

Liberty
to
Washington

North Call other Circumstances

Washington

From Mind to Sumatra land appears
to be higher and better drainage. From
about 3 mi. S. of Sumatra ~~upper~~ black
woods with many baly trees. Drainage poor.

Mr. John Cook, Pres. Board of Trade or Chamber
of Commerce gives following information:-

No new artesian wells drilled or more
new being drilled. No developments now
such as canal construction or other
excavating.

The Ryburn Lumber Co about 3 mi. north
of the city may dig a canal for ship
construction. This is the most promising
of anything we have heard of.

Reports made (or a hand pan) exposed
along beach front. This is probably after
Dr. Harper has picture of in 2nd Ann.

Can travel from here to St Joe
and on over to Panama City, Montezuma
Blountstown etc. In wet weather roads
would be very bad, rocks, holes etc.

35
Gadsden, Liberty, Franklin Co's

Feb 13-1908

Greensboro & Apalachicola

Shallow cut about $\frac{1}{2}$ to $\frac{3}{4}$ ft. of Greensboro
shows nothing but clays

at Griffin station cut showing red-yellow ^{iron} pebbly
clay

Crossing creek on south side ~~shows~~ cut maximum
depth of probably 15 ft. shows red-pink mottled
coarse sandy clays. This seems to have been excavated
for filling in.

Sandy flint nodules

At old Hopford (superior + lumber camp)
cut showing sand & hard pan

On south side of same cut showing sand
and red-yellow clays.

At Hopford cut about 10' deep showing red clay
Hopford is 5+ miles from Apalachicola

South of Hopford deep fill in crossing ^{Illegio} Creek. Saw
no outcrops of rock or other materials. Sand.
Graded road seen running in at Hopford and
leading south along RR and back north

Hopford to Illegio gently undulating country, pine timber

43

on 7. Well of R.H. Fry ^{er} Seawater

216 feet deep

Drilled about 1908

Cased 160 ft.

3 $\frac{1}{2}$ in well

Water within 10 feet of the ground.

Slight taste of sulphur.

Last 4 feet in limestone rock.

Some flint & other hard rocks.

Send copy of report.

42

M.T. Water Supply

On property of R.H. Fry
well said to be 450 feet deep

Sulphur water, does not flow.

Comes near the surface. Just
how near not known. This
place is 10 miles from Bristol half
way from Bristol & Seawater

Send copy of report.

A second report said depth 300

Mr Fry thinks depth about 250.

buy ^{well} at Selogia owned by citizens of
town. See Mr. Chas Holley, about it

At Cauchy mill, 1 mi. S. of Selogia,
well with 80 or 108' for depth. Head
about - 14 feet. See Mill Cauchy here

J. C. Platt at Bristol for general
information.

Hampton Stoughton, p. o. probably
Selogia ^{or Hybina} but lives on Occlusance River
Has a deep well. About 5 mi. south
Jackson bluff bridge

J. D. Petty at Central City. Connected with
development work for the R. R. Good

3-8-18

Liberty County

M.8 Well of Horsford

492 ft. red sand to 2 in.

Last part in limestone.

Water rises at least 2 ft
above surface

Level from top of hill 102 ft.

H.S.	F.S.	8.28
------	------	------

1.0	10.8	110.28
-----	------	--------

3.84	5.5	20.6
------	-----	------

3.45	4.3	89.6
------	-----	------

8.29	20.6	Deep well
------	------	-----------

Leapt of new Horsford
From top of hill 102 ft.

H.S.	F.S.	102 ft.
------	------	---------

1.0	10.8	106.8
-----	------	-------

3.84	8.0	115.8
------	-----	-------

4.84	18.8	88 feet
------	------	---------

102.0		
-------	--	--

106.8		
-------	--	--

3-8-18

Liberty County
Leapt of Horsford
98 ft.

Well of Cousens mill.

Rug to 13 ft

dinner 27

dull to cor 50 or 50

Rock light was 40 feet

scale of clay 80 feet

water surface.

water in well 6 feet & top.

Well of Libby.

6 in.

1.50 ft

still 100 ft.

See Mr. McCullough.

Well of Horsford from hill 102 ft.

H.S.	F.S.	
------	------	--

1.0	10.8	
-----	------	--

3.84	5.5	5.1	8.0
------	-----	-----	-----

3.45			
------	--	--	--

15.9

1.0

14.9

102.0

97.3

Manatee County.

Oneco,

E.C.Saunders,

1- 512'-- 5"-- 300'-- +5' Jas. Reddick

1- 580'-- 5"-- 0' +5' Ed Pettigrew

Average depth of wells in Oneco locality
500' to 600'. The 512' well of E.C.Saun-
ers registered $2\frac{1}{2}$ lbs. pressure.

Hadley,

1- 450'-- 4"-- 160'-- +5'

1- 600'-- 6"-- 2200'-- +5'

Bradentown,

City Water Works, D.E.Greenhoe, Ch.Eng.

3- 85'-- 8"-- 15' slightly hard

1- 85'-- 7"-- 15' 2"

1- 760'-- 6"-- +8' hard sulfur

Manatee,

City Water Works, John Sheffield, Supt.

1- 720'-- 8"-- -- +10' hard sulfur

Palma Sola,

H.E.Shaver,

1- 340'-- 6"-- 180-- +10' Helverson

1- 110'-- 2"-- 60-- +10' drillr.

Mrs. Simpson,

1- 700'-- 6"-- -- +10

Palmetto,

City Water Works,

1- 600'-- 6"-- -- hard sulfur

strong flow 100,000 gal. per day

J.E.Pedrick,

1- 636'-- 6" strong flow

1- 637'-- 6"

Manatee County (cont.)

Ellenton,

Atlantic Refining Co.

1-600'--6"--200'-- 15 lbs. L.W.Stiers

1-600'--5"--200'-- 15 lbs. E.Pettigrew

SnSads Island,

P.Marine,

1-392'--6"--80'-- +10' hard sulfur

1-632'--6"--160'-- +15' "

Drilled by Search

E.T.Pilsbury,

1-365'--6"--40'-- +20' E.Pettigrew

1-150'--2"--60'-- +20' E.T.Pilsbury

In the shallow well a salt flow was str
uck at 60'

Wells used for irrigating

Terra Ceia Island,

Mrs.E.R.Johnson,

1-322'--4"-- +30' 340 gal.per.

1-420'--4"-- +25' 300 "

Miss A.E.Robb,

1-400'--4"-- 10lbs. pressure

J.E.Jones,

1-477'--4 $\frac{1}{2}$ "--62'-- +20' J.M.Hester

W.T.Rodon,

1-515'--4 $\frac{1}{2}$ "--245'-- +20' "

J.E.Jones,

1-620'--4 $\frac{1}{2}$ "--52' -- +20' "

Jim Armstrong,

1-500'--4 $\frac{1}{2}$ "--220'-- +20' "

Barnhill,

1-350'--4 $\frac{1}{2}$ "--65'-- +20' "

" In W. part of island strike hard flint
ls. at 60' not on E. side. Quicksand at 200
on E. not on W.--- J.M.Hester, Well drilled
Terra Ceia, P.O.

Manatee County (cont.)

J.M.Hester also drilled the following
wells for the A.C.L.Ry .

1 at Gillette for the A.C.L.Ry.

620'--6"--80'-- +20'

1 at Ruskin 480'--8"--150'-- +50'

1 at Gary 400'--6"-- -4'

At Ruskin obtain flow at 75 to 100'

At Miacka Cityn Mr.Hester said he went
210' without hitting rock.

Bradentown,
Log of well of Manatee Electric Co.,
Drilled by Southard Cont. Co.,
Samples supplied by S. UT. Co.,
12" casing 308 10" casing rested at 405'

Sample #1. 150'- clear grained quartz sand,
shiny black smooth phos. pebbles and frag-
ments of a soft lime or marl, representing
with little doubt the Alum Bluff.

Sample #2. 175- one black phos. pebble and
some fragments of light colored ls. or marl
in which minute black phos. pebbles are
embedded. This sample represents a slightly
indurated stratum in the Alum Bluff form.

Sample #3. 230'- Gray calcareous sand with
minute black phos. pebble.

Sample #4. 235'- Clear grain quartz sand
and fragments of a very sandy marl in which
minute black phos. pebbles are embedded.

Sample #5. 250'- Chiefly hard flinty rock.
Some sand and a few black phos. pebbles. A
piece of native copper was found in this
sample.

Sample #6. 255'- Some flinty rock similar to
#5; but chiefly a light colored ls. or marl
in which is embedded black phos. pebbles.

Sample #7. 285'- Rather hard rock, chiefly l
ls. with some phos. pebble embedded in it.

Sample #8. 290'- Light colored rather soft m
marl with some sand and a few small ph. pebbles

Sample #9. 340'- Mixed sample, some sand
probably from above, but consisting chiefly
of a granular ls., characterized by the
small fragments into which it breaks.

Manatee

Sample #10. -374'- A ls. somewhat harder
than sample #9.
Sample #11. -380'- A marl in which is embe-
dded considerable quartz sand and some
minute phos. pebbles.
Sample #12. -701'- White granular ls.
with fragments of fossils. This ls. with
little doubt represents the Ocala.

Manatee

Marion County

Dunellon,
City Water Works, W.H. Hoffman, Supt.
160'-8"-96'- -18' slightly hard

Well at Ice Plant:

200' x 12" - -18'

Well at A.C.L. depot:

about 400ft. 4" very hard- sulfur

Hard to get water close to river. Back
from the river 2 or 3 miles easy to get. at
90ft. good supply.

Ocala,

City Water Works, L.B. McKensie, Supt.
Now use only one well, 2 held in reserve.
Soft water for boiler use.

Analysis of water from 380ft. well

Constituents	Surface well	Art. well
Calcium carb,	1.22	4.38
" sulfate	.64	14.07
Magnesium carb.	.93	4.20
Silica	.17	1.63
Iron oxide and Al.	.11	.06
Sodium chloride	.92	1.40
Sod. and Pot. sulfate	0.	.29
Vol. and organic	1.93	3.15
Total solids by evap.	6.04	29.17
Suspended matter	none	trace
Free carbon dioxide	.64	.18

Lbs. of soda ash per 1000 gal	.27	1.80
Lbs. of lime, 90% Ca(OH) ₂ per 1000 gal.	.40	1.69

Analysis by H.S.B.W-Cochrane Corp.,
Philadelphia.

9/21/21 Water from 380ft. well.

H.G.
10/13/21

City of Ocala has 3 wells :

380ft., 1120ft., 275ft. all drilled by
Sam Christian, drilled 380ft. well

Phoslime,

Fla. Soft Phosphate and Lime Co.,
plant abandoned about 2 years. J.R. Simmons,
Citra, Fla. in charge.

Citra,

J.R. Williams has well 1250, formerly own
ed by James A. Harris. Drilled more than
33 years ago, same wells recorded in U.S.
paper 319. Now used for domestic purposes.
Average depth of wells around Citra is
from 40 to 60 ft. Some wells shallow as 17 ft
get water; all hard.

Meadows,

Alphano Humus Co., Idle since Aug. 1920.
Will probably dismantle. Peat was dried and
sold as fertilizer filler, Shipped in carload
lots at 18.00 per ton.

Well: 60'-11½"- -30'

Lowell,

Average depth of wells 80 to 120ft.
Water stands about 60ft below surface.

J. Allen Snell, owner.
L.B. Brock, driller. Send Mr. Brock blank
and he will send record.

Reddick,

Commercial Lime Co., J.H. Williams Mgr.
Make lime, hydrated lime, agr. lime and
road material
well: 112'- 2"-60'- -38' used for hydrating
plant, boiler purposes and general use.

10/15/21

McIntosh,

Wells average 40 to 100ft. No sulfur.
Most every house has deep well and water
works. Well at hotel 60ft. Mr. Christian's w
well 112ft.

Orange Lake,

Mr. Stephenson, well driller

Fairfield,

B.S. Quarterman, 5 miles S.W. of Fairfield
Section of well:

Surface soil, black	2ft
Yellow clay, sand rock	8ft.
White sand rock	2ft.
Fullers earth	14ft.
Flint nodules and ls.	4ft.
Limestone	18ft.

Only one stratum of Fullers earth in
this well.

Emathla,

Surface wells at this locality 12 to 18
ft. deep.

Mrs. G.W. Wynn, ½ mile N. 60'- -30'

Arthur Brooks, 1 mile N.E. 60'- -30'

D.N. Ferguson, ½ mile S. 65'- -30'

North Lake Weir,

Wells average 75 to 100ft.
25 to 40ft to rock.

Stanton,

Shallow wells, 30 to 40 ft.
Use lake water, also some cisterns.

H.G.

10/13/21

Irvine,

Irvine Crate and basket Co.

137'- 8"- 100'- -80'

Quicksand in pockets at about 80ft.

Old well 108ft. not in use.

Well at stoer, 146'-2"

Dr Davis 119'-2"

Water stands at about same level in all
the wells.

3 miles W. at log camp plenty of water at
65ft. in a 2nd well.

Anthony,

S.A. Lerry, 72'-5"- -42'

Silver Springs,

Analysis by L.M. Booth Co., Jersey City,
N.J., 10/26/14/

Parts per 100,000

Acids and bases	
Sodium oxide Na2O	1.07
Calcium " CaO	10.32
Magnesium " MgO	1.46
Iron oxide Fe2O3 and	
Alumina Al2O3	.20
Silica SiO2	1.10
Sulphuric acid SO3	3.30
Chlorine Cl	.85
Nitric acid N2O5	not determined
Hydrogen sulfide	"

Hardness, etc.

Hardness	20.50
Causticity	***---
Alkalinity	18.50
Metacidity	.21
Acidity	---
Odor	
Color	
Turbidity	---

H.G.

10/12/21

10/12/21

H.G

Grains per U.S gallon	
Probable combination in the water.	
Calcium carbonate --	10.74
" sulfate ---	-----
" chloride -----	-----
" nitrate -----	-----
Magnesium carbonate ?	0.03
" chloride -----	-----
" nitrate -----	-----
" hydroxide -----	-----
" sulfate -----	2.81
Calcium hydroxide -----	-----
Iron carbonate -----	-----
" proto-sulfate -----	-----
" sulfate -----	-----
" oxide and alumina	0.12
Silica	0.64
Suspended matter	a trace
Incrusting solids	14.04
Sulphuric acid -----	-----
Sodium carbonate -----	-----
" sulfate	0.44
" chloride	0.82
" nitrate -----	-----
" hydroxide -----	-----
Non-incrusting solids	1.26
Free carbon dioxide	0.05
Half-bound carbon-dioxide	4.75
Hydrogen sulfide	---
Volatile matter	4.80

Water from Blue Springs, Juliette, Marion County.

No odor, tasteless, clear.

Total solids	117.1
Cl	4.3
SO ₄	9.0
SiO ₂	5.3
CaO	33.0
MgO	8.7
CO ₂	3.6
HCO ₃	115.9

Considerable organic character.

Ocala Water Co, Ocala, Marion Co.

190 ft. well. Anal by State Chemist.

Parts per mil.

Odorless, tasteless, small suspended matter, clear.

Parts per mil.

Cl	19.85
SO ₄	179.40
SiO ₂	66.00
Fe ₂ O ₃	none
Al ₂ O ₃	12.00
CaO	171.00
MgO	37.33
Total solids	652.00
Volatile matter	68.00
nonvolatile matter	584.00

Marion

Salt Springs, Narwalk, Marion Co.

Anal. by State Chemist.

Parts per mil.

#1

Cl	1928.48
SO ₄	295.50
SiO ₂	10.00
CaO	322.00
MgO	156.90
Total solids	4908.00

#2

Cl	1238.97
SO ₄	360.44
SiO ₂	30.00
Al ₂ O ₃ and Fe ₂ O ₃	00.00
CaO	151.50
MgO	193.30
Total solids	5322.70

Odor of H₂S, Saline taste, clear.

Marion

Ocala, Marion County

Well for city supply 1250 feet deep.

Anal. by U.S.Geol. Surv.

Parts per mil.

Calcium	151.
Magnesium	25.
Sodium and Potassium	18.
Iron and Alumina	0.02
Carbonate	7.7
Bi-carbonate	240.
Sulphate	266.
Chlorine	18.
Nitrate	0.22
Phosphate	trace
Silica	21.
Total solids	659.

Well for city reserve supply 150 ft. deep

Anal. by State Chemist

Calcium oxide	171.00
Magnesium oxide	37.33
Sulphate	179.40
Chlorine	19.85
Ferric oxide	absent
Alumina oxide	12.00
Silica	66.00
Volatile matter	68.00
Non-volatile matter	584.00
Total solids	652.00

marion

Marion County

Well of Southern Pine Lumber Co. Citra.

Slight brown color, oderless, and considerable suspended matter. Normal taste.

Chlorine	14.77
Sulphate radical	47.70
Silica	3.70
Iron oxide	4.00
Calcium	45.20
Magnesium	3.20
Total solids	161.6

Well of 3 mi. south of Citra

Clear, odorless, slight suspended matter, and normal taste.

Chlorine	11.81
Sulphate radical	39.50
Silica	3.60
Iron oxide	absent
Aluminum oxide	"
Calcium	85.00
Magnesium	2.50
Total solids	209.00

Well of W.H.Redditt, Citra.

Clear, oderless, perceptible taste and considerable suspended matter.

Chlorine	15.36
Sulphate radical	45.70
Silica	4.50
Iron oxide	absent
Aluminum oxide	"
Calcium	94.20
Magnesium	4.50
Total solids	228.1

marion

Blue Spring, Marion Co. Analysis for the State Survey by the State Chemist.

Ingredients

Parts per mil.

Calcium oxide	(CaO)	33.0
Magnesium	(MgO)	8.7
Sulphate	(SO ₄)	9.0
Chlorine	(Cl)	4.3
Silica	(SiO ₂)	5.3
Carbonate	(CO ₃)	3.6
Bi-Carbonate	(HCO ₃)	115.9

Total solids ----- 119.7

marion

Silver Springs, Marion Co. Analysis made for the State Survey
by the U. S. Geol. Sur.

Ingredients

Parts per mil

Calcium	73.
Magnesium	9.2
Sodium and Potassium	2.88e
Iron and alumina	0.0
Carbonate	219.
Bi-Carbonate (HCO ₃)	44.
Sulphate	7.7
Chlorine	0.20
Nitrate (NO ₃)	trace
Phosphate (PO ₄)	13.
Silica	

Total solids 274.

Marion

Marion County

Salt or Perrian Springs.

Anal. by State Chemist.

Parts per mil.

Calcium oxide	322.00
Magnesium oxide	156.90
Sulphate	295.50
Chlorine	1928.48
Silica	10.00
Total solids	4908.00

Analysis #2

Calcium oxide	151.50
Magnesium oxide	193.30
Sulphate	360.44
Chlorine	1238.97
Silica	30.00
Total solids	5322.70

Analysis by A.W.Blair.

Hardness	1491.24
Nitrates	none
Nitrites	none
Chlorine	2840.
Free ammonia	.0000
Albuminoid ammonia	.265
Total solids	6073

Odor, sulphur.

Suspended matter, white.

Contains magnesium sulphate in abundance

" hydrogen sulphide

" chlorine in considerable quantities

Marion

Marion

Well at Anthony, Fla.

Campagnie Generale des Phosphates.

- 50' Soft white limestone, granular, apparently Vicksburg. Contains many foraminifera and fragments of shells.
- 75' Possible somewhat harder, but not materially different from above.
- 100' Same as above.
- 110' Limestone of above predominates. Fragments of blue-gray like the following are included.
- 130' A hard blue-gray limestone predominates in the sample from this depth. Some fragments of the white limestone are included. One unbroken piece indicates that these blue fragments are imbedded in a matrix of light colored material.
- 160' Possibly somewhat more granular, but otherwise not differing from the white limestone above.
- 200' Same material.
- 260' A gray or light blue-gray compact limestone not unlike that found at the depth of 130' altho possibly harder.
- 300' White granular limestone.
- 350' Gray limestone very compact. The sample contains, however, one piece which is very porous.
- 375' Granular white limestone.
- 430' Porous white limestone appearing nearly cream-yellow in the powdered form.
- 440' Material similar in character to the last but of a darker color, nearly cream-yellow.
- 445' Darker in color and may be described as a brown limestone which is apparently rather porous.
- 460' Mixture of brown and light colored limestones with occasional grains of silica, the brown predominating.

Marion

Well at Anthony (continued)

480' Dark brown porous limestone.
500' Dark brown limestone.

The white limestone with occasional gray strata to the depth of 375' is doubtless Vicksburg.

Marion

Marion County

Feb. 26 Ocala. Crevices in limestone.

From the crevices of the uppermost limestone 2 mi south of Ocala was taken pieces of characteristic fuller's earth, showing that the fuller's earth horizon formerly overlay this area and was preserved only by sinking into these crevices.

The filling of the crevices must have occurred during Pleistocene chiefly since they contain platinum and no Pliocene fossils.

THE FLORIDA TIMES-UNION, JACKSONVILLE

JACKSONVILLE, FLORIDA, THURSDAY, NOVEMBER 17, 1921.

TO PIPE WATER FROM MAINLAND. KEY WEST PLANS

Franchise Granted by City Council.
Construction Will Entail Large
Expenditure.

Key West, Nov. 16.—The city council in special meeting this afternoon granted a franchise to Carl E. Aubuchon for the construction of a pipe line from the mainland to Key West to supply this city with fresh water.

Certain amendments to the franchise as sought by Mr. Aubuchon were put into the measure after the council had heard him, and arguments by others that they were imperative in order to obtain the necessary capital to finance the enterprise.

Construction of the pipe line, which will entail a large expenditure, will greatly serve the city, it is stated.

Monroe.

No. Mis. 1403. Well Water from Nassau
Truck & Farm Co., 3 miles South of Fern-
andina. Dr. E. H. Sellards.
For State Geological Survey.

Colorless; odorless; woody taste; no
sediment.

Milligrams per liter.
SiO₂..... 24
Cl..... 30
SO₄.....133
PO₄..... 0
CO₃..... 0
HCO₃.....195
Na+K..... 30
Mg..... 13
Ca..... 55
Fe+Al..... *Trace*
Loss on ignition.....130

Total dissolved solids...500

*Am. Henry
J. Bennett*

Nassau

City Water Works Well
Fernandina.

8" well completed in 1888, but output
not known until 1890 when reservoir was built

Flow tests as follows

1890	48,000 gals per hour
1895	slight decrease
1902	26,743
1904	20,642
1905	18,776
"	test with air lift 47,238
1906	17,748 " " " " 39,476
1907	17,748 " " " " 38,944

Data given by Louis Austin, 1910
Chief Engineer.

Nassau

Nassau

No. Mis. 1404. Well Water from Town
Well, Callahan. Dr. E. H. Sellards.
For State Geological Survey.

Brownish-yellow color; odorless; woody
taste; considerable brown sediment.

Milligrams per liter.

SiO₂..... 23
Cl.....131
SO₄.....129
PO₄..... 4
CO₃..... 0
HCO₃.....246
Na+K.....111
Mg..... 18
Ca..... 71
Fe+Al..... *Trace*
Loss on ignition.....170

Total dissolved solids...750

*Am. Henry
J. Bennett*

Nassau

Fernandina City Well

Drilled in 1906 by H. Walker.

1-110 feet	Sand
110-126 "	Medium hard rock
126-185 "	Sand and clay
185-400 "	Clay, very tenacious
400-450 "	Sand
450-512 "	Green clay
512-517 "	Rock
517-556 "	Blue clay
556-733 "	Bed rock, very hard, alternating hard and soft layers.

Nassau

No. Mis. 1419. Well Water from 12' rock well from C. I. Cragin, Palm Beach, for Dr. E. H. Sellards of State Geological Survey.

Milligrams per liter.	
Cl.....	543
CO ₃	0
HCO ₃	329
Loss on ignition.....	223

Total dissolved solids...1,630

E. M. Allen

No. Mis. 1420. Saw Grass Water from C. I. Cragin, Palm Beach, for Dr. E. H. Sellards of State Geological Survey.

Milligrams per liter.	
Cl.....	712
CO ₃	0
HCO ₃	476
Loss on ignition.....	1,343

Total dissolved solids...1,890

E. M. Allen

Palm Beach

Palm Beach

Weybrecht's well at West Jupiter
57' deep.

Analysis made by Am. Water Soft. Co.
July 23, 1908.

Parts per million

Total solids	1071.49
Calcium carbonate	270.01
Calcium sulphate	53.66
Calcium chloride	42.34
Magnesium carbonate	100.46
Sodium chloride	521.17
Free carbonic acid	29.48
Iron, aluminum & silica	28.80
Incrusting solids	495.28
Non-incrusting solids	521.17

Copied from notes of E. H. S.

Palm Beach

Palm B.

Water from Yamato, Fla.
Analysis made by American Water Softener Co
Nov. 3, 1909.

		Same treated
Calcium carbonate	7.22	1.27
Calcium sulphate	0.54	0.39
Calcium chloride	0.78	0.85
Magnesium carbonate	0.73	0.45
Sodium chloride	0.81	2.17
Free Carbonic acid	0.56	
Iron, Aluminum & silica	0.23	0.33
Incrusting solids	9.50	3.29
Non-incrusting solids	0.81	2.17

.128# scale per 1,000 gals.

Same water treated	
Total solids	9.55
Calcium carbonate	1.27

Log of Yamato well.

sand	24'
yellow clay	10'
sand & shell	6'
concrete rock	11'
gravel	4'
rock	1' - 6"
gravel & rock	15'
quick sand	3' - 6"
rock	1' - 8"
sand	7"
rock	7"
	67' - 10"
drilled below casing	7'
	74' - 10"

Copied from notes of E.H.S.
Palm Beach

Palm Beach County.

May 23/1922.

H. J. Connors, West Palm Beach.

Well located in S. 12 T. 42 S. R. 37 E, about 200 feet off the south bank of the West Palm Beach canal and 3 miles east of Canal Point, a town near mouth of canal.

Drilled in 1920.

Depth 962 feet, 6 inch well. Strong sulphur water, no salt. Good strong flow.

This above data from J. J. Henderson in letter of 5/23/22, Supt. for Mr. Connors. See file of H. J. Connors.

Palm Beach.

Pasco County

Trilby,

Wells 40 to 75ft. obtain hard water.

Surface wells average about 15ft.

Dade, City,

City Water Works, J.R. Turner, Supt.

499'- 10"-80'- -60' drilled by P.W.

Dukes, Ft. Meade, 1915

131'- 10"- 68'- -60' drilled by Steve

Hamilton, Dade City, 1920.

Analysis by State Board of Health.

P.P.M.

Constituents	Old well	New well
Color	0	0
Turbidity	0	0
Odor	0	0
Total solids	180	140
Fixed residue (MIN)	40	120
Vol. residue (org)	100	40
Alkalinity (M.O.)	118	108
" (P)	0	0
Bicarbonates	118	108
Carbonates	0	0
Sulphates	trace	trace
Chlorides	9m	9.5
Total hardness		
Iron	0	0.08
Soap hardness	132	139.1

8/27/21

Crystal Springs,

Average depth of wells 40 to 50ft.

George Harrison, well 33ft., ls. at 30ft.

water not good, good water at 40 to 50ft

9/16/21

H.G

Zephyr Hills,

No city water supply. Private wells
50 to 75ft. under flint cover in ls.
Flowing wells on celery farm near town.
Reported flowing well in town with a
16 to 20ft. head.

Ochre? in wells above flint.

P.T. Williams, well driller.

Dade City,

Deep well drilled as a test for oil in
1917 about 5 miles E. of Dade City on the
W. bank of the Withlacootas river and near
the bridge across the stream on the River
Road. L.A. Hudson, driller (same man that drill-
ed the Dundee well near Bushnell). Total
depth of well reported by Mr. Griffin of Dade
City to be 2200 to 2300ft. Mr. Griffin also s-
tated that the well flowed a good stream of
sulfur water at about 2000ft.

See Mr. Crichlow at Lake Alfred about
this well as he is reported to have financed
it.

Mr. J.R. Turner says well is only 1200ft.

*Note: This well is 2200 feet deep. As reported by
Mr. Crichlow at Lake Alfred.*

Dade City, Pasco County.

Public well, depth 53 feet.

Anal. by A.W. Blair.

	Parts per mil.
Hardness	93.06
Chlorine	8.50
Nitrogen as Nitrates	.87
Nitrogen as Nitrites	.000
Free ammonia	.000
Albuminoid ammonia	.000
Total solids	136.

Well of Muller and Ginsser used for ice.
Depth 45 feet. Anal. by U.S.G. S.

Calcium	58.
Magnesium	4.2
Sodium and Potassium	9.1
Iron and alumina	trace
Carbonate	0.0
Bi-carbonate	191.
Sulphate	2.2
Chlorine	13.
Nitrate	0.55
Phosphate	trace
Silica	20.
Total solids	204

Pasco

Trilby, Pasco County. Atlantic Coast Line R. R. Co.

Well 31 ft deep. Use, boiler purposes.
Analysis by U. S. Geol. Survey, 1907.

	Parts per mil.
Calcium	39.
Magnesium	1.2
Sodium and Potassium	6.6
Iron and Alumina	0.49
Carbonate	0.0
Bi-Carbonate	113.
Sulphate	2.3
Chlorine	5.4
Nitrate	1.6
Phosphate	2.0
Silica	16.
Total solids...	136.

Pasco

Pasco County

Limestone well water. Well belonging to
Dr.J.F.Corrigan, St. Leo.

	Parts per mil.
Free ammonia	.000
Albuminoid ammonia	.000
Nitrogen as nitrates	.87
" " nitrites	.000
Chlorine	8.50
Hardness	93.06
Total solids	136.00
Suspended matter	small amount
Odor	none
Appearance	nearly clear
A.W.Blair, Analyst.	
Bull.89.Fla.Agr.Exp.Station	
p 105.	

- - - - -

Water from J. C. Carter, Dade City.

Total solids	105.
Chlorine	9.
Hardness	72.25
Nitrates	1.00
Nitrites	none
Free ammonia	.000
Albuminoid ammonia	.007
A.W.Blair, Analyst.	

Pasco

Pasco County

Water from Dr. J. M. Abbott, Macom.

	Parts per million
Total solids	224.
Chlorine	87.50
Hardness	19.88
Nitrates	none
Nitrites	none
Free ammonia	.495
Albuminoid ammonia	none

Water slightly cloudy with small amount
of suspended matter - brown-white clots.
Odor very foul; this in itself was
enough to condemn it. On ignition, residu
turned very dark and the odor indicated
organic matter in considerable quantities.
Residue slightly alkaline.

40 foot open well. ~~15 ft. sand~~
10 ft. sand
15 ft. sand and yellow clay
15 ft. blue pipe clay and sand

Water better when not so high in well as
now. A.W.Blair, Analyst. 1900

Limestone water well. Public well, Dade City.

	Parts per mil.
Free ammonia	.000
Albuminoid ammonia	.015
Nitrogen as nitrates	1.440
" " nitrites	.000
Chlorine	12.
Hardness	98.26
Total solids	147.00
Suspended matter	small amount
Odor	none

A.W.Blair, Analyst.

From Bull.89, Fla.Agr.Exp.Station. p 105

Pasco

Pasco County

Water from Mr. Hand, San Antonio.

Water clear but contained brown white
sediment - flocculent. Slight musty odor.
On ignition of residue blackened decidedly
with burning, indicating organic matter.

30 foot open dug well. Water in clay.
Furnishes water for school and several
families. 10 years old. Not affected
by drought, but flow plentiful at all times.
Parts per million.

Total solids	46.
Chlorine	11.
Hardness	1.156
Nitrates	1.
Nitrites	none
Free ammonia	.00
Albuminoid ammonia	.00

A.W.Blair, Analyst. 10/5/00

- - - - -

Water from Father Roman, San Antonio.

60 foot open well. Water in clay plentiful.
Used by school and church. Water lifted
by pump. ~~15 ft. sand~~
~~15 ft. sand~~

	parts per million
Total solids	101.
Chlorine	24.7
Hardness	29.48
Nitrates	1.07
Nitrites	none
Free ammonia	.000
Albuminoid ammonia	.005

Residue alkaline in reaction.

A.W.Blair, Analyst. 10/5/00

Pasco

Pinellas County.

Dunedin,

Skinner Machine Co. furnishes city water from well: 89'-4" -40'

On ridge near Dunedin wells range close to 100ft. Go thru rock about that depth and a good supply of water is obtained, slightly hard.

Clearwater,

The well at the plant near the bay are used for drinking purposes- too salty runs about 500 parts per million salt.

The well at the bay flows at high tide.

2 wells at old plant,

130'-12" -25'

at an elevation of 18 to 24 ft.

The new wells at Gardner and Harden Sts.

One 10in. well drilled to 130ft., cased 38ft. to rock, when pumped became so salty had to be abandoned 440 p.p.m. iron 1

Another was drilled 55ft. away, 12in., 173 ft. deep, cased to 113 ft. and then went to 287ft. free from iron and salt. Water stands 21ft. below surface. This well known as well no. 6.

Pinellas

Analysis of water from well#6.

	P.P.M.
Color -----	0
Turbidity -----	0
Odor -----	0
Total solidspp-----	220
Fixed residue (mineral)	120
Volatile " (organic)	100
Alkalinity (M.O.)	154
" (P)	0
Bicarbonates -----	154
Carbonates -----	0
Sulphates -----	0
Chlorides -----	24
Iron -----	08

Analysis by State Board of Health 10/4/21

Log of well#6

Sand to	16ft.
Blue clay	16-26
Casing to 21ft.	
White rock to	73ft.
hard flint to	83ft.
white coral to	94
hard gray rock to	98
gravelly rock to	103
Fullerw earth to	112
Casing set at 112 ft.	
hadr white rock to	168
Flinty rock to	176
Blue clay rock to	179
Soft white rock to	183
Coarse porous rock to	188
hard rock to	215
Soft gray rock to	238
Hard	

Pinellas

Hard rock to 245
Gray porous rock too 287

Water rock 112 to 245 No increase in water after 245.

Drilled by Porter May.

Frank Schwable, Supt., City Water Works.

Analysis of Water from abandoned well.

Color	0
Turbidity	slight
Odor	0
Total solids	1185
Mineral (fixed)	915
Volatile (organic)	270
Alkalinity (M.O.)	176
" (P)	0
Bicarbonates	215
Carbojates	0
Sulphates	39 approximately
Chloride	436
Iron	1.0

Analysis by State Board Of Health
6/1/21

Passe Grille,

International Realty Co.,

250'-6" flows about 1ft. over casing.

Well at hotel 100ft. flowed but water not potable. Also one 150ft. flowed but water not potable.

W.D. McAdoo 110'-4"- fair flow sulfur

Sutherland

Pinellas

9/19/21

Analysis of water from wells at, Espiritu Santo Springs. Analysis by General Development Department, S.A.L.Ry., Norfolk, Va.

Dr. J.A. Collenbach, chemist, 3/31/21
Constituents. Grains per U.S. gallon.

	#1	#2	#3
Silica	5.336	4.957	1.5746
Iron & alumina	.1400	.175	.1458
Calcium Carbonate	12.8300	12.8300	12.8300
Magnesium "	11.4304	14.7535	4.1989
Calcium chloride	4.0239	12.4800	8.6310
Magnesium "	15.3670	22.7440	11.8968
Sodium "	125.7340	141.4210	62.8084
Total solids	174.8613	209.3605	102.0855

Mr. D.M. Pipkin drilled a well at the hotel about 100 yds. from the springs to get the same water as the springs.

There are 3 lines of casing in the well and a different water is obtained at each level.

6 in. casing to 43 ft.

4 in. " to 165 ft.

1 1/4 in. " to 268 ft.

The water from 268 ft. level is very highly mineralized. Drilled by P.R. May, Gary. 1921

M.K.C

Pinellas

10/7/21

Sutherland,
Most wells strike good flow about 80 ft.
Methodist Church, 90'-2 1/2" Hard
At Laundry 200'-4" "

Tarpon Springs,
City Water Works, H. McCreary Supt.
2- 127'-10"- 60'- -20' hard
2- 107'-4"- 60'- -20' "
Drilled by J.F. Zimmermah, Dunedin.

St. Petersburg,
4- 200'- 12"- 100'- -32'
Drilled by C.M. Boland, Bartow. 1921
Rock is struck about 100 ft.
Forester May in drilling for the Citizens Ice and cold storage Co.
Sand 80 ft.

Clay, sand and boulder to 235 ft.
Bedrock to 300

In well at new plant Mr. May struck rock at 130 ft and drilled in it to 306 ft.

M.K.C

9/19/21

Safety Harbor,
Espiritu Santo Springs,
4 springs 8000 gal per hr.
Water from spring #2 is bottled and sold.
Water from all the springs has been analysed by the S.A.L.Ry.

Pinellas

9/17/21

H.G.

Oldsmar,
Reolds Farms Co.,
town water supply from well about 200 ft deep, almost flows. Analysis by S.B.H.
Usually get a good flow from 48 to 75 ft. with a head of 18 in. to 2 ft. Mostly sulfur water. One well reported not sul. Near bay front in one well salt water was struck.

Pinellas

Pass-a-grille Town Well

F. C. Danielson, driller

256' deep
4" diameter
204' casing (depth to rock)
6' elevation above sea
6' head above surface
200 gallons per minute
clays, blue, white ochre and gray

35' shell and sand
6' coquina rock
85' quicksand
10' shale
34' clays
60' soapstone
26' limestone

Data given by Roy S. Hanna, P.M.

Pineellas

St. Petersburg.

Analyses by A. C. L. Ry. Co.

#1 Water from one of city wells. 150 ft.
grs. per US Gal
Calcium Carbonate 7.50
Magnesium carbonate68
Sodium Chloride 1.88
Sodium Nitrate trace
Silica99
Alumina & Iron Oxide11
Organic Matter87

12.03
(Freehling & Robertson in
1908)

#2 Water from well near Ice Factory
182 feet deep.

Total solids 38.30
Calcium carbonate 6.10
Calcium sulphate 0.95
Calcium chloride 10.54
Magnesium carbonate 3.56
Sodium chloride 7.30
Free carbonic acid 1.41
Iron, Alumina & Silica 1.49
Incrusting solids 22.64
Non-incrusting solids 7.30

Copied from letter of June 12, 1912.

File 2062

Signed L. L. Sparrow.

Pineellas

St. Petersburg,
Anal. by A. C. L. Ry. Co.

Water from well at Ice Factory. 282 ft. deep

Total solids 21.05
Calcium carbonate 7.34
Calcium sulphate 0.56
Calcium chloride 4.60
Magnesium carbonate 2.18
Sodium chloride 4.08
Free Carbonic acid 1.19
Iron, Alumina & silica 0.37
Incrusting solids 15.05
Non-incrusting solids 4.08

Pineellas

Polk County.

Belongs under
Highlands County.

Avon Park,
Fla. Ice & Power Co., well drilled by
C.M. Boland, 1025'-8" -42' 1921
Capacity of standpipe 50,000 gal.
Surface wells about 16'
F. Stevens, Mgr., Fla. Ice & Power Co.,
Avon Park.
Old well about 300'-3"
New well drilled because old one pumped
snad new one does not.

Lake Wales,
Mt. Lake Corp., Mr. Travis, Mgr.
537'-10"- hard sulfur C.M. Boland

Analysis by Law & Co., Atlanta 8/9/20

Total solids	12.0031
Organic matter	5.0736
Silica	0.9214
Iron and alumina	0.1749
Lime	5.0269
Magnesia	0.8165
Sulphates	none
Chlorine	trace

Templeton,
258'-4"-158'- -28' hard sligt sulfur
Drilled by Tyson Bros., Bartow, 1920.
158' to rock
Surface watre 15-27ft.
owned by Teble Groves Corp.,
M.G. Campbell, Mgr.
Depth of lake 100'

Frostproof,
Citrus Exchange,
963-10"-200'- -1' hard sulfur 1919

S
ur

Surface wells 16- 80'
C. Brewer, house foreman, Citrus Ex.

Ft. Meade,
City Light & Water Works, J.R. Gunn, Supt.
800'-15"- 300'- -40'
one at ice plant same as the above,

Mulberry,
City Water Works, Mr. Dudley, Supt.
322'-10"- -27' hard sulfur
Ice plant,
323'-8"-323'- -27' hard sulfur
So. Phosphate Corp., Tancrede, Sta.
700'-8"-250'- -50'
700'-14"-165'- -50'
drilled by CM. Boland
also a 4" well 50' water level -18'

Medulla,
surface wells 15-75ft.

Bartow,
City Water Works, D.E. Bevins, Supt.
726'-6"-720'- -26' sulfur med. hard
well drilled 1906.

Pierce,
American Agricultural Chemical Co.
765'-18"- 380'- -64'
450'-10"- -49'
drilled by C.M. Boland

Hopewell,
795' 18" -25'

Average depth of wells at phosphate
mines 700-800 ft.
A good supply of water at 100-300ft.
but alarger quantiyyt deeper

In the phosphate fields the depth to ls.
runs from 25- 125 ft. At Pierce it is about
100ft.

Brewster,
American Cyanamid Co.
1-1000'- 15"- -45'
2-1000'- 16" " " 9/24/21
\$ 1000 8" " "

Winterhaven Water, Ice and Electric Co.,
O.A. Gane, Secy. & Treas.
613' 10" 126' -24' G.W. Sheller-
400' 6" 125' -24' berger, drill.

Crooked Lake,
No deep wells, R.R. gets its water from
lake also town from same source. Surface
wells 14-30 ft. One at club 80ft.

Polk County.
Additional note.

H.G.
Hpoewell,
Coronet Phosphate Co.
767-15-60- -26 1920 C.M. Boland dlr.
788-15- 120- -29 1920 "

Pierce,
Am. Agr. Chemical Co.,
755-155 240- -60 1921 C.M. Boland dlr.
Above data given by W.L. Bennet, driller
for Boland. Bennet was at St. Pete.

10/8/21
M.K.C.
Lakeland,
City Water Works, Mr. Johnson, supt.
Old well 580-6- -60
New well 670-10- -60
Drilled by Geo. E. Southard,
705 S. Fla. Ave., Lakeland.

Polk County.

Lakeland,
Federal Ice and Refrigerating Co.
Log of well # 1.
Drilled by Ohio Well Drilling Co.,
H.H. Bailey, driller.

(see correspondence file
Ohio Well Drilling Co.)

#	Sample	Depth	Formation.
	1	0 to 5	Sand
	2	5 to 25	yellow clay and sand some water
	3	25 to 60	sample holds moisture and water increased.
	4	60 to 70	yellow sand
	5	70 to 76	apparently Fullers earth
	6	76 to 81	blue shale
	7	81 to 85	lime formation
	8	85 to 100	yellow formation, (W)
	109	100 to 105	phosphate, more water
	10	105 to 107	blue shale
	11	107 to 112	shale and clay mixed (W)
	12	112 to 120	hard lime formation
	13	120 to 128	shale and lime mixed
	14	128 to 152	shale- trace of phosphate at 135.
	15	152 to 155	blue shale
	16	155 to 163	lime and phosphate, (W)
	17	163 to 165	green lime, when drilled
	18	165 to 188	lime and phosphate
	19	188 to 192	sticky shale or clay
	20	192 to 196	grey lime (W)
	21	196 to 215	blue shale, pebbles showing 206 to 215
	22	215 to 251	grey lime
	23	251 to 254	buff colored lime, hard dr.
	24	254 to 330	dark grey lime, easy drilling.
	25	330 to 339	" " " , hard "
	26	339 to 375	grey lime, easier
	27	375 to 378	" " , hard
	28	378 to 400	" " easier

Polk

29	400 to 420	grey lime
30	420 to 440	" "
31	440 to 468	yellowish lime, very hard dr
32	468 to 496	" " , hard.
33	496 to 505	lime, easier (W)
34	505 to 520	"
35	520 to 535	"
36	535 to 542	lime, easy drilling
37	542 to 551	" " "
38	551 to 575	" " "
39	575 to 598	" " "
40	598 to 620	lime hard, occasional crevice or cavern

15in. pipe set at 175ft. 4in.
10in. pipe free at 243ft. 9in. will

put in more 10in. .

Balance of samples to come later.
(W) after strata width denotes holds
moisture 24 hours.

Signed,
H.H. Bailey.

Received 11/7/21

Polk

Polk County.

Lakeland,

Log of well of Federal Ice Co. (cont.)

- | | | |
|----|------------|--|
| 41 | 620 to 648 | Hard brown limestone. Many forams |
| 42 | 648 to 674 | Soft, light colored, yellowish limestone, finely powdered. |
| 43 | 674 to 698 | Hard, grayish-brown, crystalline limestone. Slightly porous. |
| 44 | 698 to 703 | Hard, brown, crystalline ls. cut fine by drill. Also some white ls. |
| | 703 to 709 | ls. and some what white fossils these evidently fell in from above. |
| 45 | 703 to 709 | Hard, dark-brown, crustalline ls |
| 46 | 709 to 715 | Hard brown limestone. |
| 47 | 715 to 721 | Brown ls. |
| 48 | 721 to 729 | Brown ls. |
| 49 | 729 to 737 | Hard crystalline ls. A fragmen of white ls. found in this sample, with what appears to be a small echinoderm, evidently from above. |
| 50 | 737 to 742 | Rounded quartz pebbles, very porous ls. and some organic matter that resembles peat. At 738 a hard blue clay or sh. showing conchoidal fracture was encountered. In this clay or shale were small incrustations of iron pyrites. |
| | 742 to 753 | Mixed hard, crystalline, brown ls. and a lighter colored, softer ls. |

Polk County

Lakeland,

Well #1, Federal Ice & Ref. Co.,

16" O.D. casing 172'-4"

12" " 90'-"

Lead packer and overlap 5'-8"

Total hole cased 256'-8"

Bottom of 12"

Total depth of hole 750'

The water level stands 103 feet in the hole

From letter of H.H.B. 1/2 12/23/21, in file of Ohio Well Drilling Co.

Polk County.

From Frostproof Eastward to Ft. Meade leaving Frostproof about 3 miles westward the typical lake region type gives way to flatwoods and saw-palmetto. This continues until crossing Bowlegs creek the west side of the creek marking the limit. From this point on into Ft. Meade is high, gently rolling pine-lands, almost free from under-growth excepting dog-fennel and wire-grass. Apparently a good soil underlain at no great depth with clay.

Loughman,

Everglades Cypress Co., have the deepest well in town, reported about 300ft. deep. See a well man in Kissimmee about details. Flowing wells occur at the Chase & Co., small mill. See about these.

H.G.
9/21/21

Polk

STRUCTURE OF SOUTHERN FLORIDA. THICKNESS AND SUCCESSION OF FORMATIONS.

With regard to the thickness and succession of the formations underlying the pebble phosphate deposits in southern Florida, the best record that is at present available is that which has been obtained through the study of samples from wells drilled at and near Tiger Bay by the Palmetto Phosphate Company, at Christina by the Phosphate Mining Company, and at Fort Myers by the Ohio Well Drilling Company.

Description of samples from well No. 3 of the Palmetto Phosphate Company, Tiger Bay, Florida.

Depth of sample from the surface.

- 73 feet. The rock at this depth is a light colored phosphatic marl or limestone. In texture and appearance it is like the marl which lies beneath the land pebble phosphates. The phosphate is in the form of smooth, rounded black, brown, and white pebbles. While this is the prevailing material of the sample, at least one fragment consists of clear grained quartz, held together by a phosphatic or calcareous cement and resembling Alum Bluff sands. Acid test showed this piece to be but slightly if at all calcareous. There are also some fragments of dark blue hard rock which effervesce but slightly in acid. No fossils were seen in this sample.
- 85 feet. This is also a phosphatic marl or limestone. It is similar to the 73-foot sample except that it is lighter in color, being light gray or nearly white. The phosphatic pebbles are mostly black in color, the black pebble in the light colored marl giving a grayish cast to the rock. The hard blue rock that effervesces scarcely at all in acid is rather more abundant in this than in the preceding sample. This hard rock also contains black phosphate pebbles and it is probable that it is merely a silicified phase of the marl. Some casts of fossils but no determinable specimens. A considerable amount of clear grained siliceous sand is seen among the finer material.
- 150 feet. The material at this depth is also calcareous and phosphatic. The phosphate pebbles are black or brown and are smooth and rounded. The rock contains numerous small cavities giving it a porous appearance. Only one fossil is seen, this being part of a small gastropod.
- 160 feet. A phosphatic limestone or marl with some fossil gastropods and bivalves preserved as casts. The rock at this depth is in general similar to the 150-foot sample. The fossils seem more abundant perhaps because the sample is larger. The phosphate pebbles are black, brown, and white in color.
- 180 feet. Compact brown, phosphatic limestone. The phosphate pebbles are not abundant in this limestone and are in the form of small black pebbles imbedded in the rock. While the rock is prevailingly compact some porous fragments are seen. A few broken fossils preserved as casts.

minifera and bryozoa are present. This sample shows a mixture of finely powdered material with brownish cast together with coarser material from a softer rock. With the coarser material is included some small pieces of bluish colored chert. Foraminifera

630 feet. Limestone, probably hard and compact, the sample being finely powdered by the drill. Both *Nummulites* and *Orbitoides* are present, although only the small specimens escaped being powdered by the drill. This compact limestone has a slightly brownish cast.

500 feet. Foraminifera abundant, chiefly *Orbitoides*, including large specimens, most of which are broken by the drill.

not phosphatic. The limestone at this depth is practically the same as that at 420 feet. It is light colored or nearly white, fragments of broken shell are

phosphatic pebbles and little if any sand.

410 feet. Light colored finely powdered marl or limestone. Fragments of echinoderm spines are seen, and also other small fossils including a few bryozoa. This material is similar to that at 400 feet, although there seem to be no phosphatic pebbles and little if any sand.

00 feet. Light colored, finely powdered marl or limestone. Fragments of echinoderm spines are present and other small or broken fossils. A few phosphatic pebbles are seen, being black and shiny in appearance. A clear grained quartz sand occurs sparingly. This material is less phosphatic than that which lies above and resembles the Chattanooga limestone as seen at Newland Spring near Falmouth in Suwannee County and near Bass in Columbia County. Test showed this powdered material to contain a small amount of phosphate.

60 feet. Light colored phosphatic sandy marl, also some bluish gray sandy phosphatic marl or limestone. Some broken fossils are included.

50 feet. Light colored phosphatic marl or limestone more or less sandy. One small fragment of chalcedony holding cast of shell. A few fossils mostly broken bivalves and gastropods. The sample includes some bluish gray sandy phosphatic limestone.

190 feet. This sample includes compact phosphatic limestone with about equal admixture of pure white siliceous sand. Whether the sand is from a sand stratum or from the six-inch cavity found at this depth, or possibly accidentally mixed from the surface, is not known.

195 feet. A sandy, calcareous and phosphatic clay. In water this material falls to pieces and becomes slippery. In acid it effervesces. The sand is in the form of clear grained silica. The phosphate is mostly in the form of small black pebbles. Material is light colored when dry, although slightly bluish when wet.

200 feet. This material is similar to that at 195 feet although there is perhaps less phosphate, and the sand is perhaps smaller grained.

205 feet. A gray sandy phosphatic limestone. The calcareous material seems to predominate, although the rock is rather sandy. The sand grains are small and well rounded. The phosphate is in the form of very minute dark specks and the rock possibly also has a phosphatic cement. No fossils seen.

240 feet. A gray sandy phosphatic limestone. The calcareous material seems to predominate although the rock is rather sandy, the sand grains are small and well rounded. The phosphate is in the form of very minute dark specks and the rock possibly also has a phosphatic cement. No fossils seen in this material, except some imperfect casts in fragments of a porous limestone which may have fallen down from a higher stratum. These porous pieces occur also in the sample at 205 feet.

250 feet. Light colored sandy and phosphatic limestone. The sand grains are clear silica. The phosphate pebbles are dark colored. A few fragments of casts of fossils. This rock is not materially different from that at 205 and 240 feet except that it is lighter in color.

255 feet. Bluish gray, sandy, phosphatic limestone together with loose calcareous sand probably representing the ground-up rock. No fossils seen except echinoderm spines.

255 to 260 feet. Gray or blue calcareous sandy phosphatic clay. No fossils.
This material is similar to that at 200 feet.

265 feet. Bluish gray sandy phosphatic limestone together with loose calcareous sand probably representing the ground-up rock. No fossils seen except echinoderm spines.

272 feet. Light colored sandy phosphatic limestone. This is very similar to the rock above the blue clay. A few fossils including fragments of *Pecten*. Also one flattened water-worn pebble of the same material as the rock above.

275 feet. The greater part of the material of this sample is the bluish gray sandy phosphatic limestone similar to that already described. With this is found a light colored compact limestone, very slightly phosphatic as shown by test. The sample also contains several pieces of red iron ore. Of fossils only a few fragments were seen.

320 feet. Light colored phosphatic and slightly sandy marl or limestone. The phosphate is in the form of smooth dark pebbles imbedded in the marl. The rock is fossiliferous, although the fossils are badly broken.

- 665 feet. Limestone breaking into coarse fragments. The predominating fossils are small flat echinoderm, the internal cavity of which is in most cases filled with calcite crystals. Foraminifera are also present, although not numerous.
- 670 feet. A compact limestone with slightly brownish cast. The same small flat echinoderm is present, although broken up by the drill, and is not abundant. Foraminifera are present, although not abundant.
- 680 feet. A brown limestone rather hard but not very compact. Few if any fossils are preserved. It is probable that the minute fossils in the rock have dissolved out, and the cavity partially refilled by calcite crystals. This gives the rock a porous and partially crystallized appearance and causes it to break into medium coarse fragments by the drill.
- 690 feet. The material is chiefly light brown or grayish brown porous limestone partially crystallized, the fossils having been destroyed. With this is included light colored rock.
- 710 feet. This sample consists chiefly of soft white limestone in which is included a few foraminifera. A limited amount of the harder brownish rocks from the stratum above is present.
- 720 feet. A light colored, rather hard, although porous, limestone which seems to be made up of a mass of broken shells and other fragments of fossils. One small flat echinoderm present, although broken.
- 740 feet. White granular limestone. Fossils not numerous, although a few foraminifera are seen; also broken pieces of a small flat echinoderm.
- 760 feet. Grayish brown limestone, rather hard and partly crystallized. A few fossils, including a small gastropod.
- 770 feet. Grayish brown limestone, rather hard and partly crystallized. Few, if any, fossils.
- 790 feet. The greater part of the material of this sample is brown or grayish brown powdered up by the drill medium fine. With this are several large pieces of ground rock which consists almost entirely of a mass of small calcite crystals. The sample contains also some light colored material including a few foraminifera.
- 800 feet. The material of this sample is similar to that of the last. The large fragments consist chiefly of a mass of small calcite crystals, the mass being brown in color.
- 810 feet. *not described*
- 814 feet. The rock at this depth is not unlike that at 800 feet, although it is darker in color, being very dark brown, somewhat compact and partly crystallized.
- 817 feet. *not described*
- 820 feet. A light colored limestone which powders up medium fine in drilling. Foraminifera present. *not found*
- 830 feet. A light colored limestone which powders up medium fine in drilling. Foraminifera present, although not abundant.
- 838 feet. The greater part of this sample is white and rather soft limestone.

Putnam County.

Edgar,

Edgar Plastic Kaolin Co.,
Overburden average 6 to 15ft.
Kaolin " 6 to 20ft.

Beneath this is a vari colored fine sand
5% to 20% ball clay associated with sand
Hummel, Supt.

Interlachen,

Interlachen Sand and Gravel Co.,
Section:

Sand or overburden 1ft.
Concrete sand 6 to 8ft.
Clay, sandy gravel 10 to 15ft.
White sand, yellow streaks 15ft
Water ---
Kaolin, white clay mixed with
sand.

Well, a terracotta tile well 65ft deep
8in. water level -50ft.

General depth of wells around Interlache
60 to 100ft, no deep wells, water soft
usually in a rather white sand,

The above data from J.H. Wylie
Send pictures to Mr. Wylie. ✓

Putnam

Palatka,

Palatka has 2 water works systems, one
getting its supply from seepage springs,
the other from artesian wells.

Palatka Water Works, several springs,
minimum flow estimated 600 ga. per min.,
maximum 1600., seasonal fluctuations.

The estimate based on the amount of
water pumped. John D. Points, supt.

City Water Works, 4 wells, 3 4in and
one 6in., average depth of about 225ft.
Good flows. Drilled by H. Merwin.

9.12.21 H.G.

East Palatka,

Fla. East Coast Ry., 285-6-185- good
flow. Drilled by H. Merwin.

H.R. Resebro, GEN... Supt., Southern
Utilities Co., Palatka.

Drilled at W. Palm Beach, Titusville,
Lakeland, Sanford, Arcadia, Ft. Myers,
Live Oak, Palatka,.

Above from Mr. W. Henly at Lake Butler.

10/20/21

Write Mr. W. Henley, at Palatka about
the Lake Butler well. ✓ 11/25/22

Putnam

Putnam County
Well #4 of Bahrenberg Bros.
Between Orange Mills and East Palatka,
1 mile south of F.E.C. Ry.

1- 3 ft.	Sand
3- 5 ft.	Hardpan, dark brown
5-40 ft.	Clay
40-45 ft.	Sand clay and shell
45-80 ft.	Clay
80-90 ft.	Clay
90-99 ft.	Clay
99-113 "	Hard rock
113-115 "	Softer rock, lighter color
115	Cavity about 2 ft.
up to 160	Soft white rock.

At 99' water flows small stream about 3
gallons per minute. This water is hard, clear,
no sulphur. At 102 ft water increased to about
10 gallons per minute. In cavity at 115 feet
water increased to about 50 gallons per minute.
Water gradually increased through soft white
rock until at 160 feet water estimated at 250
gallons per minute

Diameter of well 4"
Casing 58 ft.
Depth to rock 100'

Putnam

Putnam

Welaka Springs Mineral Water.

Analysis by Robt. S. Weston, Boston, Mass.

	Gra. per U.S.Gal.
Silica	0.7
Alumina	0.5
Iron carbonate	0.7
Calcium chloride	34.2
Calcium sulphate	40.7
Calcium nitrate	trace
Magnesia Bromide	0.3
Magnesia chloride	29.6
Magnesia carbonate	14.1
Sodium chloride	513.8
Potassium chloride	8.0

(Copied from advertising matter)

Water supposed to come from a depth of 329 feet below surface.

Putnam

1

Rodman, Fla. Putnam Co.
Well of Rodman Lumber Co.
Anal. by Dearborn Laboratories.
Chicago.

	Grs. per U.S.Gal.
Silican	.245
Oxides of iron and aluminum	.081
Carbonate of lime	4.581
Sulphate of lime	.664
Carbonate of magnesia	1.374
Chloride of magnesia	1.342
Sodium and potassium sulphates	trace
" " chlorides	5.162
Loss, etc.	.567
Total solids	14.016
Total incrusting solids	8.287
" Non- " "	5.729

Note by Chemist-

This water will cause the formation of a little less than about an average amount of scale which no doubt will be rather hard and tenacious. It is also decidedly prone to cause trouble in the form of corrosion, pitting etc., due to the considerable proportion of sodium and potassium salts presents, together with the chloride of magnesia.

(Copied from data furnished by
H. S. Cummings, Pres.
Rodman Lbr. Co.

Putnam

No. Mis. 1400. Well Water from Wilson Cypress Co., 7 miles South of Palatka. For State Geological Survey. E. H. S.

Light yellow color; odorless; vegetable taste; small, white, flocculent sediment.

Milligrams per liter.

SiO ₂	13.
Cl	234.
SO ₄	49.
PO ₄	0.
CO ₃	0.
HCO ₃	156.
Na+K	94.
Mg	33.
Ca	64.
Fe+Al	1.
Loss on ignition	215.

Total dissolved solids...855.

Putnam

City water, Palatka.

#1

Odor H₂S, Sulphur taste, clear.

Total solids	531.0
Cl	156.3
SO ₄	76.9
SiO ₂	18.0
CaO	97.1
MgO	43.3
CO ₂	7.3
HCO ₃	156.1

#2

Odor H₂S Tasteless, clear.

Total solids	488.
Cl	138.2
SO ₄	66.9
SiO ₂	11.8
CaO	101.8
MgO	39.1
CO ₂	10.8
HCO ₃	129.3

Putnam

SanMateo, Putnam County.

M. W. Raiford

By Miller, 5/9/99

Moisture at 100	15.15%
Water of combination....	5.60
Silica	64.45
Iron oxide	1.80
Aluminum oxide	6.00
Calcium oxide	2.42
Magnesium oxide	3.05
Phosphorus pentoxide ...	1.60
Potassium oxide	.70
Sulphur trioxide	.15

Putnam

Sarasota County.

9/30/21

Miacka,

J.G.Crowley, 375'-4"-100'- -7'

A.C.Palmer,

1- 700'-6" +15

3-114' 4" +10

3- 350' 4" +10

Sarasota,

City Ice Plant,

455'-6"- 120'- +14'

Furnish city 6000 gal per hr. When well at ice plant was drilled the flow of the city well was reduced.

City Water Works, J.R.Hinton, Supt.

One well 600ft. was condemned because the water was too hard. A good flow was struck in this well at 450ft.

City supply from 2 wells and from water furnished by ice plant.

390'- 4"- 200'- +6' hard slight sulfur

275'- 6"- 200'- +6' "

Venice,

W.B.Surls,

93'-3" hard slight sulfur

40'- 2½" soft.

M.K.C

Nakomis,

Well at hotel 90'-3"- +15'

" " church 52'-2" +15'

" " station 90' +15'

Wells on Caseys Key 80ft. deep and water stands about 2ft below surface.

T.C. Sines well driller, Sarasota.

Sarasota

10/1/21

Analysis of water, Sarasota Ice and Cold Storage Co.

Incrusting or soap consuming solids.
Gr. per gal.

Calcium carbonate	8.50
Magnesium "	1.43
" sulfate	8.62
Iron and aluminum oxides	.10
Silica	1.74

Non-incrusting or soap consuming solids.

Sodium sulfate	7.50
" chloride	6.40

Total dissolved solids 34.29

Total hardness	17.39
Alkalinity or acidity	10.20
Suspended matter	trace

Analysis by the Refinite Co.,
4/7/20 Omaha, Neb.

M.K.C

Sarasota

Section at Veilice as given by Mr. T.C. Sines, well driller, Sarasota.

Sand	-----20ft.
Lime and flint-	6in. to 2ft.
Blue clay	18 to 24ft. ft.
Sand	6 to 16ft.
Blue clay	18 to 24ft. ft.
Flint cap	1in. to 6in.

A very porous rotten ls. Occasionally 40 to water bearing -----3ft-50ft. clay. Another water bearing rock at about 300 ft. with a flint cap about 2 to 20in. thick. Fair flow.

Another at 550ft 20 to 80ft. thick. has flint cap. Good flow.

Quicksand at some places at various depths, mostly 150 to 200ft.

10/1/21

M.K.C

Sarasota

Seminole County

1-13-22

M.F. Robinson, Sanford, Fla.

in a letter to Capt. R.E. Rose under date of 1/13/22 states he has a flowing well, south side of Lake Jessup due south of Sanford about 7 miles, elevation of (est.) 20 feet, with a head of 17 feet above the surface and the water is only slightly H_2S , no magnesia and is very soft (softer than rain water). Wants analysis of water.

Look up Mr. Robinson when in Sanford again. 1-16-22

Seminole

Seminole County

Oct. 24, 1920 } J. J. Higgins } Pear apt.
P.O. Box 966. } soils. pebble phos.
Sav. Ga.

Send
C. M. Berry
Seminole County Demonstration Agency
Sanford, Fla.
12th Annu. Rpt.

✓ Mrs. C. M. Berry
as complete set of reports as is available.

Write
Mrs. Mary A. Spink
1140 E. March St (Newarkhurst)
Dr. Fletcher's Sanatorium,
Indianapolis, Ind.

stuck oil on Rock Lake near Orlando,
1 1/4 mi. West of Orlando.
This note from Mrs. Berry.

The following men were interviewed (with
Dr. Sellards) relative to matter of salt wells.

about
Mr. Foster } Ant. ride to Enterprise and
Mr. Hayden } return.

Mr. Ball.
C. M. Berry. Mr. Douglas, Ch. Ch. H.
Mr. Holley.

Mr. Lawton, R. Supr.

10-22-20

J. R. Hayden,
Sanford, Fla.

(Personal)

Albert Foster

Sanford, Fla.

10-22-20

Salt well of L. M. Rehbruder, Ft. Meade

N 1/4 of the N 1/4 of S. 8, T. 20 S, R. 32 E.

249' deep, 2", drilled about 1917, by J. H.

Mahoney, Sanford. The well is located between
Sanford and Geneva on Bissett Slough.

In company with Mr. J. R. Hayden and Mrs.

R. B. Raulerson Dr. Sellards + I visited the
lands owned by Mr. Hayden and Mrs. Raulerson
and the salt well only 30 feet deep. This
was pulled up, however, but the well flowed
strong salt water at the depth of only 30 feet.

Flowing fresh water wells according to Mr. Hayden
can be obtained on his property at not more
than 50 feet. One now flowing at 9 feet.

Mr. N. M. Letts, Ft. Pierce.
Mr. Holden (Wm. M. C. M. G. H. H.)

St. Augustine Well records.

General information furnished by
H. Walker.

0-12 ft.	sand
12-60 ft.	sand and shell
60-95 ft.	sand, shell and streaks of blue clay
95-145 ft.	blue clay
145-146 ft.	very hard rock (limestone) Water will flow just below this, coming just to surface
146-160 ft.	sand and clay mixed
160-170 ft.	black sand and clay mixed
170-180 ft.	bed rock, very hard
180-185 ft.	gray rock, alternating hard and soft strata.
185-200 ft.	chalky formation
200-520 ft.	alternating hard and soft s strata; mixture of shell and coral. Water bearing.

St. John

Well at Hastings.

0 - 6	Sand, surface soil.
6	Clay
-32	Sand
32 - 38	Clay
70	Clay
88	Clay
99	Clay
113 - 134	Clay
160 - 181 $\frac{3}{4}$	Clay
182	Thin rock, only 3 in. thick.
186 - 193	Rock, very hard, made only a few inches a day.
193 - 208	Porous limestone, water, $\frac{1}{2}$ flow.
208 - 241	Limestone, soft, more water.
257	Full flow.

Henry Bugbee's well.

St. John

St. Augustine,
Well of W.J. Sherman.

Head above surface 32 to 37 feet.

0-5'	Sand
5-	Clay
	White quick sand
	Clay
	Coarse pebbles and some shells
-90	Very hard rock
90-142	Greenish clay, very compact
	Hard rock
	Greenish clay with black pebbles
172	Very hard rock
172-200	White chalky rock

St. John

Water Supply Fla. E. Coast.

H. A. Holmes. Swimming Pool
H. R. R. Fla. well was drilled May 1916.
Depth 778
Drilled Brown & Ver.
Temperature 70° F.
14 in well, said to be good to the bottom.
Analysis made by Department of Public Health & Charities, Philadelphia.
William C. Robinson M. B. Chemist.
Pool 50 x 100, Sept 2 to 9. 190,000 gals.
Flow of well 52 gals in 18 min Sec. 173 $\frac{1}{2}$ in Min.
Flow of well fills pool in 18 hours.
about 27,450 cu ft = 203 $\frac{3}{4}$ gals per min.
Sanitary analysis.

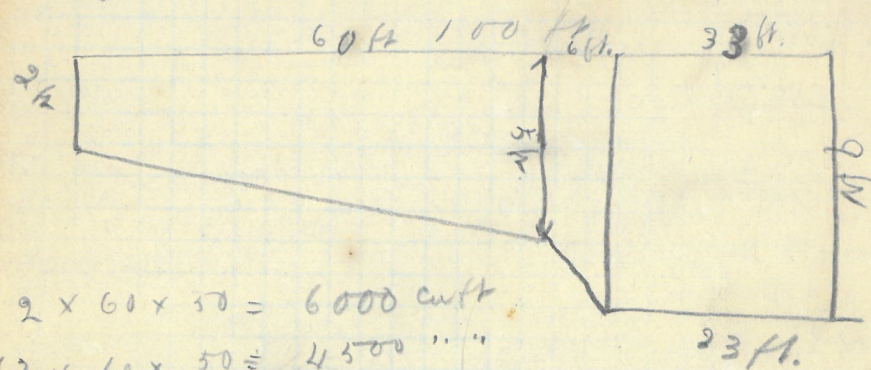
Chlorine	368
Nitrogen as nitrate	none
" " Nitrate	none
" as Ammonium Compd	0.16
" by Alcohol Permanganate	0.08

Mineral constituents.

Sodium chloride NaCl	27.20%
Potassium " KCl	4.64%
Magnesium " MgCl ₂	10.61%
Sodium sulphate (Na ₂ SO ₄)	12.38%
Calcium " CaSO ₄	16.10%
" Carbonate CaCO ₃	5.66%
Magnesium " MgCO ₃	2.81%
Silica SiO ₂	0.64%
Alumina + ferric oxide (Al ₂ O ₃ + Fe ₂ O ₃)	0.40%
Organic matter	Trace

Scale forming mineral 26.56%
Flow of well about 249,120 + 285,000 gals per day.

Poul



$$2 \times 60 \times 50 = 6000 \text{ cu ft}$$

$$\frac{1}{2} \times 60 \times 50 = 1500$$

2100 " "

$$6 \times 7 \times 50 =$$

$$33 \times 50 \times 9 = \frac{14850}{27450}$$

27450

8

120 180 10600 Gall

$$\begin{array}{r} 120 \\ 50 \\ \hline 60 \end{array} \quad \begin{array}{r} 180 \\ 50 \\ \hline 2190.00 \\ 4500 \end{array}$$

$$\begin{array}{r} 42 \\ \times 20 \\ \hline 840 \end{array}$$

$$\begin{array}{r} 1080 \overline{) 2160} \\ \underline{2160} \\ 0 \end{array}$$

$$\begin{array}{r} 18 \\ 60 \\ \hline 1080 \end{array}$$

$$\begin{array}{r} 24 \\ \times 60 \\ \hline 1440 \end{array}$$

$$\begin{array}{r} 288,000 \\ + 1440 \\ \hline 288,000 \end{array}$$

360

52 ges = 1850

$$184 = \frac{1}{18}$$

$$60 \text{ " } = \frac{60}{8}$$

City water supply, F. H. Paine.

1 well

depth 800 ft.

Size 8 in + 6 in

Flow 32 gal in 18 Sec.

Casing 6 in at 600 ft, 8 in casing at 100 ft ±
Levitt J. F. Brown & Vero

uses about 300,000 a day
pump in pump.

Flows 22 + above to surface
Cost of this 8-6 in well \$2.50 per foot
or about 2000 feet well.

Cost on 2 C well

Depth 550 ft at 45°

Casing \$2½

247.50

65.00

\$ 312.50

38

Cost 350.

values etc

Cost of 3 in

Cost of 3 in well

Depth 550 at 55°

Casing at 600

302.50

120.00

422.50

53

\$ 475.00

values etc

Hanson, well driller says the
wells at White City are practically
all 550 feet deep.
Hanson drilled his well 600 ft for
only as on experiment. No water below 530 ft.
wells used are mostly 2 in wells
using galvanized pipe.
method of drilling is hydraulic. Water
is pumped down a pipe and works
back to surface as when down to the drill
point.

$$\begin{array}{r}
 178 \\
 1240 \\
 \hline
 6920 \\
 692 \\
 \hline
 173 \\
 249,120
 \end{array}$$

$$\begin{array}{r}
 550 \\
 45 \\
 \hline
 8750 \\
 220 \\
 \hline
 247.50
 \end{array}$$

$$\begin{array}{r}
 32\frac{1}{2} \\
 800 \\
 \hline
 6400 \\
 100
 \end{array}$$

$$\begin{array}{r}
 550 \\
 55 \\
 \hline
 2750 \\
 2750 \\
 \hline
 302.50
 \end{array}$$

$$\begin{array}{r}
 200 \\
 60 \\
 \hline
 1200
 \end{array}$$

see London. Prod Est. p. 13

Artesian well of Fellsmere Farms Company

Location Sec. 22, T. 31 S, R. 37 #.

Size 4 inches

Casing used 146 feet.

Depth of well 370 feet.

Head 25 feet (tested Sept. 23, 1910 by
E.H. Every, Mgr. of the Co. see
letter to Capt. Rose dated 2/23.

9/23/10

Flow 185 gallons per minute.

Analysis of Water from above well
by State Chemist.

	Parts per mil.
Chlorine	257.
Carbonates	0.
Bi-carbonates	177.
Loss on ignition	245.
Total dissolved solids	905

Sumpter County.

Bushnell,

City well about 300ft, 1914. Drilled by Pat Winfred, McIver & MacKay, Ocala.

F.L.Rutland, Sumpterville, had the well put down while he lived at Bushnell. Might get data by writing him.

Daily consumption 12,000 to 15,000 gal.

Pearson Oil & Gas Co. drilled 2 wells, one 2002ft, the other about 1200. The 2 wells are only a short distance apart in Sec. T S, R E, about mi. N.E. of Bushnell. The water in the 2002ft. well stood about $2\frac{1}{2}$ ft. below the surface, this is on low ground on the edge of the prairie.

The 1200ft. well is on higher ground and the water stands 8ft. below the surface.

Dundee Petroleum Co. well is located possibly $\frac{1}{4}$ mile W. of the above wells. The water in this well stood about $2\frac{1}{2}$ ft. below the surface and tasted fresh/.

S. Stephens,

Sec. 21, T. 20 S, R. 22 E.

Has 7 wells, 4 in use now supplying water.

100-1 $\frac{1}{2}$ -58- -16 1920

84- 6-50 -16 1921

70- $1\frac{1}{4}$ -65- -16 1920

47-1⁴₂₅-46 - -16 Dec.1921 Had largest showi
ng of oil. Used nitro-glycerine in trying
to bring well in. Ruined it and pulled casi
ng

96-14-91- -16 1921 Good showing of oil in this well, probably second in amount. Well now used for supplying house. In pumping well only a few small films of oil showed up.

100-2-50- -16 Aug 1921. Showing of oil
Only small films rose to surface after
had been pumped for some time. Used for
domestic purposes. Composite sample from
50 to 100ft, taken

46-14-42- -16 Aug. 1921. Some oil reported. Said to have struck oil in this at 30 ft., good status of water at 46ft. In order to try to get a sample of oil an attempt was made to clean the well and drill deeper. In doing so a hard rock was struck which could not be penetrated..Also black gun powder looking material. Will try to go deeper at once.

Newland Springs, Suwannee Co. Analysis for the State Survey by the
the State Chemist.

Ingredients

Parts per mi
mil.

Calcium Oxide (CaO)	89.3
Magnesium (MgO)	9.7
Carbonate (CO ₂)	27.6
Bicarbonate (HCO ₃)	420.9
Sulphate (SO ₄)	9.5
Chlorine (Cl)	5.3
Silica (SiO ₂)	5.0
Volatile Matter	48.1
Total Solids	211.6

Suwannee

Suwannee County

Suwannee Sulphur Springs.

Anal. by C.H.Chandler, PhD.
Claude E. Pellew, E.M.
New York.

	Parts per mil.
Chloride of sodium	10.6
Sulphate of potassium	10.3
Sulphate of lime	30.5
Bicarbonate of soda	16.5
Bicarbonate of magnesia	188.9
Oxide of iron and alumina	59.7
Silica	2.6
Organic matter and volatile matter	37.4
Total solid matter	370.5

Well of R. L. Dowling

	Parts per mil.
Silica	12.9
Iron and aluminum oxides	2.5
Calcium carbonate	163.2
Calcium sulphate	25.5
Magnesium carbonate	14.9
Sodium and potassium sulphates	trace
" " " chlorides	17.2
Loss, etc.	3.1
Total	237.2

Well of G. E. Porter, Live Oak.

Silica	2.5
Iron and aluminum oxides	.9
Lime, calcium carbonate	9.7
" " sulphate	trace
Magnesium carbonate	1.8
Sodium & potassium sulphate	trace
" " " chloride	28.9

Lo

Suwannee

Suwannee County

Well of G. E. Porter, Live Oak.

	Parts per mil.
Silica	2.5
Iron and aluminum oxides	.9
Lime, calcium carbonate	9.7
" " sulphates	trace
Magnesium carbonate	1.8
Sodium and potassium sulphate	trace
" " " chlorides	28.9
Loss, etc.	2.1
Total	45.9
Organic matter	12.0

Water from Mr. McIlvane, Live Oak.

Total solids	221.
Chlorine	7.
Hardness	190.74
Nitrates	some
Nitrites	none
Free ammonia	.041
Albuminoid ammonia	.000
Sulphates	xxxxxx

A.W.Blair, Analyst 6/2/02

Suwannee

Region about Peacock
Note Taken 5/18/06 by E.H. S.

At Peacock the Newland Spring is water coming up through a natural sink and disappearing through a similar sink. The water flows a distance of about a block before going down. The indications are that two nearby sinks are connected by solution or by erosion. Flow strong and steady, but when the river rises so that it stands at a level above the water head, the flow is reversed and an unlimited quantity of water goes down the first sink.

Other sinks. 200 yards to the south is a sink supposed to go to the same "stream". Towards the river are numerous sinks. One $\frac{1}{4}$ mile is clogged; one 2 miles elongate is not clogged. Sink $2\frac{1}{2}$ miles round and deep and apparently open. 4 of the sinks near the river not examined.

Wells. The Davis well near the bank of the spring is stated positively by Mr. Davis to go to 82 feet and, like the spring, to rise and fall with the river and to fill with river water.

Live Oak, Suwannee County.

City well, depth 1080 feet.
Anal. by U. S. Geol. Surv.

Calcium	68.
Magnesium	5.7
Sodium and Potassium	7.2
Iron and Alumina	0.04
Carbonate	0.00
Bi-carbonate	224.
Sulphate	8.9
Chlorine	3.9
Nitrate	0.6
Silica	17.
Total solids .	219.

Well of R. L. Dowling, 200 feet deep.
Analysis taken from Water Supply Paper,
U. S. Geol. Surv. 204.

Calcium carbonate	163.
Lime, Calcium sulphate	25.5
Magnesium Carbonate	14.9
Sodium and Potassium sulphates	trace
Sodium and Potassium Chlorides	17.2
Silica	12.9
Total solids	237.2

Suwannee Springs Water,
Suwannee, Suwannee County.
C. H. Changler, Ph.D.

East 49th Street, New York
Claude E. Pellew, E.M. Analysts.

Gr. per U.S. Gal.

Chloride of Sodium	0.6196
Sulphate of Potassium	0.6027
Sulphate of Lime	1.7772
Bicarbonate of Soda	0.9613
Bicarbonate of Lime	11.0149
Bicarbonate of Magnesia	3.4827
Oxide of iron and alumina	0.1516
Silica	0.8040
Organic and volatile matter	2.1869
Total solid matter	21.6017

Fenholloway Sulphur Springs,
Taylor County.

Anal. by State Chemist

	Parts per mil.
Cl	70.9
SO ₄	640.5
SiO ₂	50.0
CaO	920.0
MgO	420.0
Total solids	3282.0

Odor of H₂S, Tasteless, Clear.

Taylor

Hampton Springs,
Taylor County
H. K. Miller, Analyst. June, 1904.

Parts per mil.

Total solids	985.0
Volatile matter	155.0
SiO ₂	7.0
MgSO ₄	365.2
CaSO ₄	210.5
Calcium bicarbonate	422.3
Sodium Chloride	55.6
Potassium	0.4
Sulphuretted hydrogen	3.5

Taylor

Suwannee County.

From
Times-Union, January 20, 1922.

were: J. E. Cannon, Falmouth; Mr. Blank, secretary of the chamber of commerce, and Dr. Anderson, Lake City; Editor Weaver, Mayo; J. W. Carver, W. L. Rogers, A. W. McLeran, Wellborn; F. B. Brinson, Rixford; J. V. Brown, Route E. S. J. Formyduval and Syd Allen, Rixford; Messrs. Bamberger and Marshall of the Suwannee Oil and Development Company.

Taken from news item relative to
Live Oak.

Union County.

Lake Butler,
Ice Plant, H.F. Stanton, owner.
204- 6-190- -45 1914 G.W. Young driller
At the depth of 204 ft. a cavity was struck
D.E. Knight,
90-14-45- -14 1920 B.Z. Mathews driller.
water slightly hard.
J.W. Townsend, 72-2-55- -12 1918 B.Z.M. dlr

Worthington Springs,
Visited Springs and took sample of water
for analysis. Flow from spring small; could
not be estimated as water was being pumped
at time.

Water from spring is pumped into a tank
and distributed to town. Few shallow wells
in town average about 30 ft. Most residents
use spring water, either carrying it direct
from spring or using from tank. Water from
spring impregnated with H₂S.

I.F. Lamb, owner-send copy of analysis,
Flow estimated by Mr. Lamb at 1000 gal. per
minute. Pool is 100 by 70, average depth 4 1/2 ft.
Fills this pool in 2 1/2 hours.

Dukes,
J.P. Howard, well yields sulfur water.
Mostly shallow wells about 15 ft. Some wells
about 40 ft. soft water.

Lake Butler, The deepest well in Lake Butl
belongs to J.W. Townsend: drilled J.K. Owen
and N.H. Monk 8 or 10 yrs. ago. It is about
600 ft. deep. drilled 1911 - see cover J.K. Owen.

B.Z. Mathews states that water is struck
in this vicinity from 28 to 90 ft. These are
rock wells and not surface wells: surface
wells 12 to 20 ft.

Raiford,
State Prison Farm,
313-12-175- -50 1914 hard sulfur
drilled last time by Davis.
Another well caved in and not used.
L.E. Mosley, Capt.

600, 12, 70, -50, 1917. Drill purposes.

Guilford,
C.C. McCall, Drilled by B.Z. Mathews
30 to 50 ft. water stands 2 or 3 ft.
below surface. Partly hard.

Dukes,
3 miles W.
H.G. Crawford, Drilled by Tom Fielder.
107-2-90- -89 1901 Tom Fielder dlr.
117-2-100- -111 1919 B.Z. Mathews.

Benson Spring Water, Enterprise, Fla. Analysis made at Vanderbilt University.

	Grs. per U.S. Gal.
Potassium	1.581
Sodium	105.288
Magnesium	12.427
Calcium	18.760
Iron	0.041
Chlorine	197.717
Bromine	6.020
Carbon Dioxide	32.620
Sulphuric Acid (radical)	31.570
Silica	0.991
Phosphoric Acid (radical)	0.041
Boric Acid	Heavy trace
Organic Matter	Small amount
Hydrogen Sulphide	Slight trace

(From advertising matter)

Union

Volusia

Volusia

Orange City Mineral Spring Water
Analysis by the Industrial Chemical Inst.
Milwaukee.

	Grains per gallon
Silica	1.16
Alumina	—
Iron oxide	—
Calcium sulphate	0.92
Calcium carbonate	5.37
Magnesium carbonate	1.15
Sodium chloride	1.15
Ammonia, "free"	0.00
Albuminoid ammonia	0.01
Nitrates	—
Organic Matter	0.00

(Copied from advertising matter.)

Volusia

Volusia

Orlando city well drilled in 1906
by Garrett Bros.

Sewage well.

Total depth	260'
Diameter	8"
Length of casing	101'
Water stands from surface	47'
Used as sewage well	

1-101 ft. mostly clay with some sand and layers of shell rock

101-260 Marly and rather soft limestone

260 Soft water bearing horizon. Water from this horizon rises to 47 ft. from the surface.

Volusia

Orange City, Volusia County.
Well of Orange City Water Works Co.

	Salts per 100,000 parts
Silica	2.00
Alumina	none
Iron oxide	none
Calcium sulphate	1.59
Calcium carbonate	9.23
Magnesium carbonate	1.97
Sodium chloride	1.98
Ammonia "Free"	0.015
Albuminoid ammonia	0.025
Nitrates	none
Nitrites	none
Oxygen consumed upon wet combustion	0.18
Total hardness	7.13
Temporary hardness	6.48
Permanent hardness	0.65

(Industrial Chemical Institute of
Milwaukee) Dec. 12, 1912

Volusia

SANITARY EXAMINATION OF DRINKING WATER

Number of sample.....

At the request of.....

Water from *Cold water tap in Kitchen of 38 East S. Y. Ave.
DeLand, Fla*

PHYSICAL ANALYSIS

PARTS IN ONE MILLION.

Color..... *none*..... Sediment..... *Trace*
Odor..... *none*..... Total solids..... *149.600*
Turbidity..... *none*..... Fixed residue..... *144.460*
Reaction..... *2.3 cc. $\frac{1}{10}$ H_2SO_4 (Erythrasine)* Loss on ignition..... *5.140*
Spec. Grav..... *1.00017* Soap consuming power..... *119*
Hardness..... *Temporary 118, permanent 15, total 133 (CaCl₂)*

CHEMICAL ANALYSIS

PARTS IN ONE MILLION.

Chlorine..... *13.900* (Equivalent *22.905*)
Nitrogen as ammonia { free..... *0.006*
albuminoid..... *0.024*
Nitrogen as nitrate..... *0.7874*
Nitrogen as nitrite..... *none*
Oxygen consumed..... *1.024*
Sulphuric acid..... *3.88 (S.O₃)*
Phosphoric acid..... *Trace*
Carbonic Acid { free..... *none*
combined..... *70.8 (CO₂)*
Metallic substances deleterious to health..... *no lead, no zinc, no copper
Iron 0.2+*

MICROSCOPICAL EXAM.

Amorphous matter.

BACTERIOLOGICAL EXAM.

Quantitative: Bacteria in one CC.....

Qualitative: Pathogenic.....

DeLand, Fla., *Sept 16* 1911

Voluntia

J. F. Baerecke

DeLand, Fla., Oct 14 '11

*Mr. C. H. Sellards
State Geologist
Tallahassee, Fla.*

Dear Sir,
*Many thanks for your kind letter of
Oct 5 and for the Report on Artesian Wa-
ter - supply of Eastern Florida. - The report
of the six inch well in DeLand (p. 177) dif-
fers considerably (esp. the ammonias and ni-
trates) from a report on the same waters,
sent to me by Mr. Herzog shortly after he
made the examination. (Enclosed copy.)
You will perhaps be interested in the report
of the new ten inch well which is at present
in use in DeLand. (Enclosed report of Mr. Benson.)
I made a sanitary analysis of this latter
water as we use it in the home, after it is
flowing through and standing in the con-
ducting pipes. I have enclosed the results,
but have left off the bacteriological part
which is less favorable and which I have
taken up with our City Health Officer.
Will you kindly send me the two publi-
cations marked on the card?
O remain, dear Sir,*

*yours respectfully
J. F. Baerecke*
Voluntia

DeLand, Fla.,

*Analysis of city-water from 8 in. well,
by H. Herzog Jr. Gainesville Fla.
Report Nov. 27 1898.*

*Total solids..... 136.40
Residue after ignition..... 93.40
Loss on ignition..... 43.00
Chlorine..... 6.80
(Equivalent *11.27* H_2O chloride)
Oxygen consuming power..... 1.55
Free Ammonia..... 0.06
Albuminoid Ammonia..... 0.015
Nitrates..... 0.042
Nitrites..... none
Sulphates..... 2.40
Phosphates etc..... *Trace**

*In parts per million.
(Was signed) H. Herzog Jr.*

Voluntia

DeLand, Fla.,

Analysis of city-water from 10 in. well,
(Drilled in 1906, — 264 ft. deep)
by D. H. Benson (I think of South Jacksonville)
Report December 23 1908.

Color none
Sediment none
Turbidity none
Odor, cold and hot none
Reaction slightly alkaline
to litmus.
Total solids by evaporation 190.000
Loss by ignition 1.940
Fixed residue 168.060
Free Ammonia 0.006
Albuminoid Ammonia 0.042
Chlorine 11.120
Sod. Chloride 18.350
Nitrogen as nitrates 0.800
Nitrites none
Sodium sulphate 4.650
Carbonate of lime 100.000
Carbonate of magnesia 18.080
Silica 11.000
Iron peroxide and alumina 13.000
Phosphoric acid trace

In parts per million?

Volusia

Water from W. L. Widmeyer, New Smyrna.

Odor H_2S
Taste, saline and sulphur
Clear.

Total solids	1980.0
Cl	836.6
SO_4	7.8
SiO_2	27.0
CaO	197.7
MgO	108.6
CO_3	12.0
HCO_3	209.8

Analysis by State Chemist (?)

Volusia

Health Conditions in DeLand

(THE ATHENS OF FLORIDA)

PUBLISHED BY AUTHORITY OF THE
DELAND BOARD OF HEALTH

APPRECIATING the remarkable advantages DeLand has to offer to the home seeker, the health seeker and the winter visitor, the DeLand Board of Health wishes, in a brief way, to set forth the facts bearing upon health conditions here, so that those who are interested may know what those conditions are, and with the hope that they may profit by the knowledge. We would not convey the impression that DeLand is strictly a health resort, for we have other claims upon the attention of the prospective settler and visitor than the matter of health. We have a progressive, up-to-date little city, which is the center of a large growing industry, the seat of John B. Stetson University, the home of numerous industries, well known as a winter resort, with good churches of many denominations, good schools, good hotels and a good moral atmosphere. We have a community in which a man who is enterprising and willing to work is sure to succeed. We have no saloons in the county, and very little sickness. We have a climate in which one can live in comfort and safety twelve months in the year. But while we do not wish to pose strictly as a health resort the fact remains that thousands have come here for their health and been benefited, and we hope that many more may do likewise, and in this article we will consider the advantages of DeLand as a home for the health seeker.

LOCATION

DELAND is located on a high pine ridge between the St. Johns River and Atlantic Ocean, and about one hundred miles south of Jacksonville. It is surrounded on every side by miles of pine forests, and the ocean breezes come laden with health giving balsam. The sandy soil affords good drainage, and there is never at any time any mud or standing water. The sanitary conditions of the city are carefully looked after by the Board of Health, and no unhealthful conditions are allowed to exist.

WATER

IN that most essential of all requirements for the maintenance of good health, a good water supply, DeLand is especially fortunate. We have artesian water from deep wells distributed by the city's own water works system. It is very healthful water and entirely free from the objectionable sulphur flavor of water in some parts of the State. Following is an analysis made by D. H. Benson, B. Sc.

CERTIFICATE OF ANALYSIS

Sample of water taken from city supply of DeLand, Fla.

SANITARY ANALYSIS		PARTS IN ONE MILLION	
Color.....	None	Total solids by evaporation.....	170.000
Sediment.....	None	Loss by ignition.....	1.940
Turbidity.....	None	Fixed residue.....	168.060
Odor, cold.....	None	Free ammonia.....	.006
Odor, hot.....	None	Albuminoid ammonia.....	.042
Reaction slightly alkaline to litmus		Chlorine.....	11.120
		Nitrogen as nitrates.....	.800
		Nitrites.....	None

MINERAL ANALYSIS

PARTS IN ONE MILLION		GRAINS PER U. S. GAL.	
Sodium chloride.....	18.350		1.070
Sodium sulphate.....	7.650		.445
Carbonate of lime.....	100.000		5.833
Carbonate of magnesia.....	18.080		1.054
Silica.....	11.000		.642
Iron peroxide and alumina.....	13.000		.758
Phosphoric acid.....	trace	Total grains per gal.....	9.802

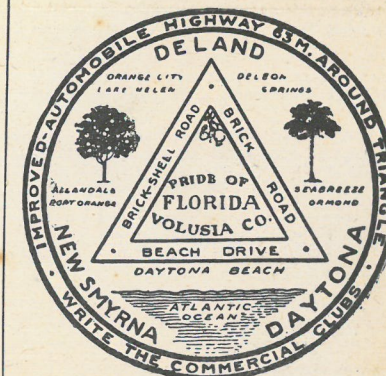
This is a very pure water and eminently suitable for domestic use.

(Signed) D. H. BENSON.

FINALLY:—If you are thinking of making a change, and wish to make your home in a genial and healthful climate, midst pleasant surroundings, and among a hospitable people, consider DeLand. If you wish to escape the rigors of a Northern winter, come where the flowers bloom throughout the year; where you can walk, or drive, on paved and shaded avenues, or ramble among the orange groves; or fish, hunt, boat or golf as your tastes incline, and above all, where you can revel in warm sunshine and a healthful outdoor life at any time of the year.

E. B. BOWEN, Secretary. (Signed) G. A. DAVIS, President.

THE BOARD OF HEALTH directs the reader's attention to Volusia County's Million Dollar Hard Surfaced Automobile Highway as shown by cut opposite. For illustrated DeLand Booklet, or detailed information, write The DeLand Commercial Club.



WEATHER CONDITIONS

A MISTAKEN IDEA prevails through the North that because Florida is so far south the summer must be unendurably hot. As this part of the State is a narrow peninsula between the Gulf and the Ocean, and as it is the path of the trade winds, the climate is very equable. We have neither extreme heat nor cold. We have a rainy season during the summer months with frequent showers which tend to cool the atmosphere, and the nights are almost invariably cool. Sunstroke is unknown here. In the winter we have occasional frosty nights and the days, as a rule are bright and sunny. The main advantage of Florida's climate is the fact that one, even though an invalid, can be out of doors every day in the year.

THE RAINY SEASON

Our rainy season is during the summer months from June to September, when we have frequent showers, which moderate the summer heat. The annual rainfall is about 60 inches.

TEMPERATURE

BASED UPON OBSERVATIONS TAKEN IN 1916

Average maximum reading for the year.....	80.4
Average minimum reading for the year.....	58.9
Mean temperature for the year.....	69.7
Difference between mean maximum and mean minimum.....	21.5
Average mean temperatures of the six coldest months	
November to April inclusive.....	61.7
For the six warmest months, May to October.....	77.7
Difference between six warmest and six coldest.....	16.0
Average mean temperature of hottest month—August.....	81.8
Average mean temperature of coldest month—December.....	59.0
Difference.....	22.8

At no time during the year did the thermometer register over a hundred and but once did it go below thirty and then for but a very short time.

F. G. BRILL, Co-operative Observer.

THE DEATH RATE

THE Board of Health has kept a record of vital statistics covering a period of several years, and notwithstanding the fact that many come here because of ill health, we find that our death rate is remarkably low.

Following is an extract from the latest report of the DeLand Board of Health:

DEATH RATE PER THOUSAND

Residents only, per thousand.....	8.75
White.....	7.75
Negroes.....	10.00

E. B. BOWEN, Sec.

(Signed)

G. A. DAVIS, Pres.

FOOD SUPPLY

IN another most important matter, the food supply, is the resident of DeLand particularly fortunate. Here we get fish and oysters fresh from their native waters, vegetables gathered fresh from the garden at any time of the year, and fruit which is allowed to ripen before it is picked. Well kept dairies supply us with the best of milk, and there is an abundant supply of good things to eat at all times.

TO PHYSICIANS

AFTER practicing medicine continuously for the past twenty-five years, the last eighteen of which have been in DeLand, Florida, I trust I may be pardoned if I should be so presumptuous as to consider myself competent to offer a word of advice to northern physicians, with reference to the thousands of their patients who are bordering on chronic invalidism.

No physician needs to be reminded of the fact that most cases of functional disorder, and many cases of even organic diseases, are benefited by an out-door life; but in many instances this kind of life during the winter months in the northern States necessarily exposes one to a temperature which is not only uncomfortable, but really dangerous, to one whose standard of health is below par. Let us not forget, however, that within a few hours of where snow and sleet and slush prevail, there is a land of perennial sunshine, where the trees are always green, where the flowers bloom in January as in June, and the birds make music all the year.

Many very intelligent and well-informed people, and to this class belong the body of our profession, who have never lived in Florida, nor ever visited its health resorts, seem to regard it as one vast swamp where reptiles abound, and the integrity of life's tripod is threatened by poisonous atmospheric influences conjured into destructive activity by some mysterious miasmata. These vague notions have no firmer foundation than had the superstition of past ages. There may be such danger zones in the Dismal Swamp, or the Everglades, hundreds of miles away, but no one is advised to go there. We do, however, unhesitatingly advise physicians to send their cases of asthma, insomnia, nasal and bronchial catarrh, neurasthenia, chronic cough, rheumatism, and even pythisis plumonalis in its curative stages (though we do not advise sending patients in the advanced stages) to our city, built on seven pine-clad hills, away from lagoons and marshes, and confidently expect gradual improvement.

Years of observation convince me that several of the fine-spun theories of super-scientific physicians, relative to the Florida climate, crumble and fall in the presence of contradicting living facts.

Some of our most active and successful business men were once "nervous wrecks," or came here on crutches or stretchers. Fond parents left comfortable northern homes in the interest of a weakly, anemic child, to see that child develop into a robust romping youngster, where we seldom have to reckon with the thermometer. Nature favored us with a climate which permits of living almost continuously out-doors, where the old and young may pursue such activities, whether work or play, as solidify the muscles of the native woodsman, as well as paint with roses the cheeks of the invalid sojourner among us.

The fountain of youth is as yet undiscovered, but verily DeLand is built on the hills of recuperation. If you are inclined to doubt what I have written I can only say: "Come and see."

J. MACDIARMID, M. D.

Section at the marl pit owned by the City, about 1 mile south
~~XXXXXXXXXXXXXXXXXXXX~~ of DeLand, made December 7, 1908, supplemented by
 a section made March 4, 1915.

5. Light colored incoherent sand.....	4 to 10 feet
4. Sandy clay, yellow, drab and blue, in places con- taining oyster shell marl.....	6 to 10 feet
3. Shell marl, very irregular top surface.....	2 to 4 feet
2. Clay stratum with concretions.....	2 to 6 inches
1. Shell marl with slightly irregular top surface....	3 1/2 to 4 feet

Notes on the Section.

The shell marl, No. 1 of the section, has a slightly irregular or undulating top surface, the variation in level amounting to as much as 6 inches ~~in 6 feet~~ vertical in 6 feet horizontal, possibly more in places. The change from the shell marl to the clay stratum above is abrupt, and the largest concretions in the clay are found just above the marl. The clay stratum in turn passes gradually into the overlying shell marl.

This shell marl, No. 3 of the section, has an extremely irregular top surface, and the most pronounced break in the section is that between this marl and the overlying sandy clay.

The stratum No. 4 of the section is lacking in constancy. In places it is chiefly clay, altho elsewhere it becomes quite sandy. At the time the first section ~~made~~ was made in this pit no fossils were found in this stratum, altho subsequently, in March 15, 1915, the stratum as then exposed was found to contain in places oyster shell marl.

The collections made in 1908 were from the shell marl, No. 1; and from the marl No. 3. The feature of some interest ^{in this pit} is the existence of sinkholes encountered in mining of which there is no indication at the surface. One of these ~~XXXXXXXX~~ at the north side of the pit is 6 or 7 feet in diameter and breaks through both marl strata, its depth being unknown.

Nashington
County

Well drilled by Joe Stump. ^{Dr. E. Sellards}
11-3-20

Note: - A well drilled in the S/2 corner of
S. 13 to a depth of 422 feet.

Second well in Sec. 24. 1st 418 feet of
log of 2nd well missing.

Well #1. S. 3-13-13 (S/2 corner of Sec. 13)

Yellow sand	5	0 - 5
Red clay	17	5 - 22
Black shale	72	22 - 94
Sand + fine gravel	194	94 - 288
Blue clay	18	288 - 302
Yellow clay	8	302 - 310
Gumbo	2	310 - 312
Black shale	3	312 - 315
Black sand + pyrites	12	315 - 347(?) 327
Blue clay + pyrites	43	347 - 390
Light blue clay	25	390 - 415
Coarse white sand	7	415 - 422

Well #2 drilled by Joe Stump. S. 24-3-13.
Elevation. Barometer 190. 110 feet 0-418.

Rock	418 - 420
Sand	420 - 426
Blue gumbo	426 - 461
Gravel + pyrites	461 - 487
Sand + coarse gravel	487 - 510
Sand, clay + gravel	510 - 600
Lime rock?	600 - 660
Gumbo	660 - 680
Sand + Gravel	680 - 700
Lime rock with soft layers	700 - 750
Shell + pyrites	754 - 810
Boulders + pyrites	810 - 840
Blue sandstone	840 - 890
Small showing of gas	890 - 915
Sand	915 - 936
Rock	936 - 950
Sand + Gravel	950 - 960

Joe Stump well #2 cont'd.

Greenish colored sand	960 - 980
Rock, showing of gas	980 - 1000
Rock + pyrites	1000 - 1010
Rock	1010 - 1030
Sand, shell + little gas	1030 - 1040
Yellow gumbo	1040 - 1050
Sand	1050 - 1060
Showing little oil + gas	1060 - 1100
Sand	1100 - 1120
Yellow gumbo	1120 - 1140
Blue gumbo	1140 - 1200
Blue shale	1200 - 1290
Sand, gravel + shell	1290 - 1300
Hard rock (lost drill)	1300 - 1372

A note added by Clapp to the log
indicates correlation as follows:

418-500	Lisbon formation
510-960	Jacksonville "
960-1200	Hatchers -
1200-1290	Bashi -
Below 1290	not correlated

Total depth of well given as
1373 feet.

Nashington County

11-1-20

12 mi. S. of Clifftop -
Lucas Switzerland

Exposure of Marianna-Ocala limestone in
an old sink depression on land owned
by the ^{S.A.} Alford Company about 2 1/2 mi. E. of
Nausau, Washington County, on north side
of public road. The rock here varies from
the typical soft phase of the Marianna-Ocala
to a rather hard almost semi-crystalline.
Many orbitoides noted. Sample of rock
taken. This locality, visited with Dr. E. H.
Sellards.

Sink-holes on property of A. L. Parrish
about 3 mi. E. of Nausau, Washington Co.
The surface rock which is much broken
up, weathers ^{much} like the Chattanooga. Below
this in the exposure in sink typical
Marianna limestone is found. Large
orbitoides are numerous. Sample taken.

Washington County.

Well at Panama City.

- 1 to 30 Ft. Sand with some shell fragments.
30 to 60 " Dark colored alum tasting clay.
This is the same clay as that
exposed at Alum Bluff on the Apal-
lachicola River.
60 to 100 ft. Gray sandy marl. The sand grains
are clear quartz and are held
together by a calcareous cement
100 to 200 ft. Buff colored clayey marl, enough
clay to become slippery when wet
200 to 300 ft. Mixed sample including a greenish
sandy marl. Limestone at 300
ft and below to 350.
350 to 400 ft. Gray clayey marl.
400 ft. Light colored fossiliferous limest
460 ft. Black, smooth, rounded phosphatic
nodules.
470 ft. Light colored fossiliferous limest

(This is copied from the log as included
in correspondence with Dr. Jos. A. Cushman,)

Washington County

Ug. 10, 1813. Mr. W. J. Gray, of the Gray Artesian
Well Co. Cottondale, reports a rock containing a
bright shiny mineral (iron sulphide). This
sample was from well on the place of H. Hinson,
10 miles south of Caryville, Washington, Co.
Depth 14 ft, strata said to be size of mans arm.
Another well 300 feet away, water tastes so bad
that well was abandoned. Water at 20 ft.
Water will eat up tin bucket in about two days.
The sample contained also an iron sulphate,
probably melanterite, which has an astringent
taste.