

HAMMER RIG

No. 1

FORESTRY  SUPPLIERS

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AMS 9120 RAP

S/N 91200919376

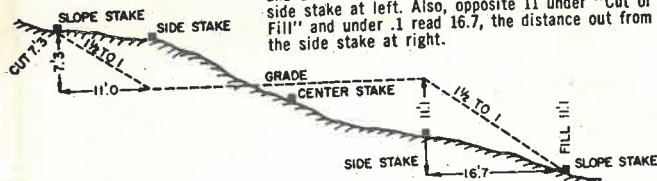
DEP No. 157389

49354 LEVEL BOOK

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40



David T. Paul, P.G.
Professional Geologist Administrator
Geological Sample Acquisition & Management
Florida Geological Survey

Florida Department of
Environmental Protection
3900 Commonwealth Blvd., MS 725
Tallahassee, Florida 32399

Phone: 850-245-3131
Fax Line: 850-617-0341
David.Paul@FloridaDEP.gov

AMS contact: Ken Lipscomb

email: KenL@ams-samplers.com

cell: 706-680-9015

M/N 9120 RAP
S/N 9120 0919376
DEP NO. 157389

The paper in this book is made of
50% high grade rag stock with a
WATER RESISTING surface sizing.

[illegible]

4/1/2021	test in gravel lot
4/2/2021	test in gravel lot

5/10/21 EMRICB001 W-19801
15' 4.5" TD
Log v/ 326R
EMRICB001_326R_DN-05021

EMRI CB002 W-19802
20' TD
rapid backfill, no groundwater log

5/11/21 EME CB 003 16' refusal w/ 14 90°
EME CB 004 24' w/ piston splar w/ 14 90°

5/25/21 EMRI CB 005 W-19805
30° 00' 50.65"
82° 00' 31.83"
44' TD v/piston splers

5/26/2021

EMRI CB006

W-19806

30° 02' 51.59"

82° 00' 38.045"

20' TD

EMRI CB007

W-19807

30° 01' 57.99"

82° 00' 23.05"

32' TD

EMRI CB008

W-19808

30° 01' 33.90"

81° 59' 46.74"

28' TD

EMRI RALPH E. SIMMONS STATE FOREST

9/14/21

EMRI SL001

Scott's Landing on the
St. Mary's River

30° 47' 04.24"

W-19837

81° 58' 10.59"

20' TD No P.S.

Rig hrs 19:22

9/14 (cont'd)

EMRI RSSF001 W-19838
 30° 48' 58.75"
 81° 56' 13.75" GPS acc 8'
 44' TD
 rig hrs 22:37

9/15/21 EMRI RSSF002 W-19839
 30° 48' 45.64"
 81° 57' 13.26" GPS acc 8'
 24' TD

EMRI RSSF003 W-19840
 30° 47' 51.48"
 81° 57' 04.72" GPS acc 8'
 refusal in calcareous material
 ~ 33 to 34' / forgot to measure stickup
 rig hrs 27:29

9/16/21 EMRI RSSF004 W-19841
 30° 47' 14.37"
 81° 57' 09.91" GPS acc 8'
 32' TD
 NS 28-32'
 rig hrs 30:47

FL Sheriff

8:20 PM - 10:20 PM 10:10

7:50 PM 20' 10"

8:00 PM 20' 10"

7:50 PM 20' 10"

7:50 PM 20' 10"

8:20 PM - 10:20 PM 10:10

7:50 PM 20' 10"

8:00 PM 20' 10"

7:50 PM 20' 10"

8:20 PM - 10:20 PM 10:10

7:50 PM 20' 10"

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7:50 PM 20' 10"

7:50 PM 20' 10"

7:50 PM 20' 10"

8:20 PM - 10:20 PM 10:10

7:50 PM 20' 10"

8:00 PM 20' 10"

7:50 PM 20' 10"

7:50 PM 20' 10"

7:50 PM 20' 10"

7:50 PM 20' 10"

FL Sheriff Yath Ranch Camp Swenson

9/29

EMER FIRESCOOL

30° 40' 19.32"

82° 02' 50.14" GPS once 10'

TD 49' 9"

RODS STUCK

Broke retraction saddle bolt

Righ hrs 36:41

9/30

bought bolts, punch, bushings,
drill bits, easy outs.

drill out broken bolt stub, extract
w/ easy-out.

hammer inner rods around stuck
rods in triangular pattern ∴

still stuck. Don't want to break bolts
again...

leave 42" rods w/ short pull up in hole
w/ orange bracket endp.

RVA hrs 40:45

8 Oct 2021 TB, JH, GR, NB

Allapattah Flats site A
 coords: N 27° 09' 45.72"
 for hole W 80° 26' 09.13"

★ Waypoint in GPSMAP 66s
 S # 0016

starting Hammering @
 ≈ 40 hours on Rig hours

- Sampled to 20' w/ normal dual tube coring method
- TQsu flowing sands began @ ≈ 18.6' FI

• Used Piston sampler from 20' - 32' (TD)

• Broke Hammer head (anvil?) @ 22.5'

• had a spare luckily & replaced it (10 minute repair)
 • Loss of sample from 22.5 - 24'

9 Oct 2021 TB, JH, NB, BR

On site ^B^D Allapattah Flats

- start hammering @
44 hours on Rig hours
- greased pillow blocks

- Coordinates for hole
as follows:

N 27° 08' 40.97"

W 080° 32' 32.14"

- TD @ 12', weather
came in w/ lightning
and we did not get
further samples.

- would have had to
use piston sampler
from 12' onward.

Direct
push
w/ 6x6
timber
underfoot
+ 2x6 for
safety plank
= 18"
stickup

11/3

EMRI - F4RCS-002 12:30pm

RK/MS
45:11

30° 46' 17.82"

4PS 6' Accy

82° 02' 39.03"

0-4' easy push halfway. 70% rec.

4-8' 100% rec. sticky clay

8-12' mottled clayey sand / sandy clay

12-16' clayey sand tan to lt red

16-20' tan to lt. gray clayey sand

20-24' gray + red mottled clay / sandy clay

→ Tyler noted resistance so we're going
to run the OVSZ ADAPTER to lessen
borehole stickiness

* could not get OVSZ ADAPTER to 24'.
trip out, change to ray one-line
shoe, hammer back to 24'. discard
waste, resume chisel-tube splog
bucked & split top of inner tube.
tan + red clay. ** 8" stickup **

24-28'

28-32' brick red, full tube

32-36' or. red, full tube

36-40' tan sand w/ mottling

40-44' refusal w/ 15" stickup

full tube; dark gray, dry clay.

TD = 42.75' 5:22pm

pour hole plug into hole, clean upside

11/3 cont'd

- rig hrs 48:30
- leave F150 @ site, pile into Rm.
- depart 6pm
- dinner @ callahan (6:30-7:15pm)
- arr hotel 8:00pm

11/4 Depart hotel 8:00am

ARR Youth Ranch, relocate rig to new site

ARR site 9:29 9:29am

ENRI - FYRCS-003

30° 40' 13.02" GPS accy 8'

82° 02' 29.97"

0-4' begin push, soft 1/2 red ~ 75% rec.
sand, w/ organics

4-8' mottled gray, or, red clayey sand

8-12' gray w/ mottly red clayey sand

12-16' gray + red mottled to red clayey sand
16-20' drives stiff, after retrieving suppl trip
out to run ORSZ ADAPTER to
snare borehole

gray w/ light mottly

→ leave ORSZ ADAPTER in hole
; resume dual-tube DP.

20-24'

DP easy penetration. spl did not fully come out w/ inner rods 6-8" left in lead outer rod. pulled rods retrieved spl, left ovsz adapter off of string, tripped back in.

gray clayey sand. during trip in/out, sacrificial tube came back full of sand w/ heavies.

24'-28'

DP/DT easy penetration.

tripped out inner rods, no liner!

tripped at outer rods, core intact.

• liner split + is stuck.

• set rods aside, put EDT on 4' rod mach of 2 2' rods, go back in.

* SAMPLE STUCK IN ROD

28'-32'

tan sand. problems w/ DT Δ to piston

32'-36'

piston sampler ultimately successful

* NOTE: to lower complete piston assy, must have puller cap on inner rods to keep piston tip from being pushed up inside DT rods.

36'

DT

cleanup site - denrob 5pm
depart parcel

11/4

ARR Hotel 6:01pm

RK HRS 52:55

11/5

checkat / depart hotel 8:00am

ARR site 8:45am

EMRI- NC121-001

30° 20' 27.74"

82° 00' 33.19"

GPS RELY 8'

0-4' ~ 70% rec. gray to brown sand

4-8' ~ 70% rec. gray sand

8-12' med. gray clayey sand

12-16' gray clayey sand

16-20' gray clayey sand

20-24' AS ABOVE, still driving well

24-28' AS ABOVE, possible heavier sand
~ 26.5-27'

28-32' gray to blue-gray sandy clay / clayey sand

32-36' AS ABOVE

36-40' AS ABOVE Penetration begins

40-44' ~~stiff~~ ~~stiff~~ slow penetration 5" stroke

Packed up by 11:46pm

RK HRS 55:19

Depart site 11:54am

ARR TLT, fuel up FRO trig

DUP cases @ 3K, arr whse 2:54pm

01/20/2022

ARR WASE ~ 8am to load

MBL, AB, DTP

Depart Wase 8:13am

ARR site 11:05am

EMRI - NC121-002

APS only 8'

30° 24' 48.08"

62° 01' 44.87"

TD 28' hard driving; opted to end
rather than stick

finish + plug hole by 12:30pm

RGR HRS 56:19

proceed to 003 "high profile" decided
to call WIC contacts to discuss site for
safety. Matt 904-759-0993 says
→ Says they are small diameter. We're
OK if we go central between them.
While waiting for call, proceed to 004

~~EM~~

EMRI - NC121-004 1:20pm

near power pole; lines across road @
site. new site ~ 24' N of lines ~ 6'
W of marked lines (buried)

→ probe 4' w/ skinny bit.

- 004 (cont'd)

30° 30' 48.15" GPS 10'

81° 59' 37.66" 1:34pm

TD 24' w/ piston splr 2x

flung sands, slow penetration, hard pull

end ~~dry~~ hole 4:26pm 58:46 hrs

* drive up CRIZI to check other sites

dinner 5:39pm - 6:25pm

ARR hotel 7:46pm

1/21 check at hotel ~ 7:28am
depart 7:47

ON SITE 8:25am Probed hole w/ 54" rod

ENRI- NCIZI-003

GPS 10' 10'

30° 26' 31.31"

82° 00' 31.89"

31.32"

31.94

} 10' 8'

TD 40' 12:28pm site packed up 12:50

* last run w/ sp, got ~8' clay.
expanded up inside 2nd rd?

ARR WASE

DEPART WASE 4:48pm

RK MS 6230

* LOAD:

- more 2x6 stock for leveling
- short piece of 6x6 for pushing stock liner out of outer rd.

1/27

EMRI-NC121-005

Woke @ 8:02am

Depart @ 8:19am

ARR site 11:30am

put out work signs - cones

30° 37' 32.66"

82° 00' 32.53" GPS 8'

lots of use of piston assy.

TD 44' run @ refusal 43'

4:18pm

fill borehole w/ hole plug R/H HRS 66: ⁵¹

depart site: 4:45pm

reach hotel 5:23pm

1/26

DEPART HOTEL 7:40am

ARR SITE 8:32am

EMRI-NC121-006

30° 41' 46.21"

GPS 8'

82° 01' 37.08"

⇒ while coring this site, take decibel readings:

OPERATOR	IDLE	77.5-80.0
	2500 rpm	82
	3000 rpm	87
	hammering	100-102-109

HELPER	IDLE	79- 80 80
	2500	86
	3000	89
	Hammering	102-106

20' away	Hammering	81-88
90° f/hack		

MBL ~ 100-104 dB

TD @ refusal 42.8'

12:41pm

RH HRS 70:20

DEPART SITE 1:13pm
ARR WARE 3:50pm

2/10 DEPART ANNEX 7:10 AM

ON SITE ARRIVAL 9:58 AM

RIG RUN TIME START 70:22
END 71:14

30 18 23.23

82 00 20.43

EMRI - TITF BALDWIN to JAX 001

TD AT 2:55 PM 48'

RETURN ANNEX 5:48 PM

3/3/22 TB, CA, BD, DTP met @ whse ~8:15 am

to Lake Jackson via Falk Dr.

1470 ARR GATE 8:35 am

4J TH004 30° 31' 24.76" NE 8'
84° 19' 24.03"

0-4' organics to gray clayey sand
4-8' gray clayey sand
8-12' br/gray mottling sandy clay, clayey sand

Piston →

LKJTH004
CONT'D

- 12-16' tan to gray clayey sand
~~16-20'~~
16-20' inner tube did not go to bottom,
tip out and use piston splay
- slightly to no clay sand, saturated
- some blow by past piston (ring)
but liner came out easy.
20-24' piston assy
br. to gray clayey sand
24-28' piston assy
gray clayey sand, a bit of lt. blue
in end of tube / bottom
28-32' piston assy TP
42- stuck extraction
R/L H/S 77:18 12:30 pm

LKJTH003

30° 31' 28.36" Aug 8'
84° 19' 23.79"

- 0-4' brown organic rich to mottled
gray / orange clay
4-8' mottled gray / orange clay
8-12' AS ABOVE, stiff + hard to drive
to end of run. liner stuck...

- trip out rods, extrude shale tube / 2' inner rod
- take opportunity w/ rods out of hole to add expander adapter to improve borehole friction in those stiff clays.
- run back to TD, discard contents of liner

12-16' gray clay / clayey sand into gray sand
 - upon retrieval, fairly sands invaded outer rods. Switch over to piston

16-20' piston splr - 1 false start, didn't run to TD and pulled inner piston - cups. trip out, clean up piston spr, run back in

gray saturated sand + clayey sand
 20-24' piston splr
 AS ABOVE

24-26' piston splr
 gray clayey sand

28'-32' piston splr
 gray + orange clayey sand

TD

clean up site 5:18pm
 Rk MRS 8:12
 Depart Lake 5:30pm
 Arr Lake 5:54pm

3/3/2022 TB, BD, CA, JG, AB

On site @ 9:30

- we have 48' of outer pipe
 - 40' of regular
 - + 8' of 2 footers

@ LKJTHZ (3rd hole of project so far)

N 30° 31' 27.17" 27.680"
W 084° 19' 22.34" 23.291"

ok phone app

0-4': about 1' of compaction
organics & sandy clay

- less organics than

- lost two holes

4'-6' lost core tube

will pull whole string.

- Going to use clay shoe
for 8'-12'

- waste tube down to
8', pull inner waste
sample, sample
from 8'-12'

Cont'd

8-12' w/ clay expanders (5" dia)
- almost ~~refusal~~
refusal
- switching to
Piston Sampler
For 12' - onward

12-16' using Piston sampler
- no refusal @
14'
= Sandy clay
very sticky
very plastic
- pulling & moving
holes
- very close to
being unretrievable

3/4/22 contd

LKJTA001 30° 31' 26.68" NCLY 8'
84° 19' 21.76"

- 0-4' DP brown organic to gray sand
4-8' DP gray clayey sand
8-12' DP gray clayey sand
12-16' DP gray / sandy mottled clayey sand
16-20' DP AS ABOVE
20-24' DP gray / sandy; brown zones; clayey S.
24-28' DP dry stiff clayey sand; not
quite a full run. ~ 3" short.
28'-32' DP inc. clay content. gray clayey sand /
sandy clay.
32'-~~38'~~^{36'} DP AS ABOVE
36-40' DP pale gray sandy clay

TD tripping out ~ 2:30 pm
24 hrs 84:47

LKJTH005

30° 31' 25.86" N 81° 8'

84° 19' 21.56" W

ck requested test right between
the two sinks

3/7/22

AB, BD, MBL, CA

TD at 30.2' 3:45pm

LKJTH000 005

86:45 Rig
time

Advanced w/ regular assembly
& tripped out at 30' to
swab hole & attempt to advance
w/ oversize shoe adapter.

Advanced an additional 0.2'
& TD'd. Carbonate present
in shoe at TD.

5/16/2022 10:00 am
EMRI STOKES 001

AB, EM, TB, MBL, BD

N 30° 24' 50.93"
W 82° 01' 12.73"

RIG TIME START 86:55

- We started with 52' of
2 3/8" pipe

~~12 x 4' sections~~

~~2 x 2' sections~~

Pipe we
have
on site

11 x 4' sections
4 x 2' sections

Rig Time End 90:47

EMRI - STOKES - 001 0' - 20' TD

EMRI - STOKES - 001A 0' - 36' TD

lost piston down hole moved
2 feet & restarted hole

Hammer Rig overview 15 June 2022

we have

11 4' outers

9 2' outers

13 4' inners

2 2' inners

21 June 2022 TB, NB, JH

86° high, partly cloudy

0832 on site @ ~~the~~
Cape Hammer Rig site 3A
★ Gopher tortois
recovered

0919 All get up
TB = Operator
NB = Assist
JH = Sample Burn

Borehole coords: Garmin 66S

Point 35

N 28° 00' 23.67"

W 080° 38' 59.40"

starting Normal
↑ Dual tube sampling

@ 91 Rig hours

O to B went well, w/ some
compression of
sample noted

cont'd

8'-12'

experienced some
slow advance
in the tube we have
Organic Rich clayey
sand.

-Matches M-series
Ben & I took out
of canal nearby
on River trip

12'-16'

More ~~clayey~~ clayey
etc. Soots, but w/
less organics.

Better point of section
this go around

16'-20'

Did a pull back
w/ a rough time
but worked ok.

20'-24'

Sample Liner
did not come up.
Liner grabber came
out of sleeve.

Pulling 24' of ^{river} ~~ext.~~

20

inner

24

1' of liner split
@ top ^{river}
grabber popped
out

grey sand w/ trace
phos or trace
Heavies
likely top of TQsu
or very near.

Took about 2.5 hours
to get 24' of sample

Now need to push down
24' of Dual tube.

Going to try pushing w/
a piston tip in dual
tube sampler to 24'. Then
pull inner extension tip
AKA. pointy inner piston
tip. Insert liner and
start sampling

Now don't have a
retainer sleeve?

24'-28' Got down to 24'
w/ Dual tube system &
a sacrificial liner
Pulled inner extensions
and up inserting
sample liner ran into
2.5' of sand which
infilled bottom of hole
and would not permit
liner to advance to
24'. Switching over
★ to Piston sampling.

• Lunch

24

• Resume

very plastic
cohesive blue
clay.

Piston

32'-36'

Piston Sampler
Went in Amazingly
easily.

sample is a creamy
blue clay

Piston

35'-40'

only took 6 seconds
to hammer full
length. Must be
more of this

soft blue clay

- Ended in clay/freshwater

Piston

40'-44'

only took 5 seconds
to ~~Hammer~~ Hammer full
length of Rod

24'-44' was Piston
sampling. Look to
have ended in a
freshwater Marl
w/ freshwater
gastropods etc.

1800

All packed up
- leaving Site
- ended @ 44'

22 June 2022 TB, NB, JH

0900 Rig hours = 97
On Site @ Hammer Site
14

NB = Primary Op
JH = Assit
TB = Sample Gura

0948 starting Dual Tube
sampling

0'-4' sand & soil

4'-8' sand & soil w/
shelly sand @
bottom of interval
- shell is mostly
fragmented

8'-12' ~~R~~ could not advance
sample tube, flowing
sands noted.

Switching to
★ Piston sampler

Hammer site 14 Borehole
GPS Garmin 66s coords
N 28° 01' 52.11"
W 080° 39' 41.35" Do not
trust
elevation

Piston Point 36
8'-12' could
w/ 1' Sand w/ clay &
trace organics
w/ 2' Shell bed w/ sand
- shell is highly fragmented
cream colored
w/ 1' grey sand w/ clay

Piston 12'-16' Grey glt sand w/
trace heavies or trace
Phos.

Piston 16'-20' Brown to grey glt
sand w/ trace shell
& heavies or phos

Cont'd

20'-24' Graded shell bed



w/ qtz sand &
what appears to be
~ 3% phosphate
shell is cream to
pink color

24'-28'

1 Qsn likely
starts in
this interval
or immediately
above

28'-32' very fine ^{grey} sand

1435 Packed up & moving
to next hole

1455 Actually leaving
site now.

22 June 2002

Rice hours @ end of
Hammer site 14 = 100

1530 On site @
Hammer site 2A

GPS Garmin 66s coords
for site 2A Borehole
- point 37 in Garmin

N 28° 01' 01.92"

W 080° 42' 35.02"

TB = Assist
NB = Sample Gurn
JH = Operator

0'-4'

4'-8' shell @ bottom

8'-12' No sample
in tube?
=> pulling whole
string to assess

8'-12' Sample was in
the bottom of
Outer rods.

Sample liner came
up w/o sample.

★ Core catcher came
out of liner

- Salvaged 90%

of Sample from
outer rod expansion

- Clay oxidized w/ shell

~~16-20'~~ → No Go. Flowing
sediments won't
not allow sample
tube to advance

Must Piston
sample

12'-16' bluish grey
clay & sand

Piston, cont'd
16-20'

Probable into
TQsu zone
grey to white
shell is sand
is calcilutite
w/ iridium to
phosphate

Piston
20-24'

Clayey/sandy
TQsu

1970

Packed up and
leaving site

24 June 2022 TB, SH, NB

0912 In bottom of pit
w/ NB, SH, TB and
Quinton (Mine POC)

- Planning to run
normal dual tube
@ approx 50' below
MHL according
to Quinton.

- Expect Rock bottom
in this pit to
give us trouble
immediately.

Fig rows @ 102

Farmin Map 66s
point 39 for borehole
coordinates

N 28° 01' 19.98"

080° 51' 20.69"

calling this site @
bottom of Pit
Back Hammer Pit 1"

AKA BHP1 for
samples

good sample from

0-4' busted through
about 2' of
~~hard~~ rock then
hit softer sed

MUST Piston sample
from 4' onward.
Flowing sed
coming up casing

0955 24' of pipe
on table

★ Will need new
union block
for rig pipe
guide soon

Piston
4'-8'

Piston
8'-12'

Piston
12-16'

Piston
16-20'

Piston
20-24'

★ 28' of pipe
out of truck

38 seconds to
sink w/ of pipe

★ 32' of pipe out
of truck

Piston
24'-28'

Piston
28'-32'

Sample
silty flow
No sink
right
H

Sample liner came
up empty essentially.
Inside of liner's
outside is thinly
coated in green
silty clay w/ up to
7% phosphate.
Possible Hawthorn?
Was going to stop
here, but going to
make one more
piston run in
case we can hit
Hawthorn

32'-36' TD

* Noted odd squelching
squeaking sound from
Foot Tilt hydraulic
assembly when
engaged.

- hydraulic fluid
is firm.

- green clayey sand
or sandy clay

Rig hours 106

24 June 2022

0907 On Site @
Cape C Hammer Site 1A

~~0907 11:18:02~~

Garmin	TB	Primary operator
GPSmap 66s	JH	Assist
↓	NB	Sample Gura
Site		

100% point

40

N 28° 02' 24.43"

W 080° 43' 33.35"

24 June

0940

Set up & starting
Hammering

Real tube

0'-4'

Sample compression
noted.
- org. & sand

4'-8'

Looks like
possible TRSU or
shelly Qu @
bottom of
Run.

- lost core
catcher

- likely because
I didn't have
enough weight
on foot @
end of Run
which caused
rattling.

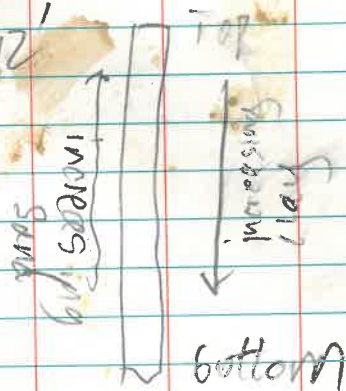
⇒ pulling
all outers

24 June 2022

4'-8' pulled all
dual
tub
outlets. core catcher
was caught in shoe
as a result, caught
the ~8"-10" of sample
we lost @ bottom
of core catcher - less
PVC liner.

bottom 8"-10" is
grey coarse etc sand
w/ trace phos,
white bivalve
& other mollusc
shells.

dual tube
8'-12'



dual
tube
12-16'

Piston

16-20'

could not advance
sample liner,
switching to
Piston Sampling

★ 32' of pipe on
table

Piston

20-24'

Piston

24-28'

24 June 2022

36' of pipe out
of truck

TD @ 36' @ Cape 1

- looked like TQsu,
though the
sheet material
was not completely
white

Rig hours = 111

1537 Packed up &
heading back to
Tallahassee

25 July 2022 TB, WB, JH

Need to locate other
power probe engine
Fry when I get
back. Only have spare...

1520 On Site at Buck
Hammock mine.

Site ID: Buck Hammock Alpha
AKA "BH-A"

Coordinates

N 28.021320

W 080.856726

Point # 041 in Garmin Map66

1404 start hammering

Rig hours 111.42

0-4'

compression note

4-8' dual tube/compression
noted

25 July 2022 BH-A

*Note that our site is right on edge of current deepest excavation. So we should be able to correlate this core w/ outcrops in pit very nicely.

First few feet are likely out of place fill, as several piles of fill & excavation fodder surround the site.

12-16' dual tube

32' of pipe
out of truck

16-20' dual tube
about 10" of
compression
noted

~~20-24'~~
20-24' Dual tube

24-28' Dual tube
1700
news
*having issue w/
inner rod sticking
up about 2" above
outer rod when
we finished last
2 runs... Not
sure how that is
even possible as
we have all correct
Drive tooling...

25 July 2022

28'-32' - Dual tube

- the chucks are working fabulously really holding truck in place while hammering.

* problem: hit very resistive lithology @ bottom of this run. Looks like poor to med ind caliche cemented sands & shell

=> Lost sample liner @ bottom of run. Liner grabber failed, likely due to hammering into rock.

- Need to pin some of the liners but don't have a hole in liners grabber to do it

28'-32' contd

25 July

=> Pulled entire string to get liner out of bottom.

- Sample tube was cracked along entire length, ~~at the top~~

... Sandy green clay & shell @ bottom. I would call TSSU.

- Salvaged All of sample which held together well

- Going to Attempt Pin tube again for 32'-36' and see what happens. I suspect a short interval of harder cemented sands/limestone caused crack.

32'-36' No penetration

1828 while getting/pushing
dual tube system,
back down to 32'
got alot of
resistance from
30'-32'. Gave
a test pull back
before taking
32'-36' sample and
could not pull
outers.

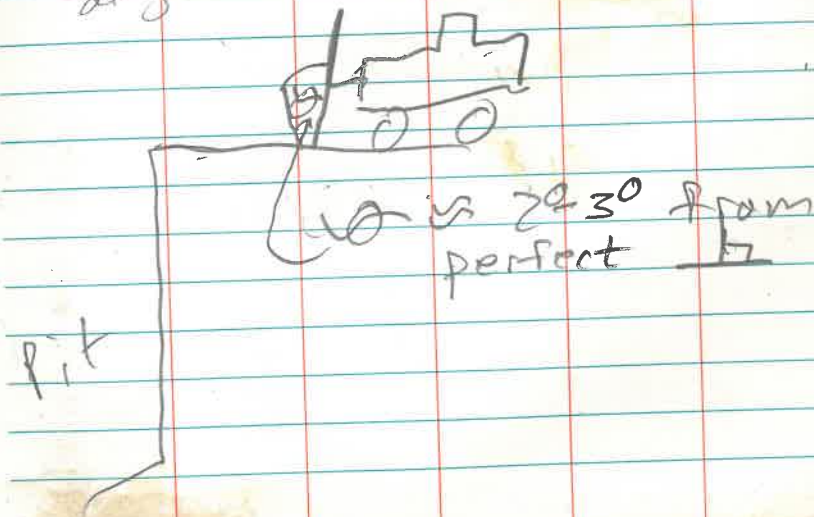
⇒ Braced hammer
foot w/ 6x6's &
2x8's to improve
pull back stability
and finally got
it.

★ TD @ 32'

29 July 2022

and more!
↓ Pictures!

Still need to get
a measurement of
Pit depth from
edge of Pit where
we drilled today
for correlation. Note
that Cores were
probably 2°-3° off
true center/level
so will possibly have
to account for this
in correlation to
Pit out crop
diagram



25 July 2022

1920 parked up & leaving.

Took a good vantage
point shot, see
iPhone video

- Could not measure
section safely, may
look @ it again
later this week

Rig hours 113:53

2005 Arrive hotel

AAR

- Chalks worked very well
- Saw horse improvisation held up to 11 day of use...
- Clamps for yellow top Stanley saw horse also worked well
- Probably should have used the day shoe to see if we →

+ could get deeper

• Tomorrow:

meet up w/
Jesse or Quinton.

Discuss sites.

+ Pick order of
work for Bravo
through Delta sites
+ Measure side of
pit if at all
possible.

+ go to next site...
or go home
depending on what
Jesse says.

26 July 2022 TB, NB, JH

0800 Left hotel, got
water @ retrack
talked to Jesse and
got permission for
all sites.

Met w/ Quinton
@ mine and discussed
plan of work and
access for sites
starting w/ Buck
Hammock Bravo
today.

Quinton guided us
to BH-B
it is in a row
field

0930 on site @
Buck Hammock - Bravo -
coords: N 28.043156
W 080.887585
AKA BH-B
Point 42 in Garmin 66s

weather looks bad
@ 1 pm to 4:30 pm...
Heavy Thunderstorms. May
have to pause work
then. We will see.

Rig hours: 113:53

0955 Start hammering

0-11' dual tube

4-8' dual tube

8-12' dual t.

12-16' dual t.

16-20' could not
Advance liner
piston switching to
piston

20-24' very easy
piston penetration

26 July 2022

1130

24'-28' Piston sampling

28'-32' Piston sampling

weight of hammer
pushed 24'-32' mostly.
Did not have to apply
actual hammering action
much.

1330

Met Jesse McKinnon
and showed him the
log and samples.
He was very interested.

Storm & lightning overhead
Packed up & heading
back to hotel until
4:30 when radar
looks clear.

Left 28' of pipe
in hole w/ piston
assembly on
the end.

28'-32' Looked to be

Fairly typical
unconsolidated

TSSU, grey sand &
abundant shell fragments
w/ some clay.

★ Keep coming back to
the idea that we
need a trailer. This
jumping up & down in
back of trucks is
lame, & takes longer
to unpack & pack.

1615

headed back to our
site @ BH-B.

Just saw lightning
strike directly
ahead of us (west),
will have to play it
by ear when we
get there. radar
implied the worst
of storm is past
us.

32'-36' Piston
36'-40' Piston
1710 Re-starting

1830 TD @ 40'
weather got serious
packed up quick.
left 35'-40' sample
in the piston assembly
until tomorrow

Rig hours: 117:24

- Blue canopy is
damaged in 3 places.
will need another,
simpler canopy

★ need to get Hammer
rig fuel in morning.

AAR

- May need to be on
site @ sunrise
to beat these afternoon
storms

26 July 2022

Note - Radiator hose on F150
is severely cracked and
worn. Must get this
fixed before next
trip if it doesn't
fail this week...

1900 Return to hotel

27 July 2022 TB, NB, JH

~~07~~ 0755 Leave hotel

0922 on Site @
Buck Hammock Charlie

- Took a long time to
get here via
farm roads w/ cattle
gates

- need to ask Jesse
if there will be
another lock on
gate to Delta site
from main road

27 July 2022

Buck Hammock Charlie

AKA BH-C

Coordinates: N 28.078487
W 080.852468

point #43 in Garmin 66s

In a shady spot at
edge of row field.
Century oaks, palmettos
5" tickleweed everywhere.

Rig hours 117.28

0945 Start hammering

0'-4' Dual tube

4'-8' Dual tube

8'-12' Dual Tube (D.Tb.)

12'-16' D.Tb.

16'-20' D.Tb.

20'-24' D.Tb.

★ Liner grabber

Failed. Had to
pull whole string
to get PVC sample
liner. Sample is
fully intact though

- Caliche cemented
sands in bit.

- Liner is split

- Also had very
slow penetration
in last half of
Run

THIS happened
Monday as well.
ran into caliche cemented
sands, had slow
penetration. Liner
came up split
after liner grabber
failed.

See 25 July comments 28'-32'

27 July 2022

24'-28' Went in w/ Dual tube assembly.

→ Sacrificial liner cracked and we had to pull whole string ~~test~~.

1150 Went in w/ Piston assembly which worked fine

This assembly got the PVC liner sandlocked in it. Employed the PVC liner extrusion platform and it worked fairly well but was damaged in the process.

Had to Piston sample for 24'-28'

28'-32' Piston

27 July 2022

32'-36' very difficult penetration
Piston - same sandy clay w/ shell that stopped us Monday @ 32' in Buck Hammer mine.

36'-40' Could not advance Piston assembly past 34' which is odd as we have a hole down to 36' already. Going to use Dual tube w/ a sacrificial liner and the clay shoe.

Advanced Dual tube w/ clay shoe down to 34', hopefully hole has been opened up a bit.

27 July 2022

36'-40' cont'd

Went back in w/
piston assembly, got
down to 34'.

* stuck ... real stuck
Tried pulling for a long
time.

* Bolt on Hammer
rig slide busted off,
replaced it w/ one
from tool box which
was much too small.
Bolt was held for
now. Must address
this later

- Moved truck and
pulled all 9 inner
rods by hand as
we did not have
enough room to
pull them w/
Rig

- Still cannot pull
the 9 outer rods
in ground

1900 Going to come
back tomorrow and
try to wallow out
hole w/ winch, if
that doesn't work,
will try to hammer
3 holes in a triangle
pattern around
stuck drill string
w/ the inner rods
we have.

FD @ 36' for

Buck Hammock Charlie

28 July 2022 TB, NB, JH

- went to BH mine & got 60 gallons of pond water

0904 on site @ BH-C

- Goal = unstuck 34' of outer rod

Tools/strategies/options

- 1) pour water & soap down the pipe & around pipe. Attempt to pull
- 2) Hammer more, then pull
- 3) Drill inner rods around stuck outer rod in triangle pattern
- 4) pull horizontally w/ winch to wallow out hole

5) Drill an inner rod w/o the stop coupler through the outer rod and into sediments below

Goint to try to unstuck pipe w/ the options above in numerical order.

- No go on first dry pull
- used winch to wallow out hole in X, Y directions & pulled up again no go
- Poured water & soap down center and outside of pipe

28 July

- Tried pulling again, did not work
- Hammered pipe in another $\approx 1.25'$, leaving about 10" ~~off~~ above land surface
- Tried pulling again, no go



- Nick suggested we use the bottle jack out of Ram to supplement pull up force.
- placed bottle jack on the foot, pushed up on hammer side assembly while pulling up w/ hydraulics.
- gave us enough to pull up about 6 inches.
- messed up bottle jack gears in the process
- will need to replace

• Tried pulling again, got it!

- 1st pipe up was bent - probably can't use it anymore

• 2nd pipe would not unscrew.

- we hammered it, tried to leverage the wrench w/ a 4' enter and broke the wrench handle.

- Tried to turn wrench w/ truck winch, broke the already broken wrench again.

- headed to Harbor Freight for steel wrenches and torch.

• $\frac{3}{4}"$ $\frac{1}{2}"$ $3\frac{1}{4}"$ $1\frac{1}{16}"$
 $\frac{1}{4}"$
 $\frac{7}{16}"$

28 July 2022

- NB bought torch set up from Lowe's.
- I will buy wrenches from Harbor Freight.

- neither location had both items.

Harbor Freight would not accept our tax free form, claimed system changed and we had to re-send our tax free cert.

- Got replacement ~~size~~ Bolts for Hammer slide assembly, 2 24" steel wrenches, a replacement nozzle for water tank hose is a strap for lifting pipe higher than mast length.

18/8

Got all pipe out of ground. Took some herculean effort to break pipe at nearly every joint.

- Had to use a combination of 8 foot breaker bars, steel wrenches, torch (for expanding box end of pipe, and placed hammer via pipe holder with into F150 receiver to provide a sturdy backing for breaking pipe. See Tyler's phone for video.

Had to move truck forward and backward twice for each joint break.

28 July Contd

- used 1.5 bags of
hole plug for hole

Rig Hours: 126:18

- will need Hammer Rig
Fuel & water (for people)
tomorrow

- Replaced Hammer slide
assembly bolt which
we originally repaired
w/ random bolt from
toolbox. 2nd repair
bolt is still a bit
too small (used $7/16$ " diameter
and 3" length) but
it is Grade 81 & closer
to the right size
than random bolt from
toolbox

- tightened down all 4
bolts holding hammer
rig to truck bed.

AAR for past two days

- Need to review AMS
catalogue & make sure
I am employing clay
shoe properly

- Need to look closely
@ sediments from BH-C
@ intervals 24'-28' &
32'-36' to identify
what was causing so
much sticktion?

- Dry sandy, crumbly
=> to plastic greenish
clay w/ shell is
what I remember

- Why did we get stuck
@ 34' when we had
already piston sampled
to 36'?

- Need to find the right
bolt for Hammer slider
assembly when we
get back to work next year

AAR (27th & 28th) contd

- Hydraulic bottle jack is now a must for Hammer rig equipment. (get a picture of proper placement, note pinch points)
- need to acquire one for Ram and one for F150.
- Aluminum pipe wrenches can't handle 8' breaker bars
- Chinese made pipe wrenches suck, even steel ones
- Want a monster, american made, steel pipe wrench for truck
- Using the winch to try and turn DPT rod (clockwise) in an effort to help free, stuck rods is a bad idea. Never again.

- Nick & I developed an effective, but slow & painful method for breaking very stubborn pipe joints (see Tyled phone for context).
Key thing this method did was:
 - remove horizontal torque on mast, by providing a stable place to back wrench up. If you back wrench up to mast (even w/ good pressure on foot) and turn wrench w/ breaker bar you could damage the mast.
- Using winch to pull pipe in x & y direction probably helped, but it will bend or one or two pieces of pipe.

AAR (27th & 28th) cont'd

- Adding soap & water too inside & outside of stuck Rod will help while pulling or hammering.

- PVC liner extruder platform needs to be improved.

— more precisely fit inner & outer rods on their own reinforced shelves & some sort of built in spacer for rod to rest space.

though 4" 2x4's or 2x8's will work

- Calcite cemented sands tend to split liner.

29 July 2022 TB, NB, JH

0925 on Site @

Buck Hammock Della
AKA BH D

coords: N 28.069809
W 080.813507

Point 44 in Garmin 66s

Got fuel for trucks &
hammer rig & drinking
water

Site is a row field.
more big live oaks
& palmettos, weather
should be good today,
though very hot.

0950 start Hammering

0'-4' D.Tb

4'-8' D.Tb

8'-12' D.Tb

12'-16' D.Tb

29 July 2022

16-20 D.Tb

lost core catcher

pulled whole
string.

got sample from
inner

really pure clay
~~white~~ w/ white
blobs of clay
or carbonate?

20'-24' D.Tb

24'-28' D.Tb

28'-32' D.Tb.

expansive clays
pushed inner rod
back up pipe about
2".

- got alot of
resistance. Hard
to pull back

29 July 2022

TD@ 32' for BH-D

32' Bit sample is:

olive green clay & sand.
on the cusp of

Sandy clay vs clayey sand
phosphate &/or heavy metals present
in trace to 1% abundance

& % organics. Somewhat
plastic & somewhat

crumbly. Very dry
and abundant shell

material. Though shell
material is extremely
weathered, pinky, white
and often just a
calcilutite powder w/
vague shape of mollusk
fragments. Chert
nodules noted.

- Sample is very similar
if not, the same, as
material we got
stuck in @ BH-C

29 July 2022 BH-D

Rig hours: 127:37

3 Aug 2022 TB, BD, DP, NB

- Pre packed Fiso's RAM
 - Repaired weldment guide
+ bent it back in place
-

9 Aug 2022 TB, NB, JH

0900 on site @ WP-Delt

coords N $26^{\circ} 52' 28.12''$

W $080^{\circ} 24' 43.92''$

point 0045 in GPSMAP66s

In JW Corbitt WMA

- Road was paved but rough. Do not plan to move fast in trucks out here

Rig hours 127.40

0'-4' Dual Tube (D.Tb.)

4'-8' D.Tb.

8'-12' could not advance sample liner. Flowing sands w/ 100% shell.

switching to Piston →

* Yoke puller is so bent that spring assisted retaining pin which keeps it up is out of the way keeps failing to ~~stay~~ stay engaged and yoke drops at random times. Will need to rig something for this in field.

* 1125: dark clouds on horizon. Weather report indicates it will get bad around 1500 but steady cool breeze makes me think bad weather will be averted. Lightning detector seems to be malfunctioning. Will have to rely on best judgment.

was
a

Battery issue

9 Aug 2022 WP-Delta

8'-12' Begin Piston Sampling
cored - Bit sample is quartz
Piston sand w/ t% shell

12'-16' grey/brown qtz sand w/
Piston little to no shell

16'-20' brown tan dr sand
Piston w/ t% clay

20'-24' tan brown qtz sand
Piston w/ clay + trace heavies

24'-28' dark brown qtz sand
Piston w/ organics

28'-32' very dark brown qtz sand
w/ organics & maybe
clay
* could be some shell
but PVC liner often
~~obscures~~ obscures it

Throughout today we have not been using O-Rings for outer rod extension joints. Just ran out (@ 32'-36') of O rings completely and we are now running piston assembly w/o big O-rings as well. Still using little O-rings for actual piston tip. I believe those are essential.

New FOS Depth record with Hammer

Via 920 RAR.

NB = Operator

TB = Drill assist

JH = Sample processor

TD 52'

Rig hours 133:45

32'-36' Penetration slowed slightly
Piston

36'-40' ^{Bit sample.} Dark grey ~~fine~~ coarse
Piston atz sand w/ ~70% shell fragments and some 2% coarse phosphatic sand

40-41'
Piston

41-48'
Piston

→ 48-52' ← called it here TD
- hard to pull out
- Bit sample is:
Mix of shell and poorly to med indurated sandy clayey tan carbonate. May be some coral fossils as well. See "TD Bit Sample" for details

AAR 9 Aug 2022

- Record depth was primarily due to lithologies of sand & shell w/o much clay. Especially no dry clays noted.
- Using no big O-rings for outer rods or piston assembly worked well. No loose pipe issues. Probably made things go faster
- Having big 36" wrenches was great
- Need new set of ^{AAA} AAs for lightning detector

we bought these

9 Aug 2022 cont'd
1715

- * Broke screws holding nylon block (pipe saddle) didn't seem to bond actual weldment too badly. will fix tomorrow

Also! remember to tighten yoke retainer bolts

Tomorrow:

- Fill up Non-Eth
- ~~Dump trash before we leave hotel~~
- Pick next sites @ blast
- Fix nylon block
- tighten yoke retainers

Lowes purchase list

- Electrical tape; ALOT
- 50 foot garden hose
(for water acquisition in field)
- AAAs
- Muffs for Jesse
- more rubber gloves

10 August TB, NB, JH

OTAS leave hotel

0940 Got Worn-FTH Fuel
is headed to sites
along powerline in
Dupuis Reserve.
~~Head~~ Acrossed Sillips
From North entrance,
scouted WP-Echo &
WP-Fortrot. Do not
like WP-Echo and
do not expect to
get both today.
Headed back to
WP-Fortrot

1004 On site @ WP-Fortrot
coords N $26^{\circ}55'32.97''$
W $080^{\circ}29'02.40''$
Point # 46 in GPSMAP66S

On the side of the road
near a powerline across
gate.

10 Aug 2022

- Replaced Nylon block bolts

- TB = operator

NB = sample processor

JH = Drill assist

1050 start hammering

0'-4'
DT6.

4'-8'
DT6

8'-12'
DT6

12'-16'
Piston

Switched to
Piston

cannot get lined up
on hole. Filling in
current hole, moving
back and re-starting
@ 16-20'

* had to rig a string
3 carabiners to hold
up puller work, as
~~the~~ the retainers
pin fails to hold it
up randomly and often.

will move over to
WP-Enko and see
if we find the
same.

10 Aug 2022

16-20 Got a lot of Resistance
Piston on this run
Top 1/2 of sample is
Quartz sand w/
some clay bit
Bit sample contained
Fossiliferous, mollusk
moldic calcite
cemented sands
bottom half ~ 2'
contains drastic litho
change which can
be observed through
sample, liver and
Felt during hammering.

1340 TD @ 20'

could not advance
piston, sampler past
19'. I assume walls
of calcite cemented
sand section caved
in. Very hard pull
back

Rig hours: 136:11

10 Aug 2022

153Z On Site & set up

@ WP Echo

Coords N 26° 53' 24.43"

W 080° 29' 02.09"

Point # 47 in GPSMAP 66s

very windy, very hot. Drilling
in the side road that
leads off main road to
power line access. FNS
route marker nearby.

Can smell wildfire or
prescribed fire smoke
coming from south w/
southerly wind.

0'-4'

DT6

4'-8'

DT6

~~8'-12'~~

8'-12'

DT6

12'-16'

DT6

16'-20' D.T6

20'-24' Only got 15"
piston of piston sampler
into new hole.
Then stout refusal

TD @ 21.25'
WP-Echo

Bit sample was
moderately indurated
calcite cemented
sands.

Rig hours 137:24
1725 packed up & leaving

11 Aug 2022 TB, NB, JH

- Bought a Ryobi battery powered transfer pump for filling water tank in the field.
 - Also got 50' of garden hose
 - Also got a power drill
- impeller pump as back-up in case battery powered transfer pump is not charged. will keep this in power drill bag.

1030 On site @ WP - Bravo
coords: N $26^{\circ} 51' 45.46''$
W $080^{\circ} 19' 35.69''$
Point # 1048 in GRS MAP 665

1106 start hammering

0'-4'
D.T.B. Hit a root, which
shifted pipe over
and screwed up
alignment of hole
Wood in bottom
of sample.

kept 0'-4' from 1st hole
and 0'-4' from 7th hole

Flowing sands, switched
to piston sampling
here

11 Aug 2022 WP Bravo
0'-4' Moving over 5 feet
D.Tb and re-starting
- Sand & organics

4'-8' - Sand w/ some silt
D.Tb & clay

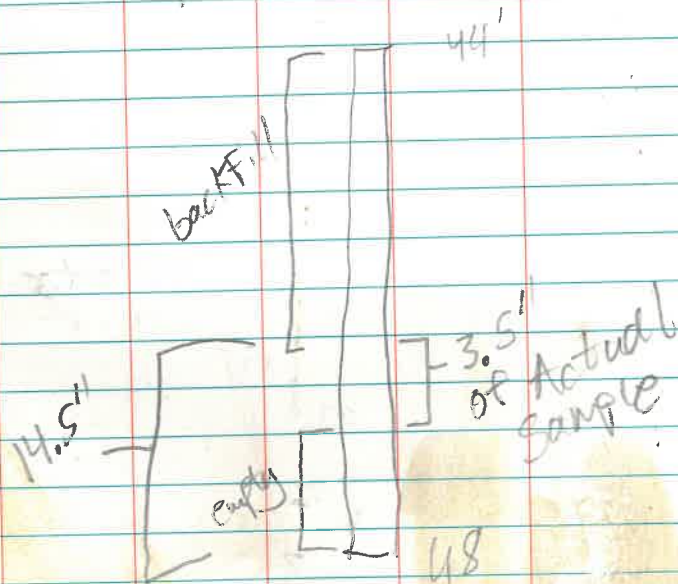
8'-12'
D-Tb

12'-16'
Piston

16'-20'
Piston

20'-24'
Piston

TD@ 44' + 2.5'



✓ Rig hours
143:00

11 Aug 2022

24-28

fine sand w/ about
5% heavies or very
fine phosphatic sand
- Dark color, likely
organics as well

28-32

Piston

32-36

Piston

36-40

Piston

shell bed w/ qtz sand

40-44

Piston

shell bed w/ qtz
sand and chunks of
carbonate.

44-48

Piston

1815

TD@ 45' 2.5"

Hit refusal
core catcher was
damaged and the
bottom 8" of sample
was lost

Use these Coords
for WP-C1 & WP-C2

Had trouble w/ access
will need to use a
different route out.

about 650' North
of originally designated
spot.

Refusal Rock/Bit sample
is a very sandy carbonate
could even call it a calcilutite
carbonate cemented
sandstone. It is
cream to tan, is mod to
well indurated with some
fragmented shell material.

sample

12 Aug 2022 TB, NE, JH

- Got NonEth Fuel for
Hammer dia

+1000 On site at
WP. Charlie 132
Coords N $26^{\circ}49'18.67''$
W $080^{\circ}24'03.91''$

Point # 0049 in GEMAP66

Swampy, wet terrain
in the fork of two
roads.

0'-4" DTb. WP. Charlie 1
4'-8" DTb.
TD @ 6' 7.5"

Hit stone refusal
Bit has a good
chunk of rock crammed
in it. Will make sure
to preserve this as a
good bit sample

14.5
 - 16.5
 33.0
 2.4
 0.9"

WP-Charlie 2-

12 Aug 2022 WP-Charlie
 - Moved North 5' to see
 if we can get around
 rock.

10'-4' DTb.

11'-5' DTb.

TD @ 6' 9"

- same stout refusal
 - same carbonate cemented
 sandstone

1122 - will move South,
 closer to original
 mapped point. Try
 again. If that doesn't
 work, will head
 to WP-Alpha
 Rightours 143:33

49.5
 - 30.5

 19.0
 - 12

 7

up asp
 prob 5' to 6' →
 higher in
 place here

Refusal Rock seemed
 to have more calcilutite
 and shal than WP-C13C2
 but it is the same
 stuff generally.

carbonate cemented
 sandstone w/ shell
 poorly to med indurated

TD @ 217'
 For WP-Charlie 3

Rig hours: 144:14

12 Aug 2022 WP-Charlie 3

On Site at WP-Charlie 3
 3rd attempt for WP-Charlie

Coords N 26° 49' 12.20"

W 080° 24' 04.22"

Point # 0050 GPS MARKS

1150

0-4'

D.Tb

4'-8'

D.Tb

8'-12'

D.Tb.

Rock frags. at bottom w/
 sand & shell frags above

12'-16'

D.Tb

From 2' to 3' of this
 Rod had alot of
 resist but broke through

16'-20'

D.Tb

20'-24'

D.Tb

@ 1's Rod has
 nearly stopped advance
 Cranked up to
 3400 RPM

Stout refusal

30.5' of pipe left

12 Aug 2022

12.48 going to park up
@ WP-Charlie 3
and head for
WP-Alpha in
Hungryland

1445 On site @ WP-Alpha
did not like
stamps original
pink for the site
due to low powerline
proximity. Chose
another spot
about $\frac{1}{2}$ mile to
the Southeast

WP-Alpha
coords N $26^{\circ} 57' 48.16''$
W $080^{\circ} 17' 31.34''$

Point # 0051 in GPSMAP66s

On the side of shell
bed road, near piles
of Road shell material
not far from Hunter
check in point

12 Aug 2002 TB, MB, 1H
WRS Alpha

0-4'
ATb

4'-8'
PTb lost core catcher 3
bottom 8" of sample
pulling whole string.

8-12
Piston

12-16
Piston white, sandy, shelly
plastic clays at bottom

16-20'
Piston Dry, sandy, plastic to
= excellent shelly clay

- Must exercise caution
w/ the slotted issue

20'-24'
Piston - slow advance
- hard sticky pull
back

TD →

12 Aug 2022
24-28
Piston

28-32¹
Piston Ended in
silt w/ shell
lost about
1/2 of sample
as fine, flowed
right through
Fingers of
core catcher

TD @ 32'
WP - Alpha

R. g hours 146:59

Location: Melbourne, FL

Date: 1/10/23

Crew: Ben Davis, Enda McMahon, Alan Baker

Site Name: Viera Park #1

Lat/Long: 28° 15' 15.36" N
80° 43' 48.78" W

- On Site @ 9:15 am

- Off Site @ 4:00 pm

- Rig hours: Start 147:26
End 152:00

- 0-4 Surficial Sands

- 4-8 Sands

- 8-12 ↓

- 12-16 ↓

★ @ 16.0' we switched to piston

- hole backfill to 12'

- 16-20 Sandy loam w/ minor shells.

- 20-24 | Shells present

- 24-28 | "

- 28-32 ↓

- 32-36 ↓

- 36-40 ↓

TD @ 40' due to complications w/
truck bed and rig mounting. Plans in
motion to fix upon return to Tallahassee.

Location: Brevard Co. near Deer Park Ranch

Date: 1/11/23

Crew: Ben Davis, Ericka, Alan

Site Name: Brevard Co. Landfill #4

Lat/Long: 28° 07' 41.56" N

80° 50' 17.32" W

- on Site: 9:40 am

- off Site: 11:35 am

- Rig hours: 152:00 @ Start

153:17 @ End

- 0-4 Surficial Sands & organics

- 4-8 Sands w/ organics

- 8-12 Sands

- 12-16 Sand, ~~clay~~ ~~minor shells~~

- 16-20 Sand, clay, shells

- 20-23 Sand & shell bed w/ clay

★ Hit refusal at 23.0' / Had to switch to piston sampler.

TD @ 23.0' Due to sticky clay & refusal. Pipe nearly got too stuck to pull out.

Location: Brevard Co. near Deer Park Ranch

Date: 1/11/23

Crew: Ben, Enck, Alan

Site Name: Brevard Co. Landfill #3

Lat/Long: 28° 06' 32.76" N

80° 50' 02.84" W

- On Site: 11:51 am

- Off Site: 1:40 pm

- Rig Hours: 153:17 @ Start
153:50 @ End

- 0-4 Surficial Sand + organics

- 4-8 Sand w/ organics

- 8-12 Sands w/ <1% Shells

- 12-16 Sand + Clay

- 16-20 "

- 20-24 "

- TD @ 24.0' Due to Sticky
Clay causing refusal.

- Very Sticky clay!

Location: Brevard Co, near Deer Park Ranch

Date: 1/11/23

Crew: Ben, Ericka, Alan

Site Name: Brevard Co Landfill #2

Lat/Long: 28° 05' 58.39" N
80° 50' 49.96" W

- On Site: 2:27 pm

- Off Site: 3:31 pm

- Rig Hours: 153:50 @ Start
154:54 @ End

- 0-4 Surficial Sand w/ organics

- 4-8 Sand w/ organics

- 8-12 Sand + clay

- 12-16

- 16-20

- 20-24



★ TD @ 24.0' due to heavy
resistance and very sticky
sandy clay.

Location: Brevard Co. near Deer Park Ranch

Date: 1/11/23

Crew: Ben, Ericka, Alan

Site Name: Brevard Co. Landfill #1

Lat/Long: $28^{\circ} 05' 34.26''$ N
 $80^{\circ} 50' 48.12''$ W

- On Site: 3:47 pm

- Off Site: 5:10 pm

- Rig hours: 154.54 @ Start
155.41 @ End

- 0-4 Surficial sand w/ organics

- 4-8 Sand w/ shells

- 8-12 Sand w/ $\leq 1\%$ shells

- 12-16 Sand + clay

- 16-20

- 20-24



* TD @ 24.0' due to heavy
resistance and sticky sand,
clay, shells. Core shoe was
plugged w/ shells + clay.

Location: Alafia State Park

Date: 1/24/23

Crew: Ben, Ericka, Alan, Gary

Site Name: ARSP-01

Lat/Long: 27° 48' 01.57" N

82° 08' 39.25" W

- on Site: 9:25 am

- off Site: 12:55 pm

- Rig hours: 156:27 @ Start
158:46 @ End

- 0-4

- 4-8

- 8-12

* Hole back filled w/ water. Had to
Switch to piston sampler.

- 12-16

- 16-20

- 20-24

- 24-28

- 28-32

- 32-33 TD

* TD @ 33.0' w/ piston sampler due
to calcareous clay rock.

* All Core Seds. were reclaimed mine
Seds. No Strat order.

Location: AlaFia State Park

Date: 1/24/23

Crew: Ben, Ericka, Alan, Gary

Site Name: ARSP-02

Lat/Long: 27° 47' 44.74" N
82° 07' 46.19" W

- On Site: 1:30 pm

- Off Site: 5:20 pm

- Rig hours: 158:46 @ Start
161:37 @ End

- 0-4

- 4-8

- 8-12

- 12-16

- 16-20

★ Hit refusal w/ dual tube. Switched to
Piston Sampler @ 200'.

- 20-24

- 24-28

- 28-~~32~~ 32

- 32-36

★ 36 gave us issues. We broke the guide
off the footer and sheared the bolts.
Pipe dropped down in hole suddenly while
driving back down. Everyone was safe.

-36-40

-40-41 TD

★ ID @ 41.0' w/ piston sampler due to
calcareous/sandy rock.

★ All core sets are reclaimed mine sets.
No Strat order.

Location: Alafia State Park

Date: 1/25/23

Crew: Ben Ericka, Alan, Gary

Site Name: ARSP-03

Lat/Long: 27° 45' 14.36" N

82° 07' 39.08" W

-on Site: 9:30 am

-off Site: 11:12 am

-Rig hours: 161:37 @ Start.
162:21 @ End.

-0-4

-4-8

-8-12

-12-16

-16-20

-20-24 TD

★ Had major trouble @ 24.0' and
had to work the pipe out of the
hole which slowed us down. Ate
up a whole mess of ~~the~~ wood but
we recovered all the pipe w/o breaking
anything. TD @ 24.0' due to heavy
resistance and greenish-white clay.

★ All core sets were reclaimed mine sets.
No Strat order.

Location: Alafia State Park

Date: 1/25/23

Crew: Ben, Ericka, Alan, Gary?

Site Name: ARSP-04

Lat/Long: 27° 45' 09.70" N

82° 07' 31.39" W

- on site: 11:30 am

- off site: 12:50 pm

- Rig hours: 162:23 @ Start.
163:23 @ End.

- 0-4

- 4-8

- 8-12

- 12-16

- 16-20

- 20-24 TD

★ TD @ 24.0' due to wet sticky
clays. Avoided using piston as
we were drilling in a settling
pond.

★ All core Seds are reclaimed mine Seds.
No Strat order.

Location: Alafia State Park

Date: 1/25/23

crew: Ben, Ericka, Alan, Gary?

Site Name: ARSP-05

Lat/Long: $27^{\circ} 47' 18.27'' N$
 $82^{\circ} 08' 05.84'' W$

- on site: 1:30 pm

- off site: 4:35 pm

- Rig hours: 163:23 @ Start
164:23 @ End

-0-4

-4-8

-8-12

-12-16

-16-20

-20-24

-24-28

* Had to switch to piston sampler
@ 28.0' due to heavy backfill.

-28-32

-32-36

-36-40

-40-44 TP

* TP @ 44.0' due to lime rock

* All core Sats are reclaimed mine Sats.

Location: Akafia State Park

Date: 1/26/23

Crew: Ben, Ericka, Alan

Site Name: ARSP-06

Lat/Long: 27° 46' 09.92" N
82° 06' 12.54" W

- On site: 11:20 am

- Off site: 12:13 pm

- Rig hours: 16:23 @ Start
16:47 @ End

-0-4

-4-8

-8-12

-12-16

-16-20 TD

* Switched to piston sampler @ 20.0'
but could not go back down hole
due to expansive clayey sands +
backfill. TD @ 20.0'

* All core Sgs are reclaimed mine Sgs.
No Strat order.

WP-A

N 26° 8' 48.16"

W 080° 17' 31.34"

E 10V - 68 -

 2 - cores from
2 boreholes in close

Proximity - 1 - 0 - 20'

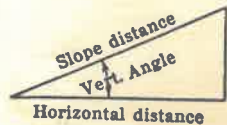
T.D.

2 - 0 - 32'

T.D.

a, b, c	Area	$s = \frac{a+b+c}{2}$, area = $\sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area = $\frac{bc \sin A}{2}$
A, B, C, a	Area	area = $\frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10'. From the table, $\cos 5^\circ 10' = .9959$. Horizontal distance = $319.4 \times .9959 = 318.09$ ft.

Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately:—the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.

