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REFERENCE 7

Freeman groundwater

"Rite in the Rain"®
ALL-WEATHER
JOURNAL
No. 391

TDD: 13-07-0005

4/21/14 Freeman ground water 13-07-0005

0920: Set up at SB01SB
will collect sample 1' above clay layers
1' into clay layer
will collect 5 CN1 + 2 oz JaR

0958: Begin Drilling

1000: Remove 0-4' core, 40% Rec
≈ 1' Fill, silt below
hard drilling 0-1', soft below

1009: Remove 4-8' core 75% Rec
Soft Drilling compaction suspected
4-8 silt, Brown, moist high mica content
Sample at 1.5'

0934 ~~1017~~: Collect SB01SB1.5 @ 1.5' bgs

1021: Collect SB01SB05 @ 5' bgs
Borehole back Filled w/ bentonite chips

1035: Set up on SB02
Push 0-4' core, no Recovery, will advance
4-8'

1048: Remove 4-8' core
75% Recovery
Same as SB01, 4-8' silty clay moist, mica present
stiff ML
Will collect sample at 5' bgs @ 10:56

4/21/14

4/21/14 Freeman ground water 13-07-0005

1058: Retry 0-4', < 25% Recovery ≈
1' soil in core, will sample at ~~1.5~~ 1'
≈ 1.5' Fill same as previous
silt below brown (Dark) moist

1106: collect SB02SB01 1' bgs
~~SB02SB1.5~~
SB02SB back Filled w/ bentonite chips

1124: Set up at SB03SB

1128: Remove 0-4' core 50% Rec
≈ 1' Fill gravelly silt
1-1.5' silt, Dk gray moist

1136: Collect SB03SB1.5 at 1.5' bgs
~~1146~~

1145: Collect SB03SB05 at 5' bgs

1304: Begin set up on SB04SB, will have to drill
through concrete pad, Jensen sets up concreat bit
1324 through concreat ≈ 6" thick

1326: Remove 0-4' core
50% Rec
- 6"-4' - silt, Dk grayish brown trace VF gvl/
coarse snd, moist, vstiff to 3', 3'-4'
very soft

1334: Remove 4-8' core
4.5'-5' same as above

4/21/14

Freeman ground water

4/21/14 CL 13-07-0005

5-8' silty clay, brown vry stiff, noticable mica content

Collect SB04SB04 at 1337 at 4' bgs

1345: Collect SB04SB05 @ 5' bgs

Borehole Back Filled w/ bentonite chips, concrete patched.

1358: Set up at SB05SB

1400: Begin drilling, hard drilling 0-2', Easy 2-4'

1403: Remove 0-4' core 50% rec

0-1.5- ~~sil~~ gravelly silt Fill Dk brown

1.5-2.5- silt, DK grayish brown stiff, trace coarse sand to 2', loose below

suspect Matiral compacting

1409: Collect SB05SB~~2.5~~ 3.5 @ ~~2.5~~ 3' bgs (LA)

1415: Collect SB05SB04 @ 4' bgs (JF)

4-4.3- same as above

4.3-8' - silty clay CL, stiff brown moist

1422: Move to SB06

1436: while moving geoprobe, side door damaged siding on grain silo, 2 Panners will need Replacing, Set up on ~~BH~~ SB06

4/21/14

4/21/14 Freeman ground water 13-07-0005

1442: Remove 0-4' core

0-6" - silty gravel Fill

6"-4' - silt w/ clay DK grayish brown, trace gvl to 1.5cm, R, some chered material noted

↑ moisture 3.1-3.5' bgs

1456: Remove 4-8' core

4-4.5- Same

4.5-6.5 - gray silty clay moist soft

6.5-8 - silt brown, stiff

will advance additional 4'

1508: Remove 8-12'

8-11.5- Same as above

11.5-12 - orange sndy clay moist

will collect at 4.5 (SB06SB4.5)

~~1540~~ 1530 ~~1530~~: Collect SB06SB6.5 @ 6.5' bgs (LA)

will also sample orange sndy clay at 11.5-12' bgs.

1549: Set up on BH07

1555: Remove 0-4' core 75% Rec

0-6" Sandy Fill

6"-1.5' Silt grayish brown, stiff, mica pf resent

1.5-3.5- silty clay

1.5-2 - DK grayish brown moist

2-3.5- Brown ↓ moisture

4/21/14

Time For SB06SB12

4/21/14 Freeman ground water B-07-0005

1602: Remove 4-8' core

4-8' Same as above Silt Med Stiff, Brown

1609: Collect SB07SB03 at 3' bgs - 3.5' bgs LA

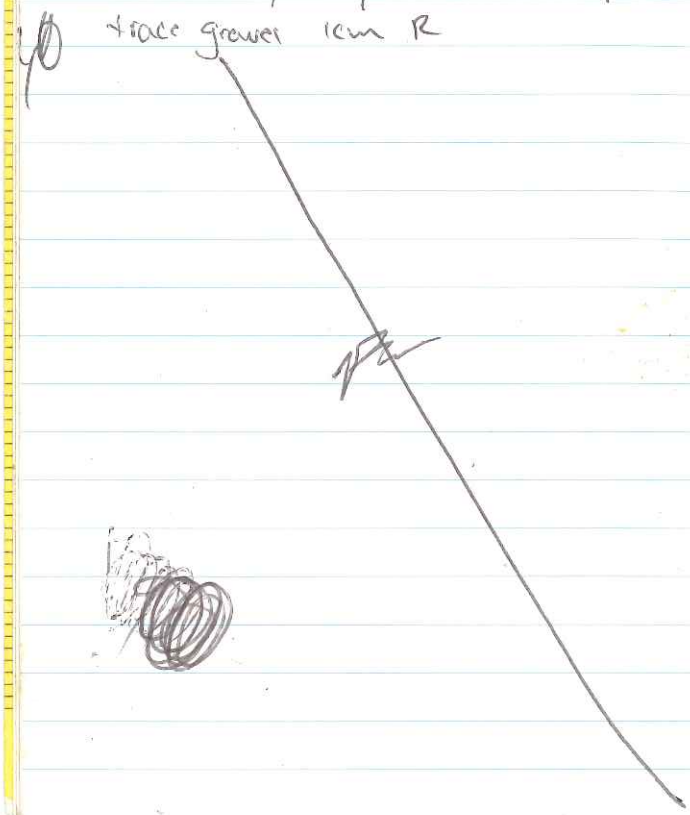
1615: Collect SB07SB04 at 4' bgs - 4.5' bgs JF

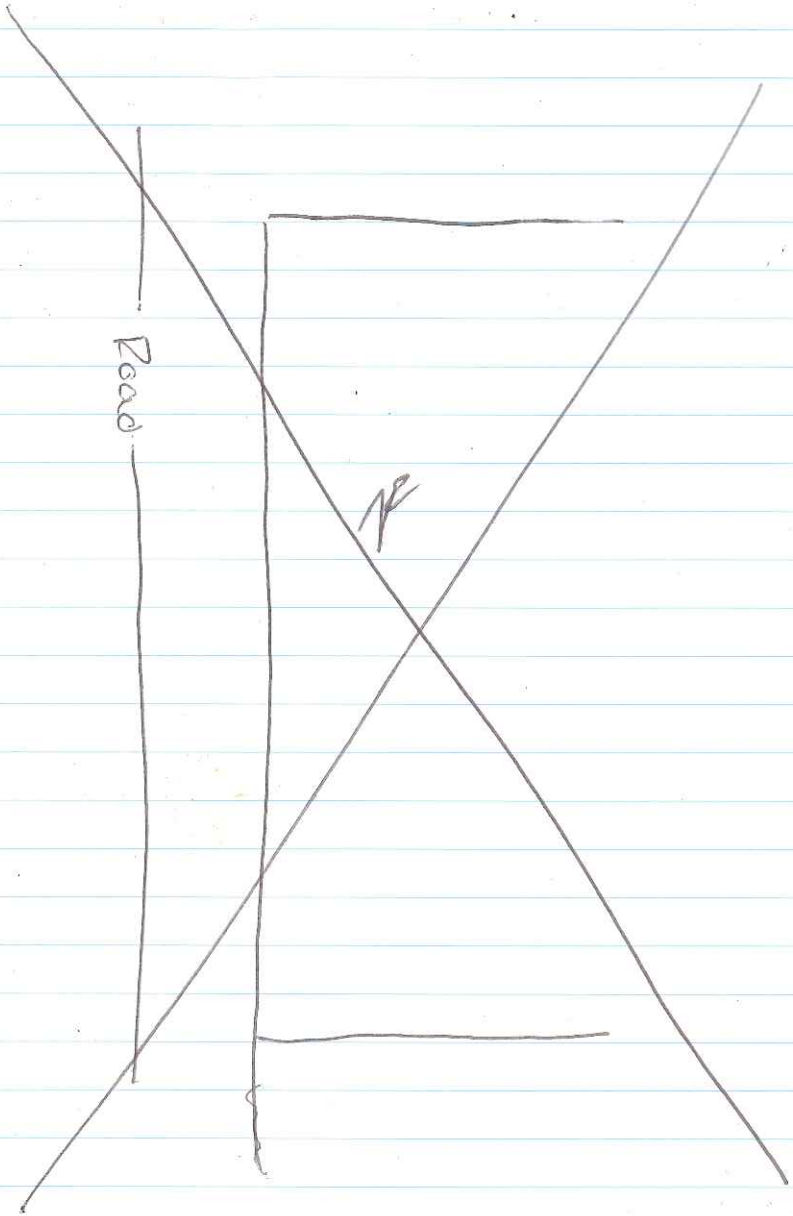
1620: ~~Rem~~ Remove 8-12' core

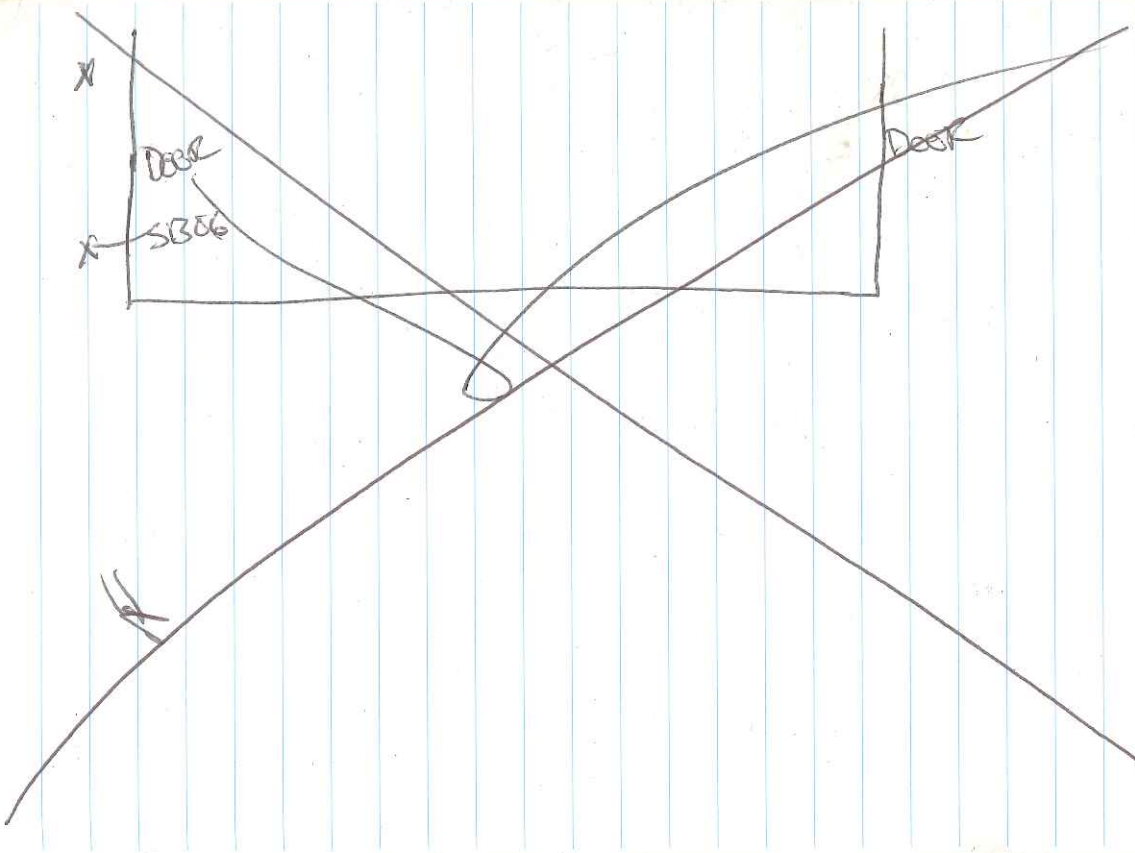
8-8.5 - Same

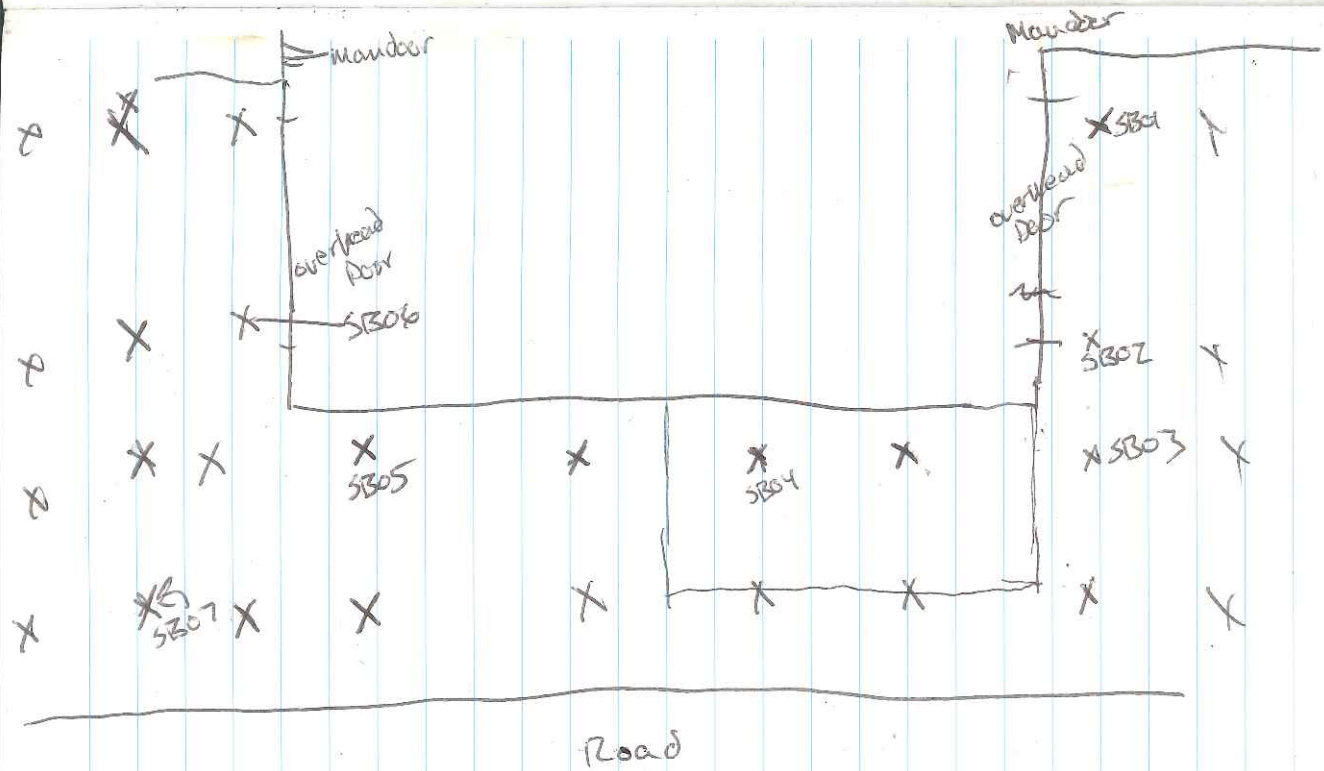
8.5 - 10 - Clay - Brown w/ Black ~~Mottling~~

10-12 - Sandy Clay - c-m mica present Stiff trace gravel 1cm R






Door
SB06
Door


Mandoor
Mandoor
SB04
overhead door
overhead door
SB06
SB02
SB05
SB04
SB03
SB07
Road

4/22/14 Freeman groundwater 13-07-0005

0826: Measure Depth to water at Marlow well
= 67.32' toc Measured at North End of
Steel casing

1037: Begin Drilling at BK01 All samples MS/MSD
18 total CN1 no Extra volume for % moisture

1040: Remove 0-4' core 95% rec
0-1' Fill ~~silty~~ gravelly silt
1-3.7 - Silt, brown to lt brown
Stiff to 2.9' Soft 2.9-3.6
3.7-4' Silty clay brown very stiff, mica

1047: Remove 4-8 - Core
4-6.7 - Same
6.7-8: Clay brown grey mottling

1052 Remove 8-12' 100%
8-8.5 - Same
8.5-10.6 - Silty clay w/ trace Snd (
Snd coarse "
10.6 - Same ~~high~~ mica trace gvl black mottling noted
10.6-12 - Silty Clay brown moist

1059 - Remove 12-16' core
12-12.4 - Silt, moist Rust Red
12.4-16 gravelly silt clay, gvl & Jam
Silty clay as above

4/22/14

4/22/14 Freeman ground water 13-07-0005

not used

Will Sample 3-3.7' BK01SB03
4-4.7 BK01SB04
11.5-12 BK01SB12

1127 collect BK01SB03
1130 collect BK01SB04

1143: collect BK01SB12

1147: Remove ~~12-16'~~ 16-20' clay
light yellowish brown
18-20 grey clay nodules mixed w/
light yellow/orange mottling

1159: Remove 20-24' core 100%
20-22' Clay gray blue w/ tan/Rust Red
mottling soft
22-23.5 clay w/ trace snd Rust Red
23.5-24 silty clay soft trace snd brown

1357: set up on SB08 East of Power Pole

1401: Remove 0-4' core 60% Rec
0-2.5 gravelly silt Fill, Dk brown moist
2.5-3 - Silty sand snd c-m A-SA
silt lt brown moist
3-~~3.5~~ 4 - Silt, Dk brownish grey moist high mica
~~3.5-4~~ 3.8-3.8 - White to lt. brown silty clay
high mica 4/22/14

4/22/14 Freeman ground water 13-07-0005

1412: Remove 4-8' 100%

4-5.2 - Silt Dk grayish moist very soft

5.2 - 8 - Silty clay, Brown Stiff, Fine mica present, moist

1417 Remove 8-12' core

8-9.2 Same

9.2 - 9.8 - Silty clay ↑ clay content brown stiff

9.8 - 10.7 - Silty clay trace sand, coarse to med

10.7 - 12 - Clay - brown stiff

1423: collect SB08SB4.5 @ 4-4.5' LA

1428: collect SB08SB5.5 @ 5-5.5 JF

1447: Begin drilling at ~~SB08~~ SB09 South of Scale house

1449: Remove 0-4 - 60% Rec

0-1 Silty gravel Fill

1-4 - Silt, moist, Brown to Dk brown, compacted, Easy Drilling,

1455 - Remove 4-8' core,

4-8' Silt, moist brown, VF mica Flakes Stiff

1503: Remove 8-12' 100%

8-12 - Same as above

1509: Remove 12-16'

12-12.7 - Same as above

12.7-14.4 - Clay yellowish brown med. stiff

14.4-15.3 - Silty sand w/ clay light tan brown

4/22/14

4/22/14 Freeman ground water 13-07-0005

Soft, Sand med-Fine

15.4 - 15.8 gravelly Silt w/ clay Rust Red ~~Wet Dry~~ Slightly moist

15.8 - 16 Same as 14.4 - 15.3

1523: Remove 16-20' core 90%

16-17.7 Same

17.7-17.9 - Dk Rust Red silt

17.9-18.5 - Same as 16-17.7

18.5 - 18.7 - Dk Rust Red Silt

18.7-19.7 - light yellowish tan silty sand, sand med-Fine, Free water when vibrated, moist

19.7-20 Dk Rost Red ~~clay~~ silt

~~1515 - Collect SB09SB4.5 3.5-4' bgs~~

~~1530: Collect SB09SB5.5~~

1515 collect SB09SB04 @ 3.5-4' bgs

1530 collect SB09SB05 @ 4.5-5' bgs

1531: Remove 20-24' core 100%

20 - 20.4 - Rust Red Silt

20.4 - 21.5 - Sandy silt, yellowish brown moist, Soft, sand F-m,

21.5 - 21.8 - Rust Red Silt

21.8 - 23 - Sandy silt and F orange moist

23 - 23.2 - Rust Red ~~silty~~ clay brittle, v hard

23.2 - 24 - Same as 21.8 - 23 w/ wx basalt? very stiff Angular tan

4/22/14

4/22/19 Freeman groundwater 13-07-0005

1610: collect BH09SB19.5 19-19.5' bgs JF

1610: collect BH09SB25 24.5-25' bgs LA

1625: Collect BH09SB15 14.5-15 JF

1647: ~~Begin drilling at~~

→ Remove 0-4' at BH10 90%

1650: 0-6 - gravelly silt fill

6"-4' silt, moist brown very stiff

1658: Remove 8-12' 100%

8-11.5' same as above

11.5-11.5 - silt w/clay soft moist, Brown

11.5-12 - silty clay w/gravel Brown, v stiff

gvl 3cm qtzite R

1712: Remove 12-16 100%

12-12.5 - same

12.5-14 gravel w/clay clay brown moist

gvl R, qtzite > 3cm - 2mm

14-16 - ~~silt~~ sandy silt w/clay

moist, orangish brown sand m-f.

1719: Remove 16-20' 100%

16-18.5 - Same, saturated 17.5-18.5

18.5-19.1 - clay - greenish brown

stiff

19.1 - 19.6 Sandy silt Reddish brown moist

v soft

19.6-20 - Same color to light tan

4/22/19

4/22/19 Freeman groundwater 13-07-0005

1729 Liner broke in hole

1750: Remove 20-24' 100%

~~20-20.2~~ - 20-20.2 - clay green hard friable

20.2-21 - ~~silt~~ sandy silt soft

Sand med-fine, tan to light yellow

~~20.1~~ 21-21.3 clay natural green hard

21.3-23.4 same as 20.2-21

23.4-24 color to reddish orange silt w/sand

w/ basalt? mixed in w/ Dark Rust Red

intervals at ~~20~~ 23.5-23.6 & 23.7-23.8 bgs

1745 collect SB10SB 18.5 @ 18-18.5'

1806 collect SB10SB15.5 @ 15-15.5

1814 collect SB10SB 20.5 @ 20-20.5

4/22/19

13-07-0005

4/23/14 Freeman groundwater

1420: Set up on SB11SB ≈ 1 Foot Southwest of SB01, will Drill to 8' + Begin ~~catch~~ loging

1433: Remove 8-12' core 100%

8-12' Silt w/clay Brown moist med stiff

1440: Remove 12-16' core 100%

12-15 Same

15 Jul + wood Debris

15-15.5 - Silt w/clay ↓ clay content yellowish brown med stiff

15.5-16' - Sa Silty clay w/ sand soft moist yellowish brown

1445: Remove 16-20' 100%

20-16.5 - Same

16.5-~~17.1~~ 17.1 - Clay greenish w/ Red mottling wood Debris at 20.5 med. stiff

~~17.1-18.2~~ 17.1-18.2 ~~Silty~~ Sand w/ silt, wet Snd F-m silt tanish grey

~~18.2-18.7~~ 18.2-18.7 Clay Soft greenish

~~18.7-20~~ 18.7-20 ~~silty sand~~ Same as 17.1-18.2

will collect Samples:

SB11SB17 - 16.5-17' 1445 LA

SB11SB18 - 17.5'-18' 1523

SB11SB18.6 - 18.2-18.6' 1521 JF

SB11SB20 - 19-20' 1507 JF

~~4/23/14~~ 4/23/14 JF

JF 3/4/15

4/23/14 Freeman ground water 13-07-0005

1533: Remove 20-24' core 100%

20-21.6 - Silty Sand Snd Fine tan to grey

21.6-21.8 Dk Red clay Friable stiff

21.8-22.9' - clay w/ silt + Sand light gray to orange soft

22.9-24 Silt w/ clay Dk Rust Red Med stiff Few Decomposed basalt?

will collect Samples:

SB11SB21.5 - 21-21.5 @ 1550

1554: Remove 24-28' core 100%

Rust Red Silt w/ clay trace sand, trace grey clay Dry/slighty moist

24-27.1

27.1-28 ~~Silty Sand~~ Sandy Silt Soft moist Rust Red to Dk brown Snd Fine

1558: collect SB11SB28 27.5-28' bgs

1623: Remove 28-32' 100%

28-32' Same as above, R. Pebbles & Scan R at 31' bgs

1627: Collect SB11SB32 31.5-32' bgs JF 3/4/15

JF 4/23/14

4/24/14 13-07-0005

~~4/24/13~~ 3/4/15 Freeman groundwater

0825 collect Ri02 From HAnd Auger bucket

0830. collect Ri03 From Cutting Shoe

0835: collect Ri04 From seperate cutting Shoe

0924: Setup on SB12SB near SB06 ≈ 3' North

SB06 went to 12' ~~will~~ NF

0935: Remove 0-4' ~~100%~~ 95% Same as SB06

0940. Remove 4-8' 90% Same as SB06

0942: Remove 8-12' 100%

- 8-12 Same as above (mid orange sandy clay) as in SB06

0950 Remove 12-16' core 100%

12 - 12.3 Same as above

12.3 - 13.5 - silt w/ clay orange is mustard color slightly moist, clay nodules to .25cm soft

13.5 - 14.1 - silt w/ clay light brown no nodules

14.1 - ~~116~~ 16 NF - Sandy silt w/ clay, Snd Fine

14.7 - 14.9 & 15.2 - 15.3 gul lenses

15.9 - 16 gul lenses gul > 5mm A - SA

1000: Remove 16-20' 100%

20-20.4 clay - green (light)

20.4 - 20.6 - Silty Sand Snd Fine silt Rust Red

20.6 - 20.8 Sandy silt w/ clay orange mustard color soft moist

20.8 - 21 - Same as 20.4 - 20.6

~~4-23/14~~ 4/24/14 NF 3/4/15

4/24/14 NF 3/4/15

~~4/23/14~~ Freeman groundwater 13-07-0005

21 - 22.5 Sandy silt w/ clay

Snd F-M-SA-A greenish brown, tan

22 - 22.2, moist, soft

22.5 - 22.8 clay green

28.8 - ~~28~~ 29.4 - ~~silty~~ Sandy silt w/ clay

Rust Red/orangeis Red thin clay lens > 5"

at 29 Snd med - Fine moist to slightly moist

29.4 - 30 - sandy silt w/ clay soft

lt gray to tan Snd Fine

1016: ~~collect~~ NF Remove 20-24'

20 - 21.6 - same as above w/ clay green 20.4 - 20.5

& 20 - 20.2

21.6 - 21.8 - clay brown Hard

21.8 - 24 - Sandy silt Orangish Red

Clay lense 23.1 23.3 med stiff and soft grayish green

will sample at

~~14-15'~~ NF

~~15.5 - 16~~ NF

19.5 - 20 SB12SB20 1041

21 - 21.5 SB12SB 21.5 1043

1050 Attempt to Drill to 28', Drilling hard

liner broke in casing, have to Remove all Pipe

1102: Remove 24 - 28' core 100%

Silt w/ sand & clay Rust Red color

soft Snd Fine trace

~~4/23/14~~ 4/24/14 NF 3/4/15

20 4/24/14 ~~4/23/14~~ 3/4/15 Freeman groundwater 13-07-0005

Collect SB12SB 28.5 From 28-28.5

attempt to Drill 28-32 liner stuck in boring again

Will not drill any deeper ≈ 15' of liner Removed, Rest Stuck

lith appears Same as above

1346: Set up on SB13SB (North of Cement Pad

1354: Remove 0-4' core 15% Rec. Crushgrl Fill, silt

1359 Remove 4-8' core 100%

4-8' Silt brown, moist med stiff, w/ clay

1402: Remove 8-12'

8-9.9 Same

9.9-10.9 Silty Clay brown stiff

10.9-11.1 gvly clay gvl <3cm R. quartzite

to 11.1-12 - Same as 9.9-10.9 mica noted at 12'

1409: Remove 12-16' 100%

12-12.9 Same

12.9-13 - gvly silt

13-~~15.5~~ 14.3 Silt w/ clay mustard/orangish yellow

14.3-14.5 clay, greenish soft

14.5-15.5 - silt w/ clay (13-14.3)

15.5-15.7 - clay (as 14.3-14.5)

15.7-16 sandy silt w/ clay Reddish brown Snd F-m moist

Collect SB13SB14 13.5-14 1415

~~4/23/14~~ 4/24/14 3/4/15

~~4/23/14~~ 4/24/14 3/4/15 Freeman ground water 13-07-0005 21

Adjust measurments 16-20'

1422: Remove 16-20' core 100%

~~20.5~~ 16-16.5 Sandy Silt, orange moist snd F-m

~~20.5-21.2~~ 16.5-17.2 Same as above ↑ moisture

~~21.2-22.4~~ 17.2-18.4 Clay green hard

~~22.4-23.1~~ 18.4-19.1 Sandy Silt, snd F moist brown to lt. grey soft

~~23.1-23.3~~ 19.1-19.3 Clay

~~23.3-24~~ 19.3-20 Sandy silt w/ clay as 22.4-23.1

Collect SB13SB20 19-20' bgs 1433

Adjust measurments

1430: Remove ~~20~~ ~~20-24~~ 24-28 100%

24-26.5 - Silt w/ clay orangish Red to Dk Rust Red

gvl present Decomposed basalt?

26.5-26.9 Silt w/ clay greyblue w/ Rust Red

26.9-27.6 - Silt w/ clay Rust Red thin lense of grey clay at 27.2 > .5" moist

27.6 ~~28~~ 27.8 Silt w/ gvl Decomp basalt Dk Rust Red Dry

27.8-28 - Same as ~~27.6-27.8~~ 26.9-27.6

1444 Collect SB13SB 27.5 @ 26.5-27.5

~~4/23/14~~ 4/24/14 3/4/15

4/24/14 3/4/15
~~4/23/14~~ Freeman groundwater 13-07-0005

1450: open 20-24 100%

20-20.2 - Clay green

20.2-20.7 - Silty ~~fine~~ clay - Soft trace Fsnd

ltgrey to tan moist

20.7-20.9 - clay green med stiff

20.9-21.3 Same as 20.2-20.7

20.7-21.9 clay green to lt green hard

21.9-23.6 Silt w/ clay orange soft moist

@ 23.3-23.4 silty clay light gray/ blackish grey

23.6-23.8 - Silt Dry Dk Rust Red Fine gvl

23.8-23.9 Same as 21.9-23.6

23.9-24 - Silt Dk Rust Red ~~med~~ slightly moist

will collect sample at ~~20.2-20.6~~ 20.8-21.2

3/4/15 1515: Collect SB13SB23 @ 22-23 Feet bgs 3/4/15

1536 Silt Rust Red

1513: Collect SB13SB21.2 @ 20.8-21.2 Feet bgs 3/4/15

31.5 Decomposed Basalt

Sample ~~30-31~~ 29-30

1543 Collect SB13SB30

1638 Remove 0-4' core at SB14SB 100%

~~1644~~ 0-6" Silty gravel Fill

6"-4' Silt Brown moist trace clay

1646: Remove 4-8 - 100%

4-8 - Same as above

~~4/23/14~~ 4/24/14 3/4/15

~~4/23/14~~ Freeman groundwater 13-07-0005
4/24/14 3/4/15

1653: Remove 8-12 75% rec

8-11 Same

11-12 Silty clay Brown stiff

S

1655 Remove

12-16' 100% rec

12-~~17.7~~ 19 Same

14-16 Silty gravel gvl <3cm R grite

silt same as above

1701 Remove 16-20' 100%

~~20-21.3~~ 16-17.3 Same

~~21.3-22.7~~ 17.3-19 - Silt w/ clay soft moist mustard

yellow/green clay nodules 22.7-23

~~22.7-23~~ 19-19.2 clay green med stiff

~~23.2-23.7~~ 19.2-19.7 silt w/ clay clay hard

Dk Rust Red silt slighty moist

~~23.7-23.9~~ 19.7-19.9 Silt, trace clay slightly moist Rust Red

to light yellow

~~23.9-24~~ 19.9-20 - clay green soft

1705 Remove 20-24 100%

1710 - Collect SB14SB~~17.5~~ 18 @ 17.5-18

20-20.5 Same

20.5-23.6 Silty Sand snd m-F

silt saturated tan 20.5-22

green 22-23.6 ~~4/23/14~~ 4/24/14 3/4/15

Freeman ground water 13-02-0005

~~4/23/14~~ 4/24/14 ~~3/4/15~~

23.6-24 - Clay hard Rust Red to green Ribbons of soft DK grey clay present

1714 Collect SB14SB23.5 @ 23-23.5

1730 Collect SB14SB21.5 @ 21-21.5

1741 Collect SB14SB28 @ 27.5-28

~~4/23/14~~
4/24/14
~~3/4/15~~