

**Table C-1  
Soils Descriptions - Test Pits**

Area Name	Depth (ft bgs)	Test Pit No.	USCS Code	Soils Description
<b>Background and Borrow Areas</b>				
Background 1	0-4'	1	SM	Silty sand with some organic material
Background 2	0-4'	1	SM	Silty sand with some organic material
Background 3	0-4'	1	SM	Silty sand with some gravel and organic material
Background 4	0-4'	1	SM	Silty sand with some gravel and organic material, higher sand content than Background 3
Borrow Area South	0-6'	1	SM	Silty sand, composition consistent to 6' depth
Borrow Area South	0-6'	2	SM	Silty sand, some gravel
Lobo Tract	0-6'	1	SM	Sandy silt, some organic material and some gravel
Lobo Tract	0-2'	2	CL	Silt-clay, darker brown, difficult to dig through, some organic
Lobo Tract	2-6'	2	SM	More silt-sand and less clay, lighter colored than than the 0-2' interval
Lobo Tract	0-6'	3	SM	Sandy-silt with some organic and gravel, with lenses of dark brown clay-silt material throughout the 6' profile
Lobo Tract	0-6'	4	SM	Sandy silt with considerable clay, medium brown
<b>Topsoil &amp; Overburden Piles</b>				
Topsoil South	0-4'	1	GM	Very gravelly silt-sand
Topsoil South	4-9'	1	GM	Gravel-silt-sand, increase in silt content
Topsoil South	9-13'	1	GC	Gravel-silt-clay, more yellowish in color, mostly fines, large rocks prevented excavation beyond 13 feet.
Topsoil North	0-15'	1		Sandy silts, some gravel, light brown in color
Topsoil / Overburden	0-3'	1	SM	Overburden material - organic, brown, some gravel but mostly silts and sands
Topsoil / Overburden	3-4'	1	SM	Topsoil - darker layers with higher organic content
Topsoil / Overburden	4-7'	1	SM	Overburden material - organic, brown, some gravel but mostly silts and sands
Topsoil / Overburden	7-8'	1	SM	Topsoil - darker layers with higher organic content
Topsoil / Overburden	8-11'	1	SM	Overburden material - organic, brown, some gravel but mostly silts and sands
Topsoil / Overburden	11-12'	1	SM	Topsoil - darker layers with higher organic content
Topsoil / Overburden	12-15'	1	SM	Overburden material - organic, brown, some gravel but mostly silts and sands
<b>Non-Economic Material Piles</b>				
Pile 5	0-3'	1	SP	Light brown, gravelly sand; 60% sand, 20% gravel, 15% silt, 5% clay
Pile 5	3-3.5'	1	GC-SC	Green clay/silt bands
Pile 5	3.5-7.5'	1	SP	Light brown, gravelly sand; 60% sand, 20% gravel, 15% silt, 5% clay
Pile 5	7.5-8'	1	GC-SC	Green clay/silt bands
Pile 5	8-15'	1	SP	Light brown, gravelly sand; 60% sand, 20% gravel, 15% silt, 5% clay
Pile 6	0-13.5'	1	SP	Gravel-sand-silt throughout, larger pieces of greenish silt-clay scattered, mostly below 4'; sandy gravel primarily
Pile 6	0-15'	2	SP	Gravelly sand/silt, chunks of green silt-clay
Pile 6	0-9'	3	SP	Gravelly sand/silt, lens of greenish-gray clay/silt from 3-4'
Pile 6	9'+	3		Native soil
Pile 6	0-15'	4	SP	Gravelly sand, some silt; very dark brown/gray, almost black

**Table C-1  
Soils Descriptions - Test Pits**

Area Name	Depth (ft bgs)	Test Pit No.	USCS Code	Soils Description
Pile 6	0-2'	5	GP	Very rocky, large rocks (1.5'+) with distinct light-colored sands and darker colored silt-sands
Pile 6	2-5'	5	GP	Smaller gravel, sands and silt-sands as in above notes
Pile 6	5'+	5		Native soil
Pile 6	0-15'	6	SW	Gravelly sand-silt, very dark colored (brown-gray, almost black), large rocks throughout
Pile 7	0-3'	1	SP	Black, very gravelly (up to 8" diameter) some fines.
Pile 7	3-7'	1	SW	Brown/yellow, sandy/gravelly
Pile 7	7-12.5'	1	GC-SC	Gray-clayey with gravel, increasing sand content with depth, large rocks prevented excavation beyond 12.5 feet
Pile 7	0-4'	2	GM	Gravel-sand-silt, light brown in color
Pile 7	4+	2		Native soil
Pile 7	5', 6-13.5'	3	GM	Gravel-silt-sand, light brown, large rocks prevented excavation beyond 13 feet
Pile 7	5-6'	3	CL	Layer of greenish clay
Pile 7	0-5'	4	GM	Gravelly silt-sand, some greenish silt-clay
Pile 7	5-9'	4	GP	Gravelly sand-silt
Pile 7	9+	4	GP	Darker sand-silt, some gravel
Pile 7	0-10'	5	GP	Gravelly sand-silt, decreasing gravel and increasing moisture with depth
Pile 7	10'+	5		Native soil
<b>Shaft Area</b>				
Pond 1	0-3'	1	ML	Dense clay, gray, medium-high plasticity, toward center of pond
Pond 1	0-3'	1	CL	Clay-silt-sand, less plasticity, toward edge of pond
Pond 1	3'+	1		Native soil
Pond 2	0-3'	1	ML	Gray, dense clay, medium-high plasticity
Pond 2	0-3'	1	CL	Clay mixed with silt and sand
Pond 2	3'+	1		Native soil
Pond 3	0-2'	1	ML	Gray, dense clay, medium-high plasticity, native at 2 ft
Pond 4	0-3'	1	ML	Gray, dense clay, drier than ponds 1 and 2, native soil sloping toward pond edge at a 1:1, medium-high plasticity
Pond 4	3'+	1		Native soil
Pond 5	0-0.5'	1	SM	Thin layer of ashy, dusty, light gray material, SM
Pond 5	5'+	1		Native soil
Ore Storage 1	0-3'	1	SM	Light gray silty material with an ashy appearance, horizontal block structure
Ore Storage 1	3-6'	1	SP	Much darker material, more sand and gravel with some silt
Ore Storage 2	0-3'	1	SM	Gray, silty layer, ashy appearance and texture
Ore Storage 2	3-6'	1	SP	Darker material, almost black with higher sand content
Access Road - 7	0-1.5'	1	GM	Very rocky, gravel and chunks of silt/sand; numerous colors, inconsistent, native soil at 1.5 feet.
Access Road - 15	0-1.5'	1	GM	Rocky, gravel with silt chunks and sand, inconsistent material/coloration, native soil at 1.5 feet.
Access Road - 19	0-1.5'	1	SM	Light gray, chunky, silty material, native soil at 1.5 feet.
Access Road - 24	0-1.5'	1	GM	Darker, sandy-silty gravel, native soil at 1.5 feet.
Access Road - 34	0-1.5'	1	OL	Silty, organic soil, native soil at 1.5 feet.

**Table C-1**  
**Soils Descriptions - Test Pits**

<b>Area Name</b>	<b>Depth (ft bgs)</b>	<b>Test Pit No.</b>	<b>USCS Code</b>	<b>Soils Description</b>
Storage Area	0-1'	1	SM	Silty, organic native soil
Shaft Pad	0-1'	1	SM	Silty sand; light gray, ashy color with mostly fines
Shaft Pad	1'+	1		Native soil

GENERAL LOCATION: Background 1  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fohrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
BG-TP1-129	0-2	1600
BG-TP1-125	2-4	1600

12  
12

Pit Width: 3'  
 Pit Length: 6'  
 Pit Depth: 4'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silty sand w/ some organic - OL (5m)

**SPECIAL NOTES:**

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GENERAL LOCATION: Background 2  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhng

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
BG-TP2-126	0'-2'	1615
BG-TP2-127	2'-4'	1620

Pit Width: 3'  
 Pit Length: 6'  
 Pit Depth: 4'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silty sand w/ some organic OL/SM

**SPECIAL NOTES:**

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SCALE					



GENERAL LOCATION: Background 3  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: LFJ/nj

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
BG-TP3-120	0-2'	1530
BG-TP3-310	0-2'	1550
BG-TP3-920	2-4'	1535

Pit Width: 3'  
 Pit Length: 6'  
 Pit Depth: 4'

9  
16  
9

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silty sand w/some gravel, organic - OL/sm

**SPECIAL NOTES:**

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SCALE					



GENERAL LOCATION: Background 4  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuchs

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL


SAMPLE No.	DEPTH	TIME
BG-TPH-122	0-2'	1545
BG-TPH-123	2-4'	1545

10  
10

Pit Width: 3'  
 Pit Length: 5'  
 Pit Depth: 4'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silty sand w/ some gravel organic - OL/sm higher sand content than BG3

**SPECIAL NOTES:**

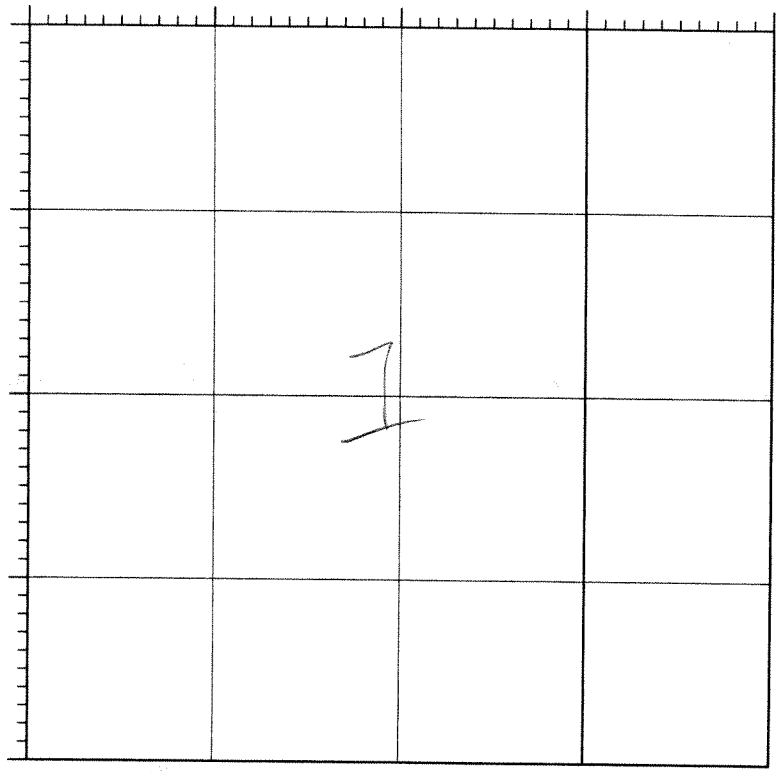
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PROJECT No.: PROJECT NUMBER  
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 SCALE

GENERAL LOCATION: Borrow Area South  
PIT TREND: \_\_\_\_\_  
PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
FIELD ENGINEER: L. Fehring



### TEST PIT LOG

#### LEGEND

SOIL HORIZON  
HORIZON CONTRACT  
GROUNDWATER LEVEL

comp. to 6'

SAMPLE No.	DEPTH	TIME
BS-TPI-041	6' 00"	16:00
BS-TPI-042	6' 00"	16:00


Pit Width: 3.5'  
Pit Length: 8'  
Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
I	Silty sand, composition consistent to 6'

**SPECIAL NOTES:**

only one sample taken b/c no strata to 6' depth

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AutoCAD FILE NAME					
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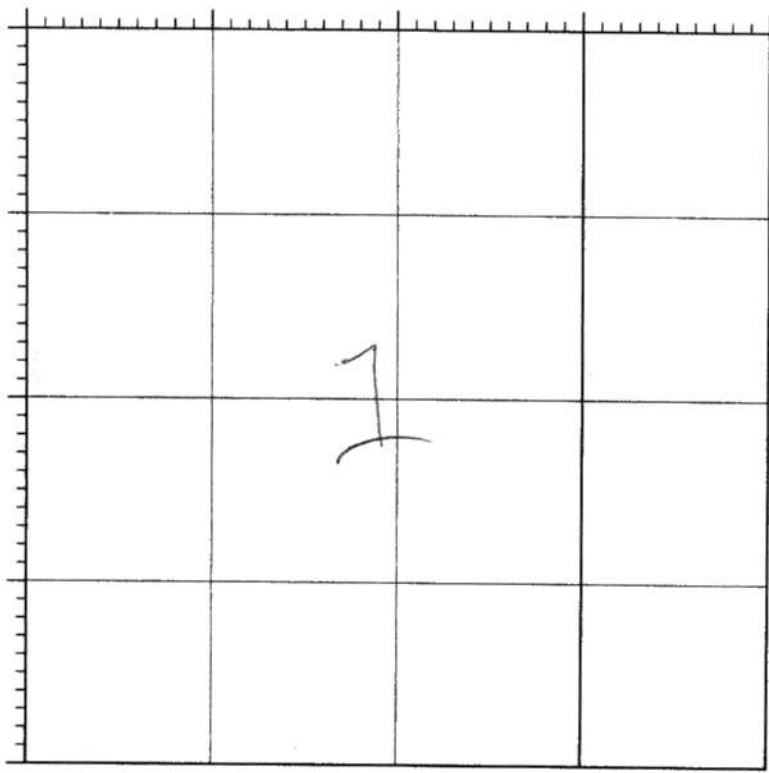
GENERAL LOCATION: Borrow Area South  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fehrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
BS-TP2-069	1420	0-6
BS-TP2-080	1420	0-6
BS-TP2-205	1420	0-6

11  
17  
13

Pit Width: 3'  
 Pit Length: 7'  
 Pit Depth: 6'

**SOIL UNIT** | **SOIL DESCRIPTION AND EXCAVATION NOTES**

1	1	Silty sand, some gravel, SM
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**SPECIAL NOTES:**

Consistent composition to 6'

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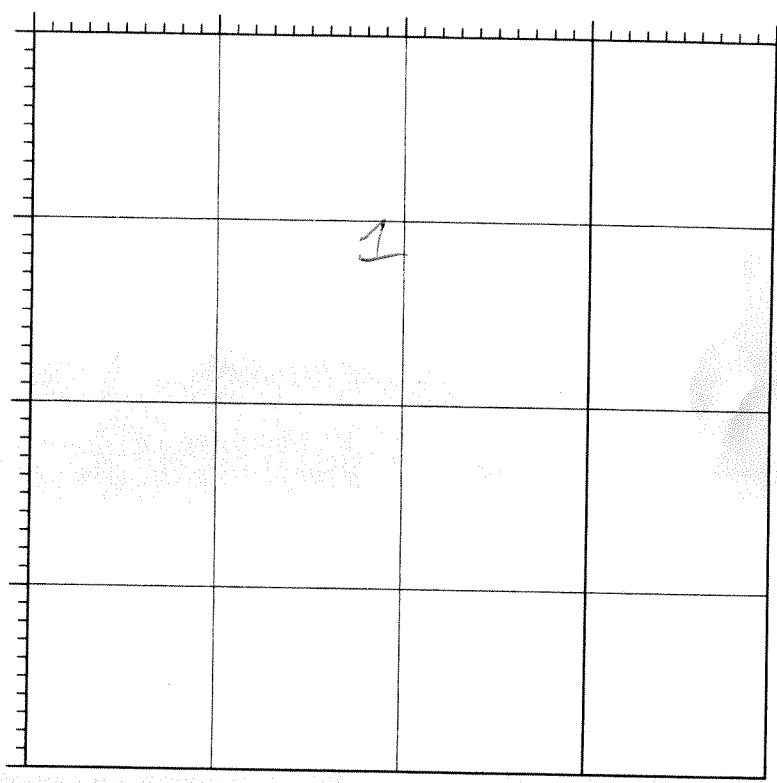
GENERAL LOCATION: Lobo Borrow  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/22/07  
 FIELD ENGINEER: L. Fehrig ✓

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
LoBo-TP3-134	0-6'	1505
LoBo-TP3-150	0-6'	1505

Pit Width: 3'  
 Pit Length: 7'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Mostly sandy-silt with some organic and gravel (SM) but with lenses of darker brown clay-silt material scattered throughout the 6' profile

**SPECIAL NOTES:**  
 inconsistent composition but no distinct layering

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PROJECT No. PROJECT NUMBER			AutoCAD FILE: FILE NAME		
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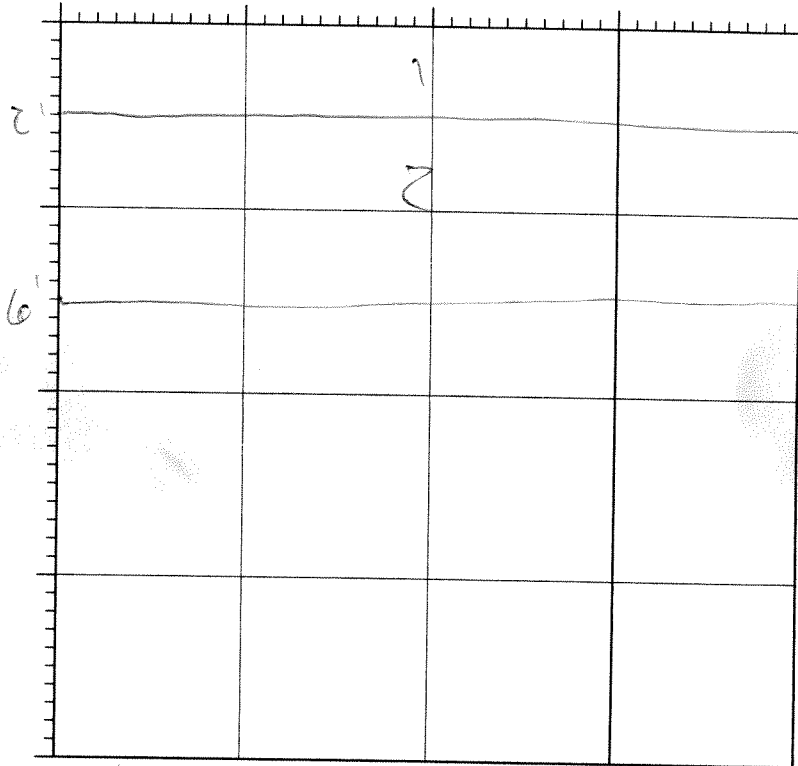
GENERAL LOCATION: LOBO BORROW  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: C. Fahmy

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL




SAMPLE No.	DEPTH	TIME
LSRS-TPC-132	0-2'	1445
LSRS-TPC-133	2-6'	1450

Pit Width: 3'  
 Pit Length: 7'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silt-clay, darker brown, difficult to dig through, some organic, OL More silt-sand and less clay, lighter colored than first layer - SM/OL
2	

**SPECIAL NOTES:**

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PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE			FIGURE No.		

GENERAL LOCATION: LOBOS BORROW  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 4/22/07  
 FIELD ENGINEER: L. FOURIG

**TEST PIT LOG** ✓

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

	1		

SAMPLE No.	DEPTH	TIME	
LOBO-TP112	0-6'	1430	10
LOBO-TP113	4-6'	1430	10

Pit Width: 46 3'  
 Pit Length: 7'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Sandy silt, some organic material and some gravel SM/OL

**SPECIAL NOTES:**  
 Consistent soil composition throughout excavated depth

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GENERAL LOCATION: Lobo Borrow  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/27/07  
 FIELD ENGINEER: L. Foley

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
<del>LOBO-TP4-176</del>	0-6'	1520

Pit Width: 3'  
 Pit Length: 7'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	<del>clayey sand</del> sandy silt with considerable clay, mid-brown SM-OL

**SPECIAL NOTES:**  
 consistent composition throughout excavated depth

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
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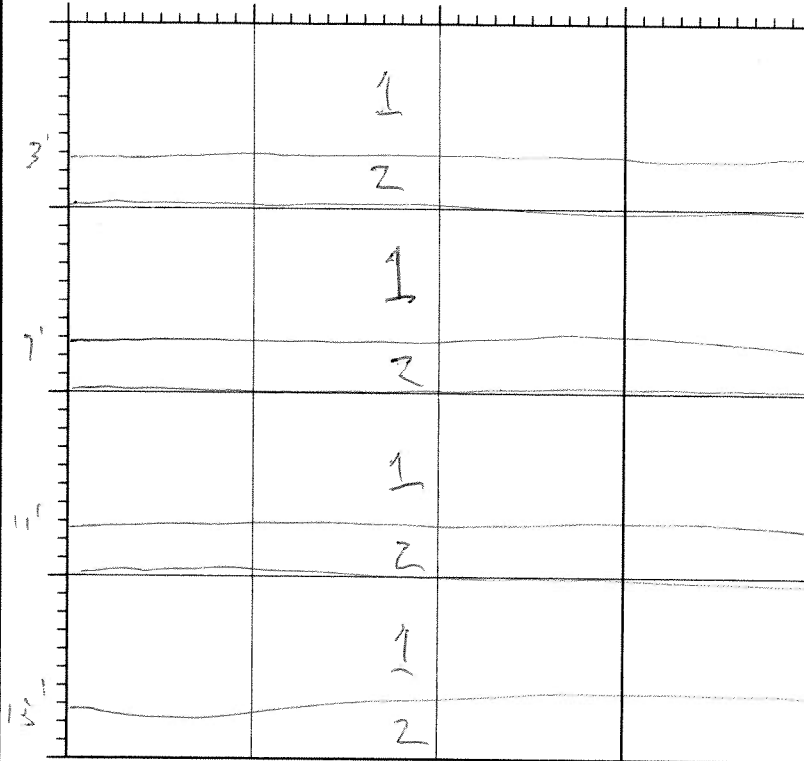
GENERAL LOCATION: Topsoil / overburden  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
 FIELD ENGINEER: L. Fokny

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
TO-TP1-015	2'	0855
TO-TP1-016	2'	0855
TO-TP1-017	4'	0905
TO-TP1-018	10'	0915
TO-TP1-019	15'	0955

11  
 11  
 11.5  
 12  
 16.5

Pit Width: 4'  
 Pit Length: 10'  
 Pit Depth: 15'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	<del>overburden</del> material - organic, brown, some gravel but mostly silts + sands - SM
Z	Topsoil - darker layers w/ higher organic content

**SPECIAL NOTES:**

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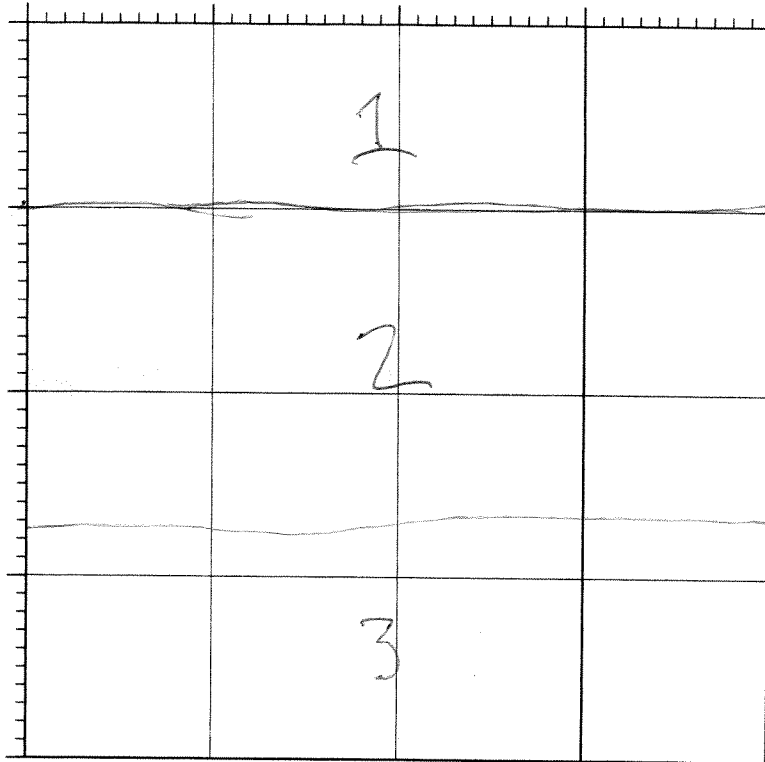
GENERAL LOCATION: Topsoil South  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fuhrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
TS-TPI-064	0-2'	1328	10
TS-TPI-065	0-2'	1320	11
TS-TPI-066	2-4'	1325	11
TS-TPI-067	10'	1335	10
TS-TPI-068	13'	1350	10

Pit Width: 3.5'  
 Pit Length: 9'  
 Pit Depth: 13'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Very Gravelly silt-sand, GM
2	Gravel-silt-sand, increase in silt content & GM
3	Gravel-silt-clay, more yellowish in color, mostly fines GC

**SPECIAL NOTES:**

Very rocky, unable to dig beyond 13'

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GENERAL LOCATION: Topsoil Area 4H  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fehrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

			1						

SAMPLE No.	DEPTH	TIME	
TN-TPI-071	0-2'	1500	//
TN-TPI-072	0-2'	1500	//
TN-TPI-073	4'	1505	//
TN-TPI-074	10'	1515	10
TN-TPI-075	15'	1530	10

Pit Width: 3.5'  
 Pit Length: 10'  
 Pit Depth: 15'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	<del>light brown silts</del> sandy silts, some gravel light brown in color

**SPECIAL NOTES:**

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



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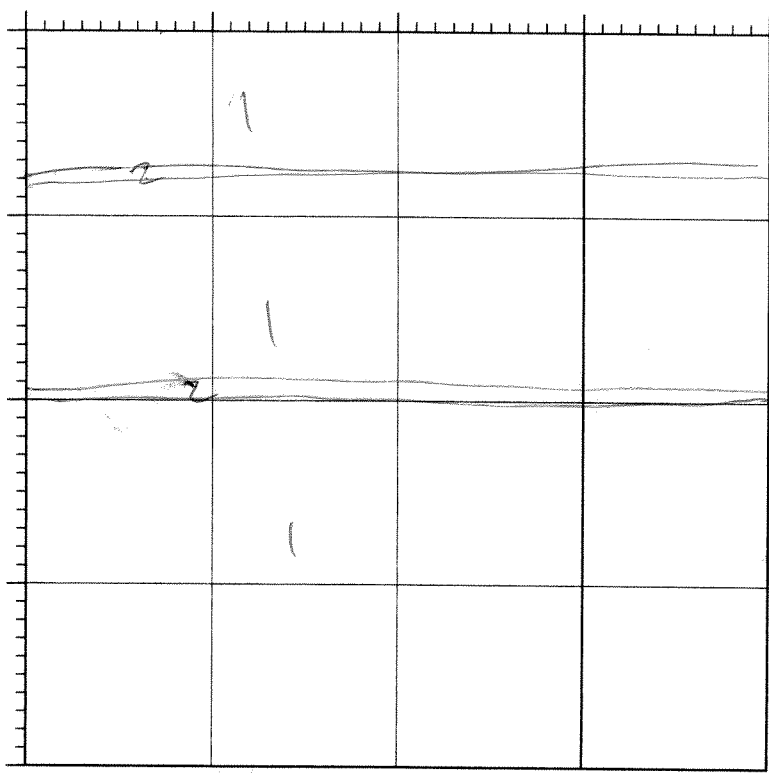
GENERAL LOCATION: Piles  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/18/07  
 FIELD ENGINEER: L. Ehrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
PS-TPI-009	2'	1610
PS-TPI-010	2'	1610
PS-TPI-011	4'	1620
PS-TPI-012	4'	1620
PS-TPI-013	10'	1630
PS-TPI-014	15'	1720

90  
 40  
 90  
 90  
 90  
 90

Pit Width: 4'  
 Pit Length: 12'  
 Pit Depth: 15'

**SOIL UNIT** | **SOIL DESCRIPTION AND EXCAVATION NOTES**

1 light brown, gravelly sand GOSA 20GR 15SL 5CL  
 2 → Green clay/silt bands - GC/SC

**SPECIAL NOTES:**

greenish-gray chunks, clayey-silty

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 AutoCAD FILE: FILE NAME  
 SCALE: FIGURE No:  
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GENERAL LOCATION: Pile 6  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fuhling

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

	1		

SAMPLE No.	DEPTH	TIME	
✓ PG-TP6-060	0-2'	1115	170
1/2 PG-TP6-061	0-2'	1105	170
✓ PG-TP6-061	2-4'	1120	160
X PG-TP6-062	10'	1130	150
X PG-TP6-063	15'	1145	150

Pit Width: 4'  
 Pit Length: 10'  
 Pit Depth: 15'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravelly sand-silt, very dark colored (brown-gray, almost black). Large rocks throughout

**SPECIAL NOTES:**

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Pile 6

GENERAL LOCATION: Pile 6  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

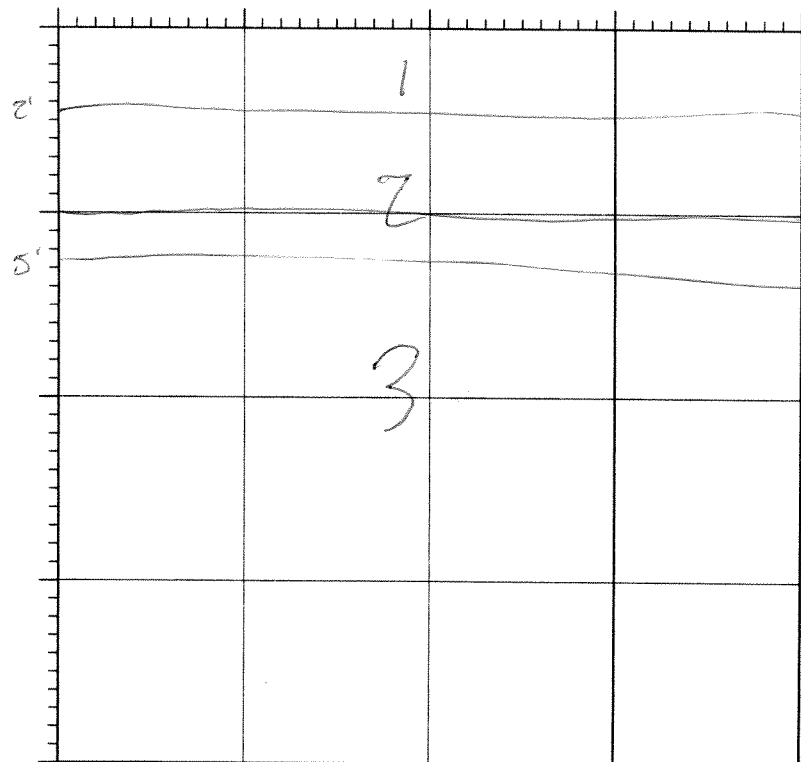
DATE: 6/20/07  
 FIELD ENGINEER: L. Fehrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

no SPLP



SAMPLE No.	DEPTH	TIME	
P6-TP5-051	0-2'	1045	120
P6-TP5-052	0-2'	1045	140
P6-TP5-053	2-4'	1050	125

Pit Width: 3.5  
 Pit Length: 8'  
 Pit Depth: 5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Very rocky, large rocks (1.5'+) with distinct light-colored sands and darker colored silt-sands - GP
2	Smaller gravel, sands and silt-sands as previously mentioned - GP
3	Native ground

**SPECIAL NOTES:**

Native ground encountered at 5' depth

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE:		FIGURE No.			
SCALE					



Pile 6

GENERAL LOCATION: Pit 6  
PIT TREND: \_\_\_\_\_  
PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
FIELD ENGINEER: L. Fubry

### TEST PIT LOG

#### LEGEND

SOIL HORIZON  
HORIZON CONTRACT  
GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME	
( P6-TPH-043	0-2'	1620	250
P6-TPH-044	0-2'	1620	200
X P6-TPH-045	2-4'	1630	150
X P6-TPH-046	10'	1640	160
✓ P6-TPH-047	15'	1650	175

Pit Width: 4'  
Pit Length: 10'  
Pit Depth: 15'

SOIL UNIT

SOIL DESCRIPTION AND EXCAVATION NOTES

I

Gravelly sand, some silt; very dark brown/gray almost black. SP

#### SPECIAL NOTES:

Black, sandy, consistent composition throughout

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No. PROJECT NUMBER			AutoCAD FILE FILE NAME		
SCALE		FIGURE No.			
SCALE					



Pile 6

GENERAL LOCATION: Pile 6  
PIT TREND: \_\_\_\_\_  
PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
FIELD ENGINEER: L. Fubey

### TEST PIT LOG

#### LEGEND

SOIL HORIZON  
HORIZON CONTRACT  
GROUNDWATER LEVEL

no agro


SAMPLE No.	DEPTH	TIME	
X PL6-TPI-027	2'	1330	95
X PL6-TPI-028	2'	1330	95
X PL6-TPI-029	4'	1335	90
✓ PL6-TPI-030	10'	1355	90
1/2 PL6-TPI-301	10'	1355	90
✓ PL6-TPI-031	13.5'	1410	90

Pit Width: 3.5'  
Pit Length: 10'  
Pit Depth: 13.5'

SOIL UNIT

SOIL DESCRIPTION AND EXCAVATION NOTES

1 Gravel - sand - silt throughout, larger pieces of greenish silt - clay scattered, mostly below 4'. Sandy gravel primarily, SP

#### SPECIAL NOTES:

Pit caved significantly, and backhoe operator became concerned that sides would completely cave in and bucket would get stuck

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE:		FIGURE No.			
SCALE		FIGURE No.			



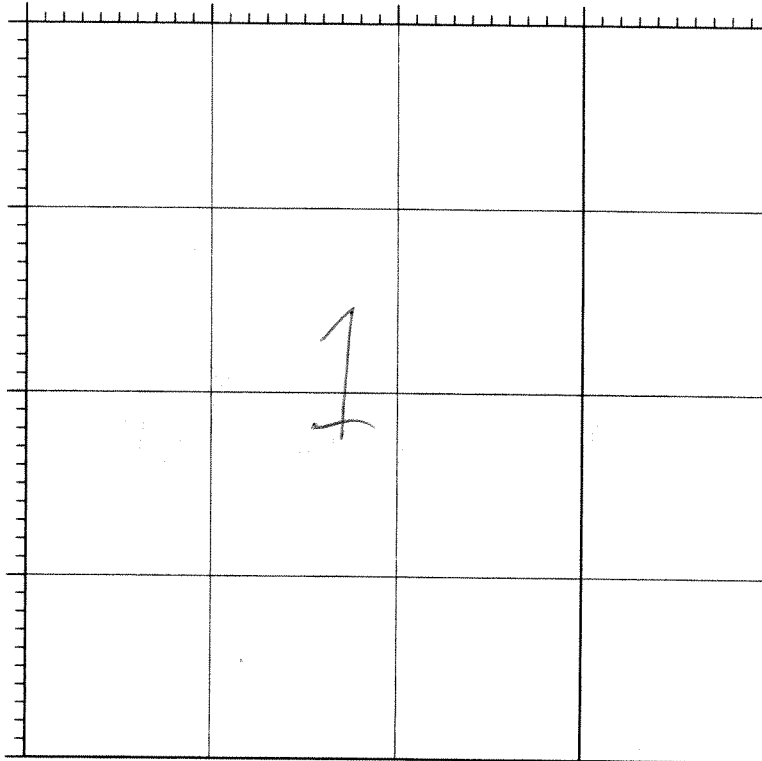
GENERAL LOCATION: Pile 6  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
 FIELD ENGINEER: L. Fishberg

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
PL6-TP2-032	2'	1425	160
PL6-TP2-033	2'	1425	160
X PL6-TP2-034	4'	1435	155
✓ PL6-TP2-035	10'	1450	175
X PL6-TP2-036	15'	1505	165

Pit Width: 4'  
 Pit Length: 11'  
 Pit Depth: 15.5

SOIL UNIT

SOIL DESCRIPTION AND EXCAVATION NOTES

1 Gravelly sand/silt, chunks of green silt-clay SP

**SPECIAL NOTES:**

Some caving while digging but target depth was attained.

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No.: PROJECT NUMBER	
AutoCAD FILE: FILE NAME	
SCALE:	FIGURE No:
SCALE	



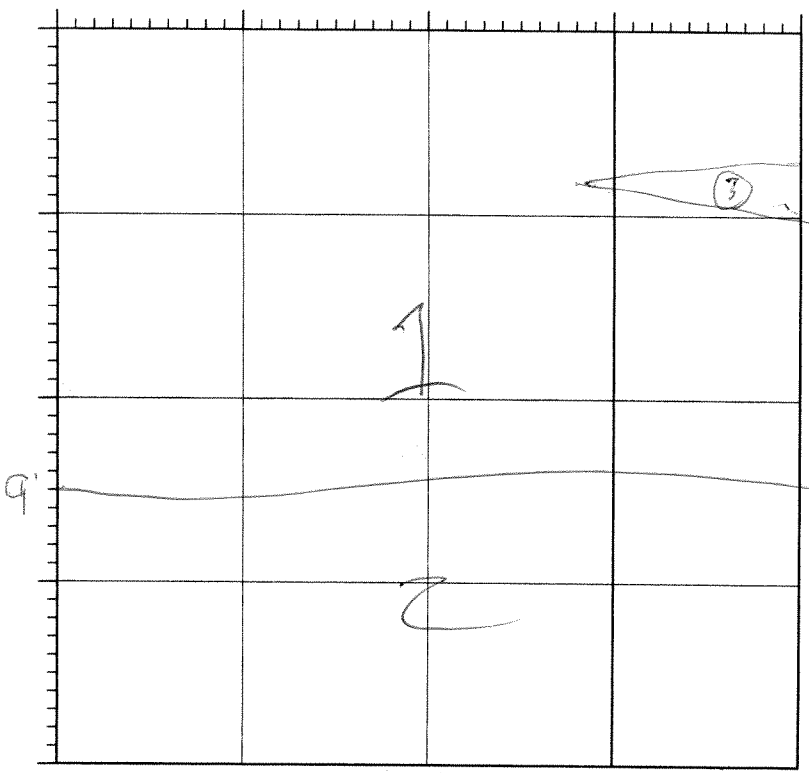
GENERAL LOCATION: Pile 6  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
 FIELD ENGINEER: L. Fabric

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
P6-TP3-037	2'	1520	140
P6-TP3-038	2'	1520	145
P6-TP3-039	4'	1530	150
X P6-TP3-040	9'	1540	140
1/2 P6-TP3-302	9'	1540	140

Pit Width: 3.5'  
 Pit Length: 10'  
 Pit Depth: 9'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravelly sand/silt, <sup>3</sup> band of greenish-gray clay/silt, SP
2	Native soil

**SPECIAL NOTES:**

Reached native soil at 9 ft.

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
			PROJECT No.: PROJECT NUMBER AutoCAD FILE: FILE NAME SCALE: SCALE      FIGURE No: FIGURE NUMBER		

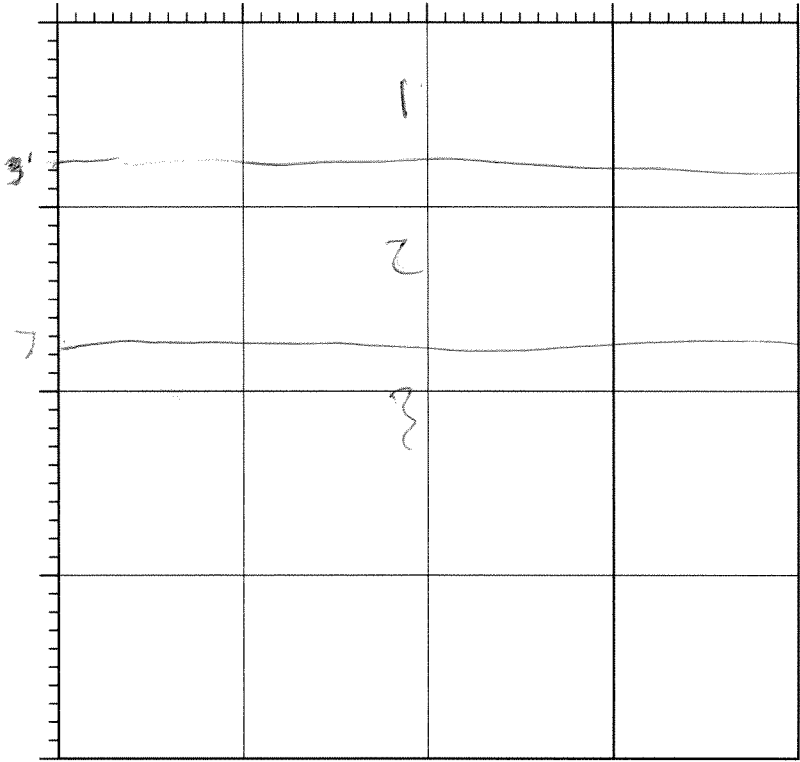
GENERAL LOCATION: Pile 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/18/07  
 FIELD ENGINEER: L. Fohrty

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
(D7-TPI-001	2' by	1425	120
(D7-TPI-002	2'	1425	120
X D7-TPI-003	4'	1430	105
X D7-TPI-004	4'	1430	120
✓ D7-TPI-005	10'	1500	130
X D7-TPI-006	10'	1500	120
X D7-TPI-007	12.5'	1520	120
X D7-TPI-008	12.5'	1520	125

Pit Width: 6'  
 Pit Length: 11'  
 Pit Depth: 12.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Black - SP, very gravelly (up to 8" dia) some fines silt etc
2	brown/yellow - SW sandy / gravelly <del>fine</del> few
3	gray - clayey w/ gravel, increasing sand content with depth GC - SC

**SPECIAL NOTES:**  
 large rock encountered at 7-8', widened hole to dig around could not excavate beyond 12.5' due to ~~large~~ large rocks

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
		PROJECT No.: PROJECT NUMBER		AutoCAD FILE: FILE NAME	
		SCALE:		FIGURE No.	
		SCALE			



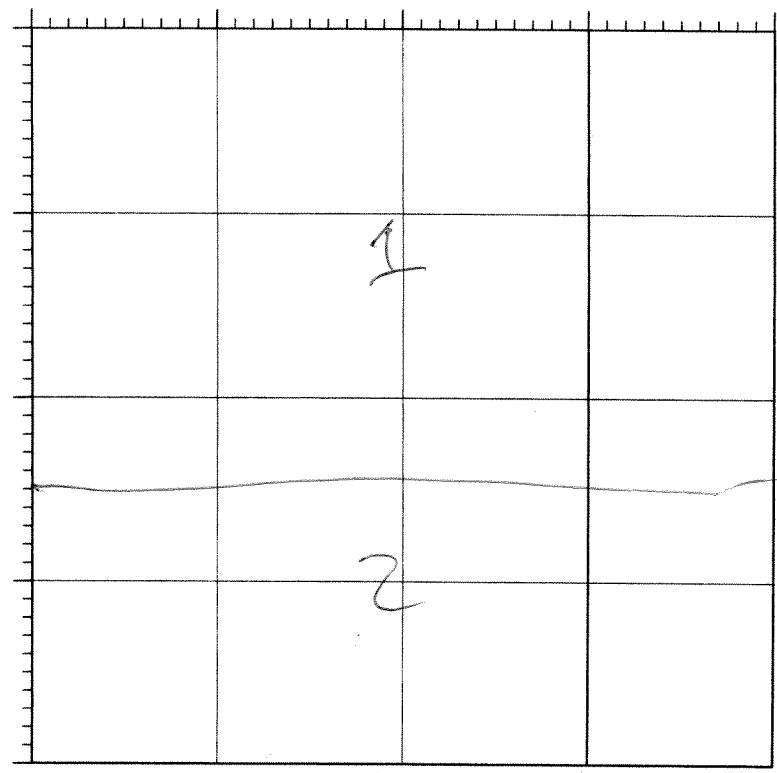
GENERAL LOCATION: Pile 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fehring

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
P7-TP5-053	0-2'	1010	145
P7-TP5-054	0-2'	1010	145
P7-TP5-055	2-4'	1015	150
X P7-TP5-056	10'	1025	145
<del>P7-TP5-057</del>			

Pit Width: \_\_\_\_\_  
 Pit Length: \_\_\_\_\_  
 Pit Depth: \_\_\_\_\_

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravelly sand - silt, GP ... decreasing gravel and increasing moisture w/ depth.
2	Native soil

**SPECIAL NOTES:**

Native soil encountered at 10'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
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SCALE		FIGURE No:			



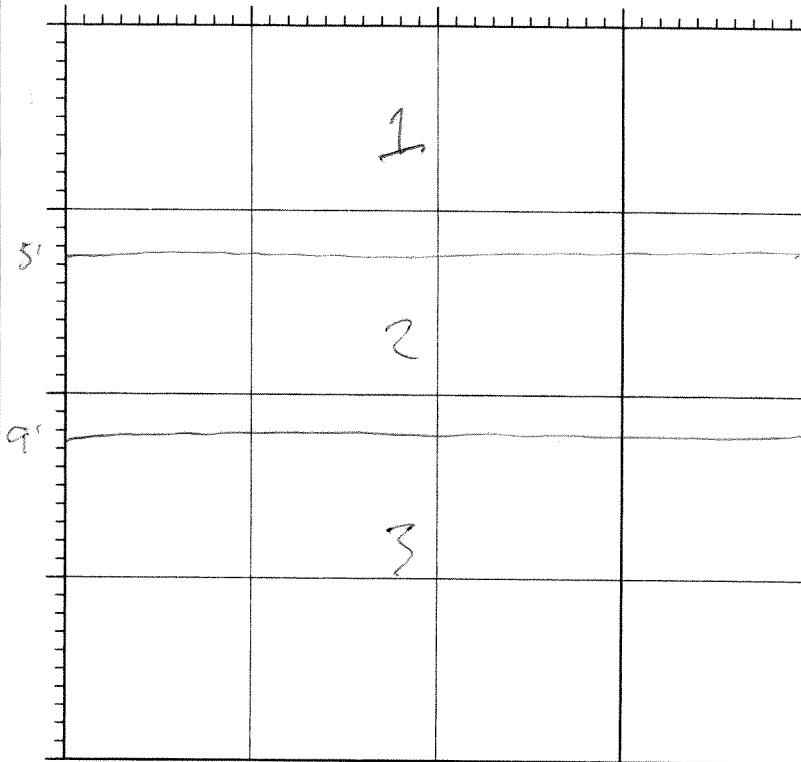
GENERAL LOCATION: Pile 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fuhning

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
✓ P7-TP4-0483	2'	0935	250
✓ P7-TP4-0490	2'	0935	240
✓ P7-TP4-0502	2-4'	0940	220
1/2 P7-TP4-308	2-4'	0940	220
X P7-TP4-051	10'	0950	220
X P7-TP4-052	13'	0955	230

Pit Width: 4'  
 Pit Length: 10'  
 Pit Depth: 13'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravelly silt-sand, some greenish silt-clay GM
2	Gravelly sand-silt, GP
3	Darker sand-silt, some gravel, GP

**SPECIAL NOTES:**

Encountered large dense rock at 13', unable to dig further

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
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SCALE		FIGURE No.			



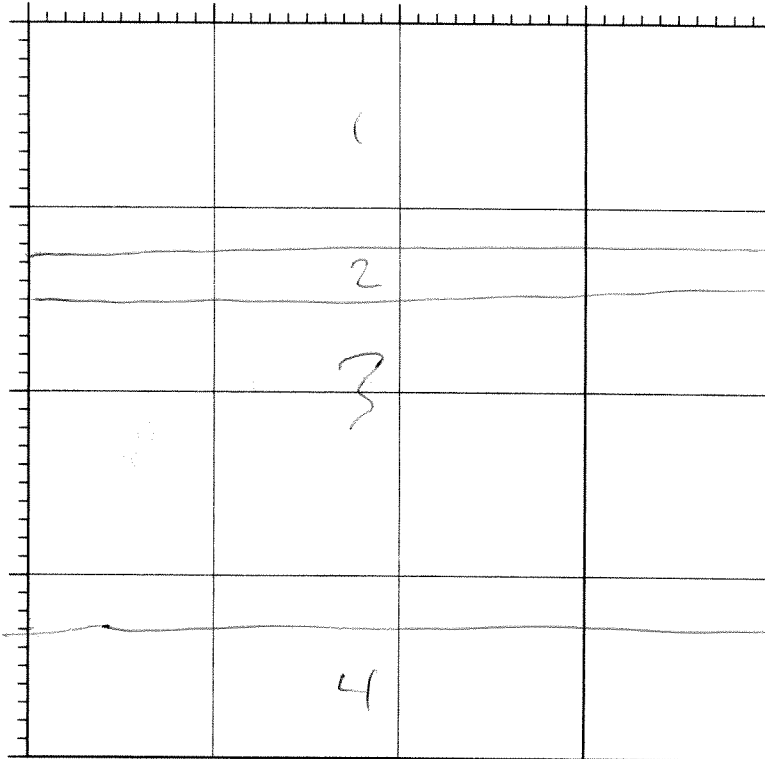
GENERAL LOCATION: Pile 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
 FIELD ENGINEER: L. Fuhrie

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
( P7-TP3-023	2'	1100	140
( P7-TP3-024	2'	1100	150
x P7-TP3-025	4'	1110	155
✓ P7-TP3-026	10'	1120	155
x P7-TP3-027	13.5'	1135	145

Pit Width: 3.5'  
 Pit Length: 10'  
 Pit Depth: 13.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravel-silt-sand lt. brown, held together somewhat well, GM
2	layer of Greenish clay similar to that seen on pile 5.

**SPECIAL NOTES:**

Very rocky material - could not proceed beyond 13.5' depth.

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
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SCALE		FIGURE No.			



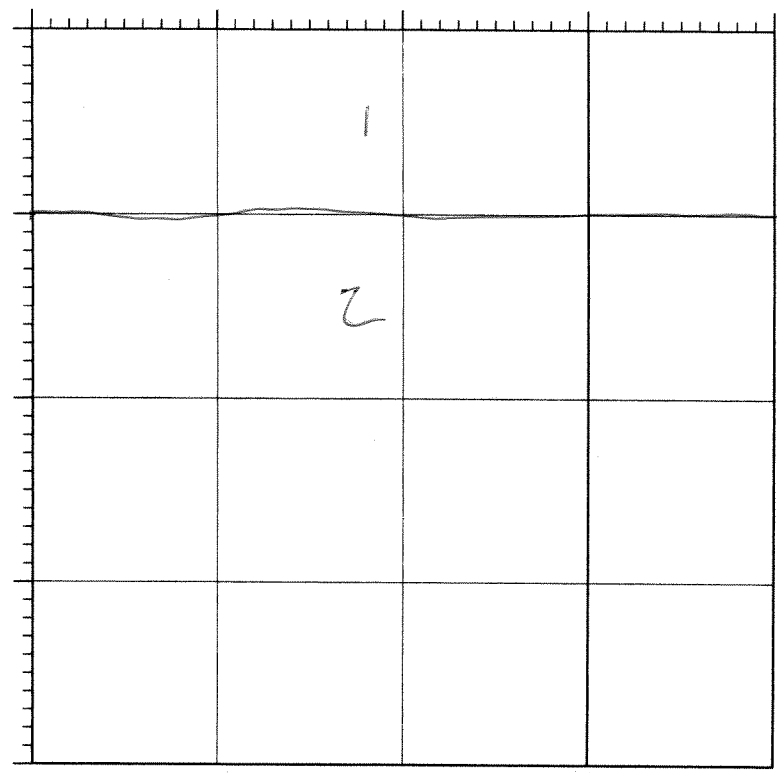
GENERAL LOCATION: Pile 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/19/07  
 FIELD ENGINEER: E. Fehrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
P7-TP2-021	2'	1040
P7-TP2-020	2'	1040
P7-TP2-020	2'	1040
P7-TP2-022	4'	1045

Pit Width: 3'  
 Pit Length: 8'  
 Pit Depth: 5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gravel-sand-silt, light brown in color, GM
2	Native soil

**SPECIAL NOTES:**

Reached native soil at 4' depth

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No. PROJECT NUMBER			AutoCAD FILE FILE NAME		
SCALE:		FIGURE No.			
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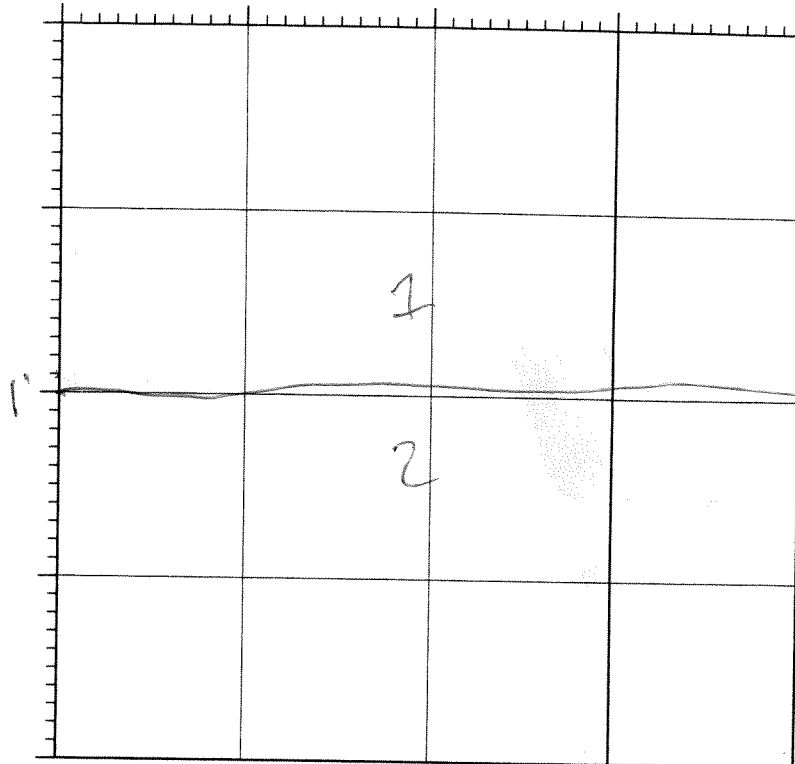
GENERAL LOCATION: Shaft Pad  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhry

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
SP-TP2-086	0-1	1030
SP-TP2-087	0-1	1030
SP-TP2-088	0-1	1030

55  
55  
55

Pit Width: 3'  
 Pit Length: 3'  
 Pit Depth: 2'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Silty sand, sm light gray, ashy color w/ mostly fines
2	Native Soil

**SPECIAL NOTES:**

Native soil encountered at 1' depth

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.: PROJECT NUMBER  
 AutoCAD FILE: FILE NAME  
 SCALE: FIGURE No.  
 SCALE

GENERAL LOCATION: Storage Area  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
SA-TP1-089	0-1'	1045
SA-TP1-090	0-1'	1045
SA-TP1-207	0-1'	1045
SA-TP1-091	0-1'	1045

RAD SA-TP1-089 12  
 SA-TP1-090 12  
 RAD SA-TP1-207 12  
 SA-TP1-091 12

Pit Width: 3'  
 Pit Length: 3'  
 Pit Depth: 2'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	silty, organic native soil - OL

**SPECIAL NOTES:**

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE:		FIGURE No:			
SCALE					



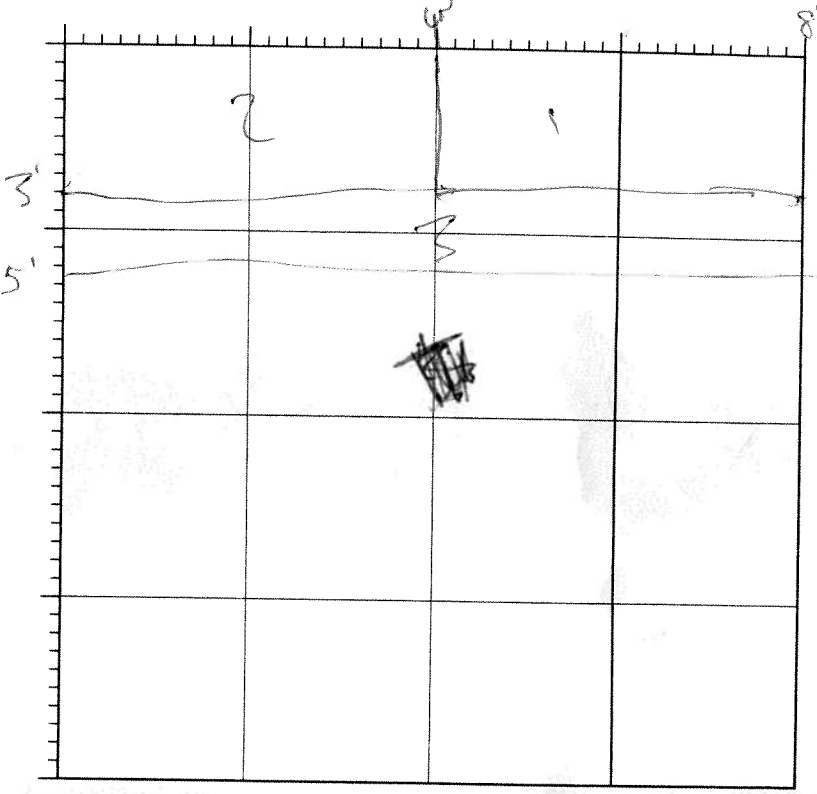
GENERAL LOCATION: Pond 1  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: N facing

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME	
( POI-TPI-099	0-2'	1245	110
( POI-TPI-100	0-2'	1245	110
( POI-TPI-308	0-2'	1245	130
x POI-TPI-101	2-4'	1300	90
x POI-TPI-102	2-4'	1300	90
POI-TPI-103	0-2'	1300	95

Pit Width: 3'  
 Pit Length: 8'  
 Pit Depth: 5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Dense clay, gray, med-high plasticity, ML
2	clay-silt-sand, less plasticity, CL
3	Native soil

**SPECIAL NOTES:**

Encountered native soil after 3'

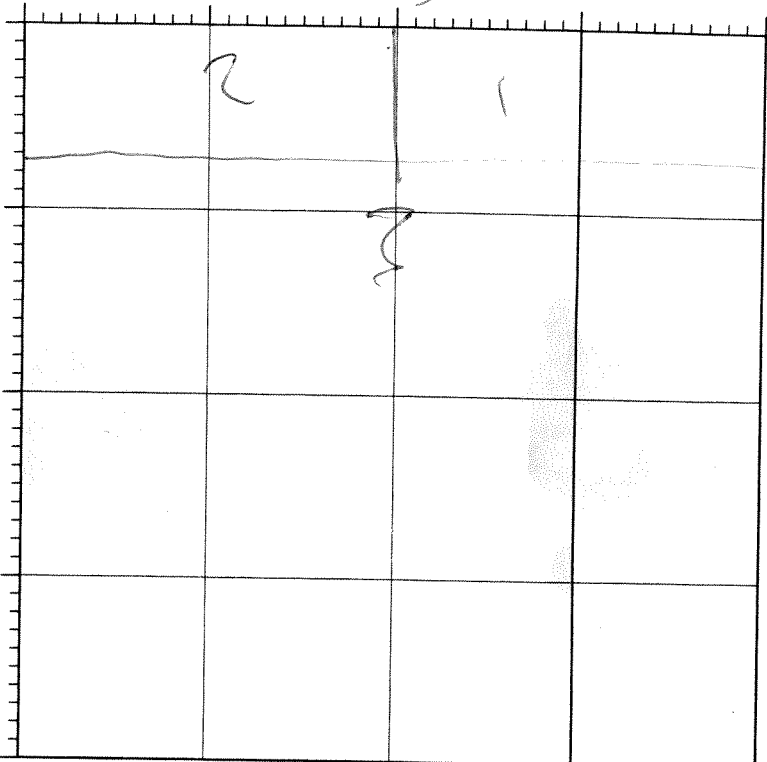
REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No.: PROJECT NUMBER  
 AutoCAD FILE: FILE NAME  
 SCALE: SCALE FIGURE No: FIGURE No



GENERAL LOCATION: Pond 2  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: E facing

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhrig



**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

SAMPLE No.	DEPTH	TIME	
( P02-TP2-104	0-2'	1315	90
P02-TP2-105	0-2'	1315	120
P02-TP2-106	2-4'	1320	70
X P02-TP2-107	2-4'	1320	70
X P02-TP2-108	6'	1325	60
X P02-TP2-109	6'	1325	45
- P02-TP2-110	0-2'	1330	100
- P02-TP2-309	0-2'	1330	90

Pit Width: 3'  
 Pit Length: 7'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gray, dense clay, med-high plasticity, ML
2	Clay mixed w/ silt/sand, CL
3	Native Soil

**SPECIAL NOTES:**

Encountered native soil at 3'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
		PROJECT No.: PROJECT NUMBER AutoCAD FILE: FILE NAME SCALE: SCALE      FIGURE No: FIGURE NUMBER			



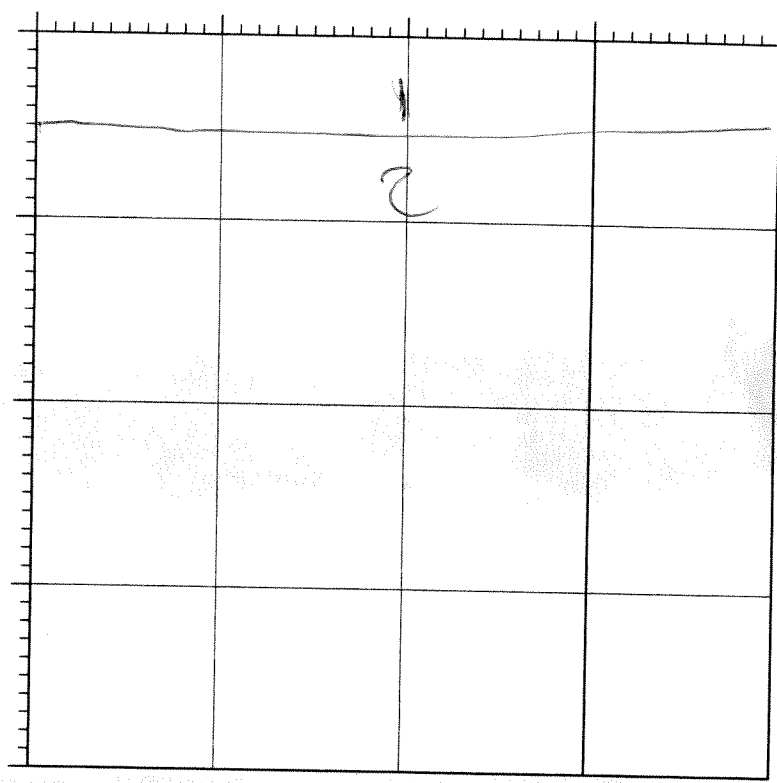
GENERAL LOCATION: Pond 3  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 4/21/07  
 FIELD ENGINEER: LEJH/mg

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
P03-TP3-114	0-2'	1420
P03-TP3-115	0-2'	1420
P03-TP3-116	0-2'	1420

65  
70  
80

Pit Width: 3'  
 Pit Length: 5'  
 Pit Depth: 4'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gray, dense clay, med-high plasticity, MC Native Soil
2	

**SPECIAL NOTES:**  
 Encountered Native soil at 2'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No. PROJECT NUMBER  
 AutoCAD FILE: FILE NAME  
 SCALE: SCALE FIGURE No. FIGURE No.

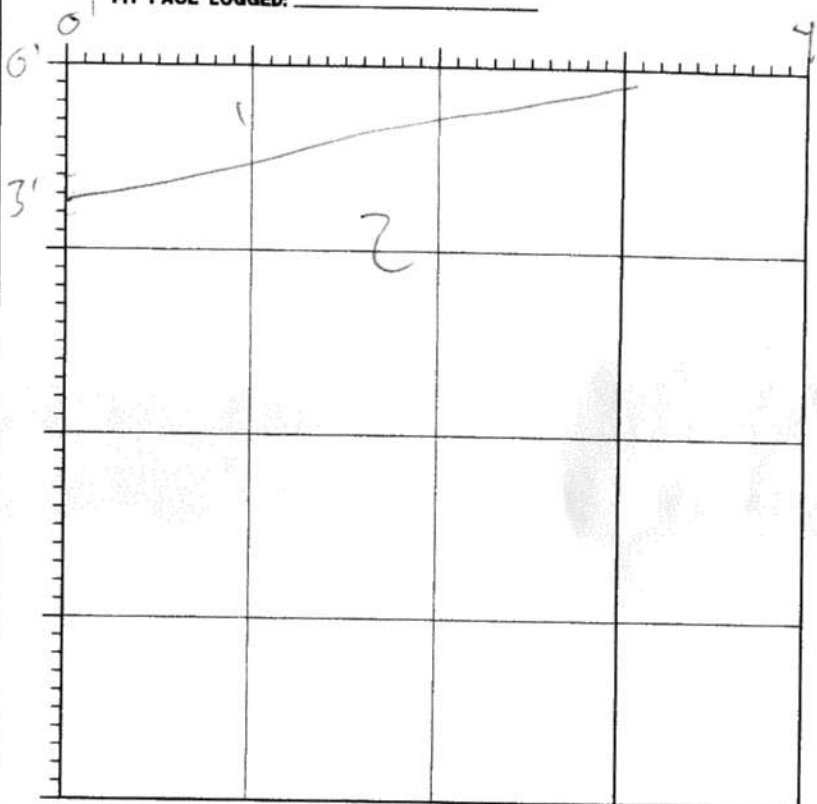
GENERAL LOCATION: Pond 4  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: C. Fuhry

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
P04-TP4-11	0-2'	1355
P04-TP4-12	0-2'	1355
P04-TP4-13	0-2'	1355

90  
 100  
 120

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 3.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gray, dense clay, med-high plasticity, M <sub>h</sub>
2	Native Soil → drier than ponds 1 + 2

**SPECIAL NOTES:**

Native soil encountered at 2-3'

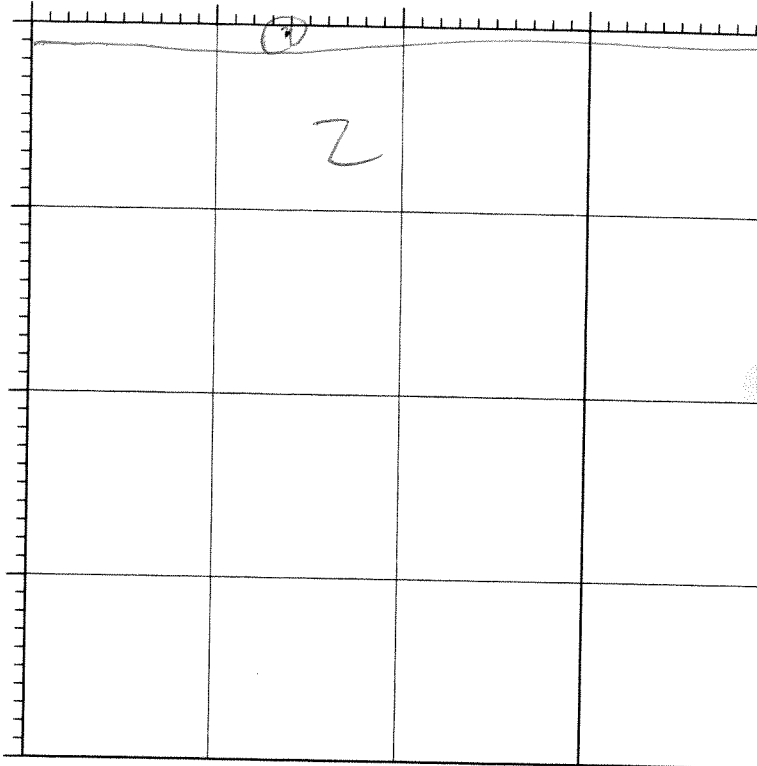
REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No. PROJECT NUMBER  
 AutoCAD FILE FILE NAME  
 SCALE: FIGURE No.  
 SCALE

GENERAL LOCATION: Pond 15  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fuhrig



**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

SAMPLE No.	DEPTH	TIME
POS-TPS-117	0-2'	1440
POS-TPS-118	0-2'	1440
POS-TPS-119	0-2'	1440

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 3'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
①	Thin layer of oshy, dusty, clayey material, SM
2	Native soil

**SPECIAL NOTES:**

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
			PROJECT No. PROJECT NUMBER		
			AutoCAD FILE NAME		
			SCALE: FIGURE No.		
			SCALE		

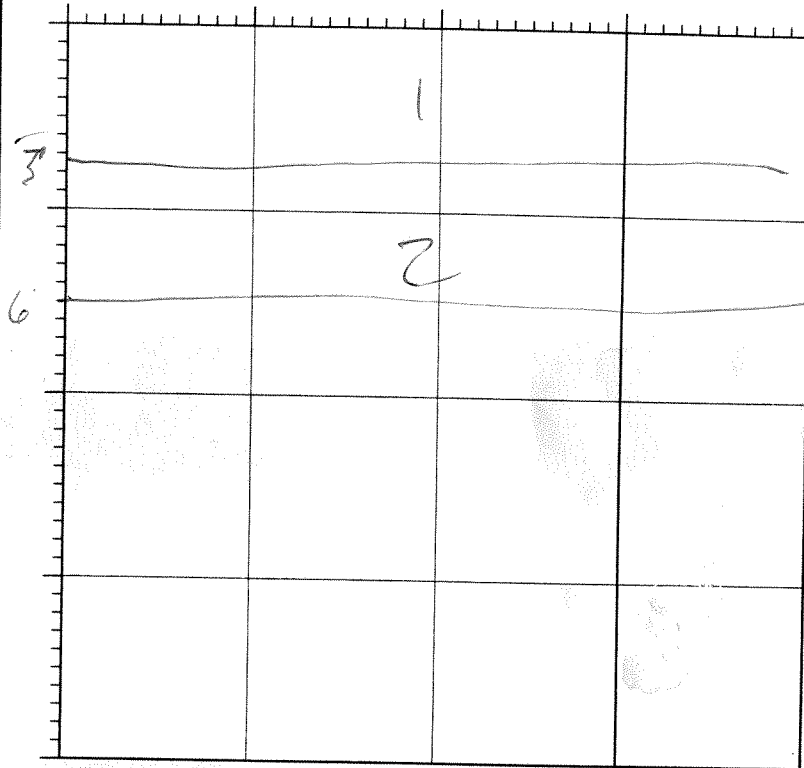
GENERAL LOCATION: Ore Storage 1  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: K. Fuhrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
OSI-TP607	0-2'	0910
OSI-TP680	0-2'	0916
OSI-TP636	0-2'	0916
OSI-TP608	2-4'	0915
OSI-TP682	6'	0920

90 RAD/201  
 90  
 70 DOP  
 78 RAD/SPLF  
 80 RAD

Pit Width: 3'  
 Pit Length: 6'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	light gray silty material with an ashy appearance, horizontal block structure, SM
2	Much darker material, more sand + gravel with some silt, SP

**SPECIAL NOTES:**  
 Very hot, 1000+ R/hr in the area

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
			PROJECT No.: PROJECT NUMBER AutoCAD FILE: FILE NAME SCALE: SCALE      FIGURE No.: FIGURE No.		

GENERAL LOCATION: Ore Storage 2  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

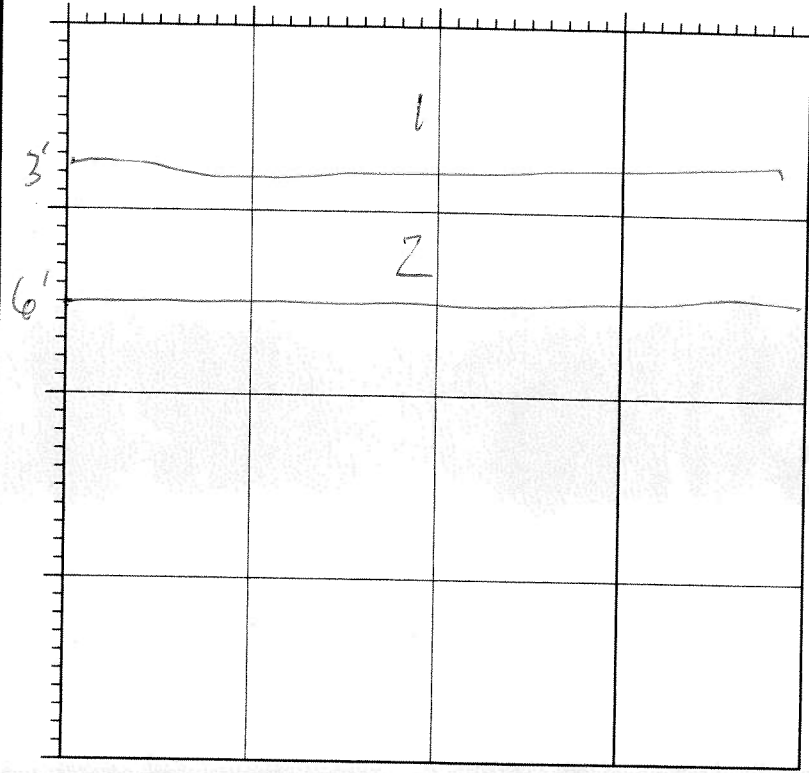
DATE: 6/21/02  
 FIELD ENGINEER: L. Fehring

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

↓  
 TFS



SAMPLE No.	DEPTH	TIME	
OS2-TFS-092	0-2'	1110	90
OS2-TFS-093	0-2'	1110	90
OS2-TFS-094	2-4'	1115	45
OS2-TFS-095	2-4'	1115	45
OS2-TFS-096	6'	1120	50
OS2-TFS-097	6'	1120	50
OS2-TFS-098	0-2'	1120	85

Pit Width: 3'  
 Pit Length: 6'  
 Pit Depth: 6'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Gray silty layer, <del>tan</del> ashly appearance and texture. Sm
2	Darker <del>gray</del> material, almost black with higher sand content

**SPECIAL NOTES:**

High gamma readings, around 600-700 uB/hr

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
		PROJECT No. PROJECT NUMBER			
		AutoCAD FILE FILE NAME			
		SCALE		FIGURE No.	
		SCALE			

GENERAL LOCATION: Access Road - 7  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Pulney

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL


SAMPLE No.	DEPTH	TIME
AR7-TP1-076	0-1.5	1545 60

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 1.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Very rocky, gravel and chunks of silt / sand numerous colors, inconsistent, GM

**SPECIAL NOTES:**

Native ground encountered at 1.5'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.: PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE:		FIGURE No:			
SCALE					



GENERAL LOCATION: Access Road 15  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Feshariz

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1	

SAMPLE No.	DEPTH	TIME
AR15-7P107	0-1.5	4:05 PM

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 1.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	Rocky, gravel with silt chunks + sand, inconsistent material / coloration, GM

**SPECIAL NOTES:**  
 Native soil encountered at 1.5'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No. PROJECT NUMBER			AutoCAD FILE: FILE NAME		
SCALE		FIGURE No.			
SCALE					



GENERAL LOCATION: Access Road 19  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/20/07  
 FIELD ENGINEER: L. Fisher

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL

		1			

SAMPLE No.	DEPTH	TIME
AR19-TP1-078	0-1.5	1610

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 1.5

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
1	light gray, chunky, silty material, SM

**SPECIAL NOTES:**

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY	PROJECT No.: PROJECT NUMBER			
						AutoCAD FILE: FILE NAME			
						SCALE	FIGURE No.		
						SCALE			





GENERAL LOCATION: Access Road-24

DATE: 6/21/07

PIT TREND: \_\_\_\_\_

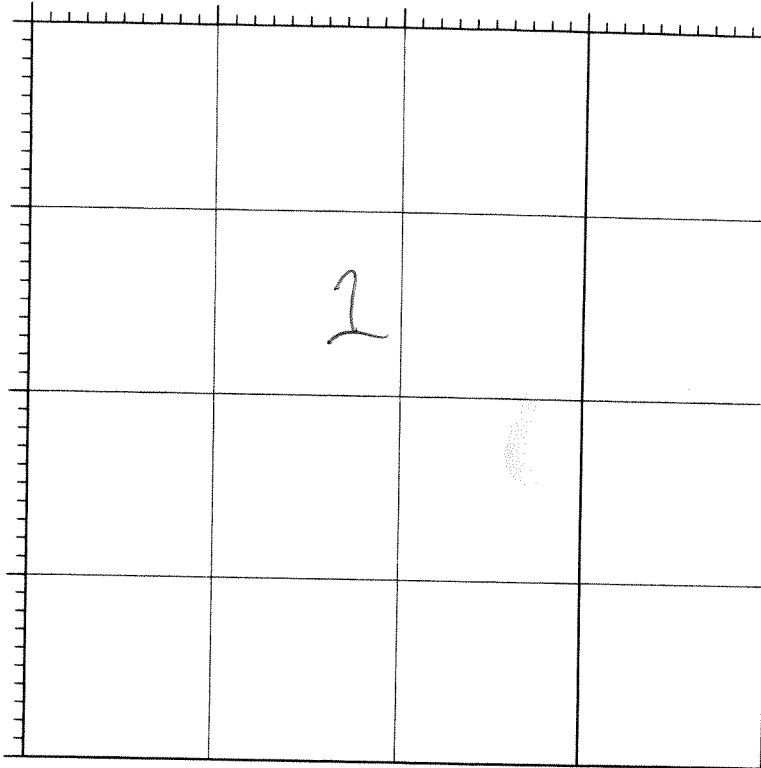
FIELD ENGINEER: L. Fohry

PIT FACE LOGGED: \_\_\_\_\_

### TEST PIT LOG

#### LEGEND

SOIL HORIZON  
HORIZON CONTRACT  
GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
AR24-TP1-083	0-1.5	0940

70

Pit Width: \_\_\_\_\_

Pit Length: \_\_\_\_\_

Pit Depth: \_\_\_\_\_

SOIL UNIT

SOIL DESCRIPTION AND EXCAVATION NOTES

1

Darker, sandy-silty gravel, GM

#### SPECIAL NOTES:

Native soil encountered at 1.5'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No.: PROJECT NUMBER	
AutoCAD FILE: FILE NAME	
SCALE:	FIGURE No.
SCALE	



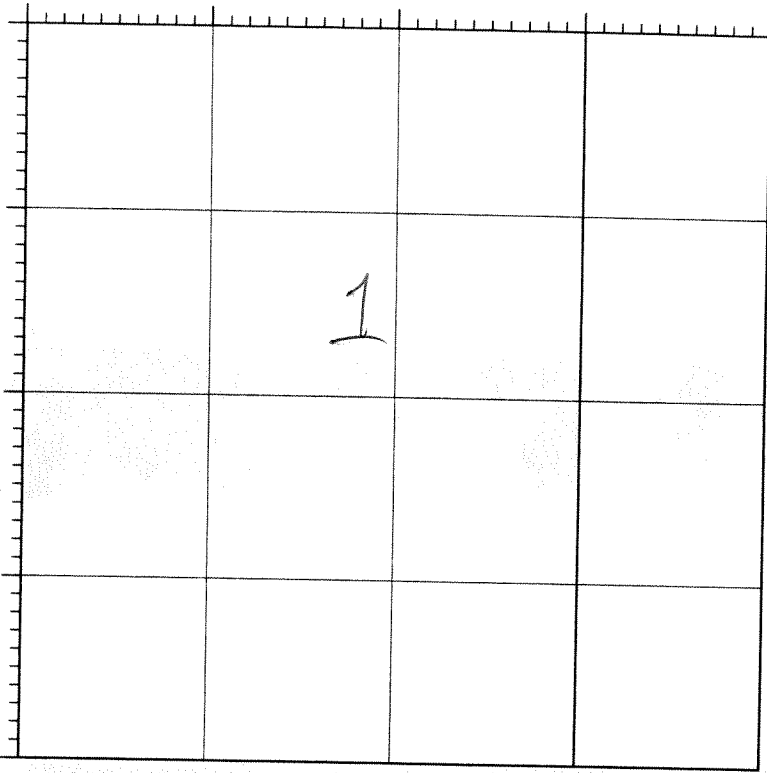
GENERAL LOCATION: Access Road - 34  
 PIT TREND: \_\_\_\_\_  
 PIT FACE LOGGED: \_\_\_\_\_

DATE: 6/21/07  
 FIELD ENGINEER: L. Fohrig

**TEST PIT LOG**

**LEGEND**

SOIL HORIZON  
 HORIZON CONTRACT  
 GROUNDWATER LEVEL



SAMPLE No.	DEPTH	TIME
<del>AR34-TP-094</del>		
AR34-TP-094	0-1.5	10:15 20
AR34-TP-095	0-1.5	10:15 21

Pit Width: 3'  
 Pit Length: 4'  
 Pit Depth: 1.5'

SOIL UNIT	SOIL DESCRIPTION AND EXCAVATION NOTES
-----------	---------------------------------------

1	Silty, organic soil - OL
---	--------------------------

**SPECIAL NOTES:**

Native soil encountered at 1.5'

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
<b>MWH</b>			PROJECT No.: PROJECT NUMBER AutoCAD FILE: FILE NAME SCALE: SCALE      FIGURE No: FIGURE No		

BORING LOG NUMBER:

P4-DH3

LOC. ID:

ELEVATION

DATUM:

SHEET 1 OF 3

PROJECT NAME

ST ANTHONY MINE

DRILL DATE: 5/1/07

INCLINATION

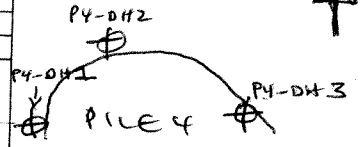
AZIMUTH

HAMMER WEIGHT:

DATE FINISHED 5/1/07

LOCATION SKETCH

N



DEPTH (UNITS)  
BORING METHOD

SOIL PROFILE

SAMPLES

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (1055) P4-DH3-001 - SILTY SAND, F-M SAND, POORLY GRADED, VERT PALE BROWN, DRY, W/F-C GRAVEL

2-4 (1057) P4-DH3-002 - SILTY SAND AS IN 0-2 FT. W/ 1/2 INCH TO 1-INCH F-C GRAVEL

4-12 (1104) - SILTY SAND AS IN 2-4 FT P4-DH3-003

12-20 (1110) P4-DH3-004 - SILTY SAND, F-M SAND, GREYISH BROWN, DRY, SOME 6-INCH COBBLES, F-C GRAVEL

20-28 (1115) P4-DH3-005 - SILTY SAND, AND F-C GRAVEL, M-C SAND, WELL GRADED, GREYISH BROWN, SUBROUNDED GRAVEL

28-36 (1125) P4-DH3-006 - SILTY SAND, W/F-C GRAVEL, W/ 3-5 IN COBBLES, GREY, DRY

36-44 (1145) P4-DH3-007 - SILTY SAND, F-M SAND, SOME F-C GRAVEL, TRACE 5-INCH COBBLES, 50/50 MIX OF BROWN + GREY, DRY

44-52 (1155) P4-DH3-008 - SILTY SAND, F-M SAND, ABUNDANT FINE TO COARSE GRAVEL, TRACE 5-INCH COBBLES, WELL GRADED, GREY/DK GREY

USCS	NUMBER	TYPE	Gamma MR/hr BLOW COUNTS*	RECOVERY
SM	001	G	25	2'
SM	002	G	20	2'
SM	003	G	25 <del>30</del> <del>124</del>	8'
SM	004	G	30	8'
SM	005	G	30	8'
SM	006	G	20	8'
SM	007	G	20	8'
SM	008	G	20	8'

ADDITIONAL COMMENTS

P4-DH3-001 2 BAGS SAMPLED FOR AGR

P4-DH3-004 1 BAG FOR RAD5 1 BAG FOR SPLP

P4-DH3-005 1 BAG FOR RAD5 COLLECTED DUPLICATE FOR RAD5 AS TIME P4-DH3-300 (1125)

DEPTH UNITS: FEET BGGS

DRILLING CONTRACTOR: LAYNE-WESTERN

DRILLER: PAUL BOSHEVSKI

LOGGED BY: RYAN HULTZ, PEN

CHECKED BY:

### SOIL BORING LOG FORM

REV No	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.
AutoCAD FILE:
SCALE:
FIGURE No.

BORING LOG NUMBER:

P4-DH3 m

LOCATION SKETCH

LOC. ID:

ELEVATION

DATUM

SHEET 2 OF 3

PROJECT NAME

DRILL DATE: 7/1/07

INCLINATION

AZIMUTH

HAMMER WEIGHT

DATE FINISHED: 7/1/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

SAMPLES

GRAPHIC LOG

USCS

NUMBER

TYPE

GAMA  
NR/hr  
BLW  
COUNT/8

RECOVERY

ADDITIONAL COMMENTS

50  
55  
60  
65  
70  
75  
80  
85  
90  
95

52-60 (1200) P4-DH3-009, ~~STIFF SAND~~  
SAND + GRAVEL, F-M SAND, F-C  
GRAVEL, W/SOME 3-5 INCH COBBLES  
DK GREY, DRY

60-68 (1210) P4-DH3-010, SAND +  
GRAVEL, F-M SAND, SOME COARSE  
SAND, F-C GRAVEL, LT BROWN DRY

68-76 (1218) P4-DH3-011, SAND + GRAVEL  
F-C SAND, F-M GRAVEL LT BROWN,  
DRY. POORLY SORTED (WELL GRADED)

76-84 (1255) P4-DH3-~~010~~ -012  
BROWN SAND W/F-M GRAVEL.  
F-M SAND, DRY, WELL SORTED

84-92 (1317) P4-DH3-~~011~~ -013, SAND  
F-C SAND, POORLY SORTED, W/SOME  
F-C GRAVEL, GREY, DRY/WELL  
GRADED

92-100 (1328) P4-DH3-014  
SAND + GRAVEL, F-C SAND,  
F-C GRAVEL, WELL GRADED,  
DRY, DK GREY

SW  
GW 009 G 25 8'

SW  
GW 010 G 20 8'

SW  
GW 011 G 23 8'

SP 012 G 25 8'

SW 013 G 21 8'

SW 014 G 19 8'

NR/hr

25 NR/hr

20 NR/hr

23

25

21

19

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: PAUL BOSH KOUSKIN  
DRILLER: LOYNE-WESTERN

LOGGED BY: RYAN HULTGREN  
CHECKED BY:

### SOIL BORING LOG FORM

REV. NO.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE  
FIGURE No.

BORING LOG NUMBER:

P4-DH3

LOCATION SKETCH

LOC. ID:

ELEVATION

DATUM

SHEET 3 OF 3

PROJECT NAME

DRILL DATE: 7/1/07

INCLINATION:

AZIMUTH

HAMMER WEIGHT:

DATE FINISHED 7/1/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

Gamma  
r/hr  
BLOW  
COUNT/6'

RECOVERY

ADDITIONAL COMMENTS

100

100-109 (1335) P4-DH3-015  
SAME AS 100-108 FT INTERVAL

SW  
GW 015 G

20

8'

GAMMA (uR/hr)

20

105

110

108-116 (1400) P4-DH3-016  
SAND, F-M, W/F - COARSE GRAVEL,  
POORLY GRADED, DRY, GREY, TRACE  
3-4" COBBLES

SP OK G

17

8'

17

115

120

116-124 (1415) P4-DH3-017  
SAND, F-M W/SOME COARSE  
SANDS, POORLY GRADED, BROWN/YT BROWN  
DRY, SOME FINE TO COARSE GRAVEL,  
SUBANGULAR. NOTE: VERY SLOW  
PENETRATION LAST 1-2 FEET

SP OK G

21

8'

21

125

124-129 (1450) P4-DH3-018  
SANDSTONE. PALE BROWN TO YELLOW  
FINE SANDS ~~OK~~ FINE TO COARSE  
GRAVEL, ANGULAR TO SUBANGULAR.

OK OK 18

5

18

130

TOTAL DEPTH = 129 FEET.

135

140

145

DEPTH UNITS: ~~FEET~~ DGS

DRILLING CONTRACTOR: JAYNE WESTER

DRILLER: PAUL BOSHIKOVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV NO. REVISIONS REV DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE FIGURE No.

BORING LOG NUMBER

P4-DHZ

LOC. ID.

PROJECT NAME ST ANTHONY MINE

ELEVATION

DATUM

SHEET 1 OF 4

INCLINATION

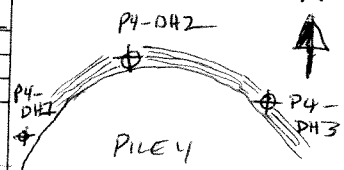
AZIMUTH

HAMMER WEIGHT

DRILL DATE: 7/2/07

DATE FINISHED: 7/2/07

LOCATION SKETCH



DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

SAMPLES

GRAPHIC LOG

USCS

NUMBER

TYPE

MR/hr  
ALLOW  
COUNT/75'

RECOVERY

ADDITIONAL COMMENTS

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (1231) P4-DHZ-001 - SAND, F-M SAND, POORLY GRADED, W/F-C GRAVEL SUBANGULAR, LT BROWN, DRY

SP 001 G 11 2'

2-4 (1235) P4-DHZ-002 - SAND F-M SAND POORLY GRADED, W/F-C GRAVEL, SUBANG., GREY, DRY

SP 002 G 11 2'

4-12 (1242) P4-DHZ-003 - SAND AS IN 2-4 GRADED TO DARK GREY

SP 003 G 12 8'

12-20 (1248) P4-DHZ-004 - AS ABOVE (4-12 FT) SAND, TRACE 3"-6" COBBLES

SP 004 G 11 8'

20-28 (1253) P4-DHZ-005 SAND + GRAVEL, F-C SAND, F-C GRAVEL, WELL GRADED, DK GREY, DRY

SW GW 005 G 12 8'

28-36 (1300) P4-DHZ-006 SAME AS 20-28 FT INTERVAL

SW GW 006 G 10 8'

36-44 (1305) P4-DHZ-007 SAME AS 20-28 FT INTERVAL

SW GW 007 G 10 8'

44-52 (1335) P4-DHZ-008 SAME AS 20-28 FT INTERVAL

SW GW 008 G 11 8'

2 FULL BAG SAMPLES FOR AGES (P4-DHZ-001)

DEPTH UNITS: FEET AGS

DRILLING CONTRACTOR: LAYNE-WESTERN

DRILLER: PAUL BOSEK ROVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV. NO.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE: FIGURE No.

BORING LOG NUMBER:

P4-DH2

LOCATION SKETCH

LOC. ID

ELEVATION

DATUM

SHEET 2 OF 4

PROJECT NAME

INCLINATION

AZIMUTH

HAMMER WEIGHT

DRILL DATE

DATE FINISHED

7/2/07  
7/2/07

DEPTH (UNITS)  
BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

SAMPLES

GRAPHIC LOG

USCS

NUMBER

TYPE

MP/HR  
SLOW  
COUNT/8"

RECOVERY

ADDITIONAL COMMENTS

50

55

60

65

70

75

80

85

90

95

52-60 (1350) P4-DH2-009  
SAME AS 20-28 FT INTERVAL

SW  
GW 009 G 10 8'

60-68 (1355) P4-DH2-010 ~~009~~ SAND,  
F-M SAND, POORLY GRADED, TRACE  
COARSE SAND, SOME FINE GRAVEL  
50/50 GRAYISH WHITE + LIGHT BROWN,  
DRY, ROUNDED

SP 010 G 23 8'

1 x 1/2 BAG,  
SAMPLE FOR  
RAOS  
P4-DH2-010

68-76 (1404) P4-DH2-011 AS ABOVE  
INTERVAL 60-68 FT, ~~MODERATELY~~  
GRADES TO VERY PALE BROWN

SP 011 G 35 8'

2 x 1/2 BAG SAMPLES  
FOR RAOS +  
SPLP  
P4-DH2-011

76-84 (1415) P4-DH2-012 - SAND +  
GRAVEL, WELL GRADED, F-C SAND  
F-C GRAVEL, (T GREY), DRY

SW  
GW 012 G 22 8'

84-92 (1500) P4-DH2-013 - SAME  
SAND + GRAVEL  
AS ABOVE 76-84 FT INTERVAL  
WITH FEW 4-INCH COBBLES OF  
ANGULAR ROCK. PENETRATION RATE  
SLOWED DURING LAST 2 FEET  
BLUSH GREY; POSSIBLE LARGE BOULDER.

SW  
GW 013 G 14 8'

92-100 (1520) P4-DH2-014 -

SW  
GW 014 G 16 8'

AS ABOVE ~~76-84~~ 84-92,  
CONTINUES 4-INCH COBBLES,  
ALL MATERIALS BLUSH GREY.

DEPTH UNITS: FEET & INCHES

DRILLING CONTRACTOR: LAYNE-WESTERN

DRILLER: PAUL BOSHKOVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV No.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE  
FIGURE No.

BORING LOG NUMBER:

P4-DH2

LOCATION SKETCH

LOC. ID:

ELEVATION:

DATUM:

SHEET 3 OF 4

PROJECT NAME:

DRILL DATE:

7/2/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED:

7/2/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

M/R  
BLOW COUNTS

RECOVERY

ADDITIONAL COMMENTS

100

105

110

115

120

125

130

135

140

145

100-108 (1525) P4-DH2-015  
SAND & GRAVEL, WELL GRADED,  
F-C SAND, F-C GRAVEL, SOME  
3-6" COBBLES; SAND GREYISH BROWN,  
COBBLES WHITISH GREY EXTERIOR,  
ORANGISH BROWN INTERIOR

SW GW 015 G 18 8'

108-116 (1535) P4-DH2-016  
AS ABOVE

SW GW 016 G 16 8'

116-124 (1610) P4-DH2-017  
SAND (F-C) & GRAVEL (FINE,  
TRACE COARSE), WELL GRADED  
DRY LT BROWNISH GREY  
ANGULAR TO SUBANGULAR

SW GW 017 G 12 8'

124-132 (1616) P4-DH2-018  
SAND & GRAVEL AS ABOVE  
116-124, LT BROWNISH  
GREY; ANGULAR/SUBANGULAR  
GRAVELS

SW GW 018 G 10 8'

132-140 (1630) P4-DH2-019  
SAND & GRAVEL, WELL GRADED,  
ANGULAR/SUBANG. BREAKABLE  
PIECES W/ PRESSURE (PINNED)  
TRANSITION FROM LT BROWNISH  
GREY TO LIGHT BROWN

SW GW 019 G 14 8'

140-148 (1638) P4-DH2-020  
PENETRATION RATE SLOWING  
GRAVEL W/ SAND, FINE GRAVEL  
W/ SOME COARSE GRAVEL, AND  
W/ F-M SAND. ANGULAR  
LT GREYISH BROWN, DRY

SW GW 020 G 12 8'

DEPTH UNITS:

DRILLING CONTRACTOR:

DRILLER:

LOGGED BY:

CHECKED BY:

SOIL BORING LOG FORM

REV No. REVISIONS REV DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



MWH

PROJECT No.  
AutoCAD FILE  
SCALE: FIGURE No.



BORING LOG NUMBER

P4-D42

LOCATION SKETCH

LOC ID

ELEVATION

DATUM

SHEET 4 OF 4

PROJECT NAME

DRILL DATE: 7/2/07

INCLINATION

AZIMUTH

HAMMER WEIGHT

DATE FINISHED 7/2/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

uR/  
hr  
SLOW  
COUNTS

RECOVERY

ADDITIONAL COMMENTS

150

148-156 (1705) P4-D42-021  
SAND + GRAVEL, WELL GRADED  
E-C SAND, F-C GRAVEL,  
LT BROWN, BREAKS EASILY,  
DRY, SUBANGULAR

SW  
4W

021

G

10

8'

155

156-164 (1712) P4-D42-022  
SANDSTONE - RESEMBLY F-M SAND  
W/FINE GRAVEL-SIZED PIECES OF  
ROCK. VERY PALE YELLOW  
@ 161 FEET PENETRATION RATE  
SLOWS CONSIDERABLY

022

G

9

8'

160

164-166 (1736) P4-D42-023  
SAME AS 156-164 INTERVAL  
PENETRATION VERY SLOW - ALMOST  
NO GRIN LAST FOOT

023

G

9

2'

170

TOTAL DEPTH = 106 FEET BLS

175

180

185

190

195

DEPTH UNITS: FEET BLS

DRILLING CONTRACTOR: LAYNE WESTERN

DRILLER: PAUL BOSHKOVSKI

LOGGED BY: KIAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV No.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD File:  
SCALE:      FIGURE No.

BORING LOG NUMBER:

P4-DH1

LOC. ID:

PROJECT NAME: ST ANTHONY MINE

ELEVATION:

SHEET 1 OF 4

DATUM:

DRILL DATE: 7/3/07

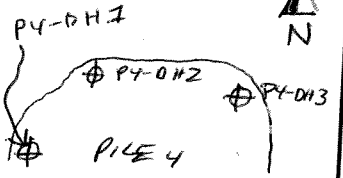
INCINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/3/07

LOCATION SKETCH



DEPTH (UNITS):

BORING METHOD:

SOIL PROFILE

SOIL DESCRIPTION

GRAPHIC LOG

SAMPLES

USCS

NUMBER

TYPE

GAMMA  
RATIO  
COUNTS

RECOVERY

ADDITIONAL COMMENTS

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (1130) P4-DH1-001 - SILTY SAND,  
F-M SAND, SOME COARSE SAND, SOME  
F-C GRAVEL; ~~WELL~~ GRAVEL GRADED,  
OR GREYISH BROWN, DRY, TRACE 3" COBBLES

SM001 G 13 2'  
SM002 G 15 2'

2-4 (1135) P4-DH1-002 - AS ABOVE  
0-2 FT INTERVAL

SM003 G 12 8'

4-12 (1140) P4-DH1-003 - AS ABOVE  
0-2 FT INTERVAL

12-20 (1180) P4-DH1-004 - AS ABOVE  
TRANSITIONS TO DARK GREY  
LESS SILT

SM004 G 13 8'

20-28 (1155) P4-DH1-005 - SAND,  
F-M-C SAND, WELL GRADED, SOME  
FINE-COARSE GRAVEL, SUBROUNDED  
LT GREY, DRY

SW005 G 13 8'

28-36 (1200) P4-DH1-006 - SAND,  
F-M SAND, POORLY GRADED, SOME  
C SAND, LITTLE F-C GRAVEL, SUBROUNDED,  
GREYISH BROWN, DRY

SP006 G 13 8'

36-44 (1206) P4-DH1-007 - SAND,  
F-C SAND, SOME F-C GRAVEL,  
TRACE 4" COBBLES, WELL GRADED,  
GREYISH BROWN, DRY, SUBROUNDED

SW007 G 13 8'

44-52 (1215) P4-DH1-008 - SAND,  
F-M, ~~SO~~ LITTLE C-SAND, SOME  
F-C GRAVEL, ~~BROWN~~ POORLY GRADED.  
BROWNISH GREY, DRY, SUBROUNDED  
SOME GRAVEL LIGHT REDDISH/WHITE

SP008 G 14 8'

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: LARNE - WESTERN  
DRILLER: PAUL BOSHKOWSKI

LOGGED BY: RYAN HULTBERG  
CHECKED BY:

REV No	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.			AutoCAD FILE		
SCALE:			FIGURE No.		



SOIL BORING LOG FORM

BORING LOG NUMBER:

P4-DH1

LOCATION SKETCH

LOC. ID.

ELEVATION:

DATUM:

SHEET 2 OF 4

PROJECT NAME

INCLINATION:

AZIMUTH

HAMMER WEIGHT:

DRILL DATE: 7/13/07

DATE FINISHED: 7/31/07

DEPTH (UNITS):

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

SAMPLES

GRAPHIC LOG

USCS

NUMBER

TYPE

Gamma  
NR/W  
ALLOW  
COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

50

55

60

65

70

75

80

85

90

95

52-60 (1223) P4-DH1-009 SAND -  
SAME AS 44-52' INTERVAL

SP 009 G 14 6'

60-68 (1229) P4-DH1-010 SAND -  
SAME AS 44-52' INTERVAL

SP 010 G 13 4'

68-76 (1236) P4-DH1-011 SAND -  
SAME AS 44-52' INTERVAL  
POSSIBLY A 2 FT BOULDER AT APPROX  
72-74 FEET BGS, (LITTLE 4-6" COBBLES  
WITH THE SAND) PENETRATION RATE  
SLOWED @ ~ 72-74 FEET BGS.

SP 011 G 12 8'

76-84 (1304) ~~P4-DH1-011~~ P4-DH1-012  
SAND + GRAVEL, F-C SAND,  
F-C GRAVEL, WELL GRADED, SUBANGULAR,  
TRACE 3-5" COBBLES LIGHT BROWNISH  
GREY, DRY

SW/GW 012 G 14 8'

84-92 (1310) P4-DH1-013 - SAND +  
GRAVEL, F-C SAND, F-C GRAVEL,  
TRACE 3" COBBLES, SUBROUNDED/  
ROUNDED, LT BROWNISH GREY, DRY

SW/GW 013 G 15 8'

92-100 (1330) P4-DH1-014 - GRAVEL +  
SAND, F-C GRAVEL, F-C SAND, TRACE  
3-6" COBBLES, WELL GRADED, LT  
BLuish GREY  
~ 97/98 FEET PENETRATION RATE SLOWING.  
POSSIBLE BOULDER?

GW/SW 014 G 14 8'

ADD'G TO PAUL B.  
2 FOOT VOID  
58-60' BGS

P4-DH1-013  
1 BAG FOR RADDS

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: LAYNE-WESTERN

DRILLER: PAUL BOSHKOVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV No. REVISIONS REV. DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE: FIGURE No.

BORING LOG NUMBER:

P4-DH1

LOCATION SKETCH

LOC. ID

PROJECT NAME

ELEVATION

DATUM

SHEET 3 OF 4

INCLINATION

AZIMUTH

HAMMER WEIGHT

DRILL DATE: 7/3/07

DATE FINISHED: 7/9/07

DEPTH (UNITS)  
BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

MR/HR  
R/BW  
COUNTS

RECOVERY

ADDITIONAL COMMENTS

100

105

110

115

120

125

130

135

140

145

100-108 (1335) P4-DH1-015 - SAND,  
F-M SAND, SOME F-C GRAVEL,  
POORLY GRADED, V. PALE BROWN TO  
LT BROWN, DRY

SP 015 G 25 8'

P4-DH1-015  
1 BAG FOR RAOS  
1 BAG FOR SPLP

108-116 (1343) P4-DH1-016 -  
SAND + GRAVEL, F-M SAND, F-C  
GRAVEL, TRACE 3-4" LOBBLES, WELL  
GRADED, SUBROUNDED, LT ~~LT~~ BROWN  
TO YELLOWISH BROWN

SW 016 G 15 8'

116-124 (1410) P4-DH1-017 - SAME  
AS 108-116 FT INTERVAL. TRANSITIONS  
~ 120 TO ~~LT BROWN~~ VERY PALE  
GREYISH BROWN

SW 017 G 13 8'

124-132 (1418) P4-DH1-018  
124-126 - SAME AS 108-116 FT

SW 018 G 14 8'

@ 126-129 ~~CLAY~~ SANDY CLAY, LOW ~~PL~~  
PLASTICITY, MEDIUM STIFF, YELLOWISH  
ORANGE, DRY

SW 019 G 12 8'

129-132 - SAME AS 108-116 FT  
TRA COLOR TRANSITION TO GREY  
FEW 6-7" COBBLES

SW 020 G 14 8'

132-140 (1437) - P4-DH1-019  
SAND + GRAVEL, F-C SAND, FINE TO  
COARSE GRAVEL, ~~LITTLE COARSE GRAVEL~~, 1 10"  
COBBLE, WELL GRADED, LT ORANGE/GREY  
ORANGISH GREY

SW 020 G 14 8'

140-148 (1450) - P4-DH1-020  
SAME AS 132-140 FEET INTERVAL  
NO COBBLES

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: LANE-WESTERN

DRILLER: PAUL BOSHKOVSKI

LOGGED BY: RYAN HULL, PLS

CHECKED BY:

SOIL BORING LOG FORM

REV NO.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE:  
SCALE:      FIGURE No.

BORING LOG NUMBER:

P4-DH1

SHEET 4 OF 4

LOCATION SKETCH

LOC. ID: \_\_\_\_\_ ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_  
 PROJECT NAME: \_\_\_\_\_ DRILL DATE: 7/3/07  
 INCLINATION: \_\_\_\_\_ AZIMUTH: \_\_\_\_\_ HAMMER WEIGHT: \_\_\_\_\_ DATE FINISHED: 7/2/07

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE	GRAPHIC LOG	SAMPLES					ADDITIONAL COMMENTS
				USCS	NUMBER	TYPE	BLOW COUNT/6"	RECOVERY	
150		148-156 (1510) P4-DH1- <del>021</del> P4		SW	GW021	G	12	8'	
155		148-154 SAME AS 132-140 FT.		SR					
155		154-156 SAND, F-M SAND, POORLY GRADED, VERY PALE YELLOW PENETRATION RATE SLOWED @ 154'		SP	022	G	10	1'	
160		156- <del>156</del> 157 (1525) P4-DH1-022							
165		SAME AS 154-156. VERY SLOW PENETRATION RATE							
165		TOTAL DEPTH = 157 FEET BGS							
170									
175									
180									
185									
190									
195									

DEPTH UNITS: FEET BGS  
 DRILLING CONTRACTOR: LATHE-WESTERN  
 DRILLER: PAUL BOSHILOVSKI

LOGGED BY: RYAN HUNTZMAN  
 CHECKED BY: \_\_\_\_\_

**SOIL BORING LOG FORM**

REV No.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.					
AutoCAD FILE					
SCALE		FIGURE No.			



BORING LOG NUMBER

P4-DH4

LOC. ID

PROJECT NAME ST ANTHONY MINE

ELEVATION

SHEET 1 OF 3

INCLINATION

AZIMUTH

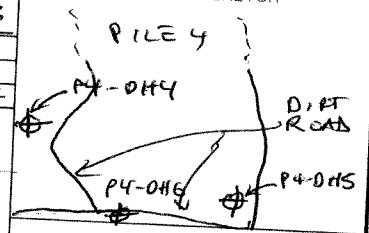
HAMMER WEIGHT

DATUM

DRILL DATE 7/4/07

DATE FINISHED 7/4/07

LOCATION SKETCH



DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

GRAPHIC LOG

SAMPLES

USCS

NUMBER

TYPE

Grain Size  
MP/hr  
BLOW  
COUNT

RECOVERY

ADDITIONAL COMMENTS

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (834) P4-DH4-001 - SILTY SAND  
F-M SAND, SOME C. SAND, POORLY  
GRADED, GREY, DRY, TRACE 3" COBBLES

SM 001 G 18 2'

SW 002 G 16 2'

2-4 (836) P4-DH4-002 - SAND,  
F-M SAND, SOME C. SAND / F.G. GRAVEL,  
GRAYISH BROWN, DRY, TRACE SILT

SW 003 G 18 8'

4-12 (845) P4-DH4-003 - AS ABOVE  
IN 2-4' INTERVAL

12-16 - NO RECOVERY (848)

16-20 - SAME AS 2-4' INTERVAL.  
(855) P4-DH4-004. 1x6" COBBLE.

SW 004 G 16 4'

20-28 (857) P4-DH4-005 - SAND,  
F-M SAND, SOME F-C GRAVEL, POORLY  
GRADED SAND, MIX OF GRAYISH BROWN  
TRANSITION TO LIGHT GRAY

SP 005 G 16 8'

28-36 (8903) P4-DH4-006 - SAND  
+ GRAVEL, F-C SAND, F-C GRAVEL,  
WELL GRADED, GRAYISH BROWN, DRY  
SUB-ROUNDED, TRACE SILT, LITTLE  
3-5" COBBLES

SW GW 006 G 16 8'

36-44 (8911) P4-DH4-007 - SAME AS  
28-36 FT INTERVAL

SW GW 007 G 17 8'

44-52 (8918) P4-DH4-008 - SAME AS  
28-36 FT INTERVAL, GRAVEL IS  
MORE SUB-ANGULAR.

SW GW 008 G 15 8'

P4-DH4-001 2 PILES  
FOR PILE 4

DEPTH UNITS: FEET PLUS  
DRILLING CONTRACTOR: LAYNE-WESTERN  
DRILLER: PAUL DZIKOVSKI

LOGGED BY: RYAN HULTGREN  
CHECKED BY: \_\_\_\_\_

### SOIL BORING LOG FORM

REV No.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.					
AutoCAD FILE					
SCALE		FIGURE No.			



BORING LOG NUMBER:

P4-DH4-~~001~~ <sup>009</sup>

LOCATION SKETCH

LOC. ID:

ELEVATION:

DATUM:

SHEET 2 OF 3

PROJECT NAME:

DRILL DATE: 7/4/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/11/07

DEPTH (UNITS):

BORING METHOD:

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

GAMMA  
R/r  
FLOW  
COUNT/8'

RECOVERY

ADDITIONAL COMMENTS

50  
55  
60  
65  
70  
75  
80  
85  
90  
95

52-60 (0927) P4-DH4-009  
SAME AS 44-52 FT INTERVAL  
SAND + GRAVEL, TRANSITION TO ~~CLAY~~  
GREY

SW  
GW 009 G 17 8'

60-68 (0938) P4-DH4-010  
SAME AS 52-60 FT INTERVAL

SW  
GW 010 G 16 8'

68-76 (0938) P4-DH4-011  
SAME AS ABOVE 52-60 FT  
INTERVAL. COLOR TRANSITIONS OF  
GREY → VERY LIGHT GREY/WHITE →  
VERY PALE BROWN

SW  
GW 011 G 25 8'

76-84 (0946) P4-DH4-012 - SAND,  
FUM, ~~SAND~~ LITTLE COARSE SAND,  
LITTLE F-C GRAVEL, POORLY  
GRADED, ROUNDED - SUB ROUNDED,  
VERY DARK BROWN, DRY

SP 012 G 35 8'

P4-DH4-012  
1 BAG RADS

84-92 (0955) P4-DH4-013 - SAND  
AS IN 76-84 FT INTERVAL.  
TRANSITION @ 80 FT TO LIGHT YELLOWISH  
BROWN

SP 013 G 35 8'

92-100 (1004) P4-DH4-014 - SAND  
AS IN 80-84 FT INTERVAL

SP 014 G 45 8'

P4-DH4-014  
1 BAG RADS  
1 BAG SPLR

DEPTH UNITS: FEET BGS  
DRILLING CONTRACTOR: LAYNE-WESTERN  
DRILLER: PAUL BOSH KOUSKI

LOGGED BY: RYAN HULTGREN  
CHECKED BY:

SOIL BORING LOG FORM

REV NO. REVISIONS REV DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE: FIGURE No.

BORING LOG NUMBER:

P4-DH4 m

LOCATION SKETCH

LOC. ID:

ELEVATION:

DATUM:

SHEET 3 OF 3

PROJECT NAME:

DRILL DATE: 7/1/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED:

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	SAMPLES				RECOVERY	ADDITIONAL COMMENTS
			USCS	NUMBER	TYPE	RECOVERY		
100		100-108 (1000) P4-DH4-015 SAND AS IN 80-84 FT INTERVAL TRANSITIONS TO YELLOWISH BROWN @ 102-108 FEET		SP 015 G	RP4 UR/W LOW COUNT/6	20	8'	
105								
110		108-116 (1018) P4-DH4-016 SAND - F-M SAND, SOME FINE GRAVEL, POORLY GRADED, YELLOWISH BROWN, DRY, SUBANGULAR GRAVEL		SP 016 G		17	8'	
115								
120		116-124 (1030) P4-DH4-017 SAME AS 108-116 FT INTERVAL		SP 017 G		20	8'	
125								
130		124-132 (1038) P4-DH4-018 SAME AS 108-116 FT INTERVAL		SP 018 G		17	8'	
135								
140		132-140 (1046) P4-DH4-019 132-134 - SAME AS 108-116 FT 134-140 - SAND, F-M SAND, SOME SAND/F GRAVEL, POORLY GRADED, LITTLE C GRAVEL LIKE SANDSTONE. RESISTANCE @ 134-136 FEET, SUBANGULAR		SP 019 G		15	8'	
145								
150		140-148 (1052) P4-DH4-020 140-146 - SAME AS 134-140 146-148 - TRANSITION TO F-M SAND, LITTLE C GRAVEL, VERY PACE BROWN PENETRATION RATE SLOWED (146-148)		SP 020 G		14	8'	

TOTAL DEPTH = 148 FT BGS

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: JAYNE WESTERN  
DRILLER: PAUL BOSHKOVSKI

LOGGED BY: RYAN HULLIGAN  
CHECKED BY:

### SOIL BORING LOG FORM

REV. NO.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No. \_\_\_\_\_  
AutoCAD FILE \_\_\_\_\_  
SCALE: \_\_\_\_\_ FIGURE No. \_\_\_\_\_





BORING LOG NUMBER:

P4-DH6

SHEET 1 OF 3

LOC. ID:

ELEVATION:

DATUM:

PROJECT NAME

ST ANTHONY MINE

DRILL DATE:

3/4/07

INCLINATION:

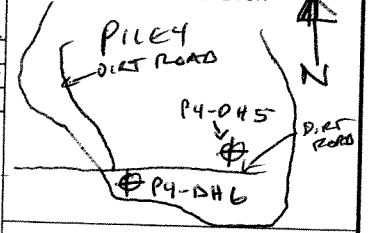
AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED:

3/4/07

LOCATION SKETCH



DEPTH (UNITS):

BORING METHOD:

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

Gamma  
nr/hr  
blow  
COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (1409) P4-DH6-001 - SAND,  
F-M SAND, LITTLE F GRAVEL,  
POORLY GRADED, V. PALE BROWN, DRY

2-4 (1410) P4-DH6-002 - SAND  
AS IN 0-2 FT. TRANSITION TO DK GRAY

4-12 (1420) P4-DH6-003 - SAND,  
F-C SAND, SOME F-C GRAVEL,  
WELL GRADED, SUBROUND, DK GRAY, DRY

12-20 (1427) P4-DH6-004 - SAND AS  
IN 4-12 FT. COLOR TRANSITION  
TO LIGHT GRAY

20-28 (1430) P4-DH6-005 - ABOVE  
SAND FROM 4-12 FT. COLOR TRANS.  
TO LT YELLOWISH BROWN

28-36 (1437) P4-DH6-006 - SAND  
FROM 4-12 FT, COLOR - DK GRAY

36-44 (1444) P4-DH6-007 - SAND  
SAME AS 20-28 FEET (LT YELLOWISH  
BROWN)

44-52 (1452) P4-DH6-008 - SAND,  
SAME AS 20-28 FEET (LT  
YELLOWISH BROWN)

SP 001	G	16	2'
SP 002	G	15	2'
SW 003	G	18	8'
SW 004	G	25	8'
SW 005	G	29	8'
SW 006	G	21	8'
SW 007	G	35	8'
SW 008	G	40	8'

P4-DH6-001 2 BAGS  
FOR AL-RO

P4-DH6-007  
1 1/2 BAG FOR RADS

P4-DH6-008  
1 1/2 BAG, RADS  
1 1/2 BAG, SACP

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: HANK-WESTERN

DRILLER: PAUL BOSCH KOVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV NO	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No:  
AutoCAD FILE:  
SCALE:      FIGURE No:



BORING LOG NUMBER:

P4-DHG

LOCATION SKETCH

LOC. ID

ELEVATION

SHEET 2 OF 3

PROJECT NAME

DATUM

INCLINATION

AZIMUTH

HAMMER WEIGHT

DRILL DATE: 7/11/07

DATE FINISHED: 7/11/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

BLOW COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

50

55

60

65

70

75

80

85

90

95

52-60 (1459) P4-DHG-009 - SAND  
SAME AS 20-28 FEET

SW 009 G 30 8'

60-68 (1503) P4-DHG-010 -  
SAND & GRAVEL, F-C SAND, F-C  
GRAVEL, WELL GRADED, SUBGRAINED,  
GREY, DRY

SW 010 G 20 8'

68-76 (1530) P4-DHG-011 - SAND &  
GRAVEL AS IN 60-68, LT BROWNISH  
GREY

SW 011 G 20 8'

76-84 (1537) P4-DHG-012, AS  
ABOVE 60-68, LIGHT YELLOWISH BROWN

SW 012 G 21 8'

84-92 (1545) P4-DHG-013, AS 60-68'  
ABOVE, TRACE SILT, LT GREY,  
LITTLE 5-6" COBBLES

SW 013 G 21 8'

92-100 (1552) P4-DHG-014, SAME AS  
84-92 FT INTERVAL

SW 014 G 19 8'

DEPTH UNITS: FEET & IN

DRILLING CONTRACTOR: LANE-WESTERN

DRILLER: PAUL BOSHIKOWSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REVISIONS table with columns: REV. NO., REVISIONS, REV. DATE, DESIGN BY, DRAWN BY, REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE:  
SCALE: FIGURE No.

BORING LOG NUMBER:

P4-DH6

LOCATION SKETCH

LOC. ID:

ELEVATION:

DATUM:

SHEET 3 OF 3

PROJECT NAME:

DRILL DATE: 7/4/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/4/07

DEPTH (UNITS):

BORING METHOD:

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

CONC  
MPT  
BLW  
COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

100  
105  
110  
115  
120  
125  
130  
135  
140  
145

102-108 (1614) P4-DH6-015  
SAND/SANDSTONE. F-M SAND  
POORLY GRADED, SOME 3-5" COBBLES  
@ 102-104' PENETRATION RATE  
SLOWED - PRODUCED BULKY GRAY  
3-5" COBBLES.  
PEN. RATE INCREASED ~~106-108~~ 104-108  
PRODUCING F-M SAND + COBBLES,  
SAND - V. PALE YELLOWISH BROWN

SP 015 G 16 8'

TOTAL DEPTH = 108 FEET BGS

DEPTH UNITS: FEET BGS

DRILLING CONTRACTOR: LEASE-WESTMAN

DRILLER: PAUL BOSHKOVSKI

LOGGED BY: RYAN HUCKLE

CHECKED BY:

### SOIL BORING LOG FORM

REV No.	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE:  
SCALE:      FIGURE No:

BORING LOG NUMBER:

P4-DHS

SHEET 1 OF 3

LOC. ID.

ELEVATION

DATUM

PROJECT NAME: ST ANTHONY MINE

DRILL DATE: 7/6/07

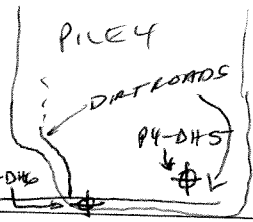
INCLINATION

AZIMUTH

HAMMER WEIGHT

DATE FINISHED: 7/6/07

LOCATION SKETCH



DEPTH (UNITS)  
BORING METHOD

SOIL PROFILE

SAMPLES

SOIL DESCRIPTION

GRAPHIC LOG

USCS

NUMBER

TYPE

Gamma  
nr/hr  
BLOW  
COUNT/5'

RECOVERY

P4-DHS

ADDITIONAL COMMENTS

0  
5  
10  
15  
20  
25  
30  
35  
40  
45

0-2 (0945) P4-DHS-001 - SILTY SAND, F-C SAND, LITTLE F GRAVEL, WELL GRADED DK GREYISH BROWN, SUBROUNDED, DRY

2-4 (0948) P4-DHS-002 - SAME AS 0-2 FT INTERVAL

4-12 (0955) P4-DHS-003 - SAME AS 0-2 FT INTERVAL

12-20 (1000) P4-DHS-004 - SILTY SAND, F-M SAND, POORLY GRADED, LITTLE F-C GRAVEL, SUBROUNDED, DK GREYISH BROWN, DRY

20-26 (1004) P4-DHS-005 - SAND, F-M SAND, SOME C SAND, WELL GRADED, ~~LITTLE~~ LITTLE F-C GRAVEL, ~~PALE~~ LT BROWN TO PALE BROWN SUBROUNDED, DRY

26-30 (1010) P4-DHS-006 - SAND AS ABOVE TRANSITIONED TO GREYISH BROWN (20-28 FT)

30-41 (1015) P4-DHS-007 - SAND AS ABOVE, MIX OF GREYISH BROWN → LT BROWN → V. PALE BROWN (COLOR CHANGES W/ DEPTH IN THAT ORDER)

44-52 (1020) P4-DHS-008 - SAND F-M SAND, LITTLE COARSE SAND, LITTLE F GRAVEL, POORLY GRADED LT BROWN, DRY, SUBROUNDED

SM 001	G	14	2'
SM 002	G	14	2'
SM 003	G	14	8'
SM 004	G	14	8'
SW 005	G	26	8'
SW 006	G	25	8'
SW 007	G	30	8'
SP 008	G	22	8'

2 X BAGS FOR AGRD

P4-DHS-007  
1 X 1/2 BAG FOR RADS

DEPTH UNITS: FEET BGS  
 DRILLING CONTRACTOR: LAINE-WESTERN  
 DRILLER: PAUL BOSKOVSKI

LOGGED BY: RYAN HULTGREN  
 CHECKED BY: \_\_\_\_\_

### SOIL BORING LOG FORM

REV No	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
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PROJECT No.  
 AutoCAD FILE  
 SCALE  
 FIGURE No.

BORING LOG NUMBER

P4-D45

LOCATION SKETCH

LOC. ID

ELEVATION

DATUM

SHEET 2 OF 3

PROJECT NAME

ST ANTHONY MINE

DRILL DATE

7/6/07

INCLINATION

AZIMUTH

HAMMER WEIGHT

DATE FINISHED

7/6/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

GRAPHIC LOG

SAMPLES

USCS

NUMBER

TYPE

GAMMA  
R/R  
BLOW  
COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

50  
55  
60  
65  
70  
75  
80  
85  
90  
95

52-60 (1025) P4-D45-009 - SAND  
SAME AS 44-52 FT INTERVAL

SP009 G 29 8'

60-68 (1040) P4-D45-010 - SAND  
SAME AS 44-52 FT INTERVAL  
YELLOWISH BROWN

SP010 G 23 8'

68-76 (1054) P4-D45-011 - SAND  
AS IN 60-68 FT INTERVAL

SP011 G 26 8'

76-84 (1102) P4-D45-012 - SAND  
AS IN 60-68 FT INTERVAL

SP012 G 26 8'

84-92 (1108) P4-D45-013 - SAND  
F-M SAND, TRACE FINE GRAVEL,  
POORLY GRADED, TRACE 3-6"  
COBBLES, SUBANGULAR, GREY, DRY

SP013 G 16 8'

92-100 (1118) P4-D45-014 - SAND  
AS IN 84-92 FT INTERVAL

SP014 G 16 8'

DEPTH UNITS: FEET PLUS

DRILLING CONTRACTOR: LAYNE WESTERN

DRILLER: PAUL BOSKOVSKI

LOGGED BY: RYAN HULTEREN

CHECKED BY:

SOIL BORING LOG FORM

REV No. REVISIONS REV DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE:  
SCALE: FIGURE No.

BORING LOG NUMBER:

P4-DHS

LOCATION SKETCH

LOC. ID:

ELEVATION:

DATUM:

SHEET 3 OF 3

PROJECT NAME: ST ANTHONY MINE

DRILL DATE: 7/6/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/6/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

GRAPHIC LOG

SAMPLES

USCS

NUMBER

TYPE

GAMMA  
RADIATION  
BLOW  
COUNTS

RECOVERY

ADDITIONAL COMMENTS

100  
105  
110  
115  
120  
125  
130  
135  
140  
145

100-108 (1123) P4-DHS-015 - SAND  
AS IN 84-92 FT INTERVAL,  
TRANSITIONED TO LT BROWN

SR 015 G 45 8'

108-116 (1130) P4-DHS-016 - SAND  
AS IN 100-108 FT INTERVAL

SR 016 G 45 8'

P4-DHS-016  
1x 1/2 BAG FOR RAD5  
1x 1/2 BAG FOR SPLP

116-124 (1139) P4-DHS-017 - SAND  
AS IN 100-108 FT INTERVAL

SR 017 G 45 8'

124-132 (1153) P4-DHS-018

124-126 - SAND AS IN 100-108 FT.

126-132 - SAND, F-M SAND, POORLY  
GRADED, LITTLE F-C GRAVEL OR  
SANDSTONE, SUBANGULAR, YELLOWISH  
BROWN.

SR 018 G 18 8'

132-138 (1158) P4-DHS-019  
SAND + GRAVEL, F-M SAND, SOME  
F-C GRAVEL, SAND -> POORLY GRADED,  
YELLOWISH BROWN, GRAVEL + TRACE  
5" COBBLES ANGULAR - SUBANGULAR  
PENETRATION RATE SLOWED @ 135'  
AND EVEN MORE @ 137' BLS

SR 019 G 14 6'

TOTAL DEPTH = 138 FEET BLS

DEPTH UNITS: FEET BLS

DRILLING CONTRACTOR: LAYNE-WESTERN

DRILLER: PAUL BUSHKOVSKI

LOGGED BY: RYAN HULTGREN

CHECKED BY:

SOIL BORING LOG FORM

REV NO REVISIONS REV DATE DESIGN BY DRAWN BY REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE  
SCALE: FIGURE No.

BORING LOG NUMBER

P3-DH8

LOCATION SKETCH

LOC. ID

ELEVATION

DATUM

SHEET 1 OF 2

PROJECT NAME ST ANTHONY MINE

DRILL DATE 7/6/07

INCLINATION

AZIMUTH

HAMMER WEIGHT

DATE FINISHED 7/16/07

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	GRAPHIC LOG	SAMPLES				RECOVERY	ADDITIONAL COMMENTS
				USCS	NUMBER	TYPE	GAMMA R/HR FLOW COUNT/8'		
0-2		(1610) P3-DH8-001 - SAND, F-M SAND, POORLY GRADED, TRACE FINE GRAVEL, V. PALE BROWN, DRY		SP 001	G	135	2'		
2-4		(1615) P3-DH8-002 - SAND, AS IN 0-2 FT INTERVAL		SP 002	G	110	2'		
4-12		(1618) P3-DH8-003 - SAND, AS IN 0-2 FT INTERVAL, INCREASED AMT R-C GRAVEL, BROWNISH YELLOW		SP 003	G	120	8'		
12-20		(1621) P3-DH8-004 - SAND, SAME AS 4-12 FT INTERVAL		SP 004	G	120	8'		
20-28		(1647) P3-DH8-005 - SAND, SAME AS 4-12 FT INTERVAL		SP 005	G	140	8'		
28-36		(1652) P3-DH8-006 - SAND, SAME AS 4-12 FT INTERVAL		SP 006	G	120	8'		
36-44		(1657) P3-DH8-007 - SAND, SAME AS 4-12 FT INTERVAL, R-C GRAVEL HAS GREEN SHADE, CRUMBLES W/MODERATE PRESSURE, CLAYEY TEXTURE SANDSTONE RT		SP 007	G	125	8'		
44-52		(1705) P3-DH8-008 - SAND, SAME AS 4-12 FT, DARK BROWN		SP 008	G	115	8'		

DEPTH UNITS: FEET  
 DRILLING CONTRACTOR: LAINE-WESTERN  
 DRILLER: PAUL BOSTROVSKI

LOGGED BY: RYAN HULT, REN + TERRY LEESON  
 CHECKED BY: \_\_\_\_\_

SOIL BORING LOG FORM

REV No	REVISIONS	REV DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No. \_\_\_\_\_  
 AutoCAD FILE \_\_\_\_\_  
 SCALE: \_\_\_\_\_ FIGURE No. \_\_\_\_\_



BORING LOG NUMBER:

P3-DHB

LOCATION SKETCH

SHEET 2 OF 2

LOC. ID:

ELEVATION:

DATUM:

PROJECT NAME: St. Anthony Mine

DRILL DATE: 7/6/07

INCLINATION:

AZMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/16/07

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	GRAPHIC LOG	SAMPLES				ADDITIONAL COMMENTS
				USCS	NUMBER	TYPE	Gamma BEOW COUNT/6"	
50-0		52-60- Lt brown sand w/ trace silt, fine-med, collected on 7/14 - P3-DHB-009 ~ 20% gravel + small cobbles		SP/009 GW	G	120	8'	
60-10		60-68- As above, Lt brown gravelly sand		SW010	G	130	8'	RAO sample
70-20		68-76 - As above (A.A.)		SW011	G	120	8'	
80-30		76-84. AA		SW012	G	130	8'	
90-40		84-92 - AA, at 90' hit a dark brown layer that appears to be soil, + chunks of weathered ss.		SW013	G	130	8'	
100-50		90-100- Dark brown clayey sand, w/ caliche + chunks of weathered ss		SW014	G	120	8'	Agro sample + Rads
100-100		100-108- <sup>sandy</sup> Brown silty clay w/ pieces of charcoal + caliche		SW015	G	120	8'	EOB = 108'

DEPTH UNITS: Feet  
DRILLING CONTRACTOR: Layne  
DRILLER: Raul B.

LOGGED BY: Toby Leeson  
CHECKED BY: \_\_\_\_\_

### SOIL BORING LOG FORM

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.:					
AutoCAD FILE:					
SCALE:		FIGURE No.:			





BORING LOG NUMBER:

P3-D47

LOCATION SKETCH

SHEET 1 OF 3

LOC. ID:

ELEVATION:

DATUM:

PROJECT NAME: St. Anthony Mine

DRILL DATE: 7/16/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/16/07

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	SAMPLES					ADDITIONAL COMMENTS
			USCS	NUMBER	TYPE	Gamma BLOW-COUNT/8'	RECOVERY	
0								
0-2		lt brown gravelly sand w/ tr silt, sand fine med	SW	001	G	80	2'	
2-4		A.A.	SW	002	G	75	2'	Rads + agro 2-4'
4-12		A.A., grayish tint	SW	003	G	65	8'	11:30
12-20		A.A., med brown	SW	004	G	65	8'	11:35
20-28		A.A. mixed med brown & lt. gray, tr. pieces of shale	SW	005	G	70	8'	11:35
28-36		lt brown sandy gravel, gravelly sand, f.m., moist	SW	006	G	70	8'	11:42
36-44		med brown, sand w/ gravel, f.m., moist, trace small cobbles	SW	007	G	60	8'	11:45
44-52		As above	SW	008	G		8'	11:50

DEPTH UNITS: Feet  
 DRILLING CONTRACTOR: Layne  
 DRILLER: Paul B.

LOGGED BY: Tobey Larson  
 CHECKED BY: \_\_\_\_\_

SOIL BORING LOG FORM

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No.: \_\_\_\_\_  
 AutoCAD FILE: \_\_\_\_\_  
 SCALE: \_\_\_\_\_ FIGURE No.: \_\_\_\_\_



BORING LOG NUMBER: **P3-D47** SHEET **2** OF **3**

LOC. ID: \_\_\_\_\_ ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_ DRILL DATE: \_\_\_\_\_

INCLINATION: \_\_\_\_\_ AZIMUTH: \_\_\_\_\_ HAMMER WEIGHT: \_\_\_\_\_ DATE FINISHED: \_\_\_\_\_

LOCATION SKETCH

DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	GRAPHIC LOG	SAMPLES					ADDITIONAL COMMENTS
				USCS	NUMBER	TYPE	Blow Count/7.5'	RECOVERY	
50 0		44-52 - See p. 1							
60 10		52-60 - <sup>RSB</sup> As above Lt-med brown, gravelly sand, f-m, moist		SW 009	G	70	8'	1200	SPLP
70 20		60-68 - As above, mixed w/pieces of dark gray shale		SW 010	G	70	8'	1205	
80 30		68-76 - Dark brown, <sup>+gray</sup> sand w/gravel, f-m, moist, trace cobbles		SW 011	G	70	8'	1210	
90 40		76-84 - As above, med brown only		SW 012	G	65	8'	1215	
90 40		84-92 - As above		SW 013	G	65	8'	1220	
100 50		92-100 As above, piece of plastic mixed in.		SW 014	G	60	8'	1225	

DEPTH UNITS: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_

DRILLING CONTRACTOR: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

DRILLER: \_\_\_\_\_

**SOIL BORING LOG FORM**

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.:			AutoCAD FILE:		
SCALE:		FIGURE No.:			



BORING LOG NUMBER:

P3-DH7

LOCATION SKETCH

LOC. ID:

ELEVATION:

SHEET 3 OF 3

PROJECT NAME:

St Anthony Mine

DATUM:

DRILL DATE: 7/16/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/16/07

DEPTH (UNITS)

BORING METHOD

SOIL PROFILE

SOIL DESCRIPTION

SAMPLES

GRAPHIC LOG

USCS

NUMBER

TYPE

Gamma  
BLOW  
COUNT/6"

RECOVERY

ADDITIONAL COMMENTS

100

110

120

130

140

150

100-108 - med brown, gravelly sand,  
f.m.t.r. coarse sand, trace small  
cobbles

108-116 - As above, w/ chunks of  
black, layered silty clay

contact ~119'

116-124 - Brown silty clay w/  
caliche + charcoal  
EOB = 124'

SW 015 G

75

8'

1230

Rads

SW 016 G

70

8'

1240

CL 017 G

60

8'

1255

DEPTH UNITS: \_\_\_\_\_  
DRILLING CONTRACTOR: \_\_\_\_\_  
DRILLER: \_\_\_\_\_

LOGGED BY: Toby Leeson  
CHECKED BY: \_\_\_\_\_

### SOIL BORING LOG FORM

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
PROJECT No.:					
AutoCAD FILE:					
SCALE:		FIGURE No.:			



BORING LOG NUMBER:

MD-D49

LOCATION SKETCH

LOC. ID: Shaft Area

ELEVATION:

DATUM:

SHEET 1 OF 1

PROJECT NAME: St. Anthony Mine

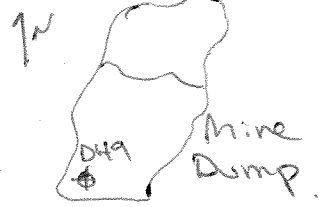
DRILL DATE: 7/16/02

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED:



DEPTH (UNITS)	BORING METHOD	SOIL PROFILE	GRAPHIC LOG	SAMPLES				ADDITIONAL COMMENTS	
				USCS	NUMBER	TYPE	Gamma BLOW COUNT/ft		RECOVERY
0		0-2 - Lt gray, sand w/ gravel + trace silt, sand v.f.f., dry		SP001	G	60	2'	1620	
5		2-4 AA.		SP002	G	65	2'	1623	Agro + Rad
10		4-12 - AA, grayish brown (appeared to be native @ ~11')		SP003	G	60	8'	1628	Rad + EPLP
15			native						
20		12-20 - Lt brown gravelly sand, f-m ultr. coarse, moist		SW004	G	—	8'	1635	
25		EOB = 20'							

DEPTH UNITS: Feet

DRILLING CONTRACTOR: Layne Western

DRILLER: Paul E.

LOGGED BY: Toby Larson

CHECKED BY:

### SOIL BORING LOG FORM

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
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PROJECT No:  
AutoCAD FILE:  
SCALE:      FIGURE No:

BORING LOG NUMBER:

MD-DH10

LOCATION SKETCH

LOC. ID: Shaft Area

ELEVATION:

DATUM:

SHEET 1 OF 1

PROJECT NAME: St. Anthony Mine

DRILL DATE: 7/18/07

INCLINATION:

AZIMUTH:

HAMMER WEIGHT:

DATE FINISHED: 7/17



DEPTH (UNITS)	BORING METHOD	SOIL PROFILE SOIL DESCRIPTION	GRAPHIC LOG	SAMPLES				ADDITIONAL COMMENTS
				USCS	NUMBER	TYPE	Gamma BLOW COUNT/6"	
0		0-2-ft <sup>to bluff</sup> brown sand w/ gravel, f-m. dry		SP 001	G	110	2'	0810 SPLP
5		2-4-ft <sup>to bluff</sup> brown gravelly sand, f-m. dry		SP 002	G	110	2'	0812 Rad + Dup
10		4-12- A.A., moist, brownish gray		SP 003	G	100	8'	0818
15		12-20- A.A., moist, brownish gray		SP 004	G	95	8'	0823 Agro + Rad
20		med turned, brown @ 20'						
25		26-28- Med brown gravelly sand, moist, contains wire & other trash.	Native	SP 005	G	85	8'	0825
30		28-36- As above w/ clayey silt.		006	G	-	8'	0835
35		EOB = 36'						

DEPTH UNITS: Feet

DRILLING CONTRACTOR: Layne Western

DRILLER: Paul R.

LOGGED BY: Tobey Leason

CHECKED BY:

SOIL BORING LOG FORM

REV No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY



PROJECT No.  
AutoCAD FILE:  
SCALE:      FIGURE No.