EXECUTIVE SUMMARY
LP-3 (Marsh Bend Park), Basin 19
19-020-033; S30,T19S,R21 1/2E

September 1, 1987

G. L. Henderson

I. SITE LOCATION

The LP-3 wellsite is located about one mile west of the body of water named Lake Panasoffkee, in Sumter County, Florida. The wellsite can be found by proceeding approximately 5.25 miles west on S.R. 470 from Interstate 75 at the Lake Panasoffkee exit (Site Location Map). The wellsite is located on the west side of S.R. 470 in Marsh Bend Park (about 660 feet north of Outlet River Bridge). The wellsite encompasses a 20' x 30' perpetual easement. The LP-3 wellsite is located in the NW 1/4 of SW 1/4 of SW 1/4 of Section 30, Township 19 South, Range 21 1/2 East; at latitude 28° 48' 10.86" North, longitude 82° 09' 12.66" West.

II. TYPE AND PURPOSE OF MONITOR

The Floridan Monitor will monitor and record any fluctuations in the potentiometric surface (hydrostatic level) of the Floridan aquifer.

Comparison of the recorded water levels (hydrostatic levels) for the Floridan Monitor and Lake Panasoffkee will provide long term information on the hydrologic characteristics exhibited by the groundwater system in the Lake Panasoffkee region. Correlation of LP-3 data with the other LP (Lake Panasoffkee) series wellsites might provide some groundwater flow patterns for the area around Lake Panasoffkee. The LP series wellsites were drilled only to provide regional background data for the Lake Panasoffkee study being conducted by the Resource Evaluation Section.

III. GEOLOGY

The LP-3 wellsite is located in the Tsala Apopka Plain, a physiographic subprovince of the Coastal Highlands topographic province in peninsular Florida. The Tsala Apopka Plain (Figure 1) is bounded on the west by the southern outlier of

the Brooksville Ridge and on the east by the Western Valley subprovince, as defined by W. A. White (1958, Bull. 41). The Tsala Apopka Plain's major drainage pattern is northerly in direction through the coast-parallel stream known as the Withlacoochee River.

The Withlacoochee River flows essentially parallel (NW-SE trend) with the strike of the limestone bedrock as determined by the flank of the Ocala Uplift, a structural feature believed to have occurred during the Tertiary time period (Figure 2). However, near Dunellon the Withlacoochee River abruptly veers left and flows westerly to the Gulf of Mexico. According to White (1958, Bull. 41), the Withlacoochee River owes its present escape route through the Brooksville Ridge to a newly formed gap (Dunellon Gap) produced by solution of limestone beneath that sand ridge.

White believed that a large freshwater lake once occupied that area today known as the Tsala Apopka Plain. At that time, the Withlacoochee River probably drained southeastward via the Hillsborough River to greater Tampa Bay, the largest estuary on the west coast of peninsular Florida. This ancestral lake, of which Lake Tsala Apopka and Lake Panasoffkee are remnants, would have assisted the passage of groundwater through permeable parts of the Brooksville Ridge from landward to seaward (NE-SW trend). This would eventually have opened a subterranean passage of sufficient crossectional area to drain the ancestral lake and facilitate the reversal of flow in the coast-parallel segment of the Withlacoochee River.

Vernon (1951, Bull. 33) showed a fault (NE-SW trend) passing through the Brooksville Ridge at this point which also could have facilitated the leakage of groundwater from the high northwestern side to the lower southwestern side. Solution would have been aided by the fact that water leaking through the ridge should have been mostly lake water which is usually more acidic than ordinary groundwater. White further substantiates the above-described suppositions with numerous subjective evidence (1958, Bull. 41) that will not be elaborated upon in this report.

The LP-3 wellsite is located on a thin veneer of quartz sands lying on the karstic limestones of the Ocala Group (1951, Bull. 33) at a surveyed elevation of

50.40 feet above NGVD (of 1929). The lithology for this wellsite was described utilizing hollow-stem auger samples (LSD-18.5') and wireline core samples (24.5'-154.5'). Unfortunately, no lithologic samples were collected for the 18.5'-24.5' interval due to lost circulation in the borehole. The below described stratigraphic sequence for the LP-3 wellsite was derived by correlation of the lithologic sample descriptions and the geophysical logs performed on the borehole.

DEPTH (Ft. below LSD)	STRATIGRAPHIC UNIT (Age)	LITHOLOGIC DESCRIPTION
LSD - 4.5'	UNDIFFERENTIATED SURFICIAL DEPOSITS (Pleistocene)	QUARTZ SAND= light gray-brown, subangular-rounded, fine-medium grained, unconsolidated, some organic staining at top of section; 30% intergranular porosity, high permeability. QUARTZ SAND=pale brown-grayish orange, subangular-rounded, fine-medium grained, poorly indurated, slightly clayey, trace iron staining; 25% intergranular porosity, low permeability.
4.5' - 9.6'	ALACHUA FORMATION (Miocene)	CLAY=light gray-light olive gray-grayish orange, poorly indurated, greasy, montmorillonitic clay; 15-18% porosity, low permeability. LIMESTONE RESIDUUM FRAGMENTS =offwhite-yellowish gray, moderately indurated, slightly chalky-splintery, calcilutite; 10% intergranular porosity, low permeability.
9.6' - 44.5'	OCALA GROUP (Upper Eocene)	LIMESTONE=very pale orange-yellowish gray moderately-highly indurated, chalky-granular millioloidal-echinoidal (Periarchus lyelli floridanus) calcarenite; 5-18% intergranular-moldic porosity, moderate-high permeability

44.5'-154.5' (T.D.)	AVON PARK FORMATION (Middle Eocene)	LIMESTONE=very pale orange-yellowish gray light olive gray, moderately- highly indurated chalky-granular-greasy in parts, millioloidal calcarenite, trace peatic-lignitic laminations 5-10% intergranular-moldic porosity, low-moderate permeability. DOLOMITE=medium light gray-yellowish gray dusky yellow, moderately indurated, splintery sucrosic, millioloidal-echinoidal (Peronella dalli) dolomite, some peatic-lignitic laminations; 2-14% intergranular-moldic porosity, low-high permeability. CLAY=dark yellowish brown-light olive gray-olive gray, moderately indurated, calcareous, greasy-waxy, organic clay, some embedded limestone fragments; 7% porosity, low permeability.

IV. HYDROGEOLOGY AND WATER QUALITY

The hydrology of the Lake Panasoffkee region is variable due to the hydrogeologic properties of the unconsolidated deposits found above the limestones of the Floridan aquifer. In some areas, the Surficial aquifer is found to be confined by clays (or clayey sands) to the unconsolidated sand deposits lying above the limestones of the Floridan aquifer; thus the water table and the Floridan's potentiometric surface are disparate. In other areas, these unconsolidated sand deposits are hydraulically connected to the limestones of the Floridan aquifer; thus the water table and the Floridan's potentiometric surface are coincident.

At the LP-3 wellsite, the relatively thin veneer of unconsolidated sand deposits appeared to be hydraulically connected to the limestones of the Floridan aquifer; thus the water table and the Floridan's potentiometric surface should be coincident. The preceding statement is substantiated through a comparison of measured water levels for the nearby Outlet River (connecting Lake Panasoffkee to the Withlacoochee River) and the Floridan Monitor constructed at the LP-3 wellsite. On February 2, 1987 the water levels recorded (by Ron Vanlerberghe, Data Collection) for the Outlet River and the Floridan Monitor were 40.01 feet (9:35 a.m.)

and 40.21 feet (9:30 a.m.) above NGVD, respectively. Also, several small springs are known to discharge from the limestones of the Floridan aquifer that line the bottom of the Outlet River.

The Floridan aquifer was only partially penetrated during well construction at the LP-3 wellsite. The Floridan aquifer was found from 9.6 feet below LSD (40.8 feet above NGVD) to 154.5 feet below LSD (104.1 feet below NGVD) at the LP-3 wellsite. The Floridan aquifer was composed primarily of moderately-highly indurated, calcarenitic limestones and moderately indurated dolomites of the Ocala Group and the Avon Park Formation.

Porosity values for the limestones of the Ocala Group ranged from 5 to 18 percent with moderate to high permeability values. Porosity values for the limestones of the Avon Park Formation ranged from 5 to 10 percent with low to moderate permeability values. Porosity values for the dolomites of the Avon Park Formation ranged from 2 to 14 percent with low to high permeability values.

Drillers' well logs for this area indicated that almost all water supply wells were utilizing the limestones of the Floridan aquifer. However, many of these domestic and/or agricultural wells penetrated only a shallow portion of the Floridan aquifer. According to some local residents, supply wells more than 100-120 feet below LSD produced drinking water with a very disagreeable composition ("rotten egg" smell or taste).

During the construction of the test corehole, water quality samples from LSD to 134.5 feet below LSD exhibited conductivity values ranging from 550-700 micromhos per centimeter, chloride values ranging from 5-19 milligrams per liter, and sulfate values ranging from 4-51 milligrams per liter. Two of those water samples, one collected at 34.5 feet below LSD and the other collected at 114.5 feet below LSD, exhibited total dissolved solids' (TDS) values of 396 milligrams per liter and 372 milligrams per liter, respectively. Thus, the water quality for the LSD-134.5 feet interval is assumed to be potable.

During the construction of the test corehole, a water quality sample was collected at the total depth of 154.5 feet below LSD and submitted to Standard Complete Analysis. The water sample exhibited a conductivity value of 700

micromhos per centimeter, chloride value of 14 milligrams per liter, sulfate value of 92 milligrams per liter, and TDS value of 400 milligrams per liter. The sample also exhibited a very high fluoride value of 0.78 milligrams per liter.

Upon completion of the corehole and before its modification into the Floridan Monitor, a "thief " water quality sample was collected at the depth of 145 feet below LSD by the District's geophysical logger. The water quality sample exhibited a conductivity value of 850 micromhos per centimeter, chloride value of 3 milligrams per liter, and sulfate value of 188 milligrams per liter.

Since the water quality samples collected below 134.5 feet exhibited moderately high sulfate, fluoride, and TDS values, then the water quality for the 134.5-154.5 feet interval is assumed to be marginally non-potable.

V. WELL DESIGN AND CONSTRUCTION (See As-Built Well Design Diagram)

The Floridan Monitor was designed to monitor and record any fluctuations in the potentiometric surface (hydrostatic level) of the Floridan aquifer. The land elevation at the Floridan Monitor was surveyed to be 50.40 feet above NGVD. The Floridan's potentiometric surface was found 10.19 feet below LSD (40.21 feet above NGVD) when measured on February 2, 1987.

The driller initiated construction on the Floridan Monitor on May 28, 1986. The driller proceeded to drill a 10 inch nominal borehole utilizing the mud rotary method to 18.5 feet below LSD. The driller utilized the CME rig to set and cement-grout the 6 inch PVC surface casing (+1.8'-18.5').

After allowing the cement-grout to cure over the weekend, the driller proceeded to ream out the bottom cement left (2'-18.5') when the casing was grouted earlier. The driller utilized the water rotary method to drill (with 5 7/8 inch bit) to 24.5 feet below LSD in order to cleanse the borehole of cement and some rock cuttings; in anticipation of wireline coring the remaining rock interval. At 23.5 feet below LSD, a gradual loss of drilling fluids (approximately 500 gallons of water) occurred and all attempts to regain fluid circulation were to no avail. The driller did manage to drill to 24.5 feet below LSD before reaching total lost circulation of drilling fluids.

The driller proceeded to wireline core to 34.5 feet below LSD. At this point, it was decided (by ROMP site hydrologist and Resource Evaluation's project hydrologist) that the final casing (4 inch PVC) for the Floridan Monitor was to be set at the depth of 34.5 feet below LSD. In order to accommodate the above design, the driller was instructed to drill on mud rotary (with 5 7/8 inch bit) to 34.5 feet below LSD. At 31.5 feet below LSD, a sudden loss of drilling fluids occurred and all attempts to regain fluid circulation were to no avail. After consultation with the project hydrologist, it was decided that the final casing (4 inch PVC) would be set later at 31.5 feet below LSD, instead of 34.5 feet below LSD.

The driller then proceeded to wireline core to the total depth of 154.5 feet below LSD while collecting water quality at the appropriate depth intervals. The test corehole was logged by the District's geophysical logger before its modification into the Floridan Monitor.

Upon completion of the test corehole, the driller proceeded to modify it into the Floridan Monitor. Forty feet of 1 1/4 inch PVC wellscreen (0.030" slot) and eighty feet of 1 1/4 inch PVC casing coupled onto approximately thirty two feet of 4 inch PVC casing was inserted into the corehole (inside the preexisting 6 inch PVC casing). The 4 inch PVC casing will facilitate the installation of a "float" type water level recorder. The driller did not sandpack the well's annulus between the 4 inch and 6 inch casing, as the 4 inch casing (attached to the 1 1/4 inch PVC assemblage) is well supported by the rock shoulder at 31.5 feet below LSD. Also, the absence of the sandpack will facilitate the future anticipated plugging of the monitor well or future modifications of the monitor well to better suit District data needs.

After sufficient development by the driller, HTH (10% chlorine) was added to the borehole in order to disinfect the completed Floridan Monitor. All construction on the Floridan Monitor was completed by June 10, 1986.

VI. GEOPHYSICAL LOGS

Before the final casing assembly was inserted into the corehole, the District's geophysical logger ran a full suite of geophysical logs. The types of geophysical logs performed and their respective logging depth intervals are outlined below.

Geophysical Log Type	Borehole Interval (Feet)
Caliper	+1.8' - 148.5'
Temperature	12' - 150.5'
Fluid Conductivity	12' - 150.5'
Electric	+1.8' - 150.0'
Natural Gamma	+1.8' - 150.5'

REFERENCES

Barr, G. L. and Lewelling, B. R.; Potentiometric Surface Of The Upper Floridan Aquifer, West-Central Florida, May 1986; U. S. Geological Survey, Open-File Report #86-409.

Fretwell, J. D.; 1983; Groundwater Resources Of Coastal Citrus, Hernando, and Southwestern Levy Counties, Florida; U. S. Geological Survey, Water-Resources Investigations Report # 83-4079.

Gilboy, A. E.; March, 1985; Hydrogeology Of The Southwest Florida Water Management District; Regional Analysis/SWFWMD, Technical Report #85-01.

Puri, H. S.; November, 1957; Stratigraphy And Zonation Of The Ocala Group; Florida Geological Survey, Geological Bulletin #38.

Vernon, R. O.; 1951; Geology of Citrus And Levy Counties, Florida; Florida Geological Survey, Geological Bulletin #33.

White, W. A.; August, 1958; Some Geomorphic Features Of Central Peninsular Florida; Florida Bureau of Geology, Geological Bulletin #44.

White, W. A.; 1970; The Geomorphology Of The Florida Peninsula; Florida Bureau of Geology, Geological Bulletin #51.

(FIGURE 1) PHYSIOGRAPHIC MAP OF LAKE PANASOFFKEE REGION (White,1970)

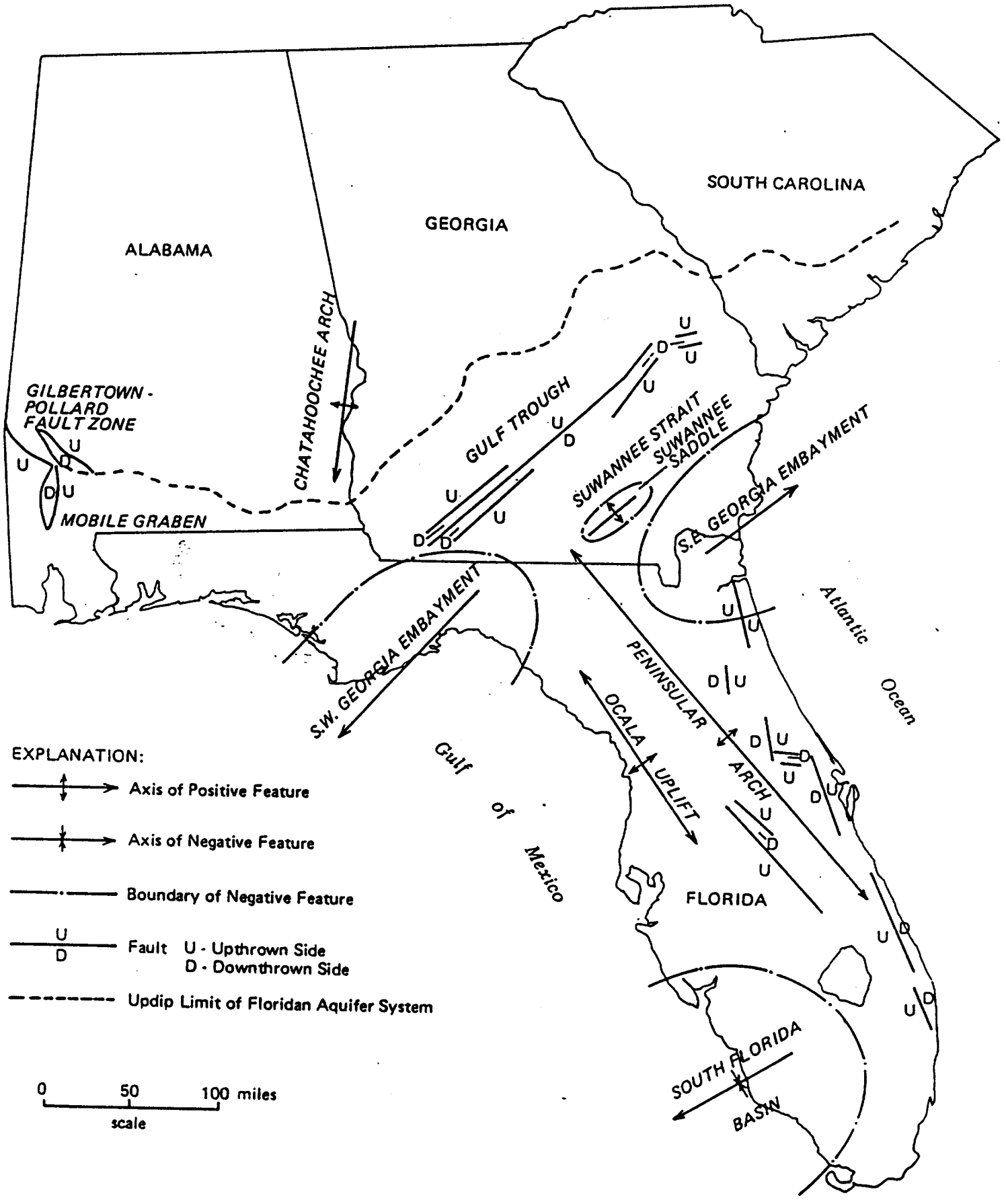
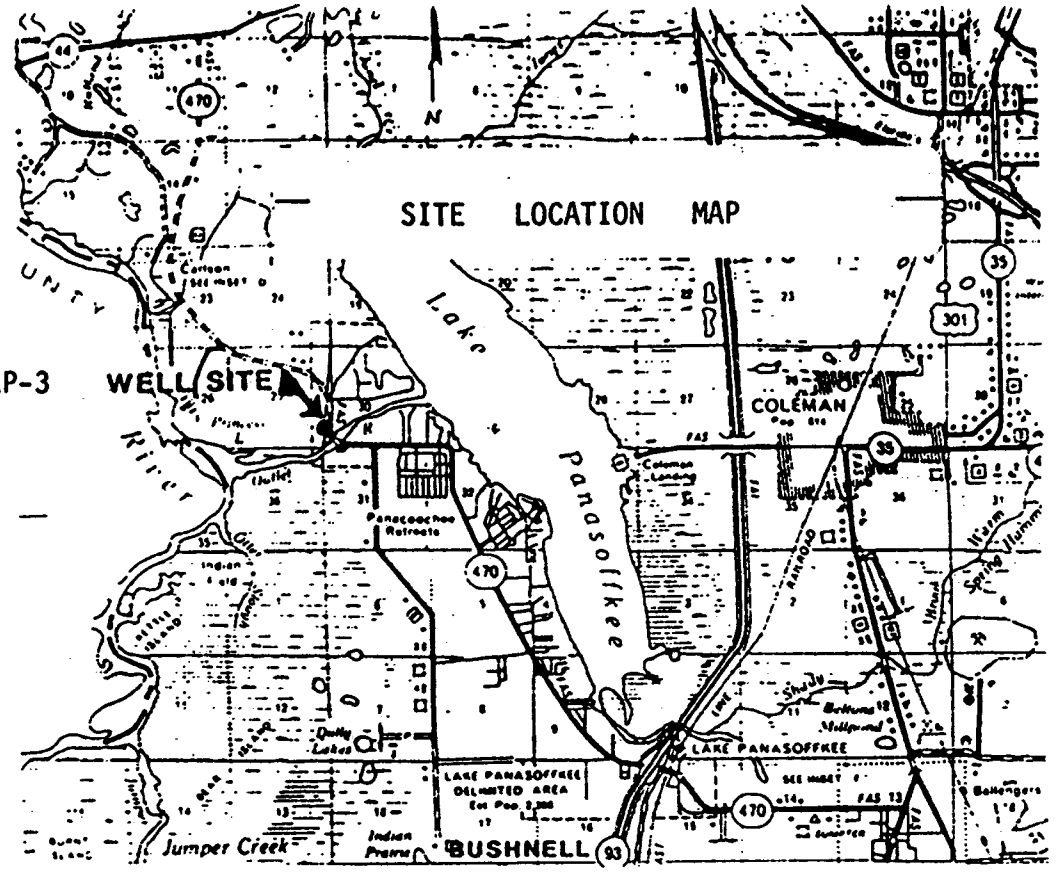
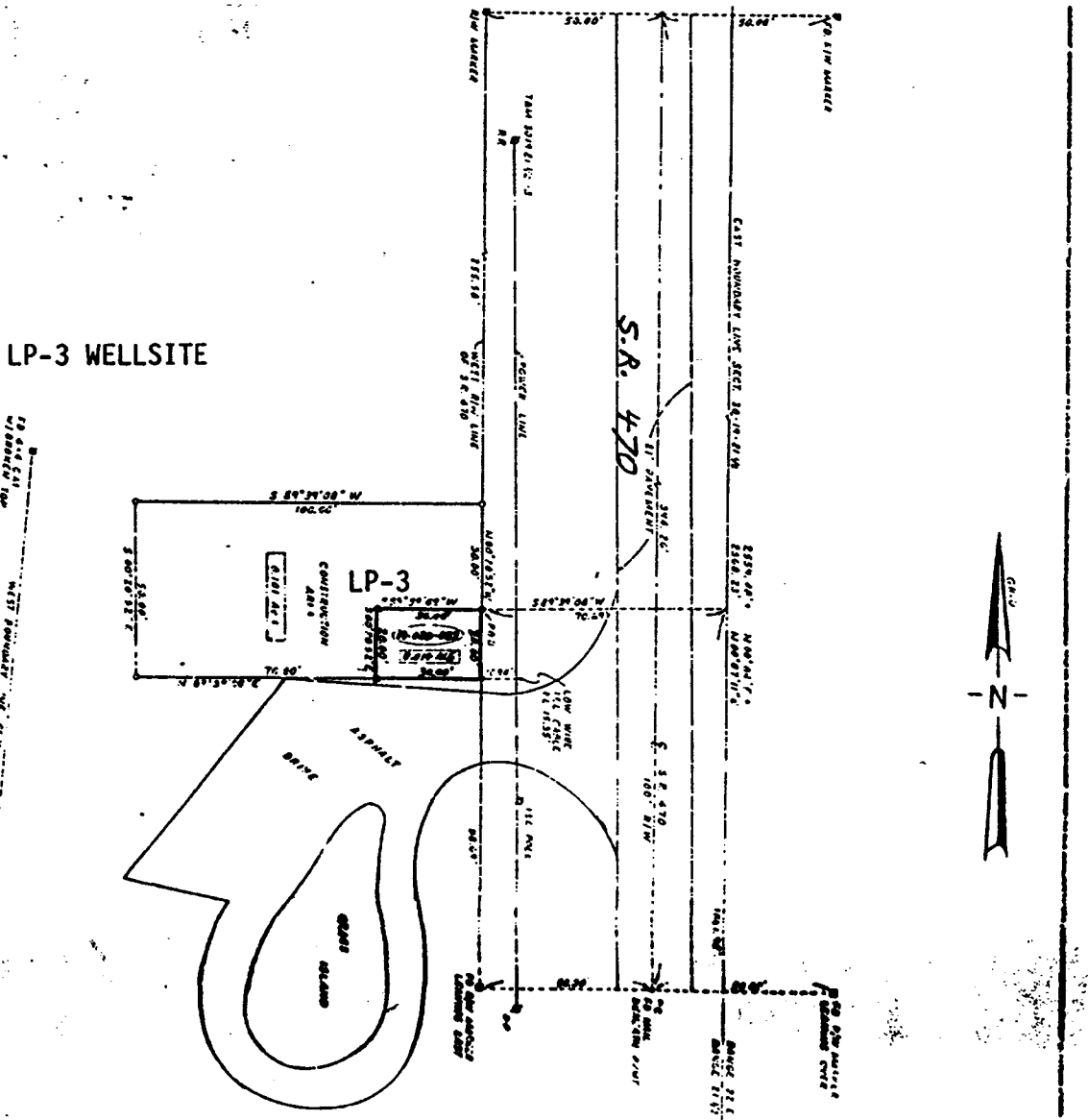


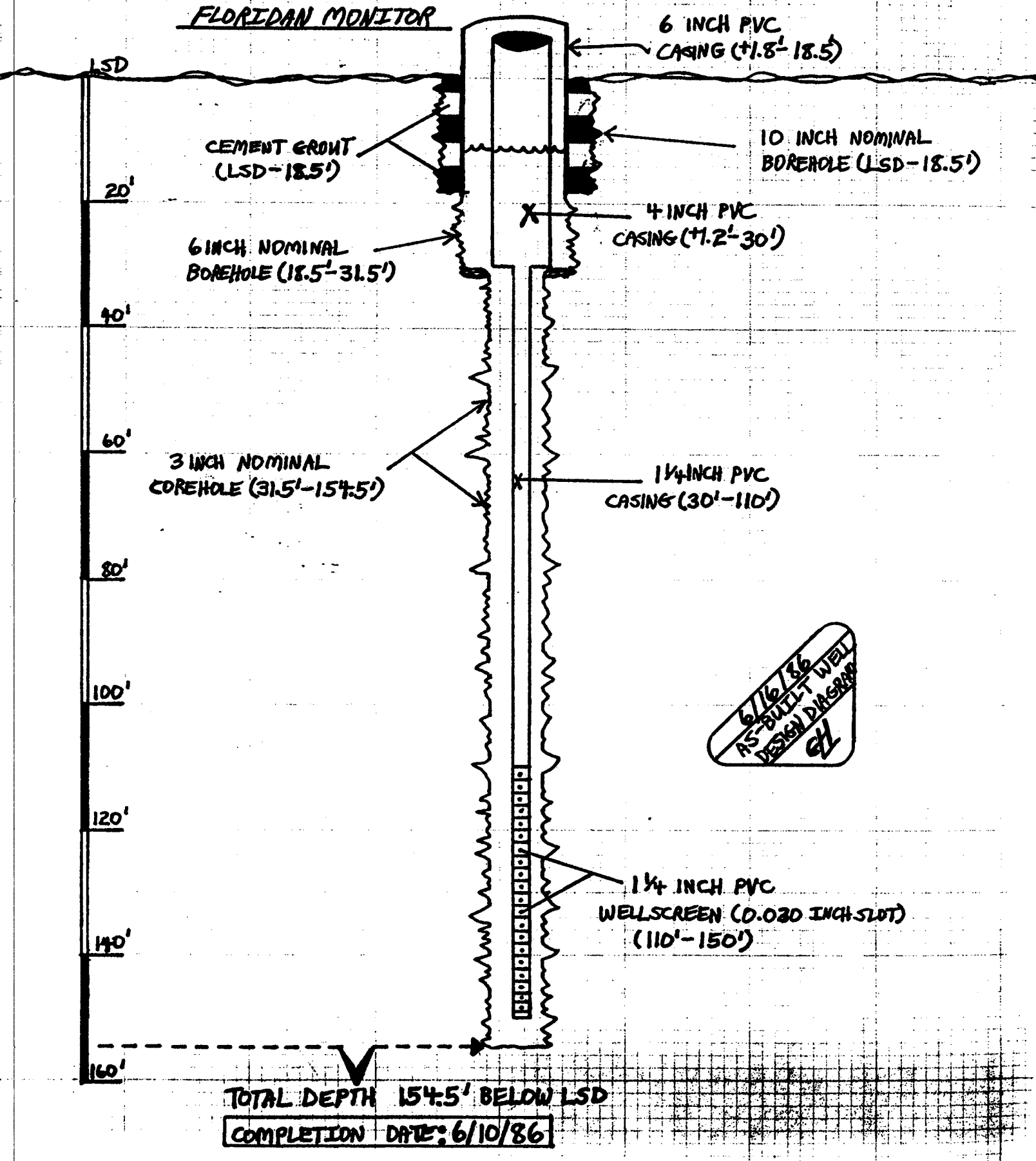
Figure 2. Structural Features that affect the Floridan Aquifer system (adapted from Miller, 1984)



ENLARGED VIEW OF LP-3 WELLSITE



LP-3 (MARSH BEND PARK) AS-BUILT WELL DESIGN DIAGRAM



LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-16644 COUNTY - SUMTER

TOTAL DEPTH: 00154 FT. LOCATION: T.19S R.22E S .27 CD
SAMPLES - NONE LAT = 28D 47M 59S
LON = 82D 05M 41S
COMPLETION DATE: 29/07/88 ELEVATION: 52 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER, GAMMA, ELECTRIC, TEMPERATURE, FLUID

OWNER/DRILLER:S.W.F.W.M.D. DRILLER: LLOYD JOHNSON

WORKED BY:DOUGLAS H. RAPPUHN (SWFWMD)

FINISHED SITE CONSISTS OF THE FOLLOWING POTENTIOMETRIC MONITORS:

SURFICIAL AQUIFER MONITOR - CASING DEPTH = 18'; SCREENED DEPTH = 24'

FLORIDAN AQUIFER MONITOR - CASING DEPTH = 42'; TD = 154'

SAMPLE COLLECTION BY HOLLOW-STEM AUGER FROM 0-43.5 AND BY WIRELINE CORI NG
FROM 42-154. WIRELINE CORING ACCOMPLISHED BY USING PLAIN WATER AS

DRILLING FLUID, ALLOWING ROUTINE POTENTIOMETRIC PROFILING AND WATER

SAMPLING DURING THE CORING PROCESS. DETAILED INFORMATION AVAILABLE FROM

SWFWMD GEOHYDROLOGIC DATA SECTION.

CORE SAMPLES ALSO DESCRIBED BY RICHARD GREEN 5/91.

THE FOLLOWING DESCRIPTION COMBINES WORK BY D.H.RAPPUHN AND R. GREEN.

0.	-	24.	090UDSC	UNDIFFERENTIATED SAND AND CLAY
24.	-	34.	122HTRN	HAWTHORN GROUP
34.	-	104.	124OCAL	OCALA GROUP

104. - . 124AVPK AVON PARK FM.

0 - .6 SAND; GRAYISH BROWN

POROSITY: INTERGRANULAR

GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE

ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY

POOR INDURATION

CEMENT TYPE(S): ORGANIC MATRIX

ACCESSORY MINERALS: PLANT REMAINS-15%, CLAY-02%

IRON STAIN-01%

OTHER FEATURES: UNWASHED SAMPLE

FOSSILS: NO FOSSILS

.6- 1 SAND; GRAYISH ORANGE

POROSITY: INTERGRANULAR

GRAIN SIZE: MEDIUM; RANGE: FINE TO VERY COARSE

ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY

UNCONSOLIDATED

ACCESSORY MINERALS: PLANT REMAINS-06%, CLAY-02%

IRON STAIN-01%

OTHER FEATURES: UNWASHED SAMPLE

FOSSILS: NO FOSSILS

1 - 3 SAND; GRAYISH BROWN

POROSITY: INTERGRANULAR

GRAIN SIZE: MEDIUM; RANGE: FINE TO VERY COARSE

ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-02%, PLANT REMAINS-01%
IRON STAIN-01%
OTHER FEATURES: UNWASHED SAMPLE, FROSTED
FOSSILS: NO FOSSILS

3 - 5 SAND; GRAYISH ORANGE PINK
POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-02%, IRON STAIN-01%
OTHER FEATURES: UNWASHED SAMPLE, FROSTED
FOSSILS: NO FOSSILS

5 - 6 SAND; DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-05%, IRON STAIN-02%
OTHER FEATURES: UNWASHED SAMPLE, FROSTED
FOSSILS: NO FOSSILS

6 - 8.5 SAND; GRAYISH BROWN

POROSITY: INTERGRANULAR

GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM

MEDIUM SPHERICITY; UNCONSOLIDATED

ACCESSORY MINERALS: CLAY-02%, IRON STAIN-01%

PHOSPHATIC SAND-01%

OTHER FEATURES: UNWASHED SAMPLE

FOSSILS: NO FOSSILS

8.5- 15.5 SAND; VERY LIGHT GRAY

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM

MEDIUM SPHERICITY; MODERATE INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: MOTTLED

ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-02%

PLANT REMAINS-01%

OTHER FEATURES: CHALKY, PARTINGS

FOSSILS: NO FOSSILS

CLAY CONTENT DECREASES WITH DEPTH TO APPROXIMATELY 20%

SOME PARTINGS ALONG SANDIER LAYERS, AND PLANT REMAINS.

15.5- 24 SAND; YELLOWISH GRAY TO PINKISH GRAY

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM

ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY

POOR INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-02%

FOSSILS: NO FOSSILS

INTERBEDS OF CLEAN QUARTZ SAND AND SOMEWHAT CLAYEY (20%
)
SAND.

24 - 28 SAND; YELLOWISH GRAY TO GREENISH GRAY

POROSITY: INTERGRANULAR

GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

MEDIUM SPHERICITY; MODERATE INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: INTERBEDDED, STREAKED

ACCESSORY MINERALS: CLAY-45%, PHOSPHATIC SAND-01%

OTHER FEATURES: VARIEGATED, PLASTIC

FOSSILS: NO FOSSILS

INTERBEDDED CLAYEY (15-35%) SAND AND RELATIVELY CLEAN C
LAY
LENSES (CLAY IS GREENISH GRAY) MINOR CLEAN QUARTZ SAND
PARTINGS.

28 - 29.5 SAND; WHITE TO YELLOWISH GRAY

POROSITY: INTERGRANULAR

GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

MEDIUM SPHERICITY; POOR INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: CLAY-13%, PHOSPHATIC SAND-02%

OTHER FEATURES: CHALKY

FOSSILS: FOSSIL MOLDS

INTERBED OF CLAYEY SAND BETWEEN TWO LENSES OF BRIGHT WH
ITE
FOSSILIFEROUS, NONCALCAREOUS, POROUS MATERIAL. TRACES O
F
MOLLUSK FOSSILS. CLAYEY SAND CONTAINS CLASTS (TO 8MM) O
F
THE WHITE MATERIAL. (WHITE MATERIAL MAY BE KAOLINITE OR
TRIPOLI?)

29.5- 34 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY

POROSITY: INTERGRANULAR, LOW PERMEABILITY

GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY

MODERATE INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: MOTTLED, STREAKED

ACCESSORY MINERALS: CLAY-20%, SPAR- %

OTHER FEATURES: CALCAREOUS, WEATHERED, VARIEGATED, PART
INGS
CLASTS OF WHITE MATERIAL (2MM-2CM) DISSEMINATED THROUGH
OUT
CALCAREOUS CLASTS ALSO AT BOTTOM OF SECTION.

34 - 36.5 CLAY; GRAYISH BROWN TO VERY LIGHT ORANGE

POROSITY: INTERGRANULAR; POOR INDURATION

CEMENT TYPE(S): CLAY MATRIX

SEDIMENTARY STRUCTURES: NODULAR, MOTTLED

ACCESSORY MINERALS: LIMESTONE-15%, QUARTZ SAND-10%

OTHER FEATURES: CALCAREOUS, GRANULAR, VARIEGATED

FOSSILS: NO FOSSILS

EXTREMELY RUBBLY CONGLOMERATION OF QUARTZ SAND AND CALCAREOUS AND NONCALCAREOUS (WHITE MATERIAL) CLASTS IN A CLAY MATRIX; TOP OF OCALA GROUP APPEARS TO BE AT 34', WITH THIS INTERVAL AN APPARENT RESIDUUM.

36.5- 43.5 CALCARENITE; VERY LIGHT ORANGE

POROSITY: INTERGRANULAR, MOLDIC

GRAIN TYPE: SKELETAL, CALCILUTITE, BIOGENIC

65% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE

POOR INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: CALCILUTITE-35%

OTHER FEATURES: CHALKY

FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, ECHINOID FOSSIL FRAGMENTS

CHALKY FINE GRAINED CALCARENITE INTERBEDDED WITH THIN POROUS BEDS OF LEPIDOCYCLINA AND MOLLUSK SHELL FRAGMENTS (38.5-40', AND 41-42').

43.5- 48.7 NO SAMPLES

48.7- 49 LIMESTONE; VERY LIGHT ORANGE

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZO
A
2" OF CORE RECOVERED.

49 - 54 LIMESTONE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, BRYOZO
A
MOLLUSKS
LEPIDOCYCLINA NOTED. 20% RECOVERY.

54 - 64 LIMESTONE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY, MO
LDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO VERY COARS
E

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

OTHER FEATURES: MEDIUM RECRYSTALLIZATION, GRANULAR

FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUS
KS

FOSSIL MOLDS

AMPHISTEGINA, LEPIDOCYCLINA NOTED. MOLLUSK MOLDS COMMON

VARIABLE POROSITY AND PERMEABILITY. 85% RECOVERY.

64 - 69 LIMESTONE; VERY LIGHT ORANGE

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE

95% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: CALCILUTITE-05%

OTHER FEATURES: GRANULAR

FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS

20% RECOVERY. PROBABLY A POORLY INDURATED

GRAINSTONE/PACKSTONE LOST DURING DRILLING.

69 - 74 LIMESTONE; VERY LIGHT ORANGE

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE

60% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: MEDIUM TO FINE

MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS

10% RECOVERY.

74 - 104 CALCARENITE; WHITE

POROSITY: INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: PELLET, BIOGENIC, CALCILUTITE

75% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE

MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: CALCILUTITE-25%, SPAR- %

OTHER FEATURES: GRANULAR

FOSSILS: MOLLUSKS, SPICULES, CORAL, ECHINOID

FEWER FOSSILS THAN OVERLYING SECTION; VERY FEW RECOGNIZABLE FORAMS; TOP OF AVON PARK FM PROBABLY IN POOR RECOVERY ZONE AT APPROXIMATELY 104'. 30% RECOVERY.

104 - 114 LIMESTONE; WHITE

POROSITY: MOLDIC, VUGULAR

GRAIN TYPE: CALCILUTITE, SKELETAL, PELLET

55% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: BIOTURBATED

ACCESSORY MINERALS: SILT- %, SPAR- %, PYRITE- %

OTHER FEATURES: MEDIUM RECRYSTALLIZATION

FOSSILS: MOLLUSKS, ECHINOID, BENTHIC FORAMINIFERA, BRYO
ZOA

DENSE, HARD LIMESTONE CONTAINING BURROWS FILLED WITH CO
ARSE

FOSSIL FRAGMENTS. FORAMS, PELLETS, AND MICRITE; POOR

RECOVERY 104-109' (20%); DICTYOCONUS AMERICANUS AT 109'

.

114 - 120 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: SKELETAL, PELLET, BIOGENIC

90% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE

MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT

ACCESSORY MINERALS: PYRITE- %, SPAR- %

OTHER FEATURES: GRANULAR, DOLOMITIC

FOSSILS: BENTHIC FORAMINIFERA

GRAINSTONE/PACKSTONE. SLIGHTLY DOLOMITIC; TRACE PYRITE

.

120 - 126.5 LIMESTONE; YELLOWISH GRAY

POROSITY: MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABI
LITY

GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE

55% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT

OTHER FEATURES: DOLOMITIC

FOSSILS: MOLLUSKS, FOSSIL MOLDS, BRYOZOA

BENTHIC FORAMINIFERA

126.5- 130 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY

POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: CALCILUTITE, SKELETAL

65% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE

MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: STREAKED

ACCESSORY MINERALS: CLAY-02%

OTHER FEATURES: VARVED, DOLOMITIC

FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, BRYOZOA, MOLLUS
KS

CARBONACEOUS FRAGMENTS (TO 15MM).

130 - 134 LIMESTONE; YELLOWISH GRAY

POROSITY: INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABI
LITY

GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE

60% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: HEMATITE-02%

OTHER FEATURES: GRANULAR, DOLOMITIC

MEDIUM RECRYSTALLIZATION

FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

CORAL, BRYOZOA

134 - 139 LIMESTONE; WHITE TO YELLOWISH GRAY

POROSITY: VUGULAR, MOLDIC

GRAIN TYPE: CALCILUTITE, SKELETAL

35% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: MASSIVE

ACCESSORY MINERALS: PEAT-01%

OTHER FEATURES: DOLOMITIC

FOSSILS: BENTHIC FORAMINIFERA, PLANT REMAINS

GRANULAR CALCAREOUS FILLED BURROWS IN FINE CALCAREOUS HOST

ROCK; MOLDS OF PLANT ROOTLETS, CONTAINING PEATY REMAINS

.

139 - 147.5 LIMESTONE; YELLOWISH GRAY

POROSITY: INTERGRANULAR, MOLDIC

GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE

45% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: PEAT- %, PLANT REMAINS- %

OTHER FEATURES: GRANULAR, DOLOMITIC

MEDIUM RECRYSTALLIZATION, HIGH RECRYSTALLIZATION

FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

MILIOLIDS

ABUNDANT MILIOLIDS.

147.5- 154 CALCARENITE; YELLOWISH GRAY

POROSITY: PIN POINT VUGS, MOLDIC, INTERGRANULAR

GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE

55% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE

GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: PLANT REMAINS-03%

OTHER FEATURES: DOLOMITIC

FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS

154 TOTAL DEPTH