

AUGER
DRILL LOG



#2

FIELD BOOK

10-93/6-94 2-60

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10-12-93

KC + FR. to Apalachicola
Bluffs Preserve (Nat. Conserv.)

W-17033

A-LB-1 T IN R TW S 7 dba
Elev ~ 202'

0-35.5' SAND - dry - NO conf.
 35.5 water table
 35.5-46.5' SAT. SAND, UNCONS.
 45-46.5' int. - ss. - spec lost
 bailed out etc. NO good.
 - pulled up 5' ins. dr bit
 drill back down to 46.5'

Notes: w fl. sd need flex plug
 butre well instl cannot use
 bentonite w flex plug.

pu stackk 7/16 or 1/2" to
 place pa betw spec retriever +
 swivel

800 AM - 7:25 PM

10-13 KC, FR, + Jennifer ~~Shook~~²

- drill hole to locker up. - run splr
46.5 - 49' - splr lost in hole
attempt to clean w barler - pulling
+ insert ctr bit to drill bk to 49
got sampler in - run to 51.5' - splr
lost - splr + retr sanded into
hole

pulled auger string. rebrued
sampler + drilled auger back
down w wood plug TD 58'
retn tub 530 pm

10-14 - KC, FR, J.R.

free up Auger, knock wood
plug out + instl. pvc csg.

- sand loc coming to Auger -
pull ~~na~~ csg - flush out sand
w pump + drill back to
td. run to pre water.

58.5

3

3' + p

5' SCN

5' blank

10 "

10 "

10 "

10 "

~~10~~ blank 5'

1/2' cap

2' ± stickup

6 bags 28-30 grit sand to 35' ±

1 bag 30-65 sand - 31'

add additional sand and collapse
to 21'

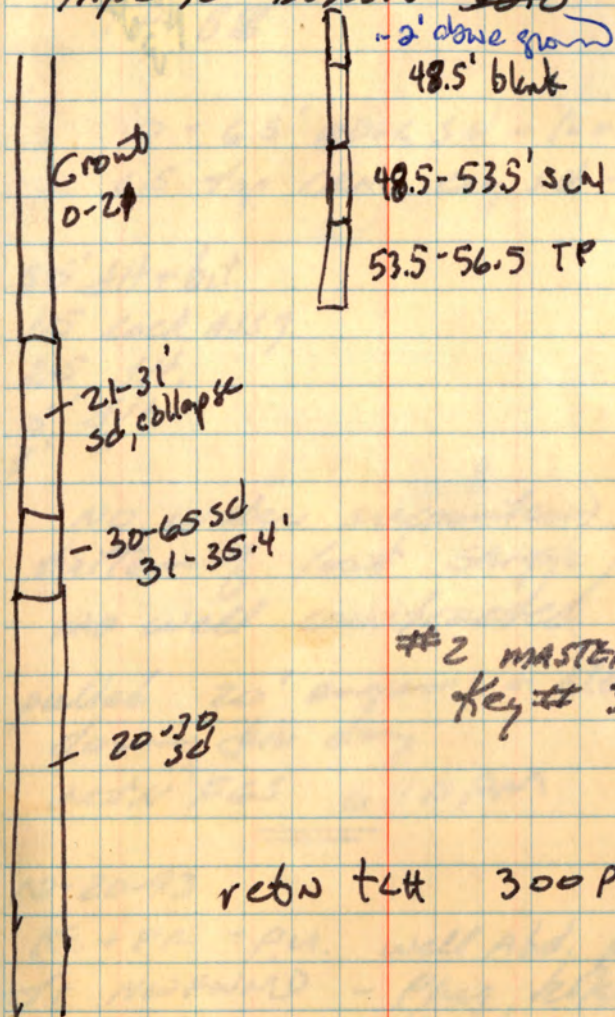
pump 5 bags portland to ~4' LSD

nd 20' gr + wht sue hose 1"

w female quick connect on one
 end
 King nipple + screw on male
 quick connect other END

10-15-93

WL 38.7' below top of coring
tape to bottom ~~38.8~~ 57.8'



No
well

10-19-93 KC, FR, Jennifer Rocks

A-LB-2 TORREYA STATE PK 5

W-17010

T 2N R 7W S 15 bab

Elev ~ 262'

TD 58'

0 - 6.5' unsl sd - loose

6.5 top CRNL clay sd - red ox

5.5' flt + bit

1.5 lock assy

2.5 flt.

5' flt.

5' "

no water encountered until
bottom of last sample run
no well constructed

pulled 20' auger + closed
down for day

retN FGS 6:10 PM

10-20-93

KC + FR - P.U. well Abd. permit
fr NWFWMD - Plug hole

11.5 bags portland cement

0 - 38' grout, hole collapsed +
filled with sediment # 38-58'

GPS File
A062316A

10-21-93
17011

A-WK-1

6

Water tank

3'8" long

3.67

1'11" wide

1'11" deep

10-21-93 KC, FR, D. HARGROVE
to Ochlockonee River St.

Park SOPCHOPPY Quad

W-17011

A-WK-1 T55, R3W, sec 36 aabd

LAT

LCN

30°00'13.2"

84°29'44.4"

Elev 10'

static water level 2' bLSD

Sand / Pine palmetto flatwoods

water table < 5' bLSD

flowing sands a problem starting
at 8 1/2 feet

go to ~~can~~ drill rod sys

5'6"
4'1 1/2"
5'
14 7/2

Sampler + sub 40.5"

Slits + drill bit 5'6"

cock array + 2 1/2 slits 4'1 1/2"

9'7 1/2

11 1/2

9 1/4 - 11 3/4

60'

40.5

100.5

36

136.5

- 25

111.5

drive sampler to 16.75'
in SINCAN. ctn sol.
- clay sol at 16.5-17'
back to wireline

ending depth 23.5

800 AM - 545 PM

10-22-93 KC, FR, Alex retN to
Och. R

5' clay squeezed into H.S.
- purged water to clear

TD 32.7' in LS

pull auger, pour 1 bag betate
~~the 4 bags sand (fill)~~

10-25 pump 5 bags portland cement
 at 25' to plug annular
 pull auger to seal hole
 to plug corehole

drill separate monitor well
 19'

SCREEN set 10-15'

20-30 sand to top of SEN

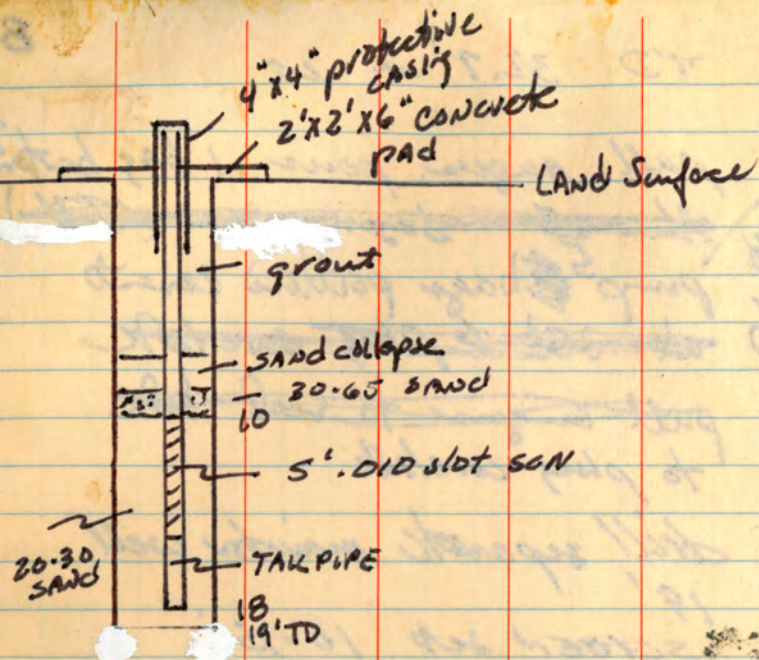
30-65 sand to ~ 9'

grout pumped at 7.5' (sand
 caved to 6' b/w)

pumped 3 bags portland, constr
 2'x2'x6" pad w 3 bags
 see note

8 AM - 5:15 PM

prep for tps trip.



10-28-93

9

KC + FR to Oct. 2 st pm
 Ambient site - to develop
 monitor well

STATIC WL 5'1" below top of
 CSG

pump rapidly, pulls well dry
 managed to pump ~ 60 gal.
 back flushing + surging by hand.
 - still pulling fine sand +
 abd. clay.

WON TLH 5:30 PM

11-9-93 W-17009

A-LB-3 - Ambient site B-9

KC, FR + Jennifer Rooks

T ZS, R6W, Sec 30 da

1.5 mi W of Liberty on FR 105

Elev ~ 98' TOPO

0-21 ~ sd

21 ~ dk lagoonal looking clay

then back into cln sds - flowing -
 splr locked into auger on
 28.5-31' run - pull string
 from splr + go back in w
 Auger flters - will run splr
 on drill rod.

8 AM - 6:15 PM

11-10-93 return to A-LB-3

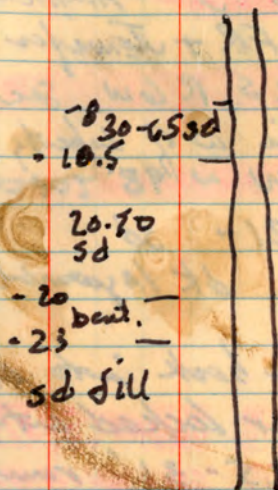
sediment in drill pipe to 15' bLSD
 pump out HSA run splr on drill
 rod - splr lost - cln sds

pull Auger flters 10' bk drill w sd
 to 23' bLSD - bentonite to 20' bLSD

20-30 SAND to 10.5' bLSD

30-65 SAND to 8' bLSD

33.5' TD



top of casing 19" above lsd
 netw TCH 5:30

11-12-93 static wtl. 5'5" below
 top csq

spend AM wk on deep well
 - slow will not move deep,

Move to wilma work ctr site

A-LB-4 W-1702B

Adjacent to U.S.F.S. wilma work
 ctr.

T 4S R 7W S 6 bdb
 Elev 63' TDPD

Drill 0-175' - then get flowing sds.
 quit for day after drilling auger further
 down flush w grd surface

11-15-93 - pu slotted spider
 bowl & TCH WLD

- disc w local residents -
 Wilma ctr area used to be
 CCC camp + old Turpentine
 plant - poss not "natural
 water quality.

pumped out hole -
 run in spl 34.5' w. flap
 VALVE starting at 19.5'

22-23.25' ^{KL, FR} spl lost from bbl
 recovered disturbed spl w
 DAILER

heavy sands - only spls fr
 bailed / pumping.

28.25-33.25 NO SM - pumped
 out HSA - collect spl at
 33.25'

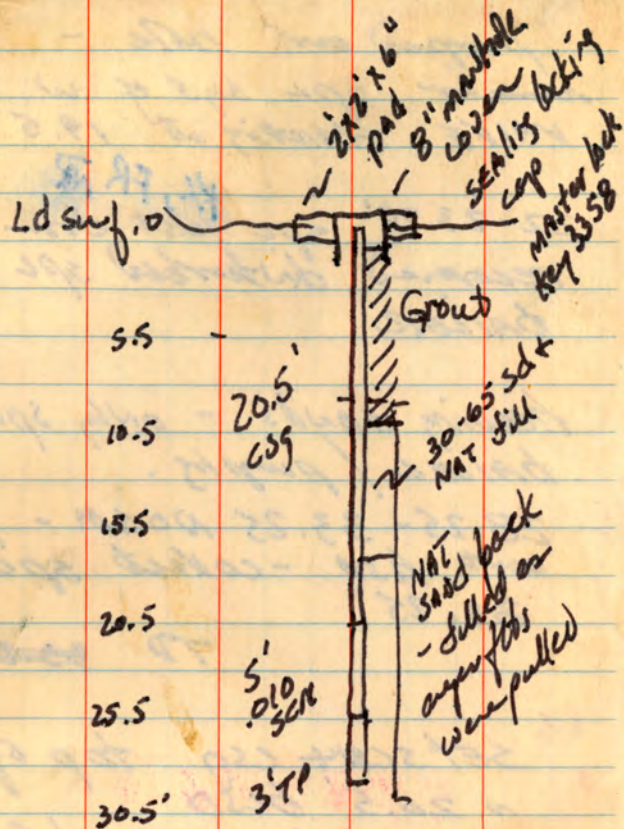
TD ~~33.25~~ 34'

SET SCAT CSG top of SON
 ~ 20.5' bLSD

left 19.5' pipe in hole w
 SAND to base (ie ~ 17.5' bLSD)

no filter sand installed - frs
 sd from formation filled in
 lined. or auger were pulled.

8 AM - 5:45 PM



11-16-93 KC, FR, JR mtn to
A-LB-4

pull auger flts in str. fill w
30-65 sd. to 10' b/sd
(only 1 bag ∴ some Nat casing
& fill)

pumped at up to ~ 6 gpm
w/o clearing up

pumped 3 bags grout - set lock
vault - water tank sprung leak
per early - pull tk + drop it till wld
11-17-93

KC, FR, JR + Penn (Dep Amb)
pump well +
comp. surface instl. - move to

A-LB-5 W-17029

T 55 R 6 W 5 13 d d C

Elev 27' Owens Bridge Quad

drilled 0-16.5' w trouble w
heaving sds from 5' on

Retn 5:20 pm

11-18-93

Retn to A-LB 5

KC, JR, Jay Silvanima

5' sd in pipe

pumped pipe & collected bails

5 ft - sd + some clay.

17.5-18' int gr clay

18-20.5' run - ~~to~~ 1.5' recovery -

bottom lost probably what is missing. start getting shell at ~ 19'

23-23.5 = bailer sample

TO 23.5' - close sd + shell fr base of hole flowing in faster than can pump out

- spot 1/2 bag cement at base of hole.

pull auger filter + install wd plug; run 2 ft + A adaptor assy (14.5') into hole

pack up for day

WATER TANK SPRING ANDRE LEAK
drip off at T2H WLD

Retn T2H 4:45 P

Traveler's
sent in turn
11-18

personal
cellular
phone

11-93

KE, FR, DON H.

15

11-93 KE, FR, DON H.

A-LB-5

call to Rick Copeland re sites
& son setting (on personal
cellular phone.

call to Mike Ashby - submerged
lands re Big Blue Spgr

pulled auger fliter + installed
csq + son

son set at 11.5-16.5'
to of well is 19'6" fr top of
csq

20-30 sd fr t.p. to 10.5' bLSD

30.65 sd + fine fr sd to 9' bLSD

Grout to surface

Move to SANBORN tower site

A-WK-2 W-17030

30°4'20.8" Lon 84°36'16.2"

TSS Rtw S2 acd

Elev 38'

0-11' sd

~ 11' clay sd to clay by 12.5'

GPS file A062314A

start getting carbonate cemented sd at
 ~17'
 drill to 19.75 - nose too far out won't
 penetrate - prob rubble rock?
 shut down for day
 return FLM 600 pm

11-22-93 KC, FR, VR, Cindy
 Cosper (Amb)
 return A-WK-2
 static wt (hole to 19.75')
 8'1" bld

19.75-20.75 hard clay carb
 cemented sd. - plugging bit
 + spur - stuck mud (3-4" max)
 20.75-21.25 got softer - pass
 clay - could not stop sd w/ fill!
 in HSA - TD at 21.25'

top of csq ~ 1" above NAT. grade
 10'-16" csq top of sen 8'8" bld
 5' sen
 3' tp to 16'8"

infill w sd to 17'
 bentonite to 15'
 20.30 sd to 8' bLSD
 30.65 sd + infill to 3.5' bLSD
 grt to surface

retN tLH 5:30pm

FRANK to A-LB-5 - build
surface form + prep

11-23-93 KC, J.R.

to A-WK-2 - build form
 + install manhole cover.

W-17031

to A-WK-3 (Pope Still Hunt
 Camp) TSS, RZW, KC, J.R.
 Elev 6.3'

0-38' to
 W-17031

KC, J.R., Andrew Priest (amb)

0-6.5 sd, 6.5 - organics -
 root etc.

8.75-11' V soft only 4" recovery
 - bump nose out for next run.

14.8-17.3' - spl lost run out of
 spec - retN w/ bailer (some 8'
 internal)
 next run 2 1/2' to 18'

End day at 23' sd - still
 flowing - chg over to drill rod
 retN tLH ~~5:30~~ ~ 5:30pm

11-24-93 retN A-WK-3 KC, JR

static wL 4'9" bLSD
 sand in HSA to 12' bLSD

purpout + drill to 58' TD
 pull 25' auger flutes +
 pump grout into bottom of
 hole ~ 2.5 bags

retN tLH 5:45pm

11-29-93

KC, FR, JR

retN to A-WK-3 after
 loading water, sd + cement

Cement to 34' in pipe (32.5' bLSD)
 pulled auger flutes.

clays squeezing in and sd collapsing
 - to ~ 8' bLSD

pumped water in to set

cbg + scw -

scw 10-15' btm tailpipe 18'

20-30 sd to 9' bLSD, 30-65 sd to
7', 1/2 by benchrite to 5'
grout - 5 to LSD.
flush completion

to A-~~LB-5~~^{WK-2} (Sanborn site)
static wc ~ 8.5' b~~to~~ top of
csg - pumped & surged

to
A-LB-5 - pump well - static wc
~ 4' bLSD
+ finish pad

return to TCH 7:00 PM

11-30-93

KC-FR-JR to Dick after
calls to Bob Warshski re keys
core hole + to NWFWMD for
permit

A-LB-6 (Venell tower site)

T 35, R 5W, sec 22 bcc

Elev 67'

W17032

first web sediment at NKG'

note: depth discrepancy noted
at 31' (core boxes) - should
be 28' - discrepancy prob
occurred in 21-28.5' interval
- chg core block labels later
to today 30.5'

NO-ext. nose of spur
netn TEL 430 pm

12-1-93 KC, FR, VR

STATIC WATER LEVEL $\begin{matrix} 19'8" \\ - 4'4" \\ \hline 15'4" \text{ BLSD} \end{matrix}$

hole open to bottom

interval from 40.25 - 41.75 - possibly
washed - had to pump hole out
to get sampler in place.

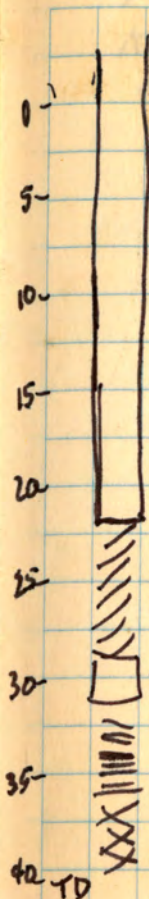
to 42.25' - hit CRS sd. slowed
into H.S.

~~had to pump out~~ + place bucket
opposite gray clay below 30.5'

33' ~~22'~~
 31' 24"
 31' 2"

5' blk
 10' blk
 10' blk
 5ft scn
 3' TP

20
 bentonite 34-37'



20.30 sd to ~15'
 30-65 sd - to ~13'
 collapse sd to 10.5
 grt to 1sd

5' SCN 23.2' top SCN
 28.2' base SCN
 3' TP 31.2'

bentonite
 sd fill

retn fh 7.00 pm

12-2-93

KC + FR ReN A-LB-6

complete surface completion
static WL 13.2' bwd

ReN FLH 1200N

OLD SUMATRA Tower

2

DATE: 12-13-93

SITE: A-LB-7 W# 16934

LOCATION: TSS, RBW, sec 24 bdb

Elevation N 26' TOPD

TD 43'

PERSONNEL KC, FR, JR

Permit# 9401634 NWPWMD

Sample RUNS:

From ft	To ft	length	
0	2.5	30"	push
2.5	5.0	30"	"
5.0	7.25	26"	"hard"
7.25	9.75	30"	"
~ 1' recovery - prob splr plugged			
∴ bottom part lost			
9.75	11.25	18"	
11.25	13'	20"	
13'	15.5	30"	poor
recovery - softer - extended			
nose of spur			
15.5	18	30"	poor
splr recovery - try new core catcher			
18-20.5' - no splr recovered -			
ran out of spur - collect bailer			
sample - pumped out hole - wet			
back in w/ flap valve			

20.5 - 23' 30" - good recovery
upper part of spl probably
washed (ie fines missing
from pump)

23 - 25.5' 30" run - ~1' recovery
doubt know if run out of spore or
pushed out of way

drilled 25.5 - 28.5 - no sps coll.
- will pump out + collect cuttings
collect cuttings 28.5 - 29.5

29.5 - 30.5' -
30.5 - 32.5' - hit clay at approx
31.5' - plugged flap valve open -
sd spl lost - small spl of
clayey material retrieved.

- shut down for day - will
need to pump out pipe before
sampling again.

retN TCH 3:30 PM

12-14-93

KL, ER VK retN to A-LB-7
SUMATRA TOWER site

STATIC WATER level 9.6' bUSD
pump hsa to remove sd. losing
bottle - drill to 38.5 - push tool
try to seal btm of filter

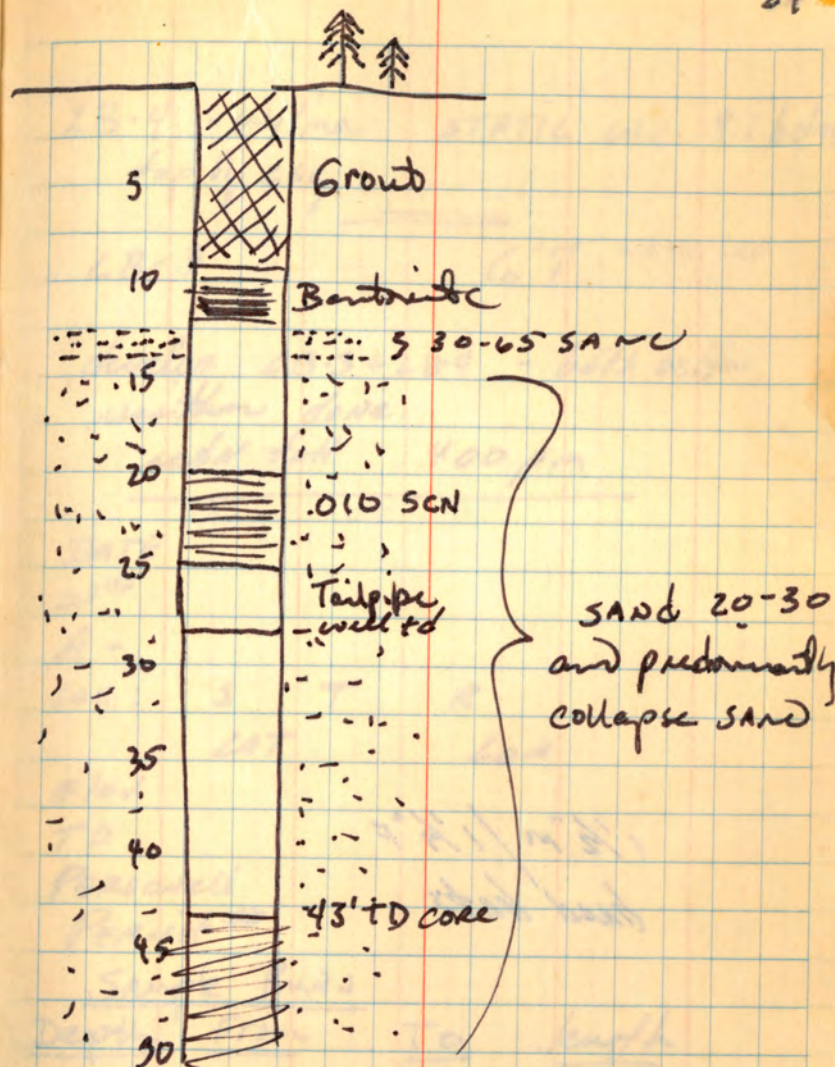
collect cuttings spl 32.5 - 35.5'
sd still flowing 37.3' - sm pumped spl
drill addl 42.5' w/o sampling - try
to get to fm chy - will pump to
obd. spl

- note spl fines lost (ie spl
sl. clay sand
pumped spl fr 42.5 - 43' - TD 43'

scn set 20-25'
well TD 28'

20 - 30 sd (1 bag) and fm sd collapse
to 14' bUSD, 30 - 65 1 bag to 13'
bentonite to 9'
neat cement grout to LSD

retN TCH 5:30 PM



12-15-93 KC-FR-TR
 mtn to A-LB-7 - compl. surface
 installation + continue development
 props 5-6 gpm
 static WL 9.3' bl. top CSG

1 1/2" m / 1 1/4" F
hard hats

25

LB-4 - Wilma STATIC WL 9.1' below
top of csg

LB-3

6'7" WATER LEV

develop LB-3 + LB-4 - both better,
weather done.

return to H 400 pm

DATE

W#

A -

LOC: S T R

LAT

LONG

Elev

TD

PERSONNEL

PERMIT #

SAMPLE RUNS

Depth

From

To

Length

★ Note: Need to verify TD
of monitor well A-LB-3

★ NEED elev top of casing from WD
A-WK-1

Well development info NEEDED
DATE, static wl, well yield, ^{water} qual

A-LB-1

W 17033

M.W. TO 57.8'

27

completion date: 10-15-93

Height top of casing + land surface ~2'

static water level 10-15-93 38'7" below top of csg

no development - can't pump w centrifugal

DATE Static W.L.

A-LB-3 / W 17009 m.w. TD

28

completion date: 11-12-93

casing top 19" above land surface

DATE STATIC W.L. (Lsg)

11-12-93 5'5"

12-15-93 6'7" - pumped + surged well w
makeup water - pumps dry after ~2 gal.
still v turbid

well to 23' (Lsg)

SCREENED interval 15-20' (Lsg)

2-28-94 Static W.L. 5'5"

gps loc file A022B16A

30°16'39.8 84°52'35.3" 34.6

surged + pumped well w TLH water -
then w natural recovery. slow recovery
still turbid

A-LB-4 / 17028 MW TD 28.5'²⁹
Completion date 11-17-93
Casing elev $\approx$ land surface

DATE static WL.

12-14-93 9.1' pumped + surged - yields $\sim$ 6 gpm
still somewhat cloudy (mostly organics)

2-28-94 6' 11" 15 GPM; pumped +
surged - surging still causes
add'l humins, fannins. no
particulates. ~~water~~ the
water is tannin stained

Gps File A02281 9A

Lat 30°09'43.8" 84°58'10.7"

A-LB-6

A-WK-3

A-WK-2

A-LB-7

A-LB-5 / W 17029 MWTD 19.5' ³⁰
 Completion date 11-22-93 csq $\approx$ lsb

DATE STATIC WZ.
 11-29-93 4'

water - still cloudy pump + surge w makeup

31
A-LB-6 / W 17032 MWD 31.2'
completion date 12-2-93
Top of CSG $\approx$ LSD

some pumping + surging w makeup water
done prior to grouting

12-1-93 static WL

12-1-93 15'4"

12-2-93 13.2' pump + surge - pumps at n
~~6 gpm~~ still slightly turbid slow yield
still cloudy

7-13 SWL 9.3' bLSD - surged + pumped
second hrs. still cloudy. Surging
still produce sm. quantities of LSD
+ ylor clay. - on pumping water under
up to cloudy ylor.

A-LB-7 / 16934 MW TD 28'

completion date 12-15-93

Top of CSG $\approx$ lsd

DATE STATIC WL

12-14-93 9.6' pump + surge - pumps at
 $\approx$ 69pm12-15-93 9.3 cont. pump + surge - still
slightly cloudy

2-28-94 5.8'

GPS file AO 228193

30° 01' 52.4" 84° 59' 22.4" surge +

pump at - 159pm - surging still
produces orange clay5-26-94 static WL 8.3' bL top
of CSG $\approx$ 159pm
pump + surge - wide open - with pump
clear but surging still produces
CLAY. - gate valve orange

bump. compl.

A-Wk-1/17011 M.W.T.D. 19'

completion date 10-25-93

Top of casing — above 1st

DATE STATIC WL (CSG)

10-28-93 5'1" pump + surge - rapidly
pumps dry - still cloudy + prod. fine
sand.

6-23-94 STATIC WL 3.4' below

top of CSG.

pumped + surged - still pumps dry,
still moving f. sd + clay

nd 1 more aggressive surging

34
A-WK-2 / W 17030 MW TD 16.75'
completion date 11-23-93

Top of casing $\approx$ LSD

DATE STATIC WL

11-22-93 8.1' - hole open to 19.75'

11-29-93 8.5' pumped + surged - quickly purps
dry, still cloudy

6-23-94 STATIC WL 7.4' below top of csg
still purps cloudy water - purps dry needs
more vigorous surging - still prod. some
fine sand

GPS File

A062319A

30° 13' ~~20.9"~~
25.9"

84° 28' 32.8"

A-WK-3 / 17031

MWTD 18'

completion date: 11-29-93

Top CSg $\approx$ LSD

DATE static WL

11-24-93 4.75 hole open to 23'

11-29-93 some pumping done prior to
grouting - prod. clay + sd

6-23-94 pumping + surging - well improved
but still produces clayey

A-LB-6

A-WK-3

A-WK-2

A-LB-7

A-LB-8 W-17085

36

Completion date 5-26-94

MWT D 23.0'

Top of csq elev. - approx WSD

5-26-94 static water level 4.3'

below top of casing

pumps ~ 129 gpm - clear

deup. complete

17043/18.5' TD
A-MO-2A-LB-8
DEUP
13.7' TD
2

A-CR-3

A-LB-9 W 16914

Completion date 6-17-94

MWTD 31.5'

top of csq approx 15D

screen set 23.5 - 28.5'

6-16-94 static WL 10.6' BUSD w
hook to ~ 32', some deep done prior to
~~the~~ grouting.

6-17-94 static WL 10.2' BUSD
cont. deep - sulfur smell, water still
clayey but improving. will mant.
5-6 gpm

SARGENT CO

- road exp in ditch/canal
W side of I 75 just N of
Bee ridge rd

TS45, R34E

LAT $25^{\circ}45'39''$ Lon $80^{\circ}55'48''$

Elev 9'

W-17027

A-MO-1

.5 mi west of corner of loop
road where trail to radio tower
leaves loop road.

~1' of road fill (shelly sd)

~3" of black peat

~3" of calcareous yellowish gray clayey sand

1.6'-3' Gray calcareous clay matrix with rock
(calcareous sand-silt-grains)

Refused at 3'

1-17-94 KC + FR Ferry MBL. Dr.

to collect to mt w L. McARTHUR

800-630

1-18 FR. Lucy to sites ~~11+12~~
KC to Naples - Adl points

1-18-94 W-17043

A-~~MO~~-2

AD11819B 14:12

$25^{\circ}45'40''$

$80^{\circ}52'29''$

site # Loop Rd east

0~2' prob road base material

2~3' soft - dk clay? w f.w. shell

hard ledge at ~3' - soft 3-4'

no recovery, hard ledge at 4'

~~16.5-17.5'~~

17.5-18.5' Pumped spl

18.5' TD

pump 5 bags cement - top off w 1.5 bags
return to Okeechobee city 7:30 pm

A-M 2 Loop Rd, Monroe Co., ~.05 mi W of Dade Co.

at least 1' of shelly fill, pale gray

1-2.5' Yellowish gray shelly, clayey, carbonate sand

2.5-3.0' Hard, cemented carbonate rock

3.0-3.5' Dark gray mud with oysters (brachiois) planispiral gastropods in brownish black mud (freshwater) at top.

3.5-5.5' Rough drilling - Chunks of shell, cemented rock, in less cemented matrix of gtz & carbonate sand, some mud(?)

5.5-6' Cemented sandy limestone with shells (oysters). Run was to 7.5', but block sampler no little recovery

6-7.5' - No recovery

7.5-7.6' Carbonate - cemented fine to medium quartz sand.

7.6-9.5' No core recovery.

9.5-10.5 Fine quartz sand. Small recovered sample in split spoon

10.5-12-

10.5-11.5 - Quartz sand

11.5-12 - White carbonate "sand", slightly

12-13' Cemented No recovery

At 13' - Cuttings - very shelly sand

At 14' - Cuttings

14-15.5 Poor recovery. At ~15' - Calc. ledge

15.5 (sample) - Relatively fine quartz.

15.5-17.5 Shelly sand - some large Turretilles.

17.5-18.5 Same (R. Finis. Cuttings)

18.5-19.5 Coarse to fine gtz & sd. Cuttings. Very bored shells

19.5-20

1-19-94 W-17044

A-CR-1

T485, R29E, Sec ~~19~~ 16

GPS Lat 26°17'40" A011914A

Lon 81°26'38"

TD 23'

pump 8.5 bags portland cement

0-.7 y.l. gy calc sd. fill

.7-1.2' wht, med br & gtz sd - prob. fill } prob. spc

1.2-1.8' yel. gy calc sd

1.8-2.5' gy br & gtz sd

2.5-3' f. gtz sd, grad to off wht. below 3'

3-7' y.l. gy & gtz sd, pale mottled

7-7.5' Hemate. med br, f. gtz sd, organic matrix, sharp contact.

7.5-10' med y.l. br & gtz sd, v sparse shell frag. no heavier or phos

10-12.5 v f. pale y.l. gy gtz sd, plant frag, sparse shell frag. cuttings only

at ~13.5' different drily. - rubble

12.5' silty gtz & d. carbonate, y.l. gy

12.5-15' ? no sm ?

15-17' run - 15-15.25 f. gtz sd, + coars carb sd.

y.l. gy, calc. matrix. splc plugged NR below

15.25'

17-17.25 tot. run calc. silt, y.l. gy some cement med ind.

A-CR-2 Notes

- 0-1' Shelly Lill
 1-2 Qtz sd, sparse shell frag.
 2-4 Calcareous qtz sd & shelly
 4-8 Sandy limestone, rough
 drilling; shell frag.
 Hard zone at 4 & 8'
 especially
 8-13.2' Hard limestone with
 qtz sand & shell frags.

at ~10.5'
 changes to:
 yel gray
 548/1

13.2-13.5 (TD) Chert (black)
 in limestone. Very
 hard drilling (then refusal).

- 17.25-17.75' sht run - y.l. gy, calc silt,
 1/2 sht. frg. indurated + non ind green
 17.75-18.25' " recovery - y.l. gy silt, med -
 c qtz sd + sh. frg.
 18.25-18.5 - gy/l, calc silt + med-c qtz sd,
 shell frg. ~ 3" recovery
 18.5-19 - sp. lost
 19-23' no spc other than cuttings - collected
 at ~20-21' and 22-23' - gy y.l. calc silt
 + m-c qtz sd + sh. frg.
 23' TD

Entire calcareous section consists of
 thin hard zones, + shell beds floating in
 soft calc mud. overall sample recovery
 poor.

pumped 8.5 bags portland.
 made run to Naples - pu addl. cement
 at 7:00 pm

1-20-94

A-CR-2 W-17045

AO12014B

26° 09' ¹⁰ "N
 81° 33' ¹⁹ "W

push spc 0-2.5'; 2.5-4' - would not
 push beyond 4' - caprock at 4' - thin
 softer from ~4.5-5
 w/ln 5'-6.5' - hd rk at 6.5'
 6.5-7' run. bump none in 7.8 - still hd. rk

17047
A-CR-4

A-CR-5

A-CR-2

A-CR-3

-CR 3 notes

-1 "Cap rock" 1st - low permeability. Anomalous still shiny. Mainly gray, some surfaces yellow orange.

1-2' Very clayey & calcareous fine med sd
Dk yellow brown DYR 4/2. Pisolites of
dk yellow orange DYR 6/6 in lower few inches
of sample.

2-3.5 - Cuttings Clayey calc sd, low gtz
3.5-9.5 Soft 1st, sparse gtz sd, vel gray 5/7 1/2
9.5-34' Cuttings only - 1st frag (gray, redd,
lots of dissol. pitting) and Shell frag
(white, gray, yell. gray).

TD = 34'

sd grbl mgs
collier loc etc

Note: All pump
cuttings
spes are
ie matrix
gone or reduced

10.5-12.5 - instl flap valve - still rest
spec on pull - jumped to retrieve.
12.5-14' somewhat harder drilling
spec retr by pumping.

shut down for day - ret'd Okla City
7:00pm

121-94 ret'd to A-CR-3

A012113A 26°09'13" 81°32'13"

clean out hole - spec won't go in
- crooked hole + cuttings coming in
- drill + pump specs

14-15, 15-16, 16-17, 17-18, 18-19

17-19 somewhat harder, rubblely drill.

19-20 hard drill. - collected
crt + p direction specs

20-22' same as above - rubblely, mod hd,
thin harder stringers
drilled + pumped spec 2' int to
34' TD

pumped 8.5 bags Portland
placed by ck train over top of
hole

A-CR-4 notes

0-3.9' 0-5-50il, dk brn blk clay loam
2.8' 5-3.9' Qz & sand, clayey below

3.9-9.0 Quartz ss, CO₂-
Cemented; shell fragments
(Anomia, oysters - some
original shell material)
Vel. gray 5Y 7/2.

9.0-28' TD.

(Scott says "Buckingham")

Loose, slightly cemented qtz +
shell frags, med to crs frag.
Some POW shells, teeth, 4 to 6"
zones of softer drilling,
probably clay, which washed
out during drilling.

Softer zones at 10.3-10.5,

11.5-12.25,

15.5-17.5

17.5-20

22.0-22.5 (soft)

22.5-23 (softer)

(But shelly
sd retrieved)

start 730

End day
7:00 pm

1-21-94 W W7047

43

A-CR-4 Bear Island Grade

AD12121A 26°13'08" / 81°20'39"

push spl 0-2.5', 2.5-3.9

3.9' top of rock

drill 3.9-5.5 collect spl & inside HSA +

off slides - sieve - still hd rk

5-6' - hd rk - collect spl of slides

6.5-7.5' - seem to brk thru caprock

- pump spl

7.5-9' - pump spl - poss contamination
from above

9.0-9.5 - short run - in place spls

9.5-10.5 - on above - sl. softer at 10.3

10.5-11.5 poor ind - barnacles, - shell frags
some phos

11.5-12.75 - shly qtz sd, some phos

12.75-15.5 - some cemented chunks in
softer matrix

15.5-17.5 - shell frags.

17.5-20' soft to 19.8 then harder

20-21 softer than above

21-22 harder, shell frags, phos, mica sd,
collect cuttings spl

22-23, 23-25.5 + 25.5-28' TD cuttings
spl

28' TD
pump 8.5 bags putland

17047
A-CR-4

A-CR-5

17049/28' TD
A-CR-6

W 17050
A-CR-7

1-22-94 W-17048

A-CR-5

A012221B 26°14'38", 81°17'38"

0-3.7' fill no sm

3.7-5.5

5.5-7.75 no sm - soft - same as above

7.75-8.5' calc st, loose, 1st shell, calc matrix

8.5-11.3' soft - shell frag + gtz sd

1-23-94 - continue A-CR-5 to 16' TD on hard rock.

~~more to next site - Auger bogged down in weathered - still down at dark~~

11.3-11.9 - no return

11.9-12 - calc cont gtz sd,

12-13 hard drilling - spur plugged

13-13.5 ✓ hd rock,

13.5-14.5 - cutting's

14.5-15.5 becoming softer w depth

15.5-16' - cutting's, ✓ hd rock

16' TD

Completed 1-23-94

pump 4.5 bags Portland cement

1-23-94
start
730A

A-CR-8

A-CR-5

17049/28' TD
A-CR-617050
A-CR-7

45
Drill rig stuck in Ford - moving to
site B, stuck by ~ 200 pm -
still stuck at dark ret'd with
730 pm

1-24 start 8 AM

to Big Cypress hdqtr
then to land - get rig to
-11, drop off at hdqtr
ret'd 900 pm

bit
core bit
drill rod
mud tub
drill pipe
slip joint

prop

swivel
weight hanger

crs 2

hoist plus

515, R 27E
36
JEL

3-21-94 KC + F.R. to Collins
Co. continue EGS/USGS notes

3-22 site #5

A-CR-6 W-17049

Lat 25° 59' ~~15~~ 15"

Lon 81° 31' ~~15~~ 15"

GPS file A032202A

site is adjacent to dirt rd (Miller
blvd ext.)

Push sampler 0-2.5, 2.5-5 +
5.0-6.5'

0-~.5 hard push - prob debris
from rd.

in 0 ~ 3.25 fill

3.25 - ~4.25 dark organic rich sd

4.25-4.5' lt gy bn gtz sd, - water
table in this sample

6.5-7.8' pumped sample clean uncon.
fgt gtz sd - some roots

7.8-10' pumped spc - gtz sd, wht. ft yl.
bn, some organic or clay bldgs or
laminae

10-12.5' pumped spc - sand on above
cohesive material - clay? at base

A-CR-8

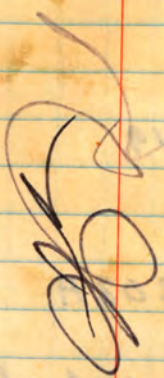
-LB-8

A-CR-6

17049/287D

A-CR-7

W 17050



12.5-13' pumped spl - clay +
carbonate - soft but cohesive
13-13.5 carbonate - poor incl -
pumped spl - streaks + blebs of
black organics/clay. some root
material

13.5-15 pumped spl - carbonate
sand w calcinutite matrix - soft
drilling - prob uncons. or v poorly
consolidated

15-16' pumped spl - carbonate as above

16-1 17.5' wireline spl -
splr plugged - only ~ 3" recovered
extend splr nose 2" - want go in

17.5' - 18' pumped spl -

18.0 - 18.5

18.5-20.2' - hit harder ledge at ~ 18.9
15 ft, some yl. bn + ol. gn sdy clay
some shells - pumped spl

20.2 - 20.8 - pumped spl

hard ledge at 20.8

20.8 - 22' hit + soft zone - ls - rubble
pump spl

22-23.5' - hard rock - coarser frag.
calcinutite matrix - pumped spl
- hit to pump - most lines lost

FED

~~562-3510~~

pipe runs SW
bumped pipe at ~25'
drilled hole - moved
6' - hand dug hole
to 3.5'

23.5-24.75
24.75-25.5
25.5-26.5

26.5-28.0 TD

Mod hd
rock
pumped
spcs
much
calcite
matrix
out
4B
on above - slightly
easier drilling

pump to bags portland

7:15 AM - 6:20 PM

FR 10 hr

3-23-94

10-17050

A-CR-7

GPS File A032313B

Lat 26° 17' ~~27~~"

Lon 81° 21' ~~05~~ 04"

hole located ~12' ENE of
corrected GPS loc

pumped spc 0-2.5 - youngest stuff soft
~~2.5-4.1~~ spc plugged

2.5-4.1 pushed spc, 4.1-4.5

4.5-~~5.8~~ wireline spc - humate rich sd

~~5.8~~ 5.8-7.8 wireline - no recovery -

softer toward base - collected humate
trailer sample - humate rich sd on shore
plus soft marl - approx contact 6.8
install flap valve

49
7.8-9' chg to gy gnt clay w black + buff
inclusions

9-9.8 clay as above - drilling like rock - push gravel
inclusions pull nose of sampler back 2'

9.8-10.5 clay as above + lt. gy gnt ls -
lower half of interval

10.5-12.5 limestone as above -

12.5-16' splr plugged w ls - no recovery
of softer material below (13-15'
- pumped splr to recover 13-15" int
CALL-SAND - w calcareous matrix

15-17.5' - soft n easy drill - pump splr

17.5-20.0 - AS ABOVE - pumped splr
20' TD

pumped 4 bags Portland

W-17051/33

3-23-94 A-CR-8 5:36 PM

GPS file A032322A

LAT 26°11'6"

81°16'03"

0-1' fill - NO SM

1-3.5 push sample surface at or
3.5-6' push splr 1.5' natural grad.

17051
A-CR-8

17085
-LB-8

16914
A-LB-9

1.5-1.25 dark organic rich bed - prob - muck?
 1.75 H. gy ls. soft crumbly shelly below 3.5'
 6-8.5 push spec - more clayey than
 above

7:15 - 7:30 wk

3-24 6:45 AM start

8.5-11' clayey carbonate as above

11-13.5 As above

13.5-16 As Above - somewhat more
 plastic(?)

16-18.5 as above

18.5-21' - somewhat harder -
 hard stringers in bottom 1/3

21-21.25 - hard - plugged spec note

21.25 - 23 - pyped spec - note -
 matrix washed out

23-25.5 - pyped - sample } Friable
 easy drill

25.5-28 - as above - somewhat harder
 last 6" - pyped spec

28-29.5 - pyped spec - most matrix
 washed out

29.5-32' as above

32-33'

32' TD

Pump 4 bags - Portland

3-24-94

GAS up rig, load cement prep
for move to A-CR-9+10
(DADE Transit Airport)
drive to sites 9+10 - ck w
Ap. operator re utilities loc.
informed no one had contacted
them for auth. to drill
- permission denied w/o
written request.

6:45 AM - 5:30 PM

3-25 - return to TCH

7:00 AM - 5:30 PM

1/2 hr lunch

T35, R8W
sec 46
ORANGE Quad

5-24-94 W-17085/45

52
Elev 42'

A-LB-8

KC, FR + Jim Tindell

AO 52416A - LAT 30°09'52" N LON 85°02'27" W

0-2.5' push - 2.5-4.5' - 4.5-6.5' SAME

go in w spur - web side running out - sd up in pipe -

set up to pump spcs

6.5-8' NORM

8-8.5' spl & flap valve sampler

drill to 10.5' - pump spl

8.5-10.5'

10.5-13' - pump spl to 12.5-15'

15-17

17-18.5

18.5-22'

22-23.5

23.5-25

25-26.5

26.5-29'

29-31.5'

31.5-34'

34-36.5'

36.5-38

38-40.5

40.5-43

All rel. clean
unconsolidated
whit, lt gr, y. or
all slowing

A-LB-8

17085

A-LB-9

16914

5-25-94 static water level
 w hole to 43' at 3.1' bgsd
 pump spl 43-45' - attempt
 to run w/in splr - suck sd
 bk in to pipe - 45' TD

well constr plan set sen 15-20'
 15' csq

5' sen

3' tp

23'

hole filled in around well sen + csq
 as fast as auger flights were pulled
 - formation sand pack - no spec
 sand

9.5

pump 3 bags neat cement

0-8' NEAT CEMENT

95-15 formation sand

15-20 screen w formation sd

5' 24" 1/2"
 Red Jet up

Growth Test

16914
 A-LB-9

T25128W
see 25 ad
woods Quad

44
15
26
43.5
15
29.5
44.95
15.0
30
29.75

W-16914

54

6-15-94 A-LB-9

KC, V.B., FR - Liberty Co

CAMEL LAKE etc

GPS File AD61513A

LAT 30°16'37.8"

LON 84°59'24.8"

Elev 72'

0-7.5' push SPL

7.5-9.5'

9.5-12' - hit sat. sed at ~21.5'

12-13' - no sm. - pushed ahead of spl.

add flap valve + ext. nose

13-15.5' - poor recovery

15.5-16.5' - 2 ft recovery !!

16.5-18' - ~6" recovery - approx 8" added

rebr. w. BALLER

- 3' of sd in pipe - nd to pump.

18-20.5' - pumped small spl.

20.5-23' - pump spl - no recovery

23-26.5' spl pumped

26.5-29.75' pumped spl

29.75 - ~33' hit crs sd - sucking
bk into pipe

shut down for day due to
T storms building

SPL 25
ad 1st up

GROUT TAIL

A-LB-9
16914

43.8
 2.5
 — 41.3
 - 3.5
 — 37.8

104

6-16-94

STATIC WATER level 10.6' BLS D
 with hole to HSA to $\approx 32'$ have
 5' sd in pipe - pump out
 + filled back in lined.

- drill down 32 $\rightarrow$ 36 - drilling
 chg at 36 - drill to 37 -
 pumped out hole to 37.8' BLS D
 - got litho chg - fine sd. gray
 clay etc

drill line run 37.3 - 39
 38 - 40.5 - softer in btm
 40.5 - 42.5 v soft
 42.5' TD

Formation sand to - 12'
 30-65 - 1 bag - 13'
 1 bag bentonite chips
 Pump 4 bags portland cement

6-17-94

Static WL 10.2' below top of
 CSG - top of CSG $\approx$ 1' above LSD
 - dropped padlock in well
 - fished out lock

56
Continue development work - pumping + surging
will sustain ~ 5-6 gpm - Sulfur smell,
clayey

Monitor well TD 31.5'
screen 23.5' - 28.5'

5 ft
red set up

Grower Tank

Wireline Sample System

Setup for Rod operation
TOP

- 1' 8" hex shank drive head adaptor
- 1' 8" hex SLEEVE
- 1' 8" hex EXT. rod
- BEARING ASSY
- NW box / AW pin sub
- AW rod as needed - pin dn
- For 3" sampler
- AW br
- + SAM
- for 2'

Juggle AW rod - ykhs - hex
EXT adj to get splr stickout
needed

brg Assy 20.5"

hex sleeve 8"

splr 36 3/4"

sub NW pin / AW box 4"

20
48 3/4

6 1/4

5' 9"

run splr on drill rod after purging
out HSA - splr lost - fine sd.

32' TD

HSA - full up ers sd

3' BLSD

site

Volume 8" hole/10' = 3.5 ft^3
 Volume 2" csq/10' (2.4" OD) = $.3 \text{ ft}^3$

- YIELD Bentonite chips/bag
 8" hole =

YIELD SOLID SD (Appx $.5 \text{ ft}^3$)
 8" hole 1.4'/bag

8" hole with 2" csq = 2.76 cement
 per 10'

GROUTING

- 1 94 lb bag portland cement
 CONTAINS 1 ft^3 powder (7.69 gal)

- MIX 5-6 gal water/bag
 yields ~ 1.2 ft^3 grout (8.5 gal)

- 50' x 8" hole = 17.5 ft^3
 complete filling needs 14.5
 bags cement and 72.5-81 gal
 water

- 2-6% bentonite added to grout
 reduces shrinkage and incr.
 fluidity

55 GALLON drum (22.5" ID)

10 gal = 6" Depth

15

9"

5.5 gal/bag

18

10.8

20

12

25

15

30

18

35

21

40

24

3 bags cement

16.5 gal = 10"

4 bags 22 gal

13.2"

A-LB-6

A-WK-3

A-WK-2

A-LB-7

CAPACITY OF HOLE

Diameter of Hole (Inches)	Gallons per Lin.Ft.	Lin.Ft. per Gallon	Sacks Cement per Lin.Ft.	Lin.Ft. per Sack Cement
2	0.1632	6.1275	0.0199	50.2513
1 1/2	.2550	3.9216	.0311	32.1543
3	.3672	2.7233	.0444	22.5228
1 1/2	.4998	2.0008	.0607	16.4748
4	.6528	1.5319	.0791	12.6422
1 1/4	.7369	1.3570	.0893	11.1982
1 1/2	.8262	1.2104	.1006	9.9404
3/4	.9206	1.0862	.1118	8.9446
5	1.0200	.9804	.1240	8.0645
1 1/4	1.1246	.8892	.1367	7.3153
1 1/2	1.2342	.8102	.1500	6.6667
3/4	1.3489	.7413	.1639	6.1013
6	1.4688	.6808	.1785	5.6022
1 1/4	1.5938	.6276	.1937	5.1626
1 1/2	1.7238	.5801	.2095	4.7733
3/4	1.8590	.5379	.2259	4.4267
7	1.9992	.5002	.2430	4.1152
1 1/4	2.1445	.4663	.2606	3.8373
1 1/2	2.2950	.4357	.2789	3.5855
3/4	2.4505	.4081	.2978	3.3580
8	2.6112	.3830	.3173	3.1516
1 1/4	2.7769	.3601	.3375	2.9630
1 1/2	2.9478	.3392	.3583	2.7910
3/4	3.1237	.3201	.3796	2.6344
9	3.3048	.3026	.4016	2.4900
1 1/4	3.4910	.2865	.4243	2.3568
1 1/2	3.6822	.2716	.4475	2.2346
3/4	3.8785	.2578	.4714	2.1213

* Cement calculations based on the volume of an average cement mixture being 1.1 cubic feet per sack of cement.

Volume of grout required to grout 10 feet inside the casing for ab

Bags of Cement
(94 lb.)

Volume
of Well

Size of
Casing

2"	.22 ft. 3	.2
4"	.87 ft. 3	.7
5"	1.36 ft. 3	1.13
6"	1.96 ft. 3	1.6
8"	3.49 ft. 3	2.9
10"	5.45 ft. 3	4.5
12"	7.85 ft. 3	6.5

Cubic Feet → gallons multiply by 7.48

A-LB-6

A-WK-3

A-WK-2

A-LB-7

GROUTING REQUIREMENTS

Volume of grout required to grout 10 feet of a two-inch annulus

Size of Casing	Size of Borehole	Volume of Annulus	Bags of Cement (94 lb.)
2"	6"	1.74 ft. 3.	1.5
4"	8"	2.62 ft. 3.	2.2
6"	10"	3.49 ft. 3.	2.9
8"	12"	4.36 ft. 3.	6.9
10"	14"	5.24 ft. 3.	3.6
12"	16"	6.11 ft. 3.	4.4
			5.1

5.4 gallons of H₂O + (1) 94 lb. bag of cement = 1.2 ft. 3.INDEX OF
CURVE AND REDUCTION TABLES

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CURVE FORMULAE

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FIELD BOOKS

Rain resistant fine quality ledger paper, bound in high visibility chrome yellow imitation leather. Printed in waterproof ink.

Left page: blue horizontal lines; red vertical lines.

Right page: 4 horizontal and 8 vertical blue lines; red vertical center line.

Stock No. 8152-00 Transit Field Book. Size $4\frac{1}{2} \times 7\frac{1}{4}$ inches.

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Both pages: blue horizontal lines; red vertical lines. 6 vertical columns.

Stock No. 8152-50 Level Book. Size $4 \times 6\frac{1}{2}$ inches.

Stock No. 8152-55 Level Book. Size $4\frac{1}{2} \times 7\frac{1}{4}$ inches.

Left page: blue horizontal lines; red vertical lines.

Right page: 4 x 4 blue lines; red vertical center line.

Stock No. 8152-60 Field Book. Size $4\frac{1}{2} \times 7\frac{1}{4}$ inches.

Both pages: 10 x 10 blue lines; inch lines slightly heavier.

Stock No. 8152-75 Cross Section Book. Size $6\frac{1}{2} \times 8\frac{1}{2}$ inches.

CURVE FORMULAE

D = Degree of Curve

1° = 1-Degree of Curve

I
L
T
E
R
L.C
M
c
d

P.T.

5730
R

1'
2
3
4
5
6
7
8
9
10

$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{1}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

