4/15/93
 TIME FINISHED: NA
 NORTH: 294882.098
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2611918.75
 GWL DEPTH: 6.43'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY CLAY: black, moist, med plasticity, firm		ND	
2				CLAY: brown and black mottled, very moist, med plasticity, firm			
4							
6				SILTY CLAY: brown and grayish-brown mottled, very moist, tr fine sand, med plasticity, firm		ND	
8							
10				SANDY SILT: brown and orange-brown mottled, fine, med to low plasticity, firm, w/ black manganese staining and some gravel			Wet at top (10.0') section of sampler
12							
14							
16						ND	

SOIL BORING LOG


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BORING NO: JAW-20

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16		MOU		CLAYEY SANDY SILT: (22%, 31%, 47%) gray very moist, high plasticity, stiff			Unleached zone at 16.5'
18		MOU					
20				Total Depth @ 20.0'		ND	Shelby tube pushed from 20.0' - 22.0'.
22							
24							
26							
28							
30							
32							
34							

SOIL BORING LOG




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PROJECT NO: 2659
 DATE BEGAN: 4/13/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 102.32'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-21
 DATE FINISHED: 4/14/93
 TIME FINISHED: 1015
 NORTH: 294185.7
 GWL DATE/TIME: 4/14/93
 DRILL EQUIP: NA
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: DK
 EAST: 2612398.14
 GWL DEPTH: 9.4'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY SANDY CLAY: black, organic, firm, med plasticity, damp to wet		ND	HCI-
2		MOL		SILTY CLAY: tan w/ reddish-brown to gray-brown mottling, organics, firm to stiff, moist		ND	HCI-
4						ND	HCI-
6		MOL		SANDY SILTY CLAY: tan w/ gray mottling, slightly plastic, firm, moist			HCI-
8				SANDY SILTY CLAY: tan to brown w/ gray mottling, tr sand, poorly graded, slightly plastic, firm, moist to damp			Groundwater encountered at 7.5'.
10						ND	HCI-
12							
14						ND	HCI-
16				SANDY CLAY			

SOIL BORING LOG

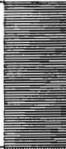
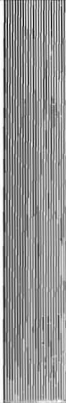




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BORING NO: JAW-21

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16			MOL		SANDY CLAY: tan to brown, poorly graded, slightly plastic, stiff, dry		ND	HCl-
18			RL		SILTY CLAY: gray, stiff, dry		ND	HCl-
20							ND	HCl-
22							ND	HCl-
24			MUL		SANDY SILTY CLAY: gray and tan, w/ tr gravel, very stiff and dry		ND	HCl-
26							ND	HCl-
28			UU		SILTY SANDY CLAY: tan to brown, w/ gravel, very stiff and dry			HCl+
28			OU		SILTY SANDY CLAY: reddish-brown w/ gravel, subrounded, very stiff, dry			HCl+
30								
32			OU				ND	HCl+
34								

SOIL BORING LOG		PAGE: 3		OF: 4			
BORING NO: JAW-21		PROJECT NO: 2659		PROJECT: IAAP			
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)	REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID		
34				SILTY SANDY CLAY: reddish-brown w/ gravel, subrounded, very stiff, dry			
36						ND	HCl+
38							
40		OU		CLAY: reddish-brown, w/ some sand and gravel, subangular to subrounded, poorly graded, slightly plastic, very stiff, dry		ND	HCl+
42		OU					
44		UU		SANDY CLAY: tan to brown w/ gravel, slightly plastic, very stiff, dry to damp		ND	HCl+
46							
48							
50		OU		SILTY SAND: gray, w/ med dense, wet			Groundwater HCl+
		MOU		SANDY CLAY: olive green, dense, damp, mottled, saponite			Weathered sandy shale w/ glauconite
52							

SOIL BORING LOG

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BORING NO: JAW-21

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
52				SANDY CLAY: olive green, dense, damp, mottled, saprolite			
54							
56		MOU		SAPPROLITIC SHALE: tan and red mottling, trace sand			
58		UU		SHALE: weathered gray to black			
60				SHALE: weathered gray green w/ some sand, glauconite, bedrock Total Depth @ 59.0'			
62							
64							
66							
68							
70							

SOIL BORING LOG


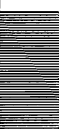
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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 0838
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 101.82'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-22
 DATE FINISHED: 4/15/93
 TIME FINISHED: 0943
 NORTH: 295002.8
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R04

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2612685.14
 GWL DEPTH: 8.0'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0							
2		OL MOL		SILTY CLAY: black, moist, w/ organic material, tr angular (<.25" and .5") to subangular sand and gravel, low plasticity soft			Slightly acid reaction in grayish-brown colored material.
4				CLAY: grayish black and orangish-brown, moist, mottled, w/ tr (<.25") rounded white gravel, med plasticity, firm			
6		MOL		CLAY: brown and orangish-brown mottled, moist tr 1.5" angular gravel, med plasticity, firm		.6 ppm	
8							
10		MOL		CLAY: orangish-brown, moist, med plasticity, firm		.8 ppm	
12							
14							
16		MOU		SANDY CLAY: brown, orangish-brown mottled, fine sand med plasticity, firm			Sampled at 17.0'

SOIL BORING LOG

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BORING NO: JAW-22

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16								
18			MOU		SANDY CLAY: brown, orangish-brown mottled, fine sand med plasticity, firm			
20					SANDY CLAYEY SILT: brown and orangish-brown, mottled dry, fine to coarse sand, hard, angular and rounded rock gravel including limestones and chert			Wet between 17.7' and 18.25'
22					Total Depth @ 20.0'		.1 ppm	
24								
26								
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/20/93
 TIME BEGAN: 1105
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 657.15'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-23
 DATE FINISHED: 4/20/93
 TIME FINISHED: 1435
 NORTH: 301689.02
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2636285.2
 GWL DEPTH: 4.99'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0					CLAYEY SILT: soft, dk gray, some organics, wet			Fill Alluvium Sampler refusal at 5.5'. Water at 5.0', no augers.
2					SILTY CLAY: stiff, strong brown, little fine to coarse sand, tr gravel, moist		ND	
4					CLAYEY SILT: stiff dk gray, tr fine sand, tr gravel, moist			
6					Shale: gray weathered, some limestone layers			
8								
10								
12								
14								
16					Total Depth @ 10.5'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/15/93
 TIME BEGAN: 1325
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 642.24'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-24
 DATE FINISHED: 4/15/93
 TIME FINISHED: 1830
 NORTH: 301887.29
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2636126.1
 GWL DEPTH: 6.85'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAYEY SILTS: soft dk gray, some organics			
2				SILTY CLAY: stiff yellowish-brown, little fine to med sand, moist SILT: stiff dk gray, some silt, little sand, moist			
4				CLAYEY SILT: stiff dk gray, some fine to med sand, moist	ND		
6				SAND/GRAVEL: dk gray, little silt, little clay, wet SILTY CLAY: stiff lt gray, little fine sand, tr gravel, wet	100'		
8				Used remaining bit to auger to 11.0' in weathered bedrock			
10							
12				Total Depth @ 11.0'			
14							
16							

SOIL BORING LOG





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PROJECT NO: 2659
 DATE BEGAN: 4/14/93
 TIME BEGAN: 1853
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 690.18'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-25
 DATE FINISHED: 4/14/93
 TIME FINISHED: 1945
 NORTH: 301363.19
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 75
 BORING LOCATION: R24

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2625447.6
 GWL DEPTH: 6.63'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		RL		CLAYEY SILT: (5yr/3/1) very dk gray, soft, low plasticity, moist, tr organic materials		ND	HCI-
2		OL		SILTY CLAY: (7.5yr/4/4) strong brown, very firm, low plasticity, dry, friable		ND	HCI-
4		MOL		CLAYEY SILT: strong brown, soft, med plasticity, moist CLAYEY SILT: strong brown w/ dk gray (10yr/4/1) CLAYEY SILT: strong brown w/ dk gray (10yr/4/1), tr fine sand, very soft, very moist		ND	HCI-
6						ND	HCI-
8				CLAYEY SILT: dk yellowish-brown (10yr/4/4) tr f/s sand, soft, med plasticity, very moist		ND	HCI-
10				SILTY SAND: f/s sand, yellowish-brown, very soft, no plasticity, wet		ND	HCI-
12				CLAYEY SILT: yellowish-brown, tr f/s sand, very soft low plasticity, moist		ND	HCI-
14				CLAYEY SILT: strong brown (7.5yr/4/6) w/ (7.5yr/5/8), firm low plasticity, dry magnesium staining		ND	HCI-
16						ND	HCI-

SOIL BORING LOG


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BORING NO: JAW-25

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID			
16				CLAYEY SILT: strong brown (7.5yr/4/6) w/ (7.5yr/5/8), firm low plasticity, dry magnesium staining			ND	Sampled at 19.0'
18								
20				Total Depth @ 20.0'				
22								
24								
26								
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/16/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 704.76'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-26
 DATE FINISHED: 4/17/93
 TIME FINISHED: NA
 NORTH: 298861.86
 GWL DATE/TIME: 5/13/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R14

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2617126
 GWL DEPTH: 4.4'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		CLAYEY SILT: dk brown and black, moist, grass roots		ND	
2		MOL		CLAY: brown and orange-brown mottled, moist w/ tr sand, med plasticity, firm		ND	
4				SANDY CLAYEY SILT: gray, tan and brown, mottled, wet		ND	
6		UL		CLAYEY SILT: dk gray and black, moist, med plasticity, stiff		ND	
8		MOL		SILTY CLAY: gray and brown, moist, med plasticity, stiff			
10				SANDY CLAYEY SILT: brown and orange-brown, mottled, wet, fine w/ tr gravel, med plasticity, stiff	.7 ppm		4' recovery
12				SANDY CLAYEY SILT: changes to very stiff to hard w/ more clay content in base of spoon			
14							
16		MOL		SILTY CLAYEY SAND: brown and orangish-brown, mottled, wet gravel w/ little clay, med plasticity, stiff	1 ppm		

SOIL BORING LOG


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BORING NO: JAW-26

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				SILTY CLAYEY SAND: brown and orangish-brown, mottled, wet gravel w/ little clay, med plasticity, stiff			Shelby tube pushed from 20.0' - 22.0'
18				SILTY CLAYEY SAND (24%, 33%, 43%), brown and orangish-brown, mottled wet gravel w/ little clay, med plasticity, very stiff	1.4 ppm		
20							
22							
24				Total Depth @ 22.5'			
26							
28							
30							
32							
34							

SOIL BORING LOG		PAGE: 1	OF: 7
PROJECT NO: 2659	BORING NO: JAW-27	PROJECT NAME: IAAP	
DATE BEGAN: 4/21/93	DATE FINISHED: 4/22/93	FIELD GEOLOGIST: DK	
TIME BEGAN: NA	TIME FINISHED: 1015	EAST: 2617364.5	
DRILLER: LAYNE	NORTH: 298564.3	GWL DEPTH: 39.37'	
GROUND SURFACE ELEV: 686.89'	GWL DATE/TIME: 5/13/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: CME 550	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R14		

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				FILL			
		MOL		ORGANIC: brown to gray organic soil			HCI-
2				SANDY CLAY: gray w/ red-brown, mottling, highly plastic, firm, saturated			
4						ND	
6		MOL		SANDY CLAY: gray w/ reddish-brown, mottling, coal moderately plastic, stiff, damp			HCI-
8		MOL		SILTY CLAY: gray w/ reddish-brown mottling moderately plastic, stiff damp			HCI-
10		MOL		SANDY CLAY: brown w/ reddish-brown mottling, subangular to subrounded, moderately plastic, stiff, damp		ND	HCI-
12		MRL		SILTY CLAY: gray w/ blue streaks, tr sand, moderately plastic, very stiff			HCI-
14		MOU		SANDY CLAY: gray w/ red-brown mottling, plastic, stiff, damp		ND	
16		RL		SILTY CLAY: blue-gray to black, moderately plastic firm and saturated			HCI-

SOIL BORING LOG

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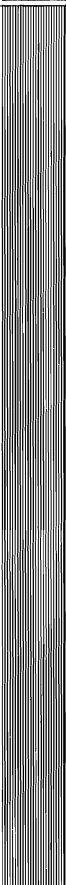



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BORING NO: JAW-27

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				SILTY CLAY: blue-gray to black, moderately plastic firm and saturated			
18		MOL		SANDY CLAY: brown w/ reddish-brown mottling, subangular to subrounded, moderately plastic, stiff, damp		ND	HCl-
20							Increased sand
22							HCl-
24						ND	Increased sand Lenses
26							HCl-
28		OL		CLAYEY SANDY SILT: red-brown, subangular to subrounded, loose, saturated			Groundwater table Sand 27'
		MOL					HCl-
				SANDY CLAY: gray w/ reddish-brown mottling, plastic, stiff			Clay 28'
							Sand 29'
30				CLAYEY SANDY SILT: red-brown, subangular to subrounded, loose, saturated		ND	HCl-
		RU					30' Clay unleached hard, dry
32				SILTY CLAY: blue gray to black, nonplastic, hard, dry			HCl+
34		RU		SILTY SAND			HCl+

SOIL BORING LOG		PAGE: 3		OF: 7		
BORING NO: JAW-27		PROJECT NO: 2659		PROJECT: IAAP		
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID	
34					ND	35' Clay blue, hard dry, unleached
36		RU				
38					ND	
40						
42		RU				HCl+
44					ND	
46		RU				HCl+
48		RU				HCl+
		RU				HCl+
50					ND	
52						HCl+

SOIL BORING LOG

PAGE: 4

OF: 7

BORING NO: JAW-27

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
52				SANDY CLAY: blue-gray to black, nonplastic, hard, dry to damp			
54		RU				ND	HCl+
56							
58							
60		RU				ND	HCl+
62							HCl+
64		RU				ND	HCl+
66							
68							
70						ND	HCl+ HCl+

SOIL BORING LOG		PAGE: 5		OF: 7		
BORING NO: JAW-27		PROJECT NO: 2659		PROJECT: IAAP		
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID	
70						
72						
74		RU			ND	HCl+
76						
78						
80		RU			ND	HCl+
82						
84		RU			ND	HCl+
86		UL			ND	HCl+
88						

SOIL BORING LOG

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BORING NO: JAW-27

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
88				SANDY CLAY: gray to brownish-gray, nonplastic, stiff, water from above		ND	HCl+
90		UL					
92				SANDY CLAY: gray to brownish-gray, nonplastic, stiff, dry			HCl+
94		UL				ND	HCl+
96							
98							
100		UL				ND	
102							HCl+
104		UL		SANDY CLAY: gray to brownish-gray, plastic, stiff saturated			Saturated, very plastic zone HCl+
106							

SOIL BORING LOG		PAGE: 7		OF: 7		
BORING NO: JAW-27		PROJECT NO: 2659		PROJECT: IAAP		
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID	
106						HCl+ Sample collected at 108.2'
108				SANDY CLAY: gray to brownish-gray, plastic, stiff saturated		
110			LIMESTONE BEDROCK			
112						
114						
116						
				Total Depth @ 116'		
118						
120						
122						
124						

SOIL BORING LOG



PAGE: 1

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PROJECT NO: 2659
 DATE BEGAN: 4/28/93
 TIME BEGAN: 1030
 DRILLER: LAYNE
 GROUND SURFACE ELEV: 695.12'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-28
 DATE FINISHED: 4/28/93
 TIME FINISHED: 1730
 NORTH: 298467.05
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: CME-550
 BORING LOCATION: R14

PROJECT NAME: IAAP
 FIELD GEOLOGIST: DK
 EAST: 2617520.8
 GWL DEPTH: 32.77
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		SILT: topsoil			Topsoil HCl-
2				SILTY SANDY CLAY: tan to lt brown w/ reddish-brown, mottling, organics, moderately plastic, firm, damp			
4		MOL				ND	HCl-
6							
8							
10		MOL		SANDY SILTY CLAY: brown w/ reddish-brown mottling, moderately plastic, firm, damp		ND	HCl-
12		MOL		SANDY CLAY: brown w/ reddish-brown mottling some organics, moderately plastic, firm, damp			HCl-
14		MOL		SANDY CLAY: gray w/ reddish-brown mottling, moderately plastic, stiff, damp		ND	HCl-
16				SANDY CLAY			

SOIL BORING LOG		PAGE: 2		OF: 4		
BORING NO: JAW-28		PROJECT NO: 2659		PROJECT: IAAP		
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID	
16						
18		MOL				HCI-
20					ND	
22		MOL				HCI-
24		MOL			ND	HCI-
26						
28		MOL				HCI-
30		MOL			ND	HCI-
32		MOU				HCI+
34		MOU				HCI+

SOIL BORING LOG













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BORING NO: JAW-28

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
34			MOU		SANDY SILTY CLAY: gray w/ reddish-brown mottling, moderately plastic, stiff, damp		ND	HCl+
36			MOU		SILTY SANDY CLAY: reddish-brown, med to coarse, subangular to subrounded, loose, saturated			HCl+
38			MOU		SANDY SILTY CLAY: brown w/ reddish-brown mottling, very stiff, slightly plastic, damp			HCl+
40			UU		SILTY CLAYEY SAND: gray, subrounded, loose, saturated		ND	Second water bearing zone
42			RU		SANDY SILTY CLAY: black, nonplastic, hard, dry			HCl+
42			UU		SILTY CLAY: brown, plastic, saturated			
44			UU		SILTY SAND: brown, coarse, subangular to subrounded, loose, saturated			HCl+
44			RU		SANDY SILTY CLAY: black, nonplastic, hard, dry			HCl+
44			UU		SILTY CLAYEY SAND: brown, fine to med grained, subangular to subrounded, loose saturated		ND	HCl+
46			RU		SANDY SILTY CLAY: black, nonplastic, hard, dry			HCl+
48			UU		SILTY SAND: black to gray fine to med grained, subrounded, loose, saturated		ND	
50			RU		SANDY SILTY CLAY: black, nonplastic, hard, dry			HCl+
52								

SOIL BORING LOG

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BORING NO: JAW-28

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
52			RU	SANDY SILTY CLAY: black, nonplastic, hard, dry			
54							
56							
58						ND	
60							
62							
				Total Depth @ 62.0'			HCl+
64							
66							
68							
70							

SOIL BORING LOG


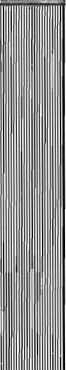







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PROJECT NO: 2659
 DATE BEGAN: 4/26/93
 TIME BEGAN: 1600
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 2.3'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-29
 DATE FINISHED: 4/26/93
 TIME FINISHED: 1710
 NORTH: 299949.70
 GWL DATE/TIME: 5/13/93
 DRILL EQUIP: BRAT-22R
 BORING LOCATION: R10

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2624176.7
 GWL DEPTH: 6.47'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0							
2		OL		CLAYEY SILT: (10yr/2/1) very soft, no plasticity, dry-moist, tr organic		ND	HCl-
4		MOL		SILTY CLAY: gray (10yr/5/1) strong brown (7.5yr/5/6), soft, med plasticity, dry-moist, iron and magnesium staining		ND	HCl-
6		MOL		SILTY CLAY: very soft med plasticity, moist		ND	HCl-
8		MOL		SILTY CLAY: soft low plasticity moist-dry, black SILTY CLAY: gray (ns/)			
10		OL		SANDY CLAYEY SILT: brown (7.5yr/4/3), soft, low plasticity, moist, blocky, little sand		.2 ppm	
12		OL		SILTY SAND: dk gray (7.5yr/4/1), very soft, low plasticity, moist-dry, fine sand		ND	HCl-
14		MOL		SILTY SAND: gray (7.5yr/5/1) and strong brown (7.5yr/5/8) moist-wet		ND	HCl-
16		MOL		SILTY SAND: wet			Sampled at 15.5'
		OU		SANDY CLAYEY SILT		ND	HCl+

SOIL BORING LOG		PAGE: 2		OF: 2			
BORING NO: JAW-29		PROJECT NO: 2659		PROJECT: IAAP			
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)	REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID		
16		OU		SANDY CLAYEY SILT: dk yellowish-brown (10yr/4/6) soft-firm, low plasticity, dry, tr fine sand		ND	HCl+
18						ND	HCl+
20		OU		CLAYEY SILT: firm SILTY CLAY: gray (10yr/5/1) very firm, low plasticity, dry, "fat" clay		ND	HCl+
22		OL				ND	HCl+
24							
				Total Depth @ 25.0'			
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/27/93
 TIME BEGAN: 1409
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 2.5'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-30
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1510
 NORTH: 299950.70
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: BRAT-22R
 BORING LOCATION: R10

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2624178.7
 GWL DEPTH: 7.31'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		OL		CLAYEY SILT: black (5YR/2.5/1), very soft, no plasticity, dry, friable, tr organic		ND	HCI-
2		MOL		SILTY CLAY: dk gray (10yr/4/1) and strong brown (7.5yr/5/8), soft, low plasticity, friable, magnesium staining		ND	HCI-
4				SILTY CLAY: strong brown and dk gray, firm, low plasticity, dry-moist		ND	HCI-
6		MOL				ND	HCI-
8		MOL		SANDY SILTY CLAY: dk gray and strong brown, very soft, med plasticity, moist, tr sand		ND	HCI-
10		MOL		SANDY SILTY CLAY: brown (7.5yr/4/3) and dk gray (7.5yr/4/1) soft, low plasticity dry-moist, friable, tr fine sand			HCI-
12							
14		MOL		SANDY SILT: strong brown gray and brown, soft, low plasticity, dry, friable, little fine sand			HCI-
16		MOL		SILTY CLAY: yellowish-brown (10yr/5/8) and gray (10yr/6/1), very soft, med plasticity, moist-wet, tr fine sand		ND	HCI- Sampled at 16.5'

SOIL BORING LOG 2 OF: 2
 BORING NO: JAW-30 PROJECT NO: 2659 PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16							
18		MOU		SILTY CLAY: yellowish-brown (10yr/5/8) and gray (10yr/6/1), very soft, med plasticity, moist-wet, tr fine sand SILTY CLAY: very firm, low plasticity, dry, tr fine sand		ND	HCI+
20				Total Depth @ 19.0'			
22							
24							
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/27/93
 TIME BEGAN: 0900
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 2.74'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-31
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1035
 NORTH: 299951.71
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: BRAT-22R
 BORING LOCATION: R10

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RLT
 EAST: 2624180.7
 GWL DEPTH: 6.79
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		OL		CLAYEY SILT: black, soft no plasticity, dry-moist, tr organic, SAND: S/m/l, little s/m gray		ND	HCl-
2		MOL		SILTY CLAY: very dk gray (10yr/3/1), gray (nyr/5/1) very soft, med plasticity, dry-moist		ND	HCl-
4							
6		MOL		SILTY CLAY: gray and yellowish-brown, very soft, high plasticity, moist		ND	HCl-
8							
10		MOL		SILTY CLAY: firm, low plasticity SILTY CLAY: gray and yellowish-brown (10yr/4/6) soft, med plasticity, moist, tr sand		ND	HCl-
12		MOL		CLAYEY SILT: dk yellowish-brown (10yr/4/4) and dk gray (n4/), soft-firm, none-low plasticity, dry, tr fine sand		ND	HCl-
14		MOL		SILTY SAND: strong brow, (7.5yr/5/8) and dk gray		ND	HCl-
16		OL		SILTY CLAY: strong brown, soft, med plasticity, moist-wet, little fine sand, chemical odor			

Sampled at 16.5'

SOIL BORING LOG

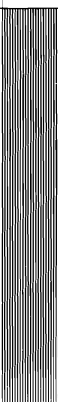

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BORING NO: JAW-31

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)	
					FID	PID		
16				SILTY CLAY: strong brown, soft, med plasticity, moist-wet, little fine sand, chemical odor		6 ppm	HCl-	
18							2 ppm	
20		OU					1 ppm	HCl+
22		MOU		SILTY CLAYEY SAND: gray (7.5yr/5/1) and strong brown (7.5yr/5/8), firm, med plasticity, dry		ND	HCl+	
24							ND	HCl+
				Total Depth @ 24.5'			Pushed Shelby tube to 24.5' -26.5'	
26								
28								
30								
32								
34								

SOIL BORING LOG

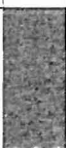





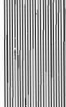


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PROJECT NO: 2659
 DATE BEGAN: 4/17/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-32
 DATE FINISHED: 4/17/93
 TIME FINISHED: NA
 NORTH: 294875.01
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615612.4
 GWL DEPTH: 8.8'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		CLAYEY SILT: brown, moist organic, tr sand, low plasticity, soft			HCl-
2				SANDY SILT: brown and orange-brown, mostly fine, tr clay, med plasticity, firm			
4				SAND: orange-brown, mostly, silty, med plasticity, firm, manganese staining	.2 ppm		HCl-
6				SANDY SILT: orange-brown, med plasticity, firm, wet 6'-9', manganese staining			
10		OU OL OL		CLAYEY SILT: brown, wet med plasticity, firm	.2 ppm		HCl+
				CLAYEY SILT: brown, wet, med plasticity, firm			
12		MOU		SANDY SILT: reddish-brown, moist, gravelly, firm			HCl-
14				SILTY CLAY: orangish-brown, tan, reddish-brown, mottled, fine, sand, med plasticity, firm	.2 ppm		HCl+
16				SILTY CLAY: orangish-brown and brown, moist, mottled, fine sand and tr gravel, med plasticity, firm			Well set at 15.0'

SOIL BORING LOG		PAGE: 2		OF: 2		
BORING NO: JAW-32		PROJECT NO: 2659		PROJECT: IAAP		
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID	
16			[Hatched Profile]			
18				SILTY CLAY: orangish-brown and brown, moist, mottled, fine sand and tr gravel, med plasticity, firm		
20					.2 ppm	
				Total Depth @ 20.0'		
22						
24						
26						
28						
30						
32						
34						

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-33
 DATE FINISHED: NA
 TIME FINISHED: NA
 NORTH: 294987.98
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: DK
 EAST: 2616071.14
 GWL DEPTH: 20.36'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover; etc.)
						FID	PID	
0					FILL: black to dk gray, organic soil			
2			MOL		CLAY: reddish-brown w/ orange mottling, some sand and silt, poorly graded, moderately plastic, firm, moist			HCl-
4			MOL		CLAY: reddish-brown w/ orange mottling, some sand and silt, moderately plastic, firm, moist		ND	HCl-
6								
8			MOL		SAND: reddish-brown w/ orange mottling, some clay subangular to subrounded, poorly graded, med saturated		ND	HCl-
			MOL		CLAY: reddish-brown, fat clay, tr silt, poorly graded moderately plastic, firm, moist			HCl-
10			MOL		SAND: reddish-brown w/ orange mottling, some sand, poorly graded			HCl-
12					CLAY: reddish-brown w/ orange mottling, some sand, poorly graded			
14							ND	
16								

SOIL BORING LOG		PAGE: 2		OF: 2			
BORING NO: JAW-33		PROJECT NO: 2659		PROJECT: IAAP			
ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)	REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
				FID	PID		
16				CLAY: reddish-brown w/ orange mottling, some sand, poorly graded			
18		RU		CLAY: dk gray, tr silt, poorly graded, slightly plastic, stiff, damp		ND	HCl-
20		OL		SAND: brown to reddish-brown, med to coarse w/ some clay and gravel, sub-angular to subrounded, graded, loose, wet			HCl-
		RU		CLAY: dk gray, blue-gray w/ tr silt, slightly plastic stiff, damp			HCl+
		OL		SAND: reddish-brown to brown w/ orange mottling, med w/ some clay, sub-angular to subrounded, slightly graded, loose, saturated			HCl-
22							
24						ND	
26							
28							
30		RU		CLAY: dk gray, blue-gray, mottled w/ some sand and gravel, poorly graded, slightly plastic, stiff, damp			HCl+
32		RU					HCl+
				BEDROCK: yellow and reddish-brown, shaly dolomitic limestone weathered		ND	
34				Total Depth @ 34.0'			

SOIL BORING LOG

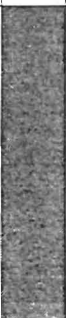




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PROJECT NO: 2659
 DATE BEGAN: 4/17/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-34
 DATE FINISHED: 4/17/93
 TIME FINISHED: NA
 NORTH: 296295.28
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: WC
 EAST: 2615729.92
 GWL DEPTH: 11.1'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		MOL		CLAYEY SILT: brown and orangish-brown w/ tr gravel and fine sand, med plasticity, firm, moist			HCl-
2							
4		OL		SANDY SILTY CLAY: brown to orange-brown, mottled, med plasticity, firm, moist		1 ppm	HCl- HCl-
6		OL		SILTY SAND: brown and orange-brown mottled, fine- med, wet at 9.0', highly oxidized w/ black manganese staining			
8							
10		OL		SILTY SAND: orange-brown, wet, fine to med, tr clay		1.4 ppm	HCl-
12		MOU		SANDY SILTY CLAY: brown-orange and gray mottled, med plasticity, stiff black manganese staining			HCl-
14						1 ppm	
16				Total Depth @ 15.0'			

SOIL BORING LOG		PAGE: 1	OF: 2
PROJECT NO: 2659	BORING NO: JAW-35	PROJECT NAME: IAAP	
DATE BEGAN: 4/17/93	DATE FINISHED: 4/17/93	FIELD GEOLOGIST: DK	
TIME BEGAN: 1630	TIME FINISHED: 1925	EAST: 2614850.53	
DRILLER: LAYNE	NORTH: 297588.84	GWL DEPTH: 9.8'	
GROUND SURFACE ELEV: NA	GWL DATE/TIME: 5/25/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: CME 550	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R22		

ELEV (FT)	DEPTH BELOW SURF (FT)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0					FILL: limestone chips			
2								
4			MOL		SILT: possible fill, reddish-brown, mottled, moderately plastic, firm, damp to wet		.3 ppm	HCI-
6								
8			MRL		CLAY: gray-green w some sand and organics, moderately plastic, firm, damp			HCI-
			MOL					HCI-
10			RU	○○○	SAND: reddish-brown w/ orange mottling, some clay, poorly sorted, loose, damp to wet		.5 ppm	HCI+
					CLAY: gray-green w/ some sand, poorly sorted, moderately plastic, firm, damp			
12								
14			OL	○○○	SAND: reddish-brown w/ some clay, subangular to subrounded, poorly graded, loose, saturated		.5 ppm	HCI-
				○○○	DOLOMITIC LIMESTONE			
16				○○○				

SOIL BORING LOG

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BORING NO: JAW-35

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
16				DOLOMITIC LIMESTONE			
18							
20							
22				Total Depth @ 21.0'			
24							
26							
28							
30							
32							
34							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/18/93
 TIME BEGAN: NA
 DRILLER: LAYNE
 GROUND SURFACE ELEV: NA
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-36
 DATE FINISHED: 4/17/93
 TIME FINISHED: NA
 NORTH: 297593.77
 GWL DATE/TIME: 5/25/93
 DRILL EQUIP: CME 550
 BORING LOCATION: R22

PROJECT NAME: IAAP
 FIELD GEOLOGIST: MV
 EAST: 2614686.4
 GWL DEPTH: 7.5'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0		UL		CLAYEY SANDY SILT: dk brown to gray, moist, organic			HCl-
2		MOL		CLAYEY SILT: orangish-brown, brown and gray mottled, w/ little sand, med plasticity firm, w/ black manganese staining			HCl-
4				CLAYEY SILT: brown and orangish-brown and gray mottled w/ tr sand, med plasticity and firm			
6						1.5 ppm	Very moist at base of spoon.
8				CLAY: brown and orangish-brown, wet, mottled, tr sand, plastic, firm			
10				SANDY CLAY: brown and orange-brown mottled, fine-med, manganese staining, wet		1.6 ppm	
12				SILTY SAND: brown and orange-brown, wet			
14				SANDY CLAYEY SILT: brown and gray mottled, very moist to wet, fine-med, med plasticity, firm			
16				SANDY SILT: brown, wet fine, moderately plastic, firm SILT		1.7 ppm	

SOIL BORING LOG






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BORING NO: JAW-36

PROJECT NO: 2659

PROJECT: IAAP

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
16					SILT: brown w/ tr orangish-brown, very moist, tr sand, med plasticity, firm			
18					SILT: brown and orangish-brown, tr clay, dry-moist, very stiff			
20			MOU		SILTY SAND: brown and orange-brown, tr clay, dry-moist, very stiff		1.4 ppm	HCl+
22					SANDY SILT: bright orange-brown, dry, tr clay, med plasticity			Shelby tube pushed from 20.0' to 22.0'. Tube was damaged by a rock at depth.
24					SANDY CLAY: brown and orange-brown and gray, mottled, fine-med, med plasticity, very stiff			
26					SAND: orange, tr silt, stiff		1 ppm	
28					CLAYEY SANDY SILT: brown and orange-brown and gray, mottled, fine-med, very stiff			Shelby tube pushed from 25.0' to 27.0'
30					Total Depth @ 25'			
32								
34								

SOIL BORING LOG		PAGE: 1	OF: 1
PROJECT NO: 2659	BORING NO: JAW-37	PROJECT NAME: IAAP	
DATE BEGAN: 4/17/93	DATE FINISHED: 4/17/93	FIELD GEOLOGIST: MV	
TIME BEGAN: NA	TIME FINISHED: NA	EAST: 2614686.42	
DRILLER: LAYNE	NORTH: 297989.59	GWL DEPTH: 7.5'	
GROUND SURFACE ELEV: NA	GWL DATE/TIME: 5/25/93	GWL EQUIP: WLM	
DRILLING METHOD: HSA	DRILL EQUIP: CME550	CHECKED BY: TDM	
CONTRACTOR: JAYCOR	BORING LOCATION: R22		

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SANDY CLAYEY SILT: Grayish brown, moist, fine, plastic, silt w/ sand, top soil (top 4"), oxidized zone 2", firm ground surface			HCI-
2							
4							
6				CLAYEY SANDY SILT: reddish-brown, fine to med		2.2 ppm	
8							
10				SANDY CLAYEY SILT: tan-yellowish-brown mottled, red-brown tan, wet at 9.0', w/ gravel, sandy elastic silt w/ gravel-unleached zone		2 ppm	
12							
14				SANDY SILTY CLAY: tan-brown, fine-med, w/ gravel		2 ppm	
16				Total Depth @ 15.0'			

SOIL BORING LOG




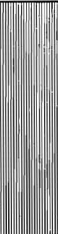
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PROJECT NO: 2659
 DATE BEGAN: 4/26/93
 TIME BEGAN: 1530
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 673.13'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-38
 DATE FINISHED: 4/26/93
 TIME FINISHED: 1635
 NORTH: 307037.10
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2628220.7
 GWL DEPTH: 6.15'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				CLAYEY SILT: stiff, dk gray, tr fine sand, some organics			Alluvium
2				SILTY CLAY: stiff, dk gray, w/ tr brown mottling tr fine sand, wet at 3.5"			
4						ND	
6				SANDY CLAY: stiff, lt gray and yellowish-brown modeling, 1/4" sand seams at 18" and 27", wet tr gravel		ND	R01-SA-501-01*
8				SILTY CLAY: stiff, yellowish-brown, some fine to med sand, tr gravel, moist			Till
10				Total Depth @ 10.5'			
12							
14							
16							

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/26/93
 TIME BEGAN: 1705
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 672.08'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-39
 DATE FINISHED: 4/26/93
 TIME FINISHED: 1825
 NORTH: 306025.51
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B-57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2628475.87
 GWL DEPTH: 3.99'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0				SILTY CLAY: fill yellow-brown		ND	
2				CLAYEY SILT: stiff, dk gray, tr fine sand, moist SILTY CLAY: stiff, lt gray, and yellowish-brown mottled, tr fine sand, tr gravel, wet at 4.0'			
4							
6							
8				SILTY CLAY: stiff, lt gray and yellowish-brown, some fine to med sand, tr fine to med gravel, last .5" sand and gravel seam, wet SILTY CLAY: very stiff, lt gray and yellowish-brown, little fine sand, moist		ND	
10							
12				SILTY CLAY: very stiff, yellowish-brown, little fine to med sand, tr gravel, moist		ND	
14							
16				Total Depth @ 15.0'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/27/93
 TIME BEGAN: 0805
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 673.46'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-40
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1045
 NORTH: 302600.03
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2628542.52
 GWL DEPTH: 4.65'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0								
2					SILTY CLAY: stiff, strong brown, w/ tr lt gray mottling silty clay, tr fine sand, moist		ND	
4					SILTY CLAY: stiff lt gray to brown mottling, tr fine sand, tr gravel, tr manganese staining, moist		ND	
6								
8								
10								
12								
14								
16					SILT CLAY			Sandy seam wet but producing little water

SOIL BORING LOG		PAGE: 2		OF: 2				
BORING NO: JAW-40		PROJECT NO: 2659		PROJECT: IAAP				
ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)		VOLATILE ORGANIC VAPORS (ppm)	REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID		
16					SILTY CLAY: stiff, lt gray w/ brown mottling, little fine sand to gravel, tr manganese staining, moist .5" sandy seams at 16.5'. Effervescent 18.5'-20'			
18			SILTY CLAY: stiff, lt gray w/ tr brown mottling, little fine to coarse sand, tr gravel, tr manganese staining, effervescent, moist					
20								
22								
24					SILTY CLAY: stiff, gray, little fine sand, non-effervescent, moist			
26					Total Depth @ 25.0'			
28								
30								
32								
34								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/27/93
 TIME BEGAN: 1110
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 671.88'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-41
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1450
 NORTH: 305430.40
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2628720.2
 GWL DEPTH: 5.00'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT) DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
					FID	PID	
0							
2				SILTY CLAY: stiff, strong brown and lt gray, little fine sand, little fine to coarse gravel, iron oxide layers at 1.6', 3.1', and 3.7', moist			
4							Iron oxide layers cemented and approximately .5" thick
6				SILTY CLAY: stiff, lt gray, tr fine sand, moist, effervescent at 5.5', calcareous cement layer (.5") at 5.8', moist			
8				SILT: stiff, dk gray, some clay, grading into clayey silt, moist			
10							
12							
14				SILTY CLAY: stiff, lt gray, little fine sand moist			
16				Total Depth @ 16.0'			

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/28/93
 TIME BEGAN: 1620
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 684.86'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-42
 DATE FINISHED: 4/28/93
 TIME FINISHED: 1710
 NORTH: 304450.60
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: RS
 EAST: 2628652.76
 GWL DEPTH: 5.3'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0			DL		SILT: black w/ organics		ND	HCI-
2			DL		SANDY SILTY CLAY: dk brown, med plasticity, firm, moist		ND	HCI-
4			DL		SILTY CLAY: gray, high plasticity, firm, moist		ND	HCI-
6			MOL		SANDY SILTY CLAY: yellowish brown w/ gray modeling, med plasticity, stiff, wet		ND	HCI-
8			OL		SILTY CLAY: yellowish-brown, highly plastic, very stiff, dry		ND	HCI-
10					Total Depth @ 10.0'			
12								
14								
16								

SOIL BORING LOG

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PROJECT NO: 2659
 DATE BEGAN: 4/27/93
 TIME BEGAN: 1510
 DRILLER: AQUADRILL
 GROUND SURFACE ELEV: 696.81'
 DRILLING METHOD: HSA
 CONTRACTOR: JAYCOR

BORING NO: JAW-43
 DATE FINISHED: 4/27/93
 TIME FINISHED: 1950
 NORTH: 303700.62
 GWL DATE/TIME: 5/24/93
 DRILL EQUIP: MOBIL B57 RV
 BORING LOCATION: R01

PROJECT NAME: IAAP
 FIELD GEOLOGIST: JET
 EAST: 2628501.2
 GWL DEPTH: 4.1'
 GWL EQUIP: WLM
 CHECKED BY: TDM

ELEV (FT)	DEPTH BELOW SURF (FT.)	SAMPLE TYPE AND NO.	OXIDATION / LEACHING CHARACTERISTICS	PROFILE	DESCRIPTION (USCS name and symbol, color, grain size and angularity, grading/sorting/plasticity, moisture content, relative density or consistency, soil texture and structure, odor, staining)	VOLATILE ORGANIC VAPORS (ppm)		REMARKS (soil or formation name, depth of analytical samples, thickness of asphalt / concrete / topsoil cover, etc.)
						FID	PID	
0					SILTY CLAY: stiff, dk gray, w/ yellowish-brown modeling, wet			
2								
4								
6					SANDY SILTY CLAY: stiff, yellowish-brown mottled, w/ lt gray, tr gravel, moist			
8								
10					SANDY SILTY CLAY: stiff, gray, tr gravel, wet			
12								
14					SANDY SILT: soft to peaty, dk gray, .4 dk gray, some organics, wet, .5 same as above except some decomposed wood fragments			
16					CLAYEY SILT/SILTY CLAY Stiff, dk gray, little organics, moist SANDY SILTY CLAY			