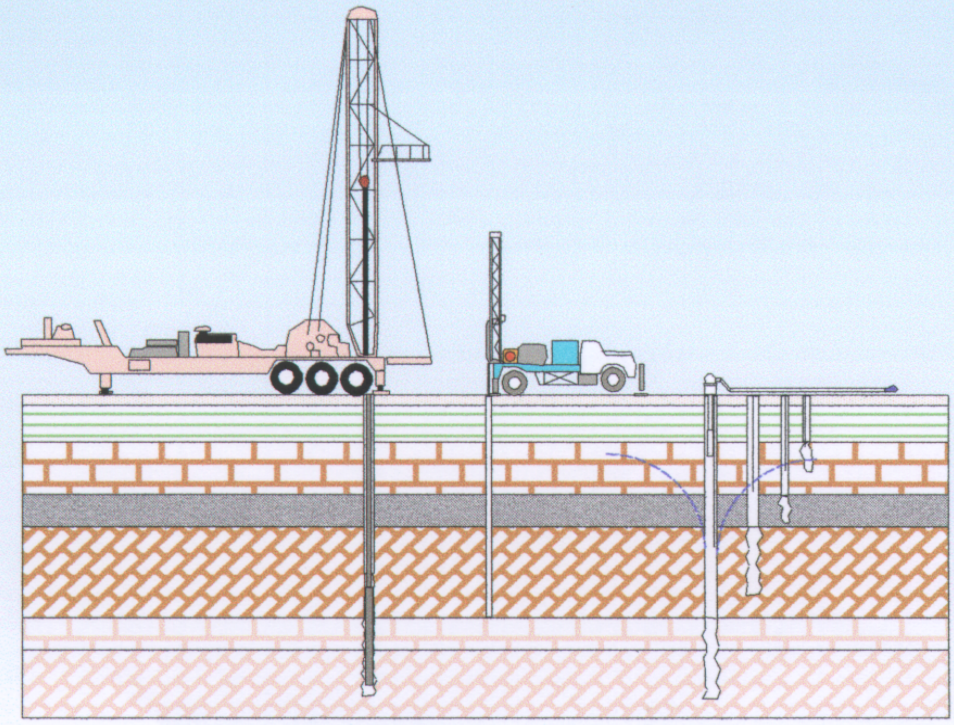
ROMP 13 TIPPEN BAY

MONITOR WELL SITE
DE SOTO COUNTY, FLORIDA

PHASE TWO

EXPLORATORY DRILLING AND MONITOR WELL CONSTRUCTION



Geohydrologic Data Section
Resource Data Department
Southwest Florida Water Management District
October 1998

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The geological evaluations and interpretations contained in the *ROMP 13 Exploratory Drilling and Monitor Well Construction Report* have been prepared by or approved by a certified Professional Geologist in the State of Florida, in accordance with Chapter 492, Florida Statutes.

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Date: 10-8-98

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AND MONITOR WELL CONSTRUCTION

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1.0 INTRODUCTION

The ROMP13 (WRAP S-4) Tippen Bay well site is one of six Regional Observation and Monitor-Well Program (ROMP) well sites constructed for the Southern District Water Resource Assessment Project (SDWRAP). The SDWRAP is a long-term study of the groundwater systems in DeSoto, Hardee, and portions of Charlotte, Polk, and Sarasota Counties (Figure 1.)

The ROMP 13 well site was obtained by the Southwest Florida Water Management District (SWFWMD) in November 1993 for construction of a multiple well monitor site. Drilling, testing, and monitor well construction at ROMP 13 was completed in phases. The data collected during construction and testing at ROMP 13 is presented in three phases: **Phase One - Core Drilling and Testing, Phase Two - Exploratory Drilling and Monitor Well Construction**, and **Phase Three - Aquifer Performance Testing.**

Phase one, exploratory coring from land surface to 1,544 feet below land surface (bls), began in January 1994 and was completed in June 1994. Phase two, deep exploratory drilling (below 1,544 feet bls), testing and monitor well construction was initiated on November 27, 1995. The exploratory drilling and testing was completed on June 27, 1996 and monitor well construction was completed in August 1996. Phase three, aquifer performance testing, began in December 1996 and was completed in August 1997. This report, **Phase Two - Exploratory Drilling and Monitor Well Construction,** presents the data from the deep exploratory drilling, testing, and construction of the monitor wells at ROMP 13.

2.0 SITE LOCATION

The ROMP 13 (WRAP S-4) Tippen Bay well site is located in De Soto County, approximately 20 miles southeast of Arcadia (Figure 2). ROMP 13 is located on property obtained from Bob Paul, Inc., in the northeast quarter of Section 21, Township 39 South, Range 27 East at latitude 27° 04' 17" north, longitude 81° 36' 57" west (Figure 3). Land surface elevation at the well site is approximately 60 feet above the National Geodetic Vertical Datum of 1929 (NGVD).

3.0 DRILLING AND COLLECTION METHODS

Mud-rotary and reverse-air drilling methods were used during well construction and exploratory drilling at ROMP 13. The mud-rotary method was used for drilling in less permeable zones. Reverse-air was used in highly permeable zones and when groundwater samples were collected with depth. Several methods were utilized for collection of groundwater samples. All groundwater samples were collected in accordance with ROMP Water Quality Sampling Protocol.

3.1 DEEP EXPLORATORY DRILLING

The deep exploratory drilling and testing (1,544 feet bls to 2,090 feet bls) at ROMP 13 was performed by the District contractor, Layne, Inc. from January 1996 to March 1996. Deep exploratory drilling at ROMP 13 was performed to determine site stratigraphy, groundwater quality, hydraulic properties, the depth to the 1,000 mg/l saltwater interface, and the depth to the evaporite sediments of the sub-Floridan confining unit (Ryder, 1985). Monitor wells MW-4 and MW-5 were constructed to accomplish these goals. Both wells were later converted to permanent monitor wells following testing activities.

Construction of monitor well MW-4 began by utilizing the mud-rotary method of drilling. A 32-inch diameter borehole was drilled from land surface to 61 feet bls and 62 feet of 24-inch diameter welded steel casing was installed and pressure grouted to land surface. A 17.5-inch diameter borehole was then drilled using mud-rotary from 61 feet bls to 671feet bls and 672 feet of 12-inch diameter welded steel casing was installed and pressure grouted to land surface. An 11.5-inch diameter borehole was then drilled using mud-rotary from 672 feet bls to 786 feet bls. The reverse-air method was used to drill a 5.625-inch borehole from 786 feet bls to 1705 feet bls. While advancing the 5.625-inch borehole, off-bottom packer tests were conducted at 50 and 100 foot intervals for hydraulic testing of the Ocala and Avon Park formations. In addition, groundwater samples were collected with depth and drill cuttings were collected for lithologic description. Exploratory drilling in MW-4 was terminated at 1,705 feet bls when high levels of total dissolved solids (TDS) were encountered in the groundwater. Figure 4 presents a diagram of monitor well MW-4 during the exploratory drilling and testing phase. Monitor well MW-4

was backplugged with cement grout from 1,705 feet bls to 797 feet bls to monitor the permeable sections of the Suwannee and Ocala Limestones of the Upper Floridan aquifer. Following aquifer testing in July 1998 MW-4 was lined with 673 feet of 6-inch diameter schedule 40 PVC casing from 2 feet above land surface to 671 feet bls (Figure 5).

Construction of monitor well MW-5 began in March 1996 following completion of MW-4. A new 32-inch diameter borehole was drilled using mud-rotary to 61 feet bls and 62 feet of 18-inch diameter welded steel casing was installed and grouted to land surface. A 17.5-inch diameter borehole was then drilled using the mud-rotary method from 61 feet bls to 671 feet bls and 672 feet of 12-inch diameter welded steel casing was installed and grouted to land surface. A 11.5-inch diameter borehole was drilled using reverse-air from 671 feet bls to 1700 feet bls. A 5.625-inch borehole was advanced from 1,700 to 2,090 feet bls. Drilling below 1,700 feet bls in the high TDS groundwater was accomplished by using low TDS water pumped from MW-4 for the drilling fluid, thereby diluting the drilling discharge water. Offsite discharge of drilling water was maintained at levels below 2,500 milligrams/liter (mg/l) TDS. Specific capacity tests and packer tests were performed while advancing the 5.625-inch borehole. Drill cuttings were collected with depth while drilling and a 4-inch diameter core of evaporite sediments was collected in the middle confining unit from 2,075 feet bls to 2,090 feet bls. Figure 6 presents a diagram of the MW-5 monitor well during exploratory drilling. Subsequent to exploratory drilling the well was converted to a permanent monitor well. Monitor well MW-5 was backplugged from 2,090 feet bls to 1,600 feet bls to monitor a highly permeable zone within the Avon Park Formation of the Upper Floridan aquifer. Following backplugging, 6-inch diameter schedule 40 PVC casing was installed from 3 feet above land surface to 1,550 feet bls and pressure grouted in place. A 12-inch diameter open hole remains from 1,550 feet to 1,600 feet bls (Figure 7).

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected at approximately 30 foot intervals in both MW-4 and MW-5 during exploratory drilling, to characterize the water quality of the Upper Floridan aquifer. Each sample was split and one sample was analyzed in the field for temperature, specific capacity, specific conductance, pH, chloride, sulfate, and density. The other sample was delivered to the District Environmental Chemistry Laboratory for more extensive analyses. Chain-of-Custody forms were used to track the samples. Results of the groundwater samples analyses are presented in Section 6.0.

Four methods were used to collect groundwater samples during exploratory drilling at the ROMP 13 well site: reverse-air drilling discharge, point-source bailer, geophysical thief, and packer test. Figure 8 is a diagram of the off-bottom formation packer used in the collection of the packer test samples. All four methods were used in both wells except the geophysical thief sample method, which was used for sampling only in MW-5. Tables 1 through 3 present a summary of the field water quality analyses and the collection method for groundwater samples obtained during deep exploratory drilling at ROMP 13. Tables 4 through 6 present the laboratory analysis and method of collection for the groundwater samples.

3.3 GEOPHYSICAL LOGGING

Several suites of geophysical logs were run at the ROMP 13 site in order to delineate hydrogeological units, characterize water quality and pick packer setting points. All logs were run with SWFWMD's digital geophysical logging equipment and are archived with the ROMP 13 File of Record. The geophysical logs run at the ROMP 13 site are identified below:

CALIPER	Three-arm caliper
GAM(NAT)	Natural Gamma
SP	Spontaneous Potential
RES (16N)	16" Normal Resistivity
RES (64)	64" Normal Resistivity
RES SUITE	Single Point Resistance (16", 64" Normal, lateral log)
RES(FL)	Fluid Resistivity
SP COND	Specific Conductance-fluid
TEMP	Temperature-Fluid

Most of these logs were run to shallow depths (land surface to 600 feet bls) and are presented in Phase 1: Core Drilling and Testing. Logs that were run to greater depths are presented here in Phase 2. An electromagnetic induction suite was run to record natural-gamma radiation, conductivity, and resistivity in MW-5 after monitor well construction. The resistivity log, however, is not included because the results were inconclusive. A caliper log was also run in MW-5 and the logs is presented in this report.

Electromagnetic induction (EM-induction) logging is used to measure conductivity deep into the surrounding formation in order to minimize the effects of the invaded zone of the borehole. The conductivity measurements are not affected by PVC casing or fluid in a well. The device consists of a transmitter and receiver coil that operates at a specific frequency. A current in the transmitter coil induces a current in the receiver coil. The strength of the induced current in the receiver coil depends

upon the conductivity of the formation. The conductivity is measured in millimhos per meter (Watt, 1974). Figure 9 presents the conductivity log for the AvonPark/Exploratory well (MW-5). As seen from the graph, the conductivity varies throughout the shallow portions of the borehole until a dramatic increase in conductivity at a depth which corresponds to the beginning of the Suwannee Limestone. Immediately below this sharp increase, the conductivity decreases and remains low until the next increase, between 1,580 feet and 1,610 feet bls, which corresponds to the fracture zone. This increase in conductivity characterizes zones containing high TDS waters. The conductivity log coincides with the delineated stratigraphic and hydrogeologic units.

On the second track of the induction tool, natural gamma radiation emitted by the surrounding rock is measured. Potassium-40 is a common gamma-emitting radioisotope found in fine-grained units such as clay or phosphatic minerals. This feature makes natural-gamma logging most useful in finding clay beds within the rock formations. A sharp increase in gamma counts per second is an indication of clay in the formation (Keys et al., 1981). At the ROMP 13 site, the graph shows alternating beds of high and low gamma radiation at relatively shallow depths. This coincides with the previously delineated units of alternating sand and clay in the surficial and intermediate aquifer systems. The gamma count is extremely high from approximately 250 feet to 350 feet bls which can also indicate a moderate amount of phosphate in the rock unit. A substantial increase in the gamma count at 700 feet bls indicates a clay layer, previously noted during coring, that begins the upper Floridan aquifer.

Caliper logs are used to determine the diameter of a borehole, set or find the casing depth, pick packer test points, locate fractures, and delineate lithology (Keys et al., 1981.) The caliper is a device which consists of three mechanical arms that is lowered into the borehole. Once it is at the bottom of the hole, the arms are opened and the caliper is raised to the surface. While it is being raised, the arms open and close in the hole in response to the changing diameter and the wall of the hole is recorded on the graph. Figure 10 presents a caliper log from the Avon Park/ exploratory well after monitor well construction. The straight line from land surface to 1,550 feet bls is the 6-inch diameter casing in the well. Below the casing is an open hole drilled with a 12-inch bit. Variations in the diameter of the hole from 1,580 feet to 1,610 feet bls indicate natural fracture and dissolution zones.

4.0 GEOLOGY

The ROMP 13 well site is located within the Central Highlands physiographic province on the DeSoto Plain, a division of the Mid-Peninsular zone of the Floridan Peninsula (White, 1970). The well site is within the SWFWMD Peace River Basin. Well site elevation is approximately 60 feet NGVD.

4.1 STRATIGRAPHY

The ROMP 13 well site stratigraphy was defined from: descriptions of the continuous lithologic core collected during core drilling, drill cuttings collected during reverse-air drilling from 1,579 feet bls to 2,075 feet bls and a fifteen-foot core (2,075 feet to 2,090 feet bls) collected from a 4-inch core barrel. Figure 11 depicts the geology and hydrogeology described at the ROMP 13 well site. The lithologic log for ROMP 13 is presented in Appendix A.

4.1.1 Undifferentiated Surficial Deposits

The uppermost unit at the ROMP 13 well site extends from land surface to 19 feet bls. This unit is Pliocene to Holocene in age and comprises the Surficial Aquifer System. This system consists of fine to medium grained, unconsolidated quartz sand, with some interbedded silt, clay, and organic matter. Trace amounts of phosphate, fibrous plant material and some shell fragments were also noted.

4.1.2 Peace River Formation

The Peace River Formation of Miocene to Pliocene age extends from 19 feet to 207.5 feet bls. It comprises the upper portion of the Hawthorn Group as described by Scott (1988). The appearance of larger amounts of clay marks the beginning of this formation as well as the upper confining unit of the Intermediate Aquifer System. This unit is predominantly siliciclastic with alternating beds of quartz sand, clay, and carbonates (limestone or dolostone). The uppermost portion of the unit consists of interbedded quartz and phosphatic sand and clay. The rest of the formation consists of sandy fossiliferous limestone, calcilutite and clay with occasional beds of sandstone and phosphate. Several types of fossils were noted in the carbonate rocks including, mollusks, pelycypods, gastropods, and sharks teeth.

4.1.3 Arcadia Formation

Underlying the Peace River Formation is the Arcadia formation, which is mid-Miocene in age and located in the lower part of the Hawthorn Group. It extends from 207.5 feet to 704 feet bls at the ROMP 13 site. In some areas of south Florida the Arcadia formation includes the Tampa and Nocatee members (Scott, 1988), however, at the ROMP 13 site the Tampa member is absent. The upper portion of the formation, the undifferentiated Arcadia formation, consists primarily of fossiliferous carbonates interbedded with rich phosphatic sands and clay. The unit becomes increasingly sandy with depth and shows a fining-upward sequence. Occasional thin lenses of clay and chalky calcilutite beds were noted. The formation contains beds of molluscan calcilutite, fossiliferous sandy calcilutite and non-fossiliferous, poorly-indurated calcarenite. The Nocatee member begins at 581 feet bls and is predominantly siliciclastic with varying amounts of clay, limestone (usually wackestone), and microcrystalline dolostone. The quartz sand is fine to medium grained. Fossils are common including, coral, foraminifera, fossil molds, and mollusks.

4.1.4 Suwannee Limestone

The Suwannee Limestone is Oligocene in age and forms the upper portion of the upper Floridan aquifer system (Scott, 1992). It extends from 704 feet to 777 feet bls and is distinguished from the overlying Arcadia Formation by the absence of phosphate. This formation contains light orange to yellowish gray, poorly to moderately indurated calcarenite with a calcilutite matrix. The grains are biogenic and range from very fine to fine. Numerous fossils were noted during coring such as, mollusks, worm traces, benthic foraminifera, miliolids, echinoids, and several fossil molds.

4.1.5 Ocala Limestone

The Ocala Limestone is Eocene in age and is highly fossiliferous. It extends from 777 feet to 1,054 feet bls. At the ROMP 13 site, the Ocala is yellowish gray to very light orange limestone with a calcilutite matrix. The most striking feature of the Ocala Limestone is the number of fossils. Common fossils include, benthic foraminifera (*Lepidocyclina sp.*, *Nummulites sp.)*, mollusks, echinoids, fossil molds, worm traces and coral.

4.1.6 Avon Park Formation

The Avon Park Formation extends from 1,054 feet to 2,050 feet bls and is Eocene in age. It makes up the lower part of the upper Floridan aquifer system. The uppermost part of the formation is characterized by light orange to yellowish gray calcarenite, interbedded with packstone, wackestone, and some dolostone. Minor amounts of dolomite appear at 1,238.5 feet bls and start increasing at 1,535.5 feet bls where the predominant feature is dolomitic fine-grained calcarenite followed by recrystallized cryptocrystalline dolomite in vugs. A major fracture zone occurs at approximately 1,580 feet bls and ends at 1,610 feet bls. This unit grades into very hard, black dolostone and marks the end of the fracture zone. Below the fracture zone begins a cream-colored, chalky dolomitic limestone with trace amounts of organic laminae. Beginning at 1,909 feet bls trace amounts of pure gypsum and anhydrite were noted in the limestone.

4.1.7 Sub-Floridan Confining Unit - Evaporites

The trace amounts of gypsum and anhydrite found in the drill cuttings of the Avon Park Formation marked the beginning of the evaporites. The sub-Floridan confining unit begins at 2,050 feet bls and is Eocene in age. It extends to the final drilling depth of 2,090 feet bls at the ROMP 13 site. The last fifteen feet of drilling were performed with a 4-inch diameter core barrel. The core contained fractured dolostone filled with gypsum.

5.0 HYDROLOGY

The ROMP 13 well site hydrogeology was defined during initial wireline coring and exploratory drilling. Aquifer systems were delineated from lithologic descriptions of permeable and non-permeable units, from geophysical logs and from potentiometric levels recorded during drilling.

5.1 SURFICIAL AQUIFER SYSTEM

The surficial aquifer is an unconfined aquifer that contains Pliocene to Holocene undifferentiated terrace sand interbedded with silt, clay, and organic matter. It extends from land surface to 19 feet bls. The amount of clay increases and eventually forms the bottom confining unit at the base of the surficial aquifer. Differences in the lithology of the sediments causes the hydraulic properties to vary throughout

the system. (Wilson, 1934). Water levels fluctuate seasonally and range from 1 to 5 feet bls annually.

5.2 INTERMEDIATE AQUIFER SYSTEM

The Intermediate Aquifer System is a confined aquifer system extending from 19 feet to 704 feet bls at the ROMP 13 site. It contains Miocene to Pliocene siliciclastic and carbonate sediments with variable permeability. The aquifer is characterized by a series of three confining and two permeable zones at the ROMP 13 site. The upper confining unit is the base of the surficial aquifer and the lower confining unit is the top of the underlying Upper Floridan aquifer system.

The upper confining unit extends from 19 feet to 275 feet bls and contains the Peace River Formation and the upper part of the Undifferentiated Arcadia Formation. This zone consists of siliciclastic sediments with alternating beds of quartz sand, clay, and some carbonates. The middle permeable zone occurs from 275 feet to 420 feet bls and contains the undifferentiated Arcadia unit consisting of fossiliferous carbonates with rich phosphatic sand and clay. Below the middle permeable zone and still in the undifferentiated Arcadia Formation is the middle confining unit from 420 feet to 505 feet bls. The lower permeable zone occurs from 505 feet to 581 feet bls. The lower confining unit occurs from 581 feet to 704 feet bls and contains the Nocatee Member of the Arcadia Formation.

Figures 12 and 13 show the seasonal variations of the potentiometric surface of the intermediate aquifer system in the area of ROMP 13. Potentiometric levels in the intermediate aquifer system averaged 48 feet NGVD in September of 1996 and 52 feet NGVD in May of 1996. The water level in September is typically higher than that of May because it falls at the end of the rainy season, which lasts from June through September. May tends to be drier and therefore water levels are at their lowest during that month (Wilson, 1993.) However, during 1996 the potentiometric surface of the intermediate aquifer was higher in May.

5.3 UPPER FLORIDAN AQUIFER

The Upper Floridan aquifer system begins at 704 feet bls with the Suwannee Limestone and extends down through the Ocala Limestone and the Avon Park Formation to a final depth of 2,050 feet bls. The Suwannee Limestone comprises the shallow upper permeable zone and extends from 704 feet to 777 feet

bls. It is Oligocene in age and consists of a light orange to yellowish gray, poorly indurated calcarenite with a calcilutite matrix. Below the Suwannee lies the late-Eocene Ocala Limestone from 777 feet to 1,054 feet bls. This is a confining zone consisting of a yellowish gray to light orange fossiliferous limestone with a calcilutite matrix. The Avon Park Formation begins at 1,054 feet bls and extends down to 2,050 feet bls. It is middle-Eocene in age and the upper portion (to 1,300 feet bls) consists of a confining zone of light orange to yellowish gray calcarenite interbedded with packstone, wackestone, and dolostone. This confining zone contains a series of three thin permeable zones. The lower permeable unit begins at 1,300 feet bls and is dolomitic with fine-grained calcarenite followed by a very permeable mass of porous, indurated dolomite crystals interbedded with crystalline dolomite and dolomitic calcarenite. A highly transmissive, major fracture zone occurs at 1,580 feet and extends to 1,610 feet bls. Hard, black dolostone marks the end of the fracture zone. At 1,868 feet bls the dolostone contains 3% evaporite minerals (gypsum and anhydrite) and increases to 30-35% evaporites at 1,952 feet bls. These evaporite minerals indicate a transition from the overlying dolostone. The sub-Floridan confining unit comprised of fractured dolostone filled with gypsum, is described from 2,050 feet to 2,090 feet bls.

Figures 14 and 15 portray the potentiometric surface of the upper Floridan aquifer during September and May. Water levels averaged 48 feet NGVD in September and 46 feet NGVD in May.

6.0 GROUNDWATER QUALITY

Several methods were used to collect groundwater samples at approximately 30 foot intervals during exploratory drilling at the ROMP 13 site. Tables 1 through 6 show field and laboratory analysis of the samples. Figure 16 presents two graphs of the water quality analyzed in the discharge samples collected in MW-5. Additional ground water samples were collected by using bailer, packer test, and geophysical thief methods. These samples were used in the analysis of the groundwater quality, however, they are not presented in graphical format due to the randomness of the sample intervals.

The first graph in Figure 16 presents the chloride and sulfate concentrations with the depth from 1,548 feet bls to 2,075 feet bls. Sulfate levels increased significantly at approximately 1,600 feet bls from 91 mg/l to 745 mg/l and eventually leveled off at approximately 1,700mg/l with two peaks at 1,878 feet and 1,972 feet bls. The two peaks had sulfate levels of 2,563 mg/l and 2,454 mg/l respectively. Chloride levels increased gradually until approximately 1,590 feet bls, where the chloride levels show a dramatic

change. The chloride concentrations increased from 107 mg/l at 1,579 feet bls to 1,981 mg/l at 1,610 feet bls. This indicates that the 1,000 mg/l chloride isochlor occurs between 1,580 feet and 1,610 feet bls.

The second graph in Figure 16 shows that the specific conductance and total dissolved solids (TDS) increased with depth in a similar pattern as the chloride and sulfate concentrations. Specific conductance increased from 773 μmhos to 16,000 umhos between 1,579 feet and 2,075 feet bls. Total dissolved solids increased from 480 mg/l at 1,579 to 10,000 mg/l at 2,075 feet bls.

7.0 HYDRAULIC DATA

Several packer tests were performed in the shallow upper Floridan / exploratory well (MW-4) and two packer tests were performed in the deep upper Floridan / exploratory well (MW-5). During each test water levels were measured with a pressure transducer and recorded with a datalogger. The drawdown and recovery curves are presented in Figures 17 through 24. The specific capacity at each testing interval was calculated from the drawdown curves and the results are displayed in Table 7. The results of the specific capacity tests for the packer intervals were relatively low, indicating that the zones from approximately 800 feet to 1,045 feet bls and 1,983 feet to 2,090 feet bls are predominantly confining. These results generally coincide with the previously determined Ocala confining zone and the sub-Floridan confining unit. An extensive permeable zone, occurs from 1,300 feet to 2,050 feet bls.

Several specific capacity tests were performed in the field during the discharge sampling from 1,548 feet to 2,075 feet bls. The results of the tests are presented graphically in Figure 25. The results show that the specific capacities are much higher in this zone than the intervals previously mentioned during the packer tests. There are four zones with fairly high specific capacities, including the aforementioned major fracture zone from 1,580 feet to 1,610 feet bls. These results coincide with the permeable zone of the Avon Park formation.

Aquifer performance tests (APT) were performed on several aquifers and the results will provide a more extensive analysis of the hydraulic data. The results of the APT's will be presented in Volume 3: Aquifer Performance Testing.

8.0 MONITOR WELL CONSTRUCTION

Drilling and construction of five permanent monitor wells at the ROMP 13 Tippen Bay well site began in November 1995 and was completed in August 1996. Monitor Well 1(MW-1) was drilled by the district owned CME 75 drilling rig and all other monitor wells were drilled by the district contractor Layne, Inc. Hollow-stem auger, mud-rotary, and reverse-air methods of drilling were used to construct the wells.

The permanent monitor wells constructed include: a 4-inch diameter surficial aquifer monitor well (MW-1), an 8-inch diameter upper permeable zone intermediate aquifer system monitor well (MW-2), an 8-inch diameter middle permeable zone intermediate aquifer system monitor well (MW-3), a 6-inch diameter Suwannee/Upper Floridan aquifer system monitor well (MW-4) and a 6-inch diameter Avon Park/Lower Floridan aquifer system monitor well (MW-5). The Suwannee monitor well was initially constructed by Layne, Inc., but was later modified by the district.

Three temporary observation wells were previously constructed at the ROMP 13 site by the district owned CME 75 drilling rig. The temporary wells include a surficial aquifer water supply well (Figure 26), an intermediate aquifer dual zone (Figure 27) and a Suwannee observation well (Figure 28). Construction of monitor wells MW-4 and MW-5 can be found in section 3.1 of this report. Well construction details for all of the monitor wells and observation wells are presented in Table 8.

8.1 PERMANENT SURFICIAL AQUIFER MONITOR WELL

A hollow-stem auger was used to drill a 10-inch diameter borehole from land surface to 24 feet bls. Four-inch diameter Tri-Lock® PVC 0.030-inch slot well screen (7.5 feet to 22.5 feet bls) and 4-inch diameter Tri-Lock® PVC casing (3 feet above land surface to 7.5 feet bls) was then installed into the borehole. Six - twenty grain size silica sand was poured into the annulus of the well to form a sand pack from 3.5 feet to 24 feet bls. The remainder of the annulus (land surface to 3.5 feet bls) was filled with cement grout. Figure 29 illustrates the as-built diagram for monitor well MW-1.

8.2 MIDDLE INTERMEDIATE AQUIFER MONITOR WELL

Construction of monitor well MW-2 began by utilizing the mud rotary method of drilling. A 22-inch diameter borehole was drilled from land surface to 65 feet bls. Fourteen-inch steel casing was installed to 65 feet bls and pressure grouted to land surface. A 13 ½-inch borehole was then drilled using mud rotary from 65 feet to 282 feet bls. Eight-inch sch 40 PVC casing was then installed from 1 foot above land surface to 282 feet bls and pressure grouted in place. Mud rotary drilling continued and a 7 7/8-inch nominal borehole was drilled from 282 feet to 341 feet bls. Due to loss of circulation, reverse air drilling was initiated at 341 feet bls and a 7 7/8-inch diameter borehole was continued to a final depth of 417 feet bls. An open hole remains from 282 feet to 417 feet bls. Figure 30 depicts the as-built diagram of MW-2.

8.3 LOWER INTERMEDIATE AQUIFER MONITOR WELL

The mud rotary method of drilling was used initially during the construction of monitor well MW 3. A 28-inch diameter borehole was drilled from land surface to 65 feet bls. Twenty-inch steel casing was then installed from land surface to 65 feet bls and pressure grouted in place. A 13 ½-inch borehole was drilled from 65 feet to 514 feet bls. Eight inch sch 40 PVC casing was installed from 2 feet above land surface to 514 feet bls and grouted in place. Mud rotary continued and a 7 7/8-inch borehole was drilled from 514 feet to 542 feet bls and then reverse-air drilling commenced. A 7 7/8-inch borehole was drilled from 514 feet to a final depth of 592 feet bls and then the well was airlifted until all of the drilling mud was flushed from the well. Figure 31 depicts the as-built diagram for monitor well MW-3.

9.0 SUMMARY

The goal of the deep exploratory drilling was to determine the thickness, water quality, and hydraulic properties the upper Floridan aquifer. The bottom of the upper Floridan aquifer was identified by drilling into the sub-Floridan confining unit. At the ROMP 13 site, the Avon Park /exploratory well was drilled to a final depth of 2,090 feet bls. Lithologic cores and drill cuttings were collected and described in order to present a complete description of each formation at the well site. The cores and the drill cuttings along with the geophysical logs provide the information needed to delineate the aquifer systems.

The groundwater quality was analyzed both in the field and in the laboratory at approximately 30 feet intervals. The results show that chloride levels increased with depth from 103 mg/l at 1,548 feet bls to 4,757 mg/l at 2,075 feet bls. The 1,000 mg/l chloride isochlor was found to be between 1,580 feet and 1,610 feet bls. Sulfate, specific conductance and TDS rose gradually with depth and all experienced a significant increase around 1,600 feet bls.

Specific capacity tests were performed in the field and calculated from the packer test drawdown graphs. The results helped to confirm previously determined permeable and non-permeable zones within the aquifer systems. All of the specific capacity tests coincide with the different aquifer zones. According to the caliper log and the specific capacity tests, the zone of highest transmissivity (and the 1,000 mg/l chloride isochlor) occurs in the major fracture zone located from 1,580 feet to 1,610 feet bls.

10.0 REFERENCES

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FIGURES

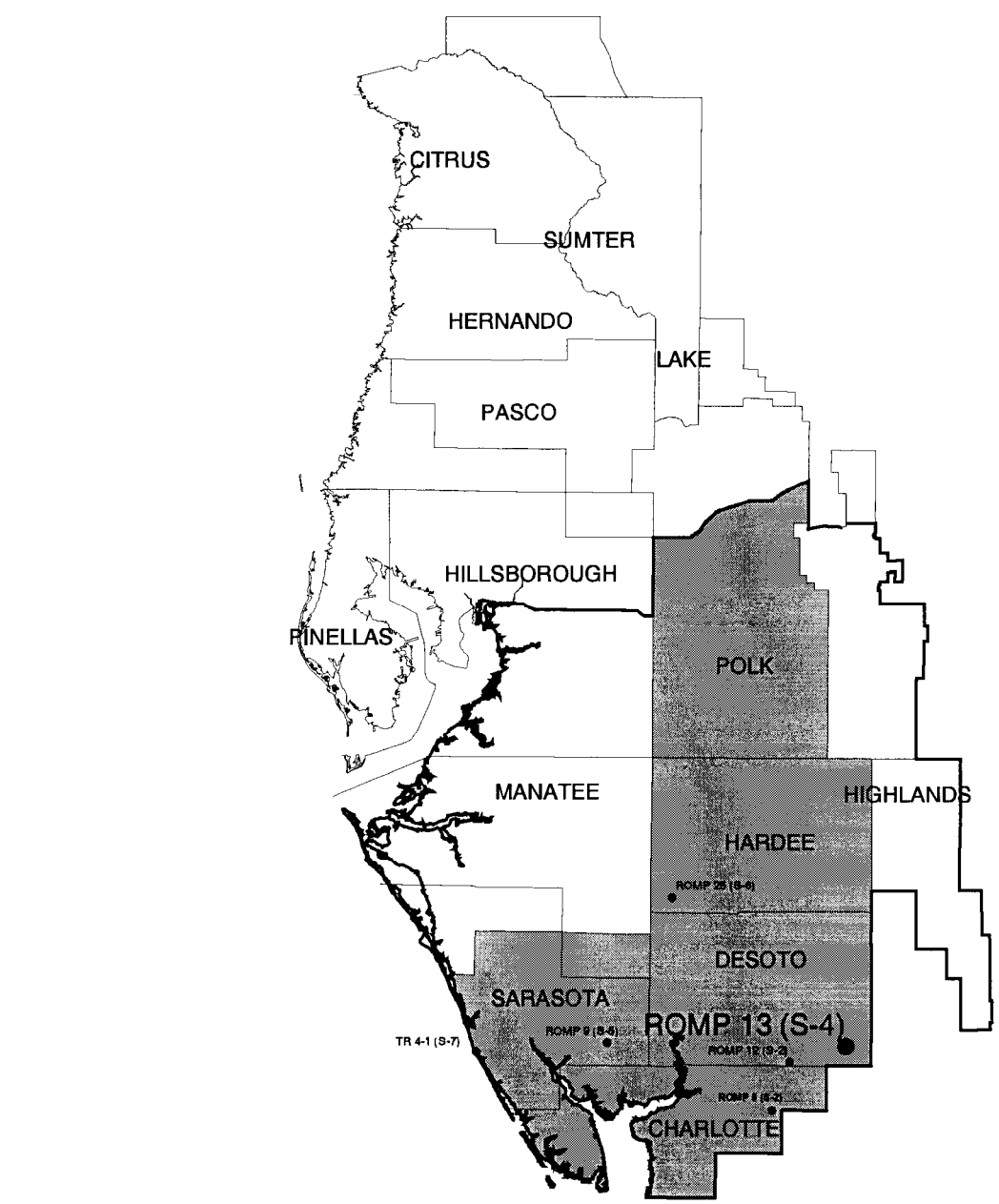
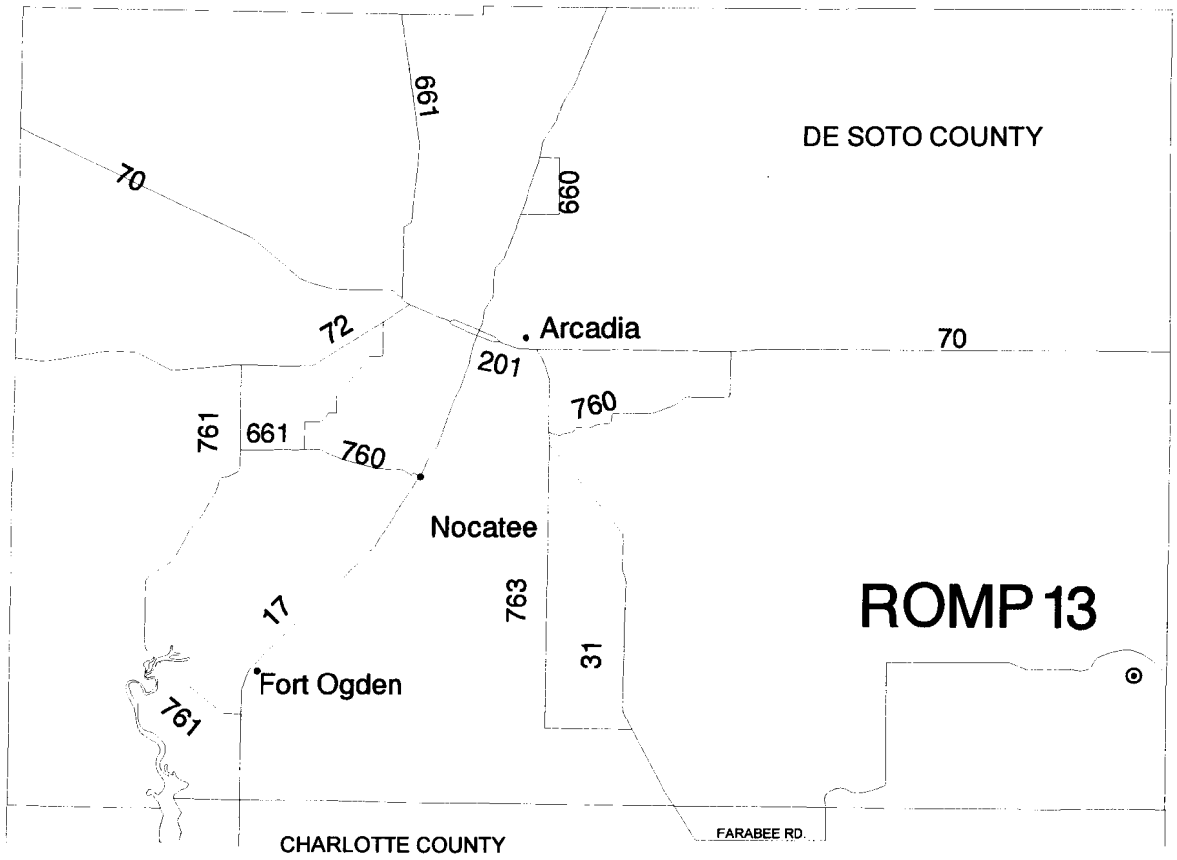


FIGURE 1. ROMP 13 TIPPEN BAY

Southern District Water Resource Assessment Project Area



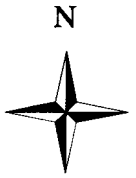


FIGURE 2. ROMP 13 TIPPEN BAY

General Location Map

R13county.wpg

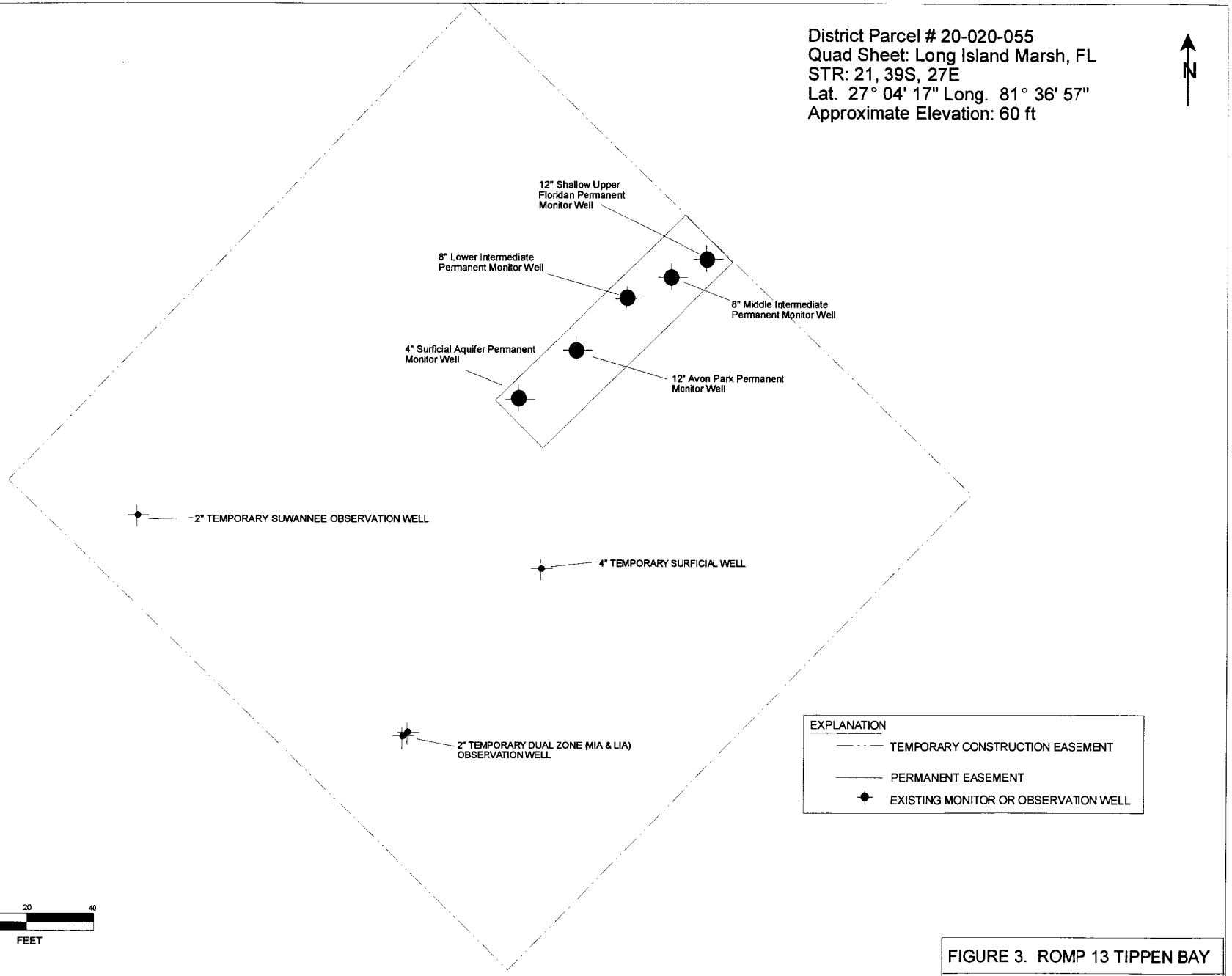


FIGURE 3. ROMP 13 TIPPEN BAY

WELL SITE DIAGRAM

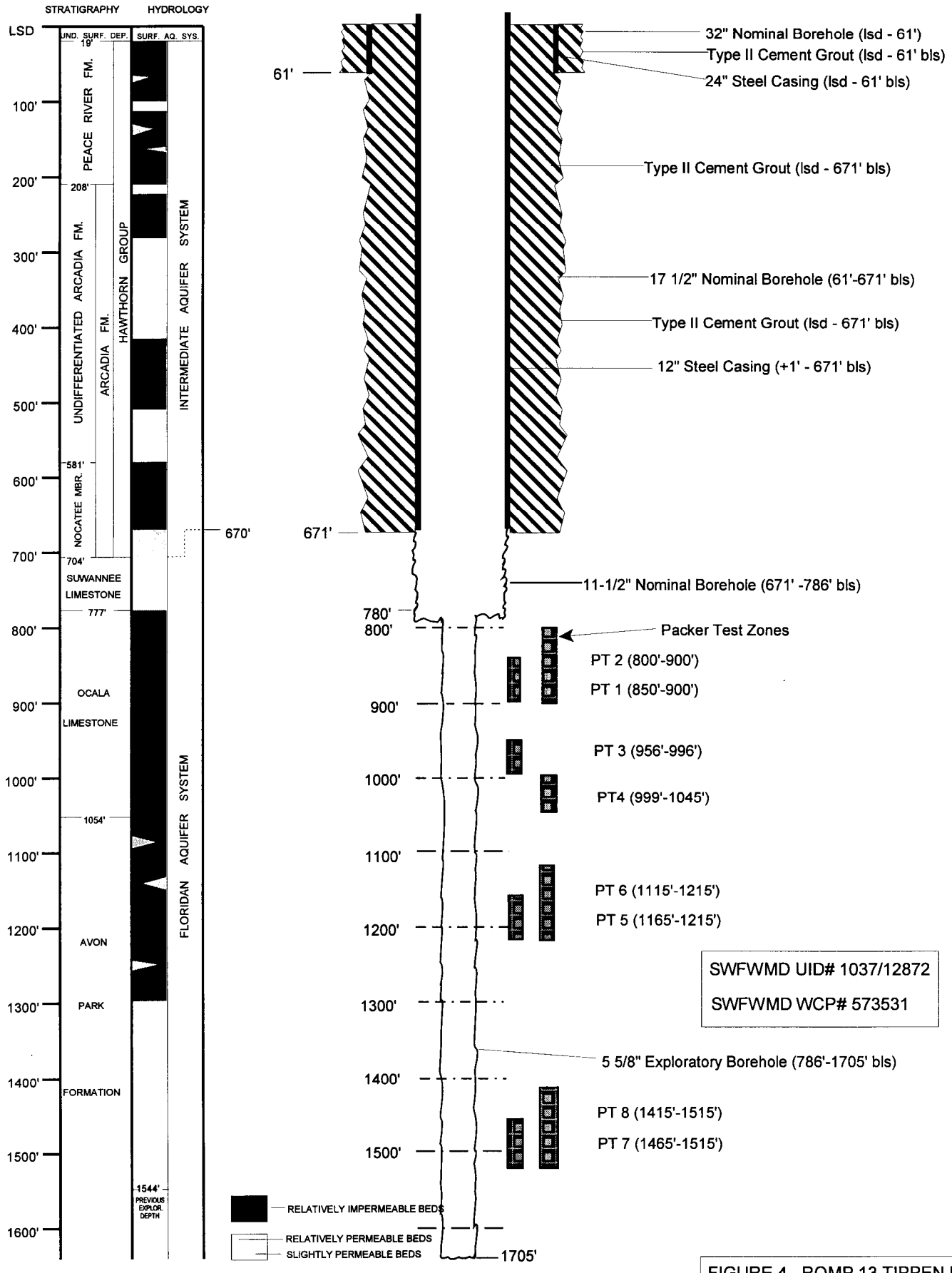


FIGURE 4. ROMP 13 TIPPEN BAY

MW 4 Exploratory Well Configuration and Packer Test Intervals

ROMP13 / MW4exp.WPG

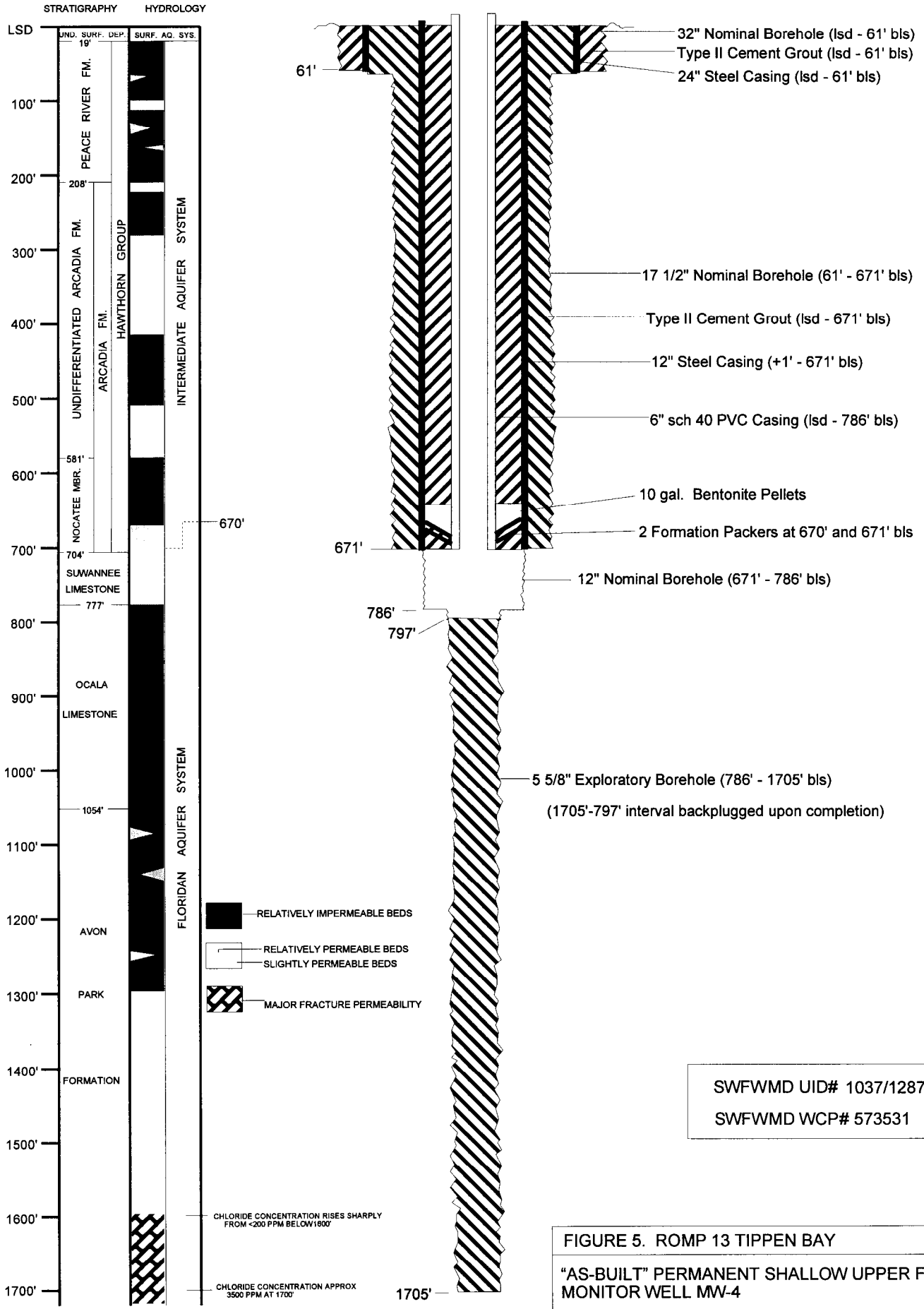


FIGURE 5. ROMP 13 TIPPEN BAY

"AS-BUILT" PERMANENT SHALLOW UPPER FAS MONITOR WELL MW-4

LAT 27 04'18" / LONG 81 36'58"; S21-T39S-R27E; DESOTO COUNTY

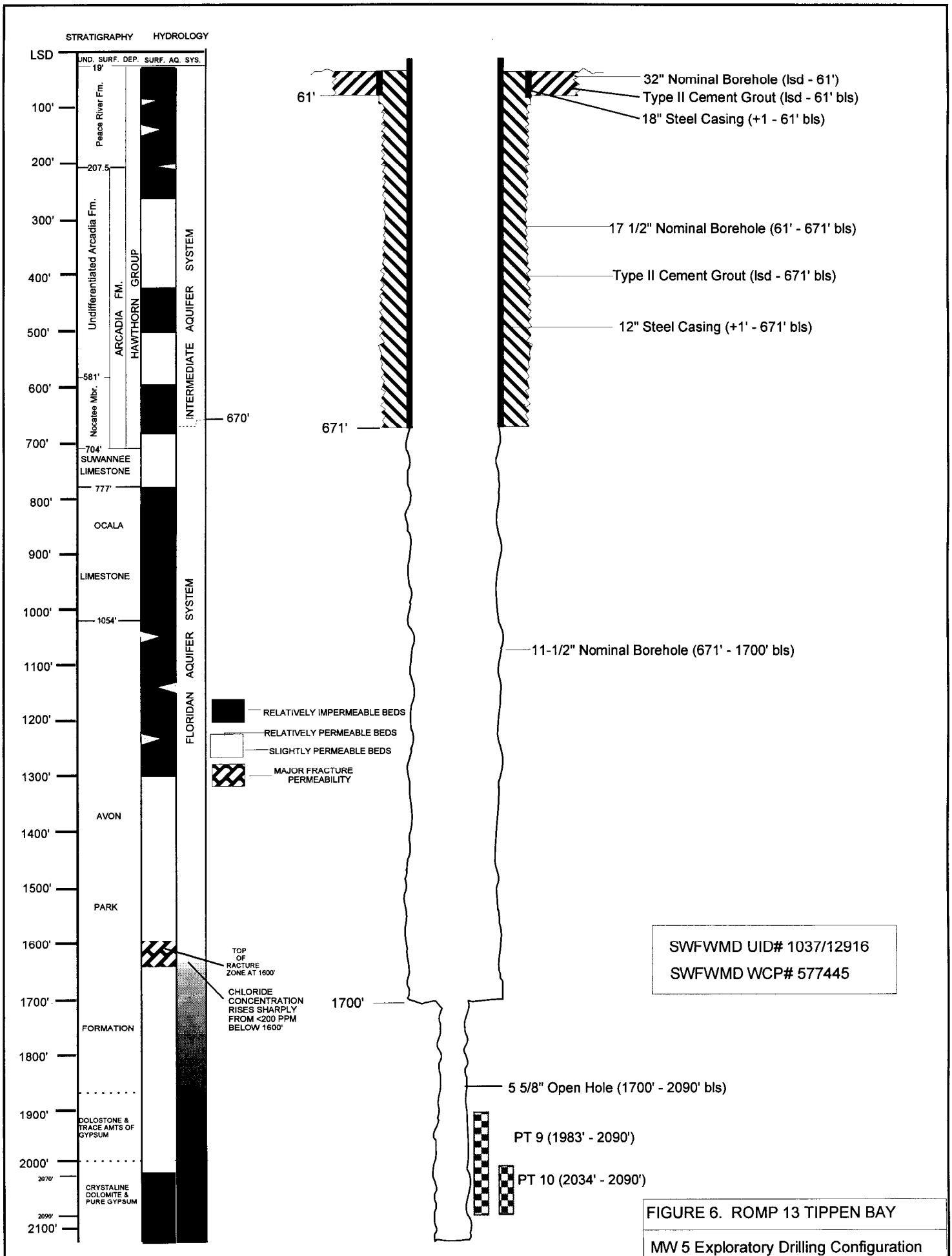


FIGURE 6. ROMP 13 TIPPEN BAY

MW 5 Exploratory Drilling Configuration and Packer Test Intervals

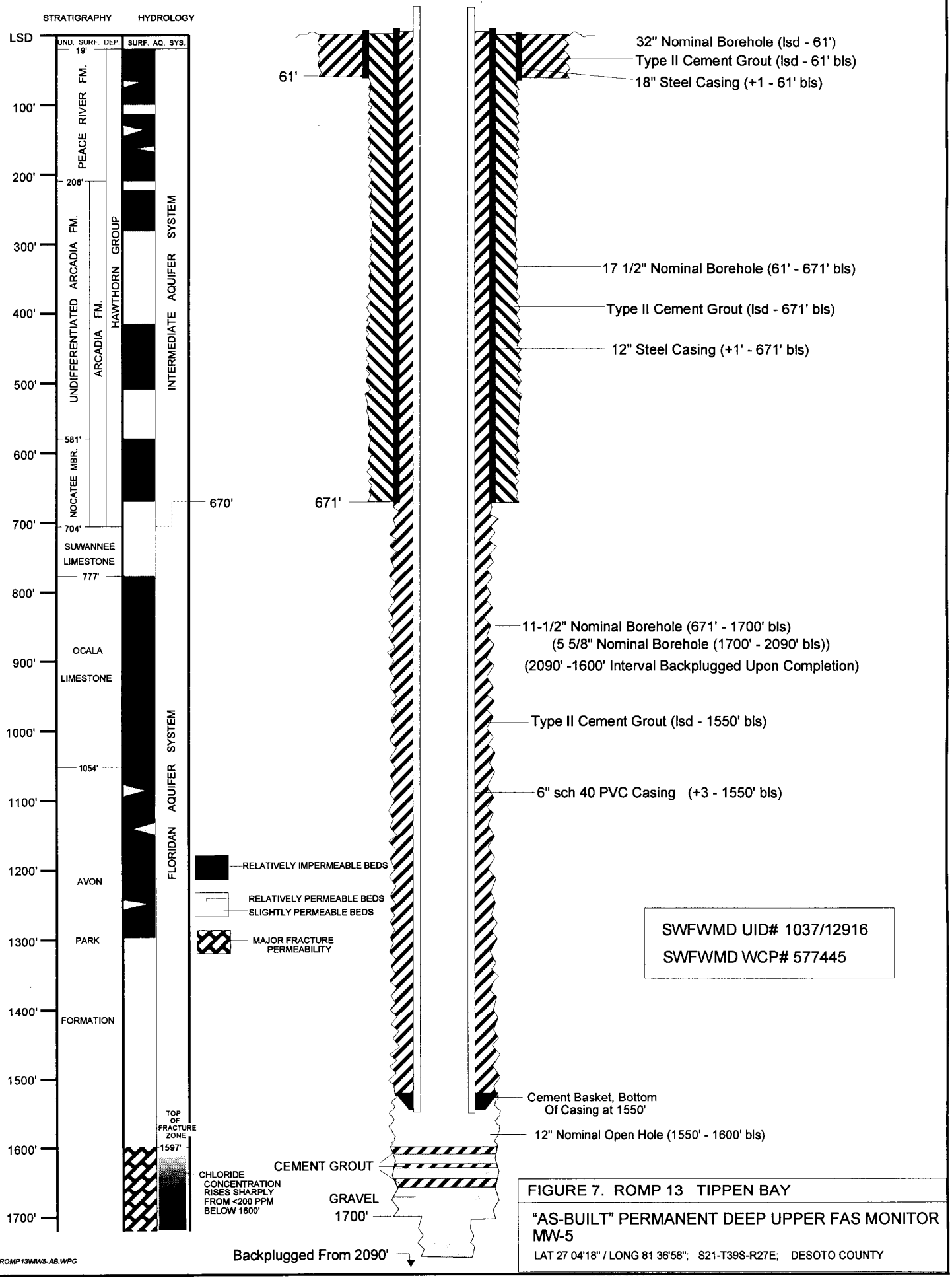
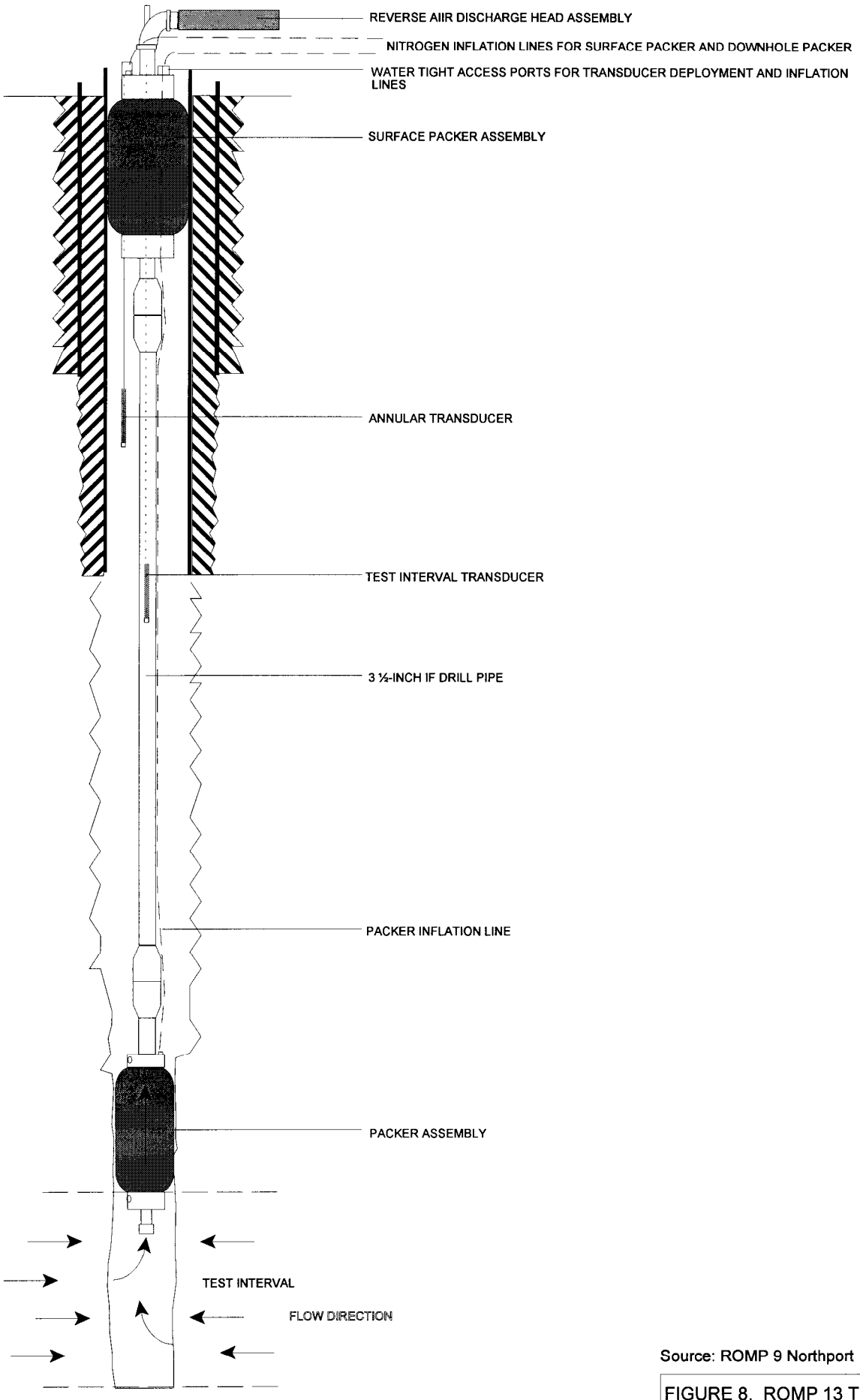


FIGURE 7. ROMP 13 TIPPEN BAY

"AS-BUILT" PERMANENT DEEP UPPER FAS MONITOR MW-5

LAT 27 04'18" / LONG 81 36'58"; S21-T39S-R27E; DESOTO COUNTY



Source: ROMP 9 Northport

FIGURE 8. ROMP 13 TIPPEN BAY

Off-Bottom Formation Packer

Padker.wpg

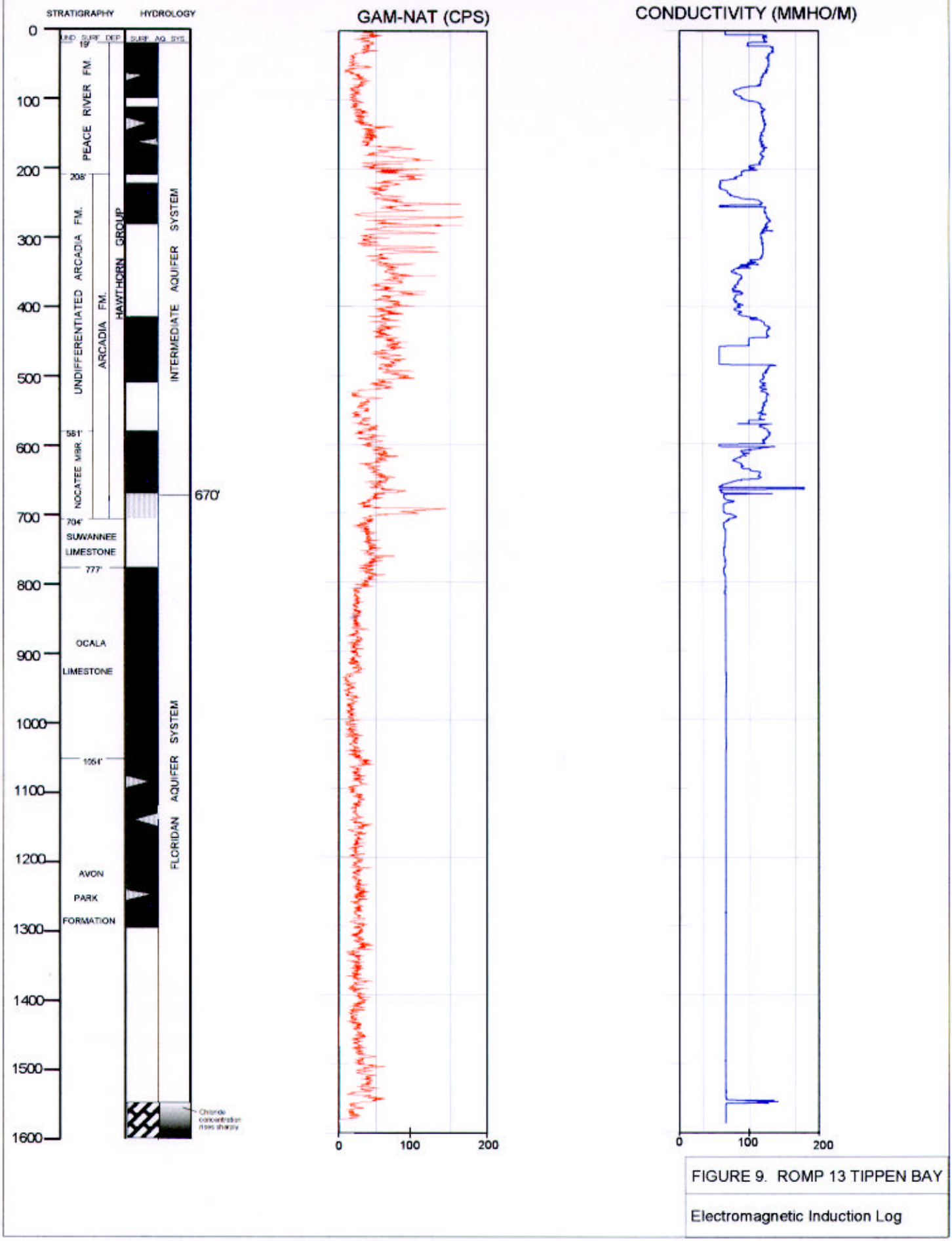
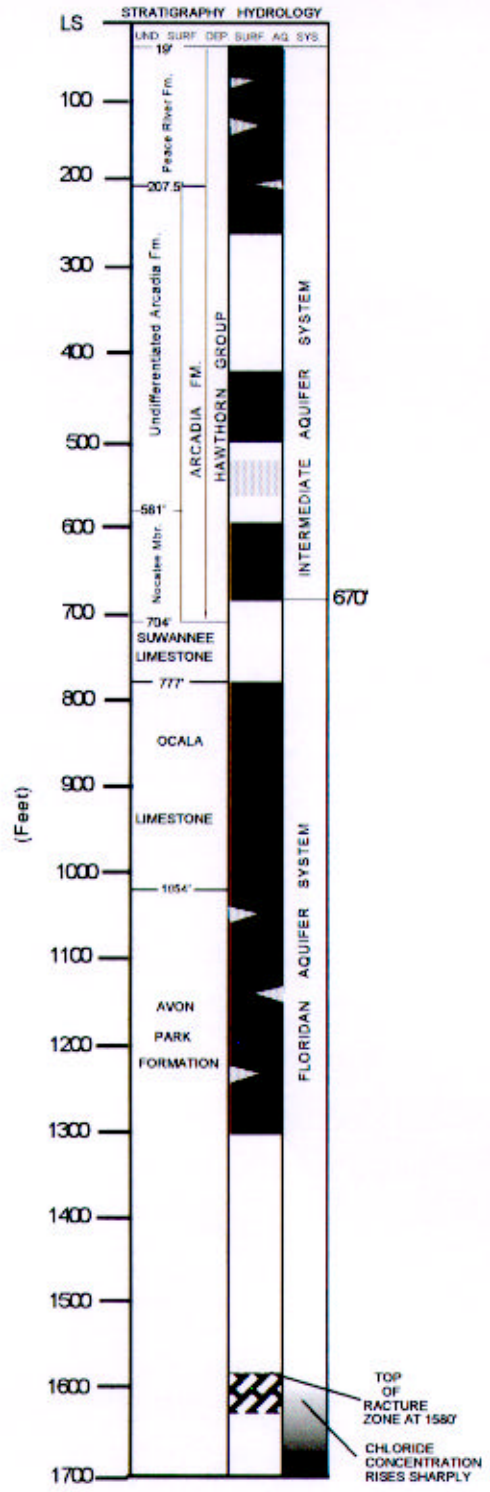


FIGURE 9. ROMP 13 TIPPEN BAY

Electromagnetic Induction Log



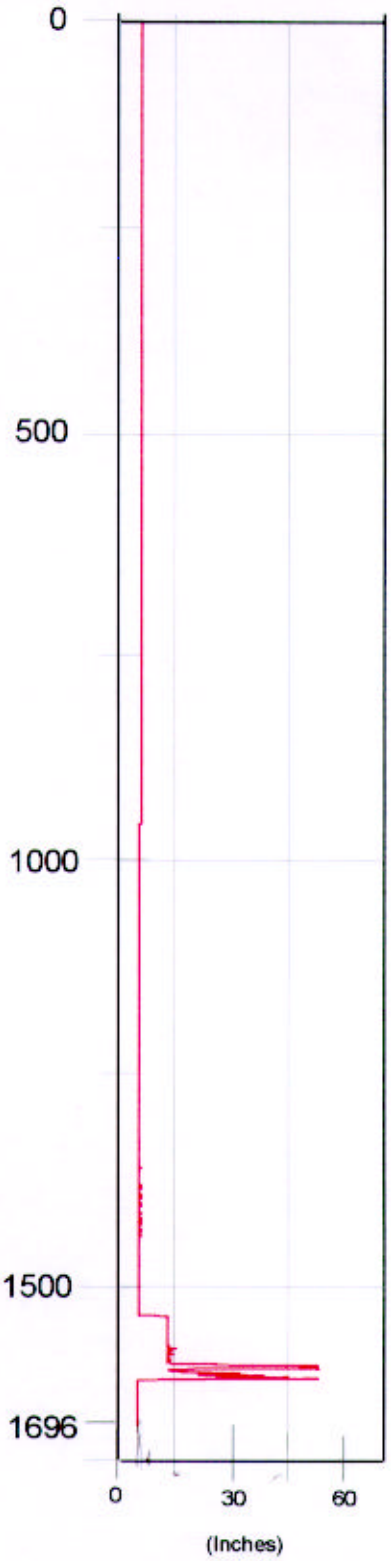


FIGURE 10. ROMP 13 TIPPEN BAY

Caliper Log

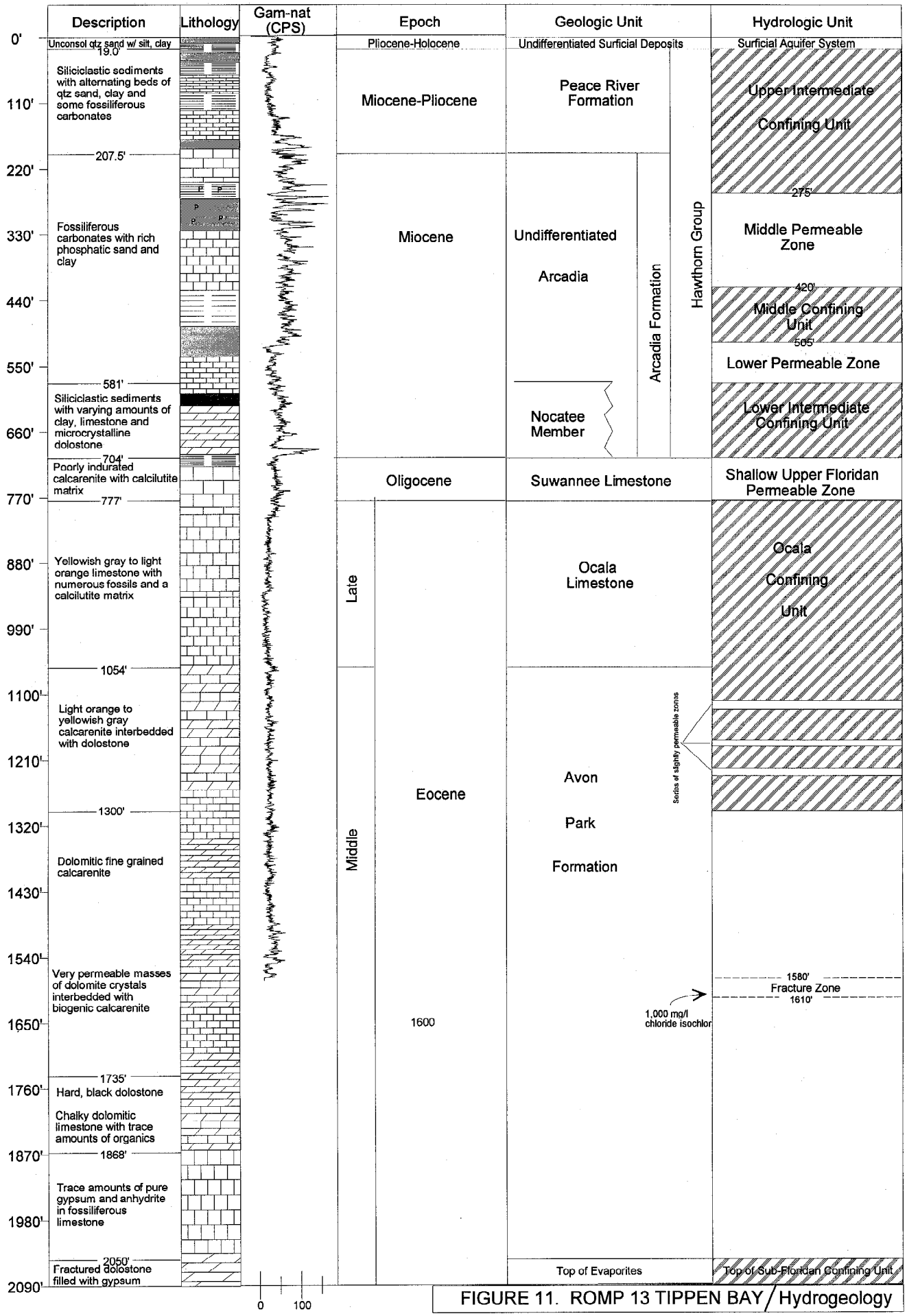


FIGURE 11. ROMP 13 TIPPEN BAY/Hydrogeology

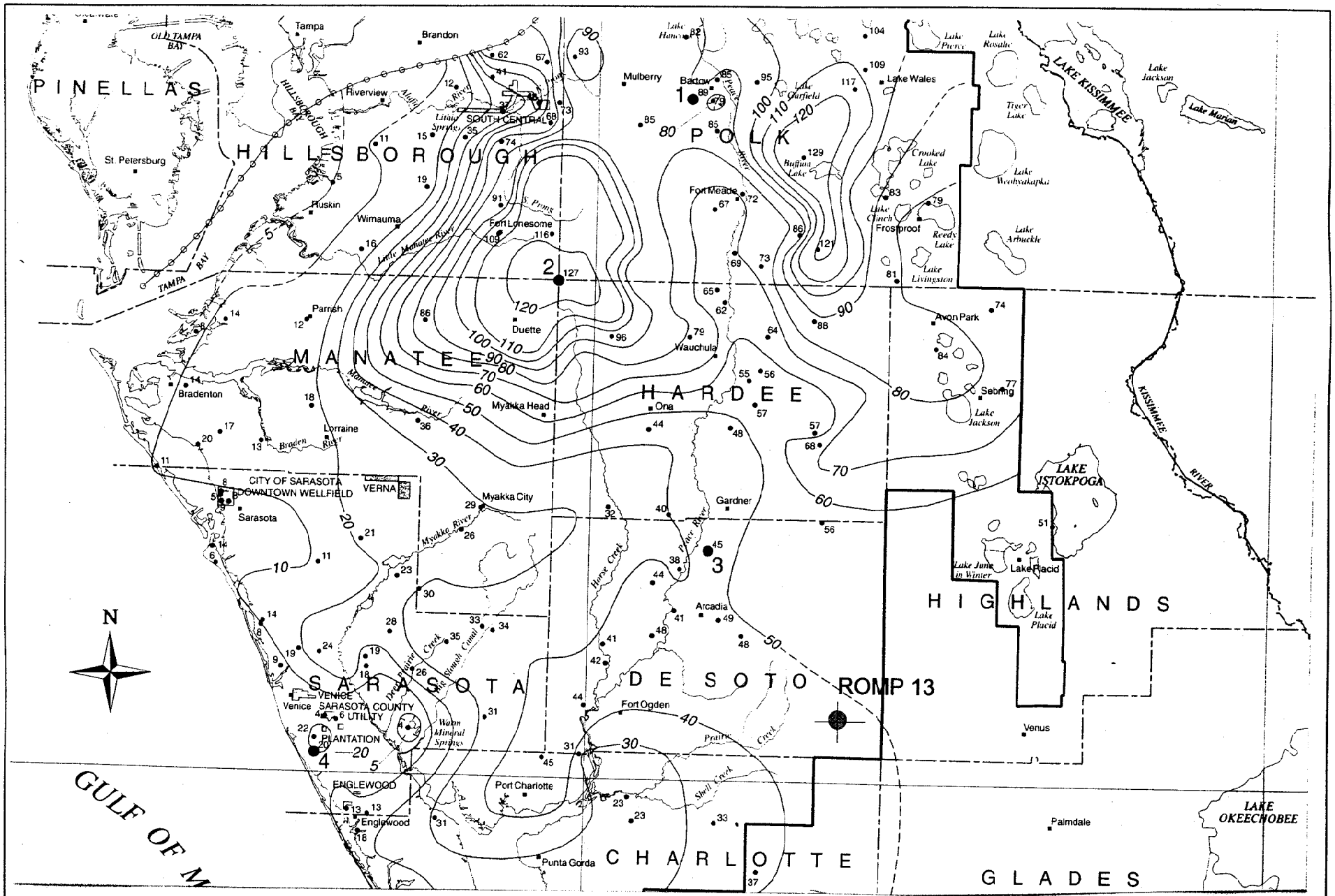
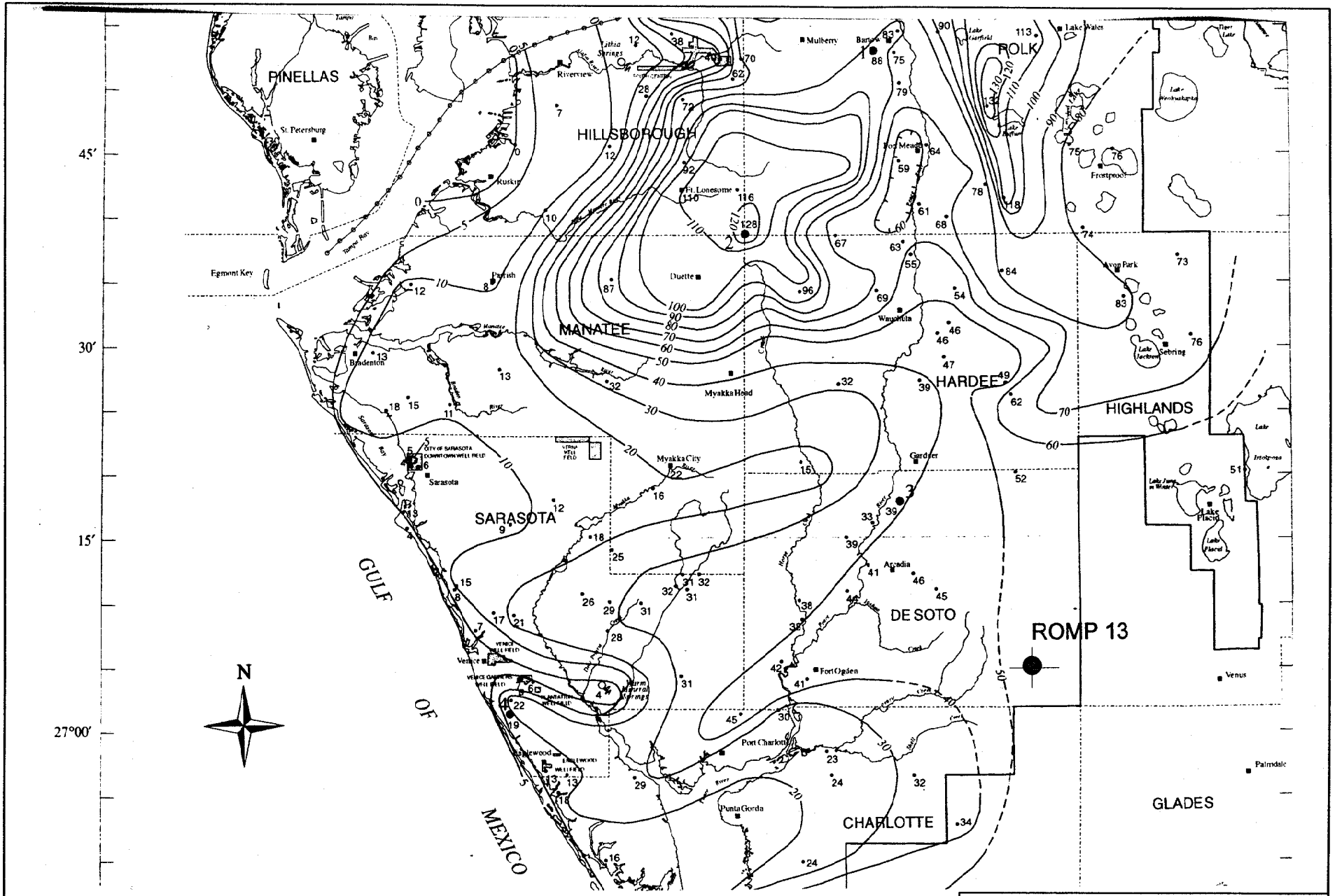


FIGURE 12. ROMP 13 TIPPEN BAY

Potentiometric Surface of the Intermediate Aquifer-September 1996.



Contours in Feet NGVD.

From: USGS map prepared by J.A Mattie, P.A. Metz, and A.E. Torres, 1996

ias596pot.wpg

FIGURE 13. ROMP 13 TIPPEN BAY

Potentiometric Surface of the Intermediate Aquifer- May 1996.

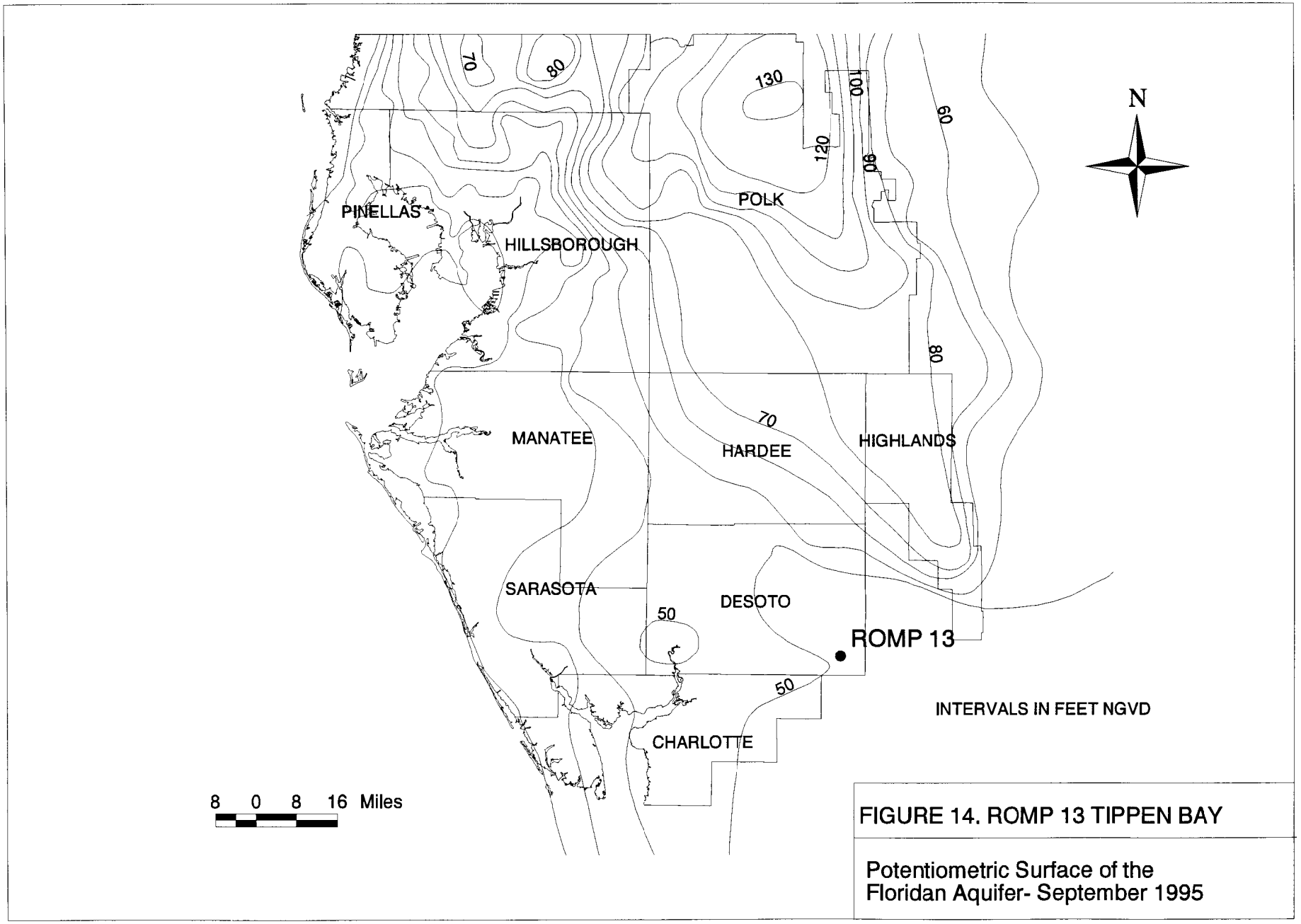


FIGURE 14. ROMP 13 TIPPEN BAY

Potentiometric Surface of the Floridan Aquifer- September 1995

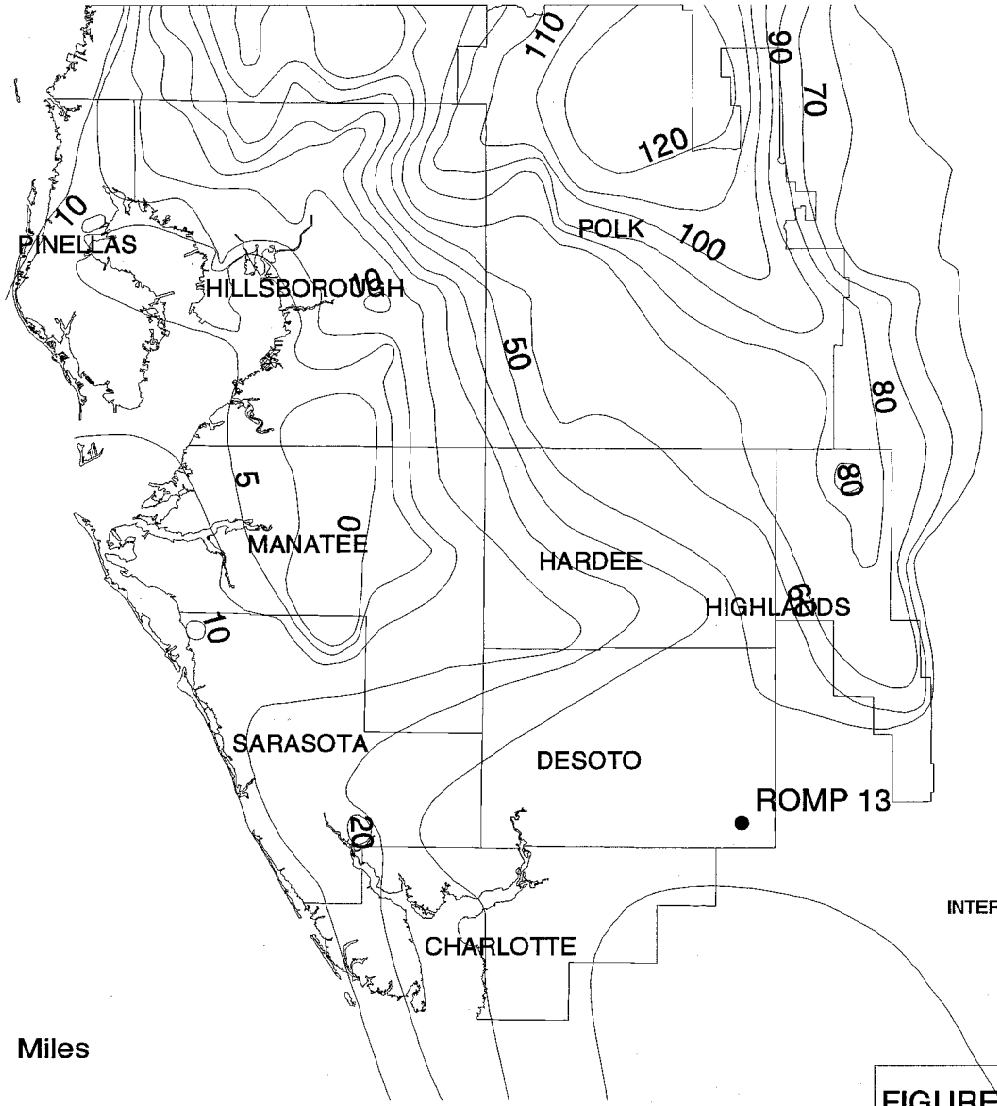
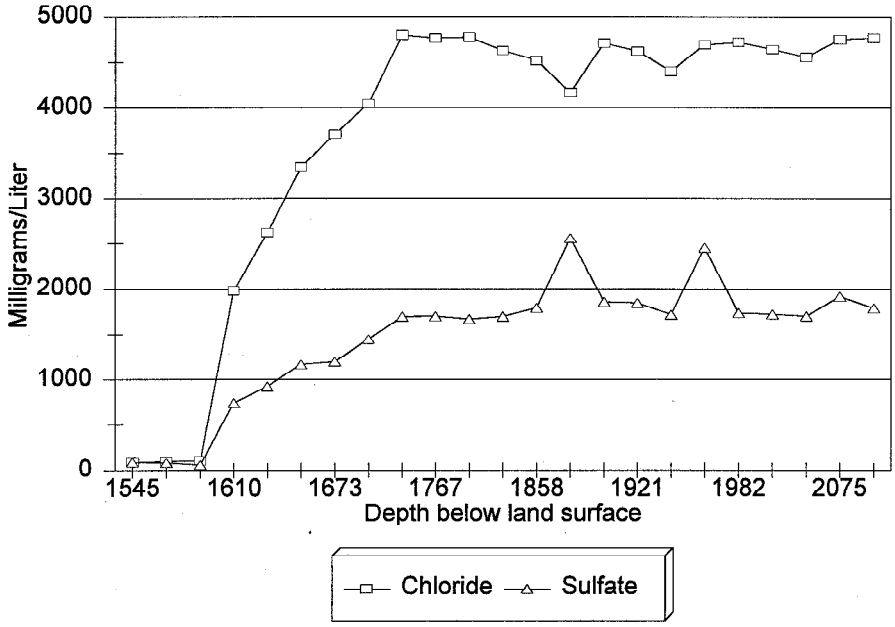


FIGURE 15. ROMP 13 TIPPEN BAY

Potentiometric Surface of the Floridan Aquifer- May 1996

EXPLORATORY DRILLING DISCHARGE SAMPLES

Laboratory Analysis



EXPLORATORY DRILLING DISCHARGE SAMPLES

Laboratory Analysis

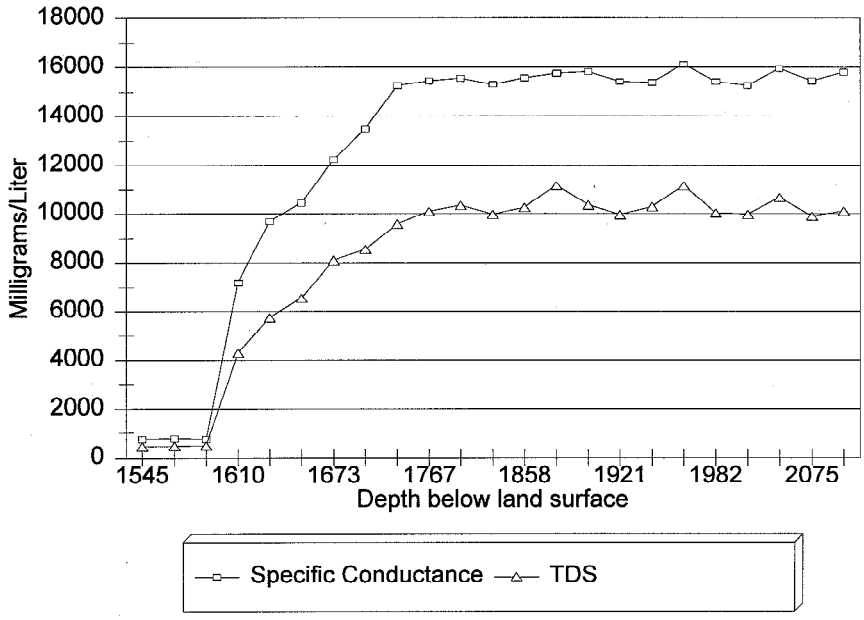
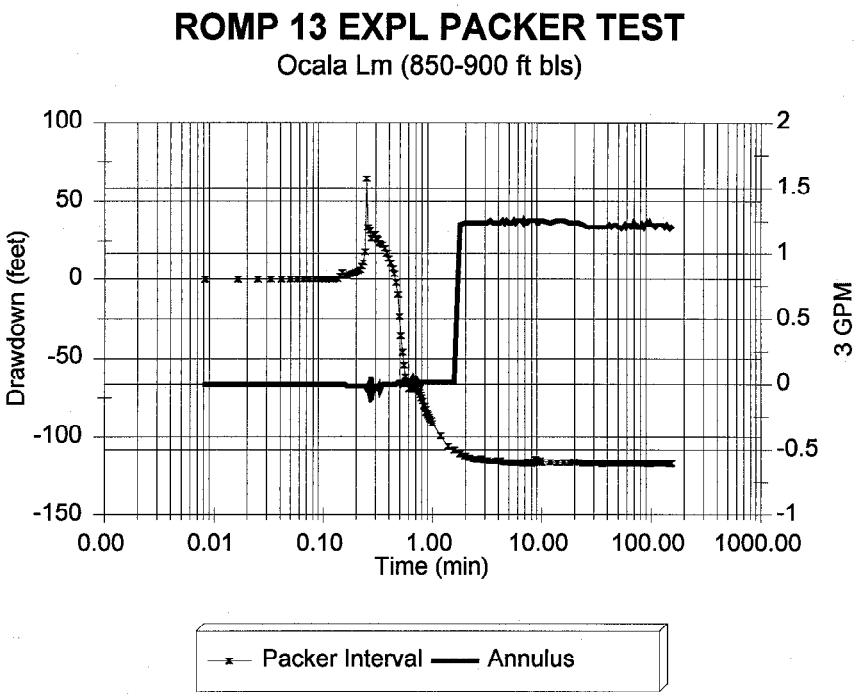


FIGURE 16. ROMP 13 TIPPEN BAY
Ground Water Sample Laboratory Results

R13wq.wb2



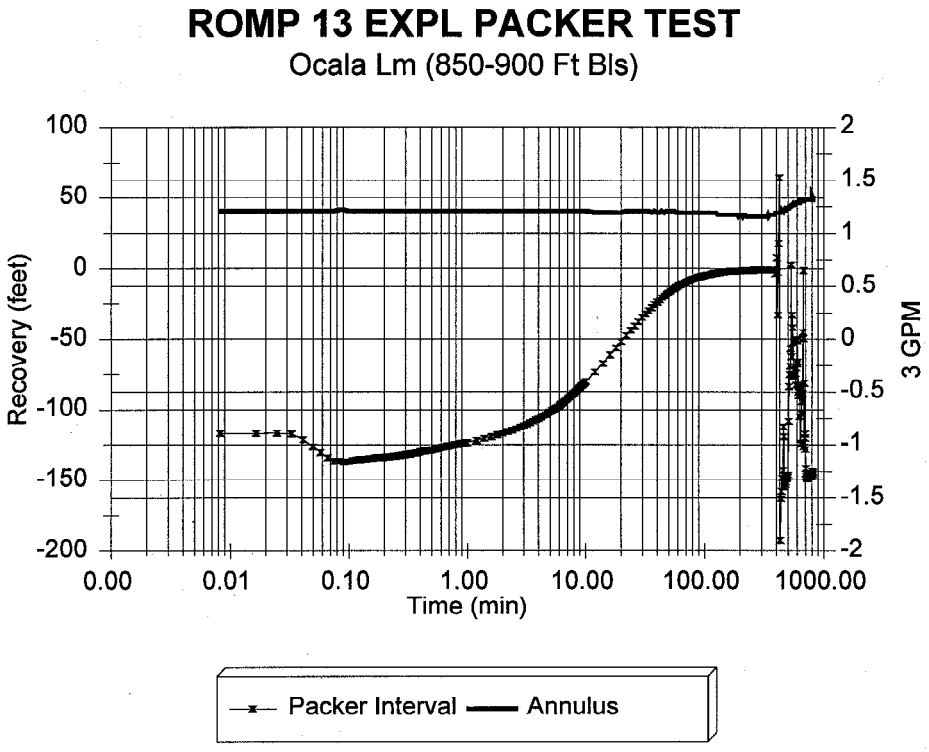
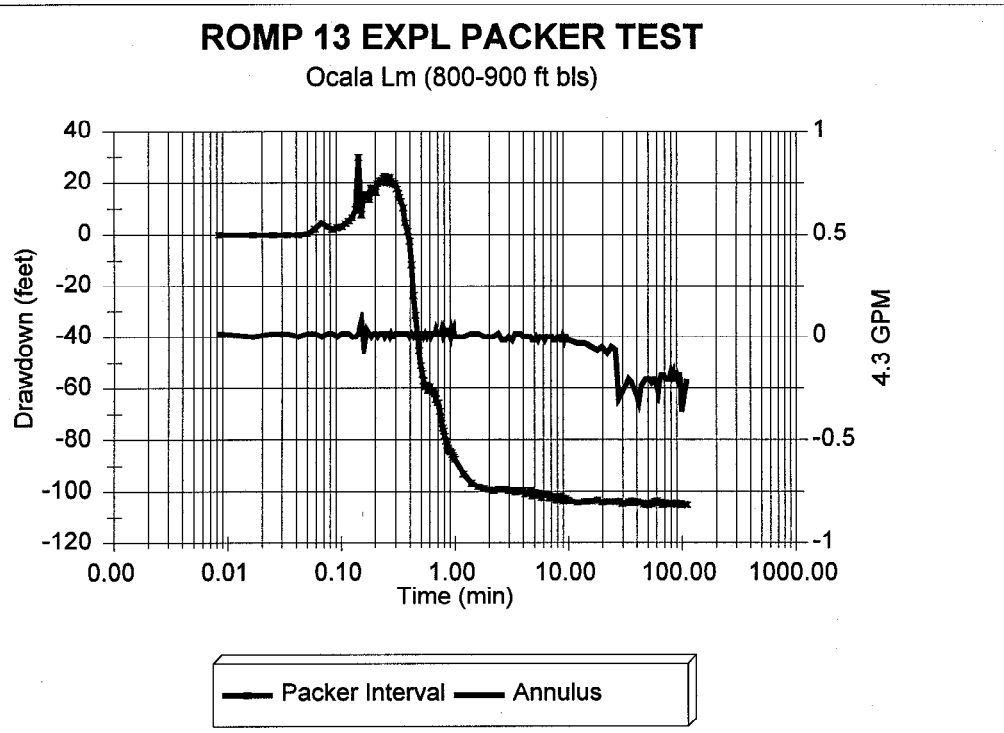


FIGURE 17. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (850 - 900 ft bls)



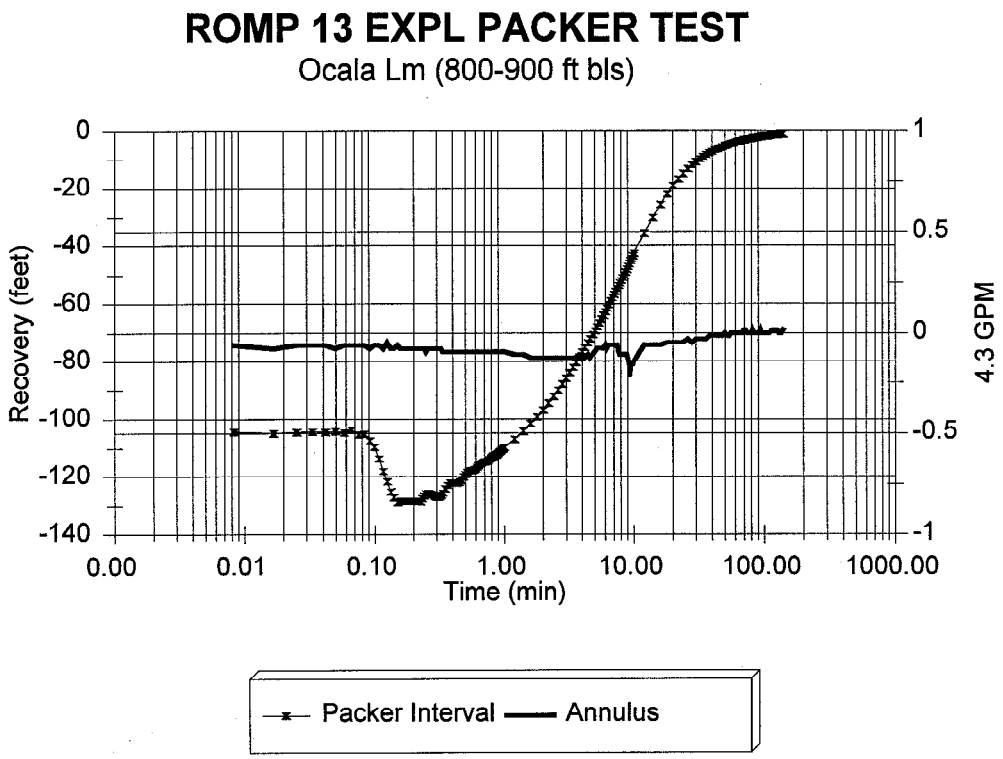
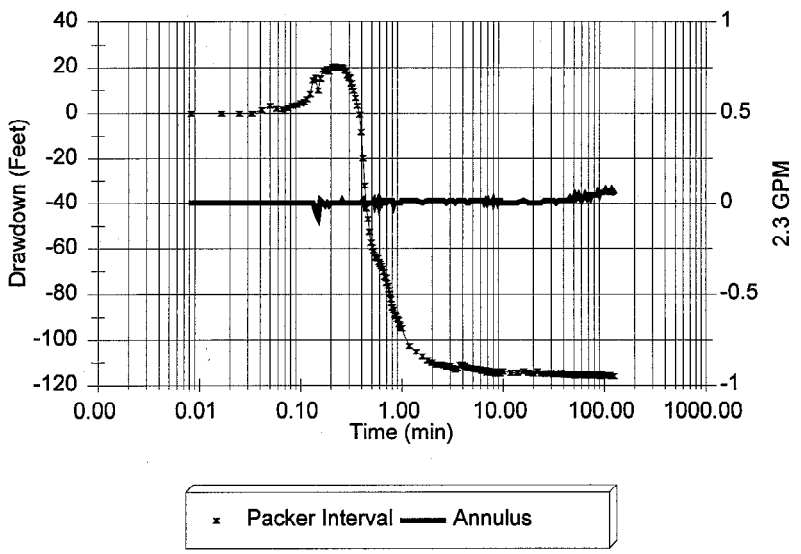


FIGURE 18.ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (800 - 900 ft bls)

PT800De.wb2



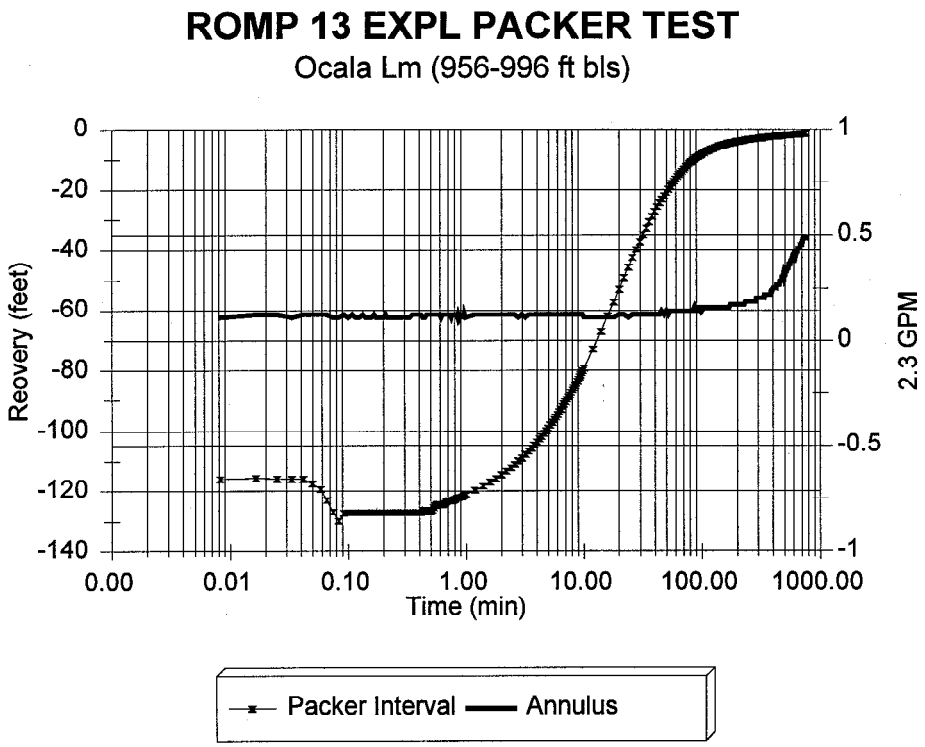
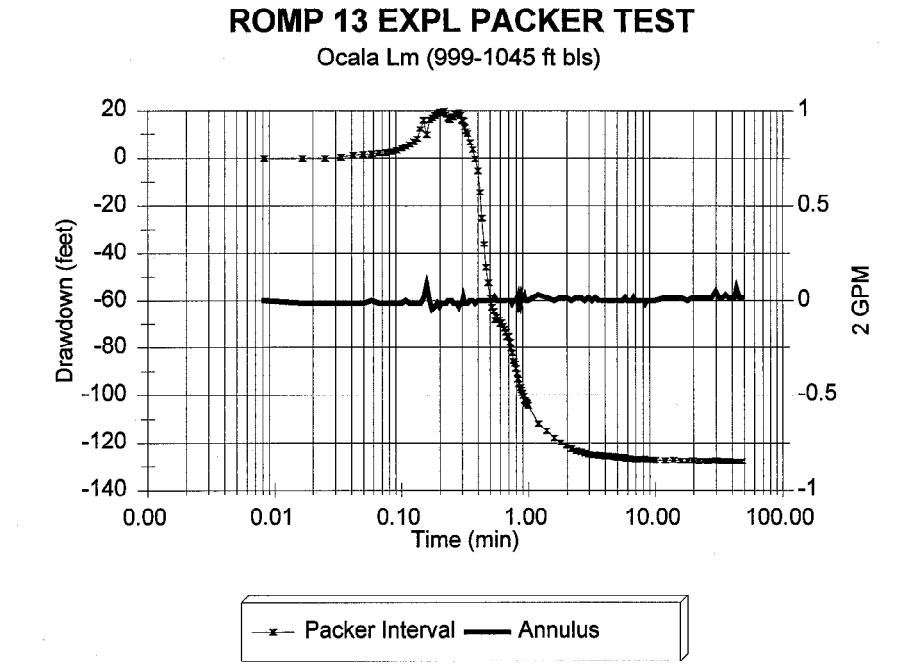


FIGURE 19. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (956 - 996 ft bls)

PT956d.wb2



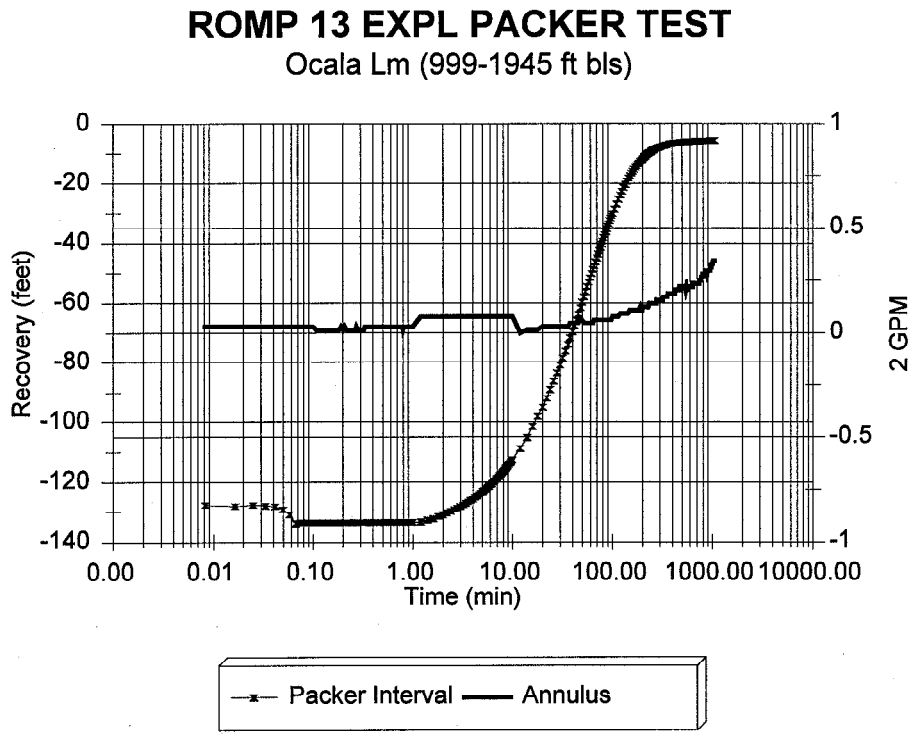
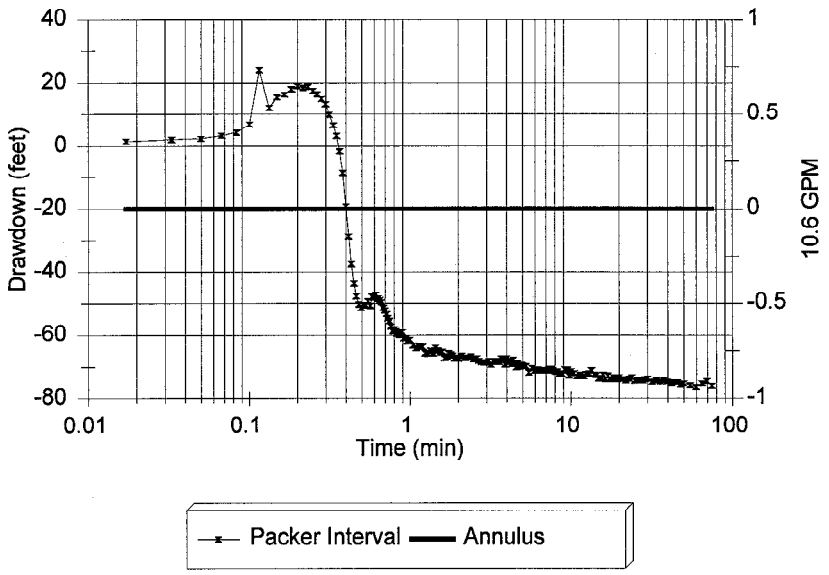


FIGURE 20. ROMP 13 TIPPEN BAY
Packer Test Drawsown and Recovery Curves (999 - 1945 ft bls)

PT999De.wb2

ROMP 13 EXPL PACKER TEST

Avon Park (1115-1215 ft bls)



ROMP 13 Expl Packer Test

Avon Park 1115-1215 (ft bls)

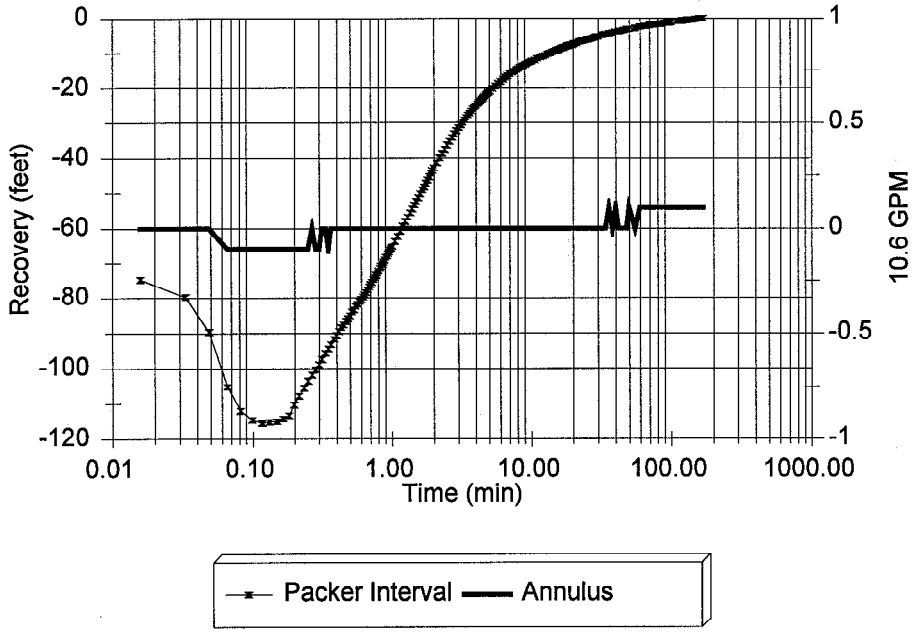
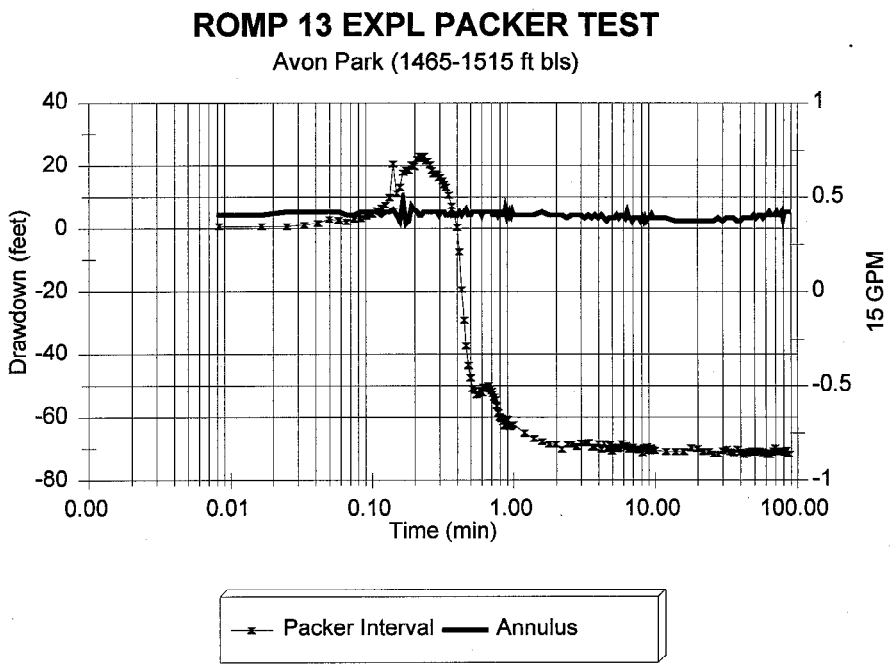


FIGURE 21. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (1115 - 1215 ft bls)

PT1115D.wb2



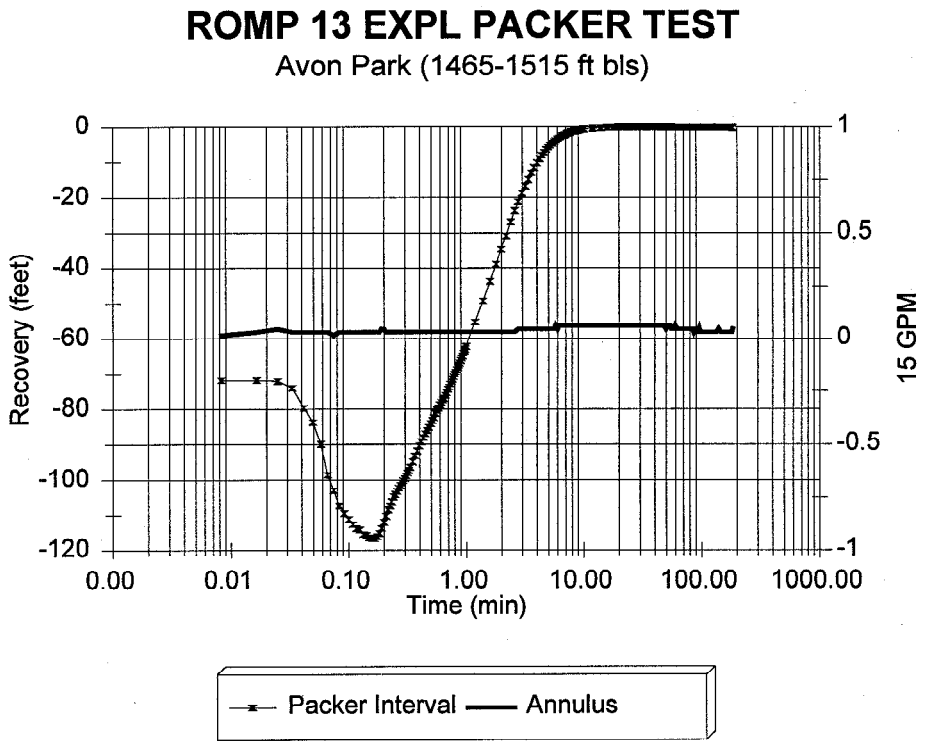
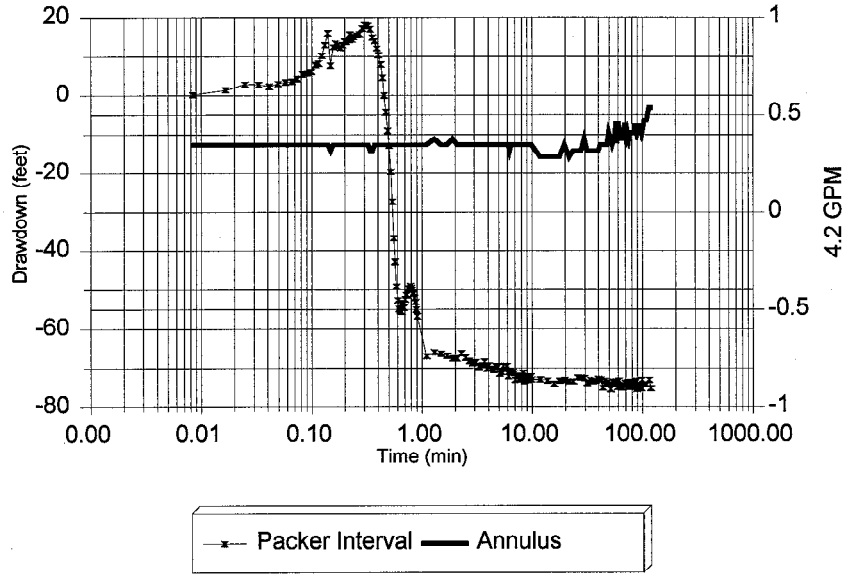


FIGURE 22. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (1465 - 1515 ft bls)

PT1465D.wb2

ROMP 13 EXPL PACKER TEST

Avon Park (1983-2090 ft bls)



ROMP 13 EXPL PACKER TEST

Avon Park (1983-2090 ft bls)

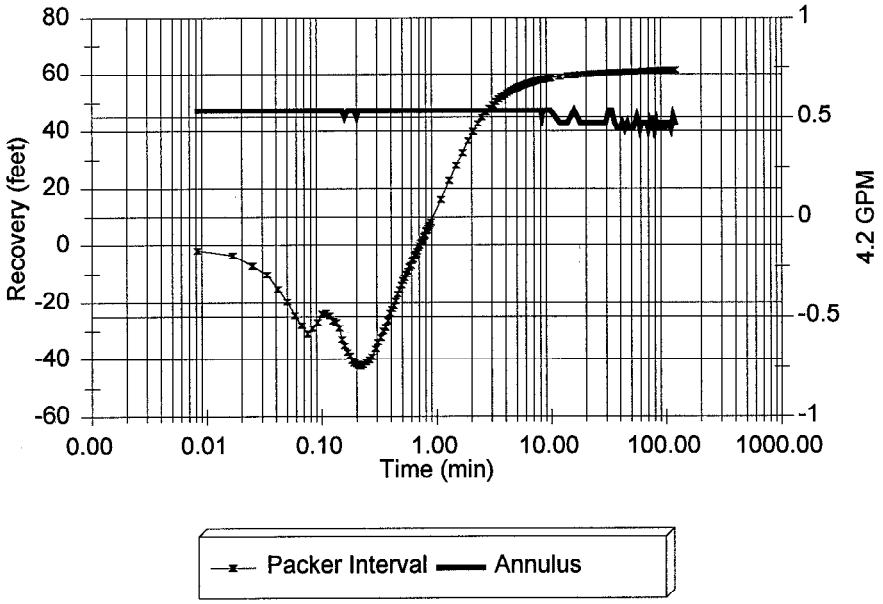
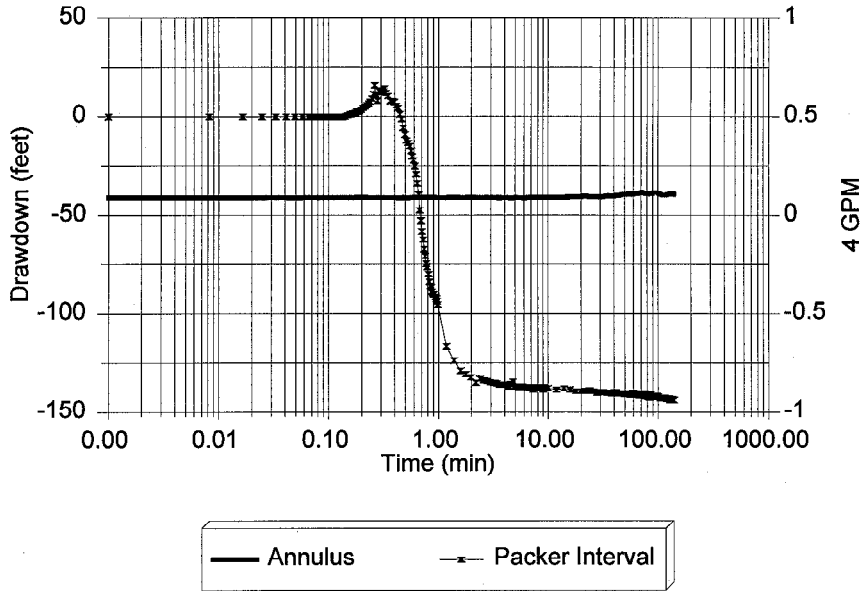


FIGURE 23. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (1983 - 2090 ft bls)

PT1983e.wb2

ROMP 13 EXPL PACKER TEST

Avon Park (2034-2090 ft bls)



ROMP 13 EXPL PACKER TEST

Avon Park (2034-2090 ft bls)

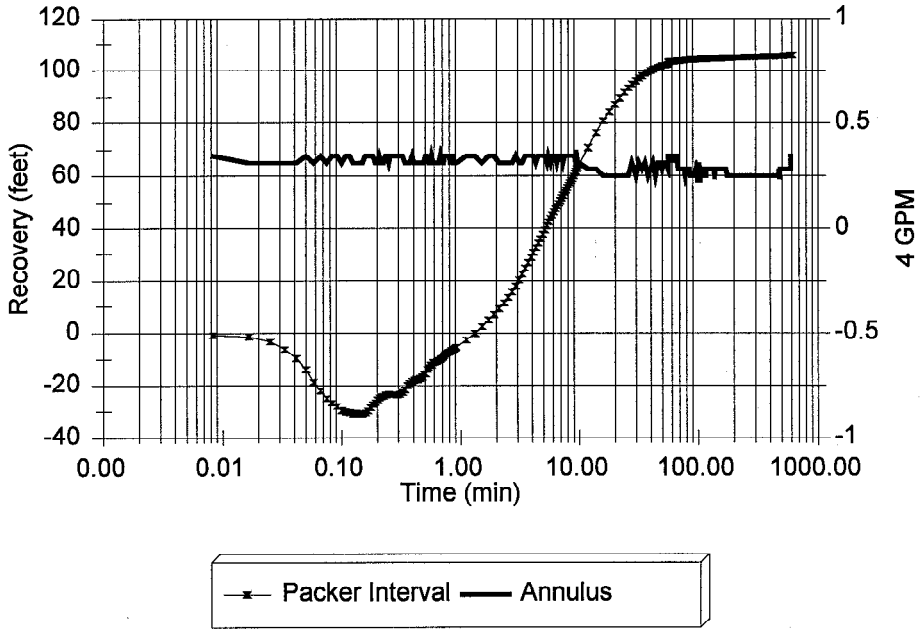


FIGURE 24. ROMP 13 TIPPEN BAY
Packer Test Drawdown and Recovery Curves (2034 - 2090 ft bls)

PT2034e.wb2

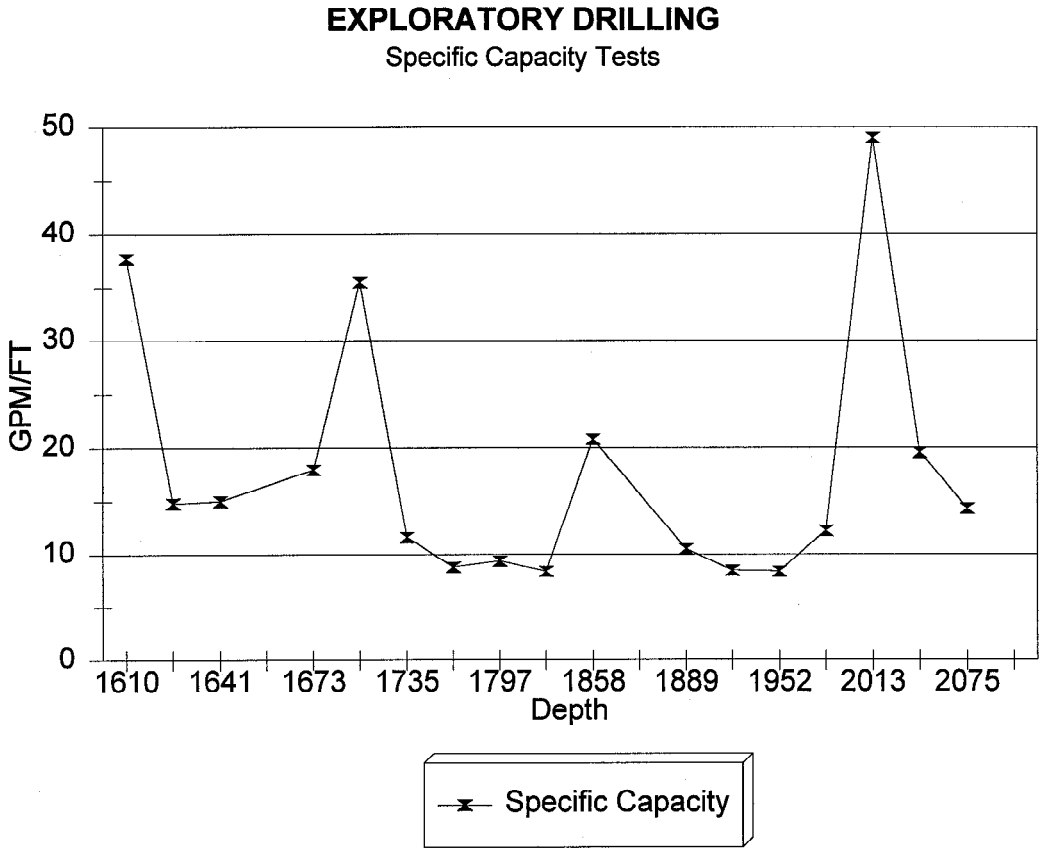


Figure 25. ROMP 13 TIPPEN BAY
Specific Capacity Tests

R13wq.wb2

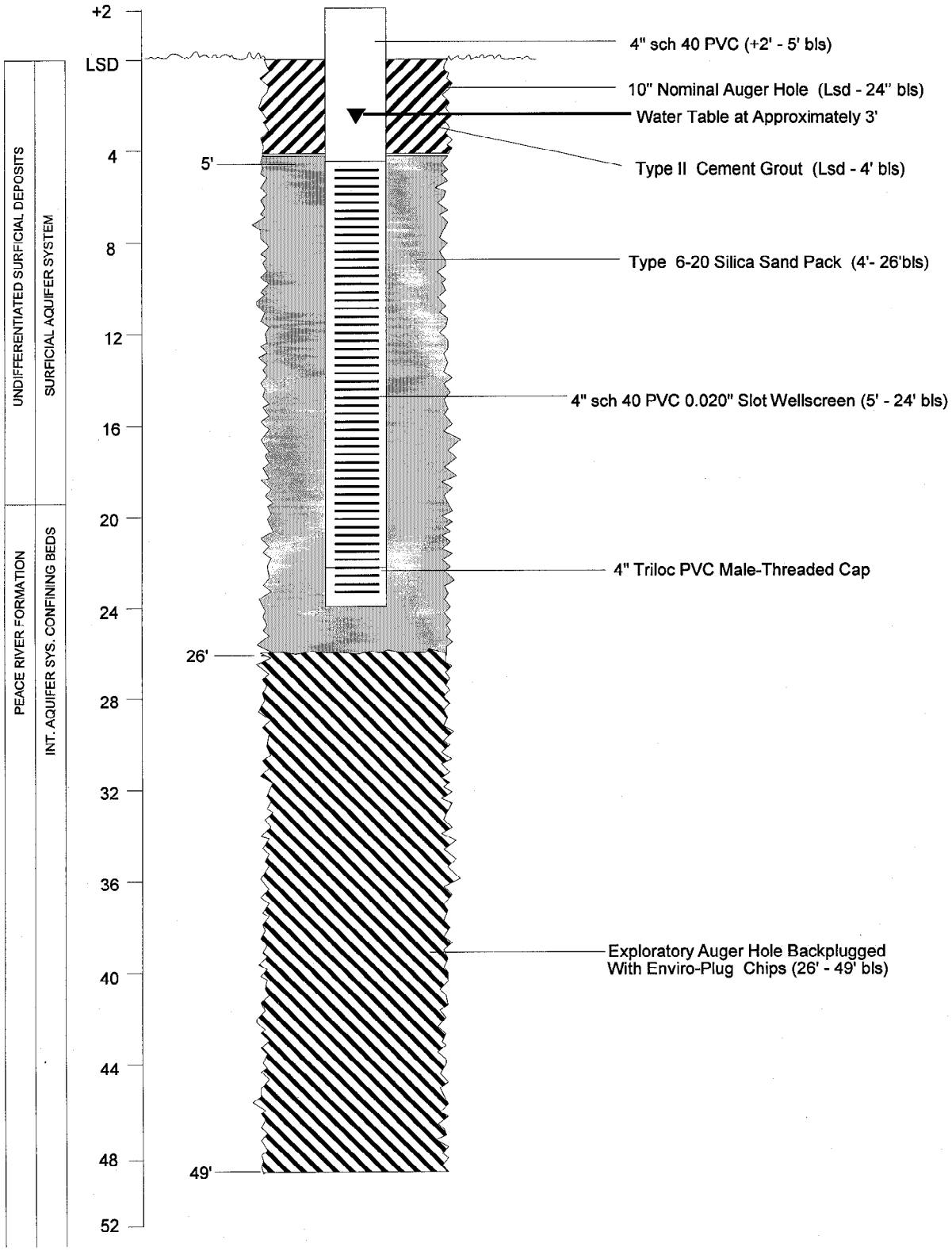


FIGURE 26. ROMP 13 TIPPEN BAY

Temporary Surficial Aquifer Observation Well / Initial Water Supply Well

Tempsurf.wpg

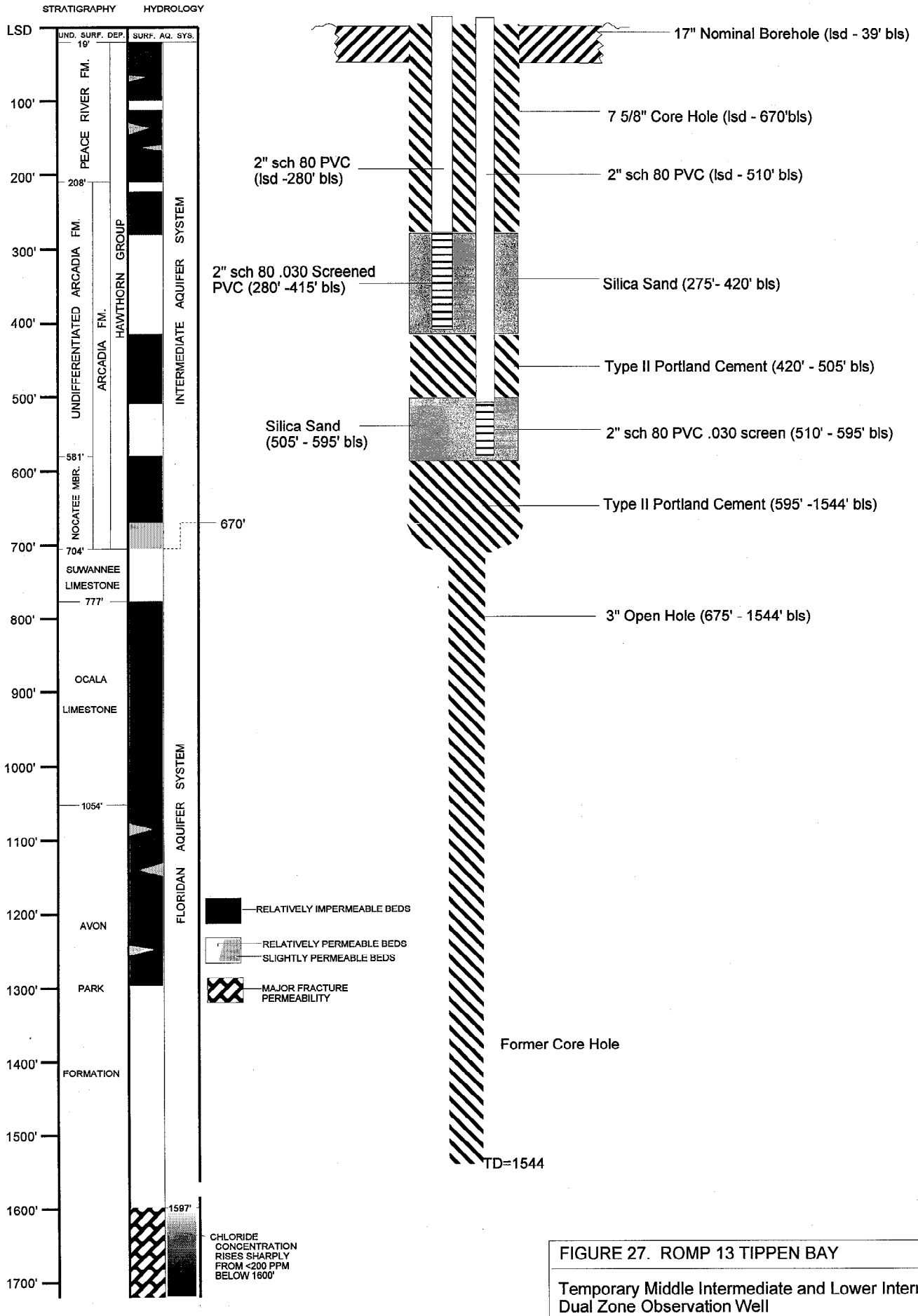


FIGURE 27. ROMP 13 TIPPEN BAY

Temporary Middle Intermediate and Lower Intermediate Dual Zone Observation Well

Dualzone.wpd

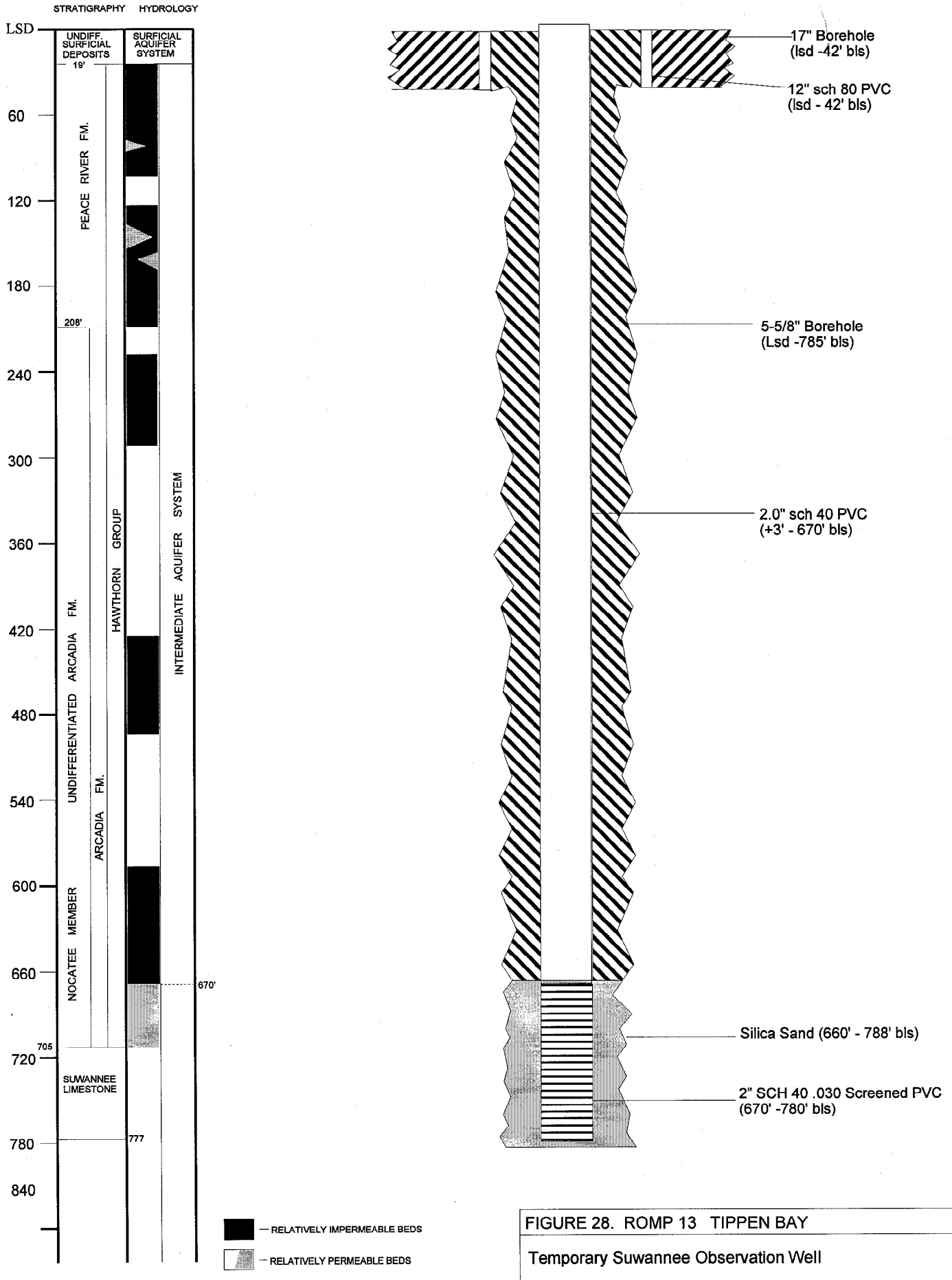
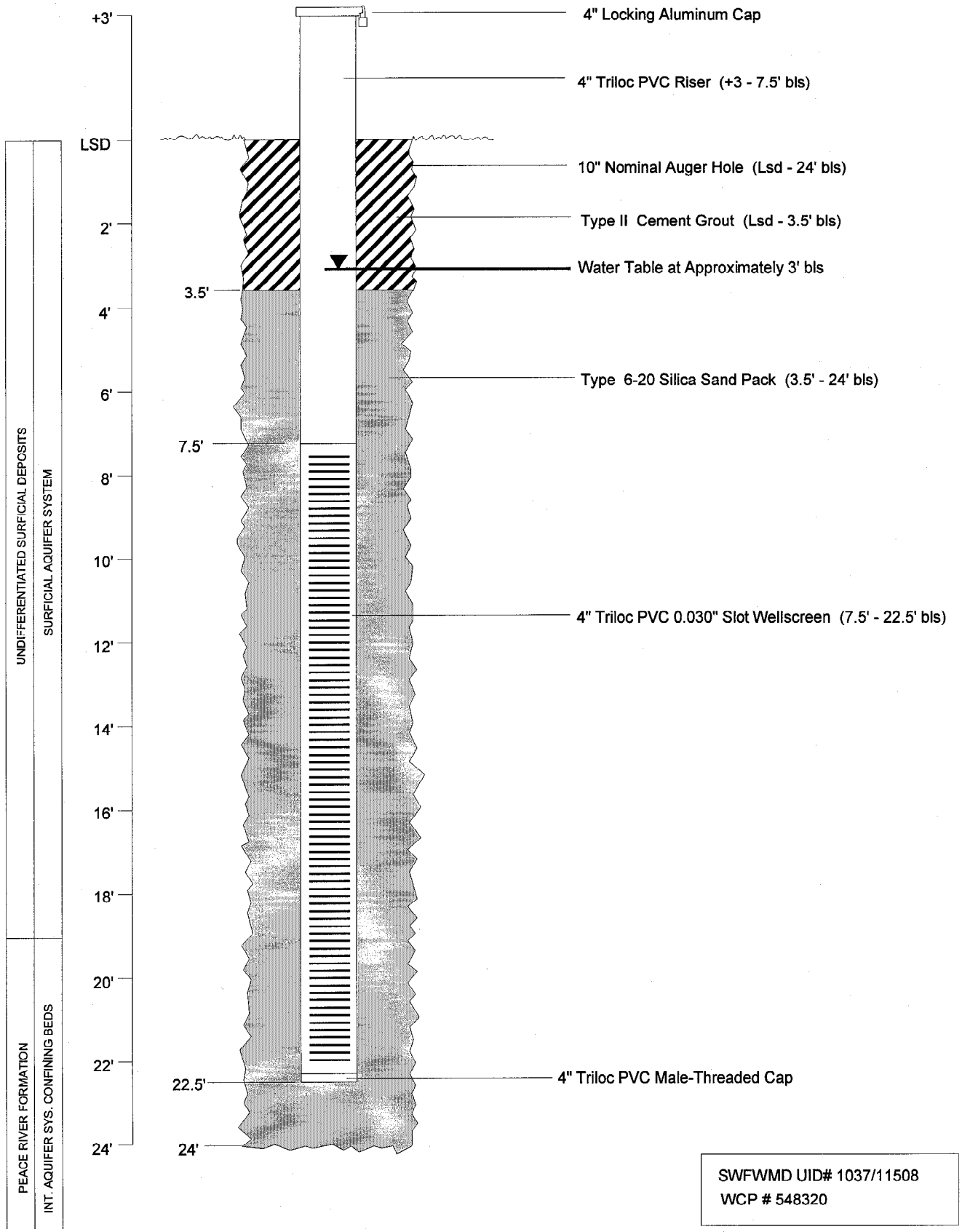


FIGURE 28. ROMP 13 TIPPEN BAY

Temporary Suwannee Observation Well

Suwob.wpg



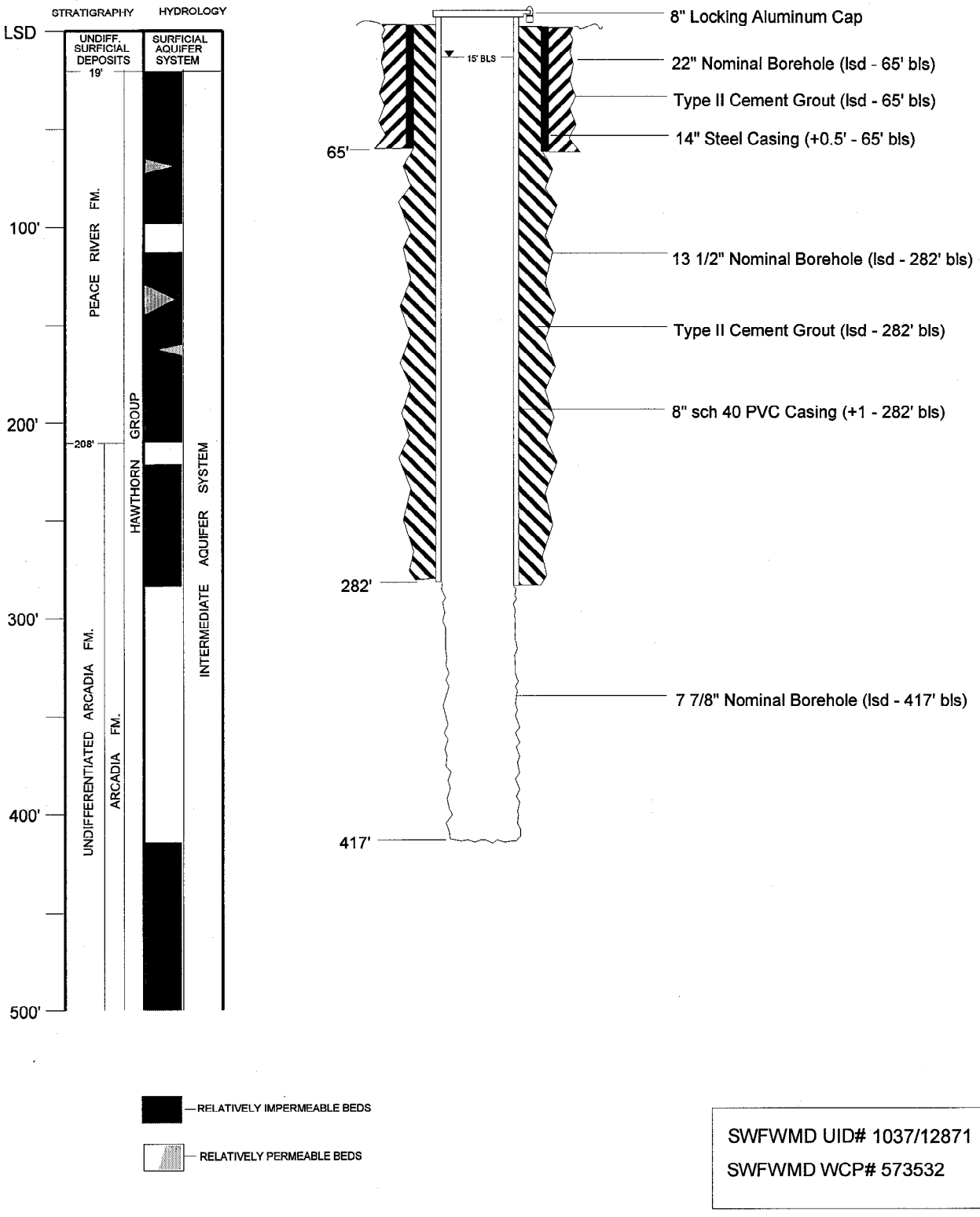
SWFWMD UID# 1037/11508
WCP # 548320

FIGURE 29. ROMP 13 TIPPEN BAY

"As Built" Permanent Surficial Monitor Well MW-1

LAT 27 04'18" / LONG 81 36'58" ; S21-T39S-R27E; DESOTO COUNTY

ROMP13\"MW1-AB.WPG



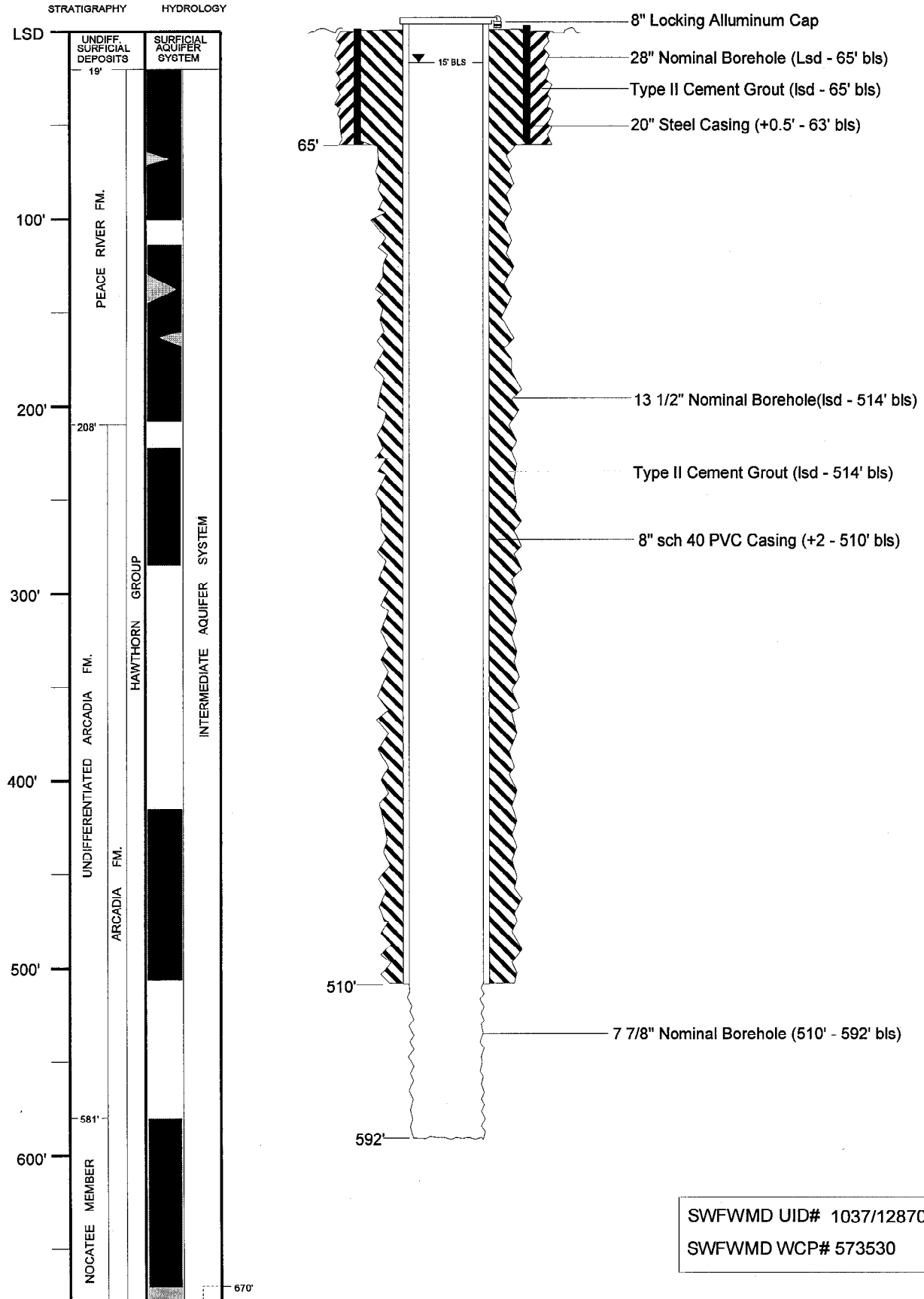
SWFWMD UID# 1037/12871
SWFWMD WCP# 573532

FIGURE 30. ROMP 13 TIPPEN BAY

"As-Built" Permanent Middle IAS Monitor Well MW-2

LAT 27 04'18" / LONG 81 36'58"; S21-T39S-R27E; DESOTO COUNTY

ROMP13 \MW2-AB.WPG



SWFWMD UID# 1037/12870
SWFWMD WCP# 573530

FIGURE 31. ROMP 13 TIPPEN BAY

"As-Built" Permanent Lower IAS Monitor Well MW-3

LAT 27 04'18" / LONG 81 36'58" ; S21-T39S-R27E; DESOTO COUNTY

ROMP 13 \MW3-AB.WPG

TABLES

Table 1. Field Analysis of Packer Test Data Collected During Exploratory Drilling in MW-4

R13 wq.wb2

Date	Time	Depth (ft bls)	Specific Cond. (uMHOS)	Water Temp. (C)	Cl (mg/L) (Hach)	SO4 (mg/L) (Hach)	pH
02/14/96	1656	850-900	620	23.6	140	125	8.53
02/15/96	1224	800-900	610	24.5	N/A	N/A	8.34
02/19/96	1805	956-996	650	22.8	N/A	N/A	8.58
02/22/96	845	999-1045	600	23.8	140	100	8.05
02/27/96	1740	1165-1215	660	26.1	N/A	N/A	8.61
02/28/96	1105	1115-1215	670	26.9	140	N/A	8.51
03/05/96	858	1465-1515	960	24.8	180	7200	8.37
03/05/96	1605	1415-1515	800	26.8	N/A	N/A	8.54
* 06/17/96	903	2034-2090	28800	26.1	N/A	N/A	7.11
* 06/18/96	1310	1983-2090	35500	27.2	N/A	N/A	7.07

12" steel casing extends to 670 ft bls

* Taken in MW 5

N/A not analyzed

Table 2. Field Analysis of Bailer Samples Collected During Exploratory Drilling in MW 4

R13 wq.wb2

Date	Time	Depth (ft bls)	FluidTemp. (C)	Specific Conduct. (uMHOS)	pH (ATC)	Specific Gravity (gm/cm)	Cl- (mg/L)	SO4 (mg/L)
03/06/96	1715	1578	27.9	N/A	8.48	N/A	N/A	N/A
03/07/96	1410	1641	28.6	N/A	7.96	N/A	1500	>500
03/13/96	1550	1700	27.9	N/A	7.75	N/A	3500	>1200
*05/06/96	1400	1952	26.5	16350	6.94	N/A	N/A	N/A
*05/07/96	1500	2075	30.4	15950	7.25	N/A	N/A	N/A
! 06/15/96	900	2084	27.8	17500	6.86	1.01	N/A	N/A

12" steel casing extends to 670 ft bls

* Collected in MW 5

! Geophysical Thief Sample Collected in MW 5

N/A not analyzed

Table 3. Field Analysis of Discharge Samples Collected During Exploratory Drilling in MW-5

R13 wq.wb2

Date	Time	Depth (ft bls)	Spec. Capacity (gpm/ft)	FluidTemp. (C)	Specific Conduct. (uMHOS)	pH (ATC)	Specific Gravity (gm/cm)	CL (mg/L)	SO4 (mg/L)
04/24/96	910	1548	13.2	27.5	752	8.23	N/A	N/A	N/A
04/24/96	1105	1579	14.8	27.7	767	8.47	0.999	150	125
04/24/96	1600	1610	37.7	29.3	7220	7.99	1.001	5000	900
04/25/96	1000	1641	15.0	29.5	9150	7.96	1.002	3500	1100
04/25/96	1337	1662	N/A	30.4	10290	7.89	1.002	4000	1100
04/29/96	1530	1673	17.9	30.3	12550	8.03	1.003	4000	1400
05/01/96	830	1704	35.5	29.0	13600	7.28	1.005	5000	1500
05/01/96	1120	1735	11.6	29.7	15390	7.30	1.005	6000	1500
05/01/96	1430	1767	8.8	29.7	15540	7.27	1.005	5500	1750
05/01/96	1650	1797	9.4	30.0	15580	7.46	1.005	5500	2000
05/01/96	1825	1827	8.4	30.2	15630	7.42	1.005	5500	2000
05/02/96	925	1858	20.8	30.1	15620	7.28	1.005	5000	1500
05/02/96	1105	1878	N/A	30.0	16150	7.40	1.006	5000	2300
05/02/96	1225	1889	10.5	30.5	15740	7.42	1.005	5000	2200
05/02/96	1500	1921	8.5	30.6	15990	7.27	1.005	5000	2000
05/02/96	1740	1952	8.4	30.4	15800	7.33	1.005	5000	2000
05/06/96	1635	1982	12.2	30.2	15800	7.42	1.005	5000	1800
05/07/96	830	2013	49.0	29.4	15600	7.43	1.005	5500	2000
05/07/96	1010	2044	19.6	30.1	16150	7.45	1.006	5500	2000
05/07/96	1350	2075	14.3	30.3	15670	7.33	1.005	5500	2000
05/07/96	1500	2075	N/A	30.4	15950	7.25	1.005	5500	2000

12" steel casing extends to 670 ft bls

N/A not analyzed

Table 4. Laboratory Analysis of Packer Test Samples Collected During Exploratory Drilling in MW-4

R13WQ.wb2

Date (M/D/Y)	Time	Depth (ft bls)	Specific Cond. (umhos)	Water Density	CL	SO4	pH	Br	TDS	Ca	Mg	Bicarb as (CaCO3	K	Na	Si	Fe (ug/l)	Total Hardness (CaCO3)	ION %
02/14/96	1656	850-900	640	1.004	77	63	8.2	0.6	400	29	22	126	3.7	59	8.1	51	163	1.83
02/15/96	1224	800-900	631	1.004	71	70	8.2	0	388	29	24	124	3.8	54	8.6	62	171	2.28
02/19/96	N/R	956-996	665	1.004	69	72	8.4	0	402	27	28	147	5.2	62	8.6	5	183	2.41
02/22/96	N/R	999-1045	675	1.004	76	73	8.2	0.2	398	27	25	131	5.3	63	6.5	0	170	2.41
02/27/96	N/R	1165-1215	696	1.004	68	90	8.3	0	409	30	31	146	5.3	55	8.7	38	203	2.01
02/28/96	N/R	1115-1215	699	1.004	72	88	8.5	0.3	420	29	31	146	5.5	58	9.0	39	200	1.32
03/05/96	N/R	1465-1515	1030	1.005	148	136	8.1	0.4	597	55	29	119	2.5	75	8.4	7	257	0.03
03/05/96	N/R	1415-1515	806	1.005	100	126	8.2	0.3	516	50	28	129	2.6	51	8.5	45	240	-0.29
* 06/17/96	903	2034-2090	39780	1.0204	12440	4192	7.6	50	25610	1244	793	98	235	6750	4.7	626	6372	-1.49
* 06/18/96	1310	1983-2090	38960	1.0205	12630	4269	7.5	41	25690	1235	773	104	232	6740	5.5	789	6267	-2.61

All concentrations in mg/L unless otherwise noted

12" steel casing extends to 670 ft bls

* Collected in MW 5

N/R not recorded

Table 5. Laboratory Analysis of Bailer Samples Collected During Exploratory Drilling in MW-4

R13WQ.wb2

Date (M/D/Y)	Time	Depth (ft bls)	Specific Cond. (umhos)	Water Density	CL	SO4	pH	Br	TDS	Ca	Mg	Bicarb as (CaCO3	K	Na	Si	Fe (ug/l)	Total Hardness (CaCO3)	ION %
03/06/96	1715	1578	N/A	N/A	145	120	N/A	N/A	554	53	28	118	N/A	N/A	N/A	N/A	N/A	N/A
03/07/96	1410	1641	5020	1.0025	1332	514	7.9	4.4	2929	190	127	99	17	657	7.3	64	997	-0.32
03/13/96	1550	1700	12630	1.0064	3590	1257	7.5	19	8190	453	312	90	61	2045	6.6	481	2416	3.75
* 05/06/96	1400	1952	16120	1.009	4698	2454	7.2	17	11170	831	365	61	72	2438	5.1	2085	3578	-1.31
* 05/06/96	1500	2075	15800	1.0081	4774	1790	7.9	14	10110	529	365	86	73	2464	5.7	760	2824	-2.23
! 06/15/96	900	2084	26400	1.0121	7610	2740	7.6	23	15330	859	479	74	124	3696	5.3	211	4117	-4.05

All concentrations in mg/L unless otherwise noted

12" steel casing extends to 670 ft bls

Table 6. Laboratory Analysis of Discharge Samples Collected During Exploratory Drilling in MW-5

R13WQ.wb2

Date (M/D/Y)	Time	Depth (ft bls)	Specific Cond. (umhos)	Water Density	CL	SO4	pH	Br	TDS	Ca	Mg	Bicarb as (CaCO3)	K	Na	Si	Fe (ug/l)
04/24/96	910	1548	760	1.0004	103	88	8.2	0.3	464	42	24	130	4.2	62	8.8	2
04/24/96	1105	1579	773	1.0004	107	91	8.1	0.3	480	43	25	126	3.5	63	8.6	5
04/24/96	1600	1610	7190	1.0036	1981	745	8.1	8.1	4272	252	179	89	25	1050	6.6	45
04/25/96	1000	1641	9700	1.0046	2622	923	7.9	8.9	5740	329	234	81	32	1343	5.5	79
04/25/96	1505	1662	10450	1.0054	3353	1167	7.9	9.9	6540	376	259	80	38	1487	38	120
04/29/96	1530	1673	12240	1.0062	3170	1202	7.8	11	8100	440	303	82	48	1858	5.9	91
05/01/96	830	1704	13510	1.0069	4051	1446	7.8	14	8540	480	334	84	57	2072	5.9	240
05/01/96	1120	1735	15260	1.008	4804	1699	7.7	15	9600	524	369	82	69	2423	5.6	312
05/01/96	1430	1767	15450	1.008	4772	1705	7.7	15	10090	530	371	81	71	2475	5.6	195
05/01/96	1650	1797	15550	1.0081	4784	1674	7.8	14	10340	531	374	83	70	2501	5.5	274
05/01/96	1825	1827	15300	1.0079	4631	1699	7.7	18.0	9980	524	368	85	70.0	2456	5.6	308
05/02/96	925	1858	15560	1.0080	4522	1794	7.7	14.0	10250	544	374	88	73.0	2488	5.8	304
05/02/96	1105	1878	15750	1.0088	4173	2563	7.8	15.0	11180	871	352	103	70.0	2371	6.0	186
05/02/96	1225	1889	15810	1.0082	4713	1857	7.9	15.0	10360	544	369	90	73.0	2476	6.1	158
05/02/96	1500	1921	15410	1.0081	4621	1850	7.9	15.0	9960	535	364	88	71.0	2450	5.7	227
05/02/96	1740	1957	15390	1.0078	4402	1720	7.8	14.0	10290	538	363	86	72.0	2444	5.6	244
05/06/96	1400	1952	16120	1.0090	4698	2454	7.2	17.0	11170	831	365	61	72.0	2438	5.1	2085
05/06/96	1635	1982	15410	1.0090	4725	1738	7.9	14.0	10040	518	363	97	71.0	2418	5.7	189
05/07/96	830	2013	15270	1.0079	4644	1724	7.8	15.0	9970	523	365	84	69.0	2433	5.7	249
05/07/96	1010	2044	15940	1.0080	4558	1705	7.9	16.0	10670	544	378	86	74.0	2525	5.8	332
05/07/96	1350	2075	15450	1.0083	4757	1919	7.9	15.0	9910	549	369	88	72.0	2483	5.9	210

All concentrations in mg/L unless otherwise noted

12" steel casing extends to 670' bls

Table 7. Results of Packer Testing at ROMP 13 in MW 4 and MW 5

R13wq.wb2

Test Interval (ft bls)	Stratigraphic Unit	Hydrogeologic Unit	Discharge (gpm)	Drawdown (feet)	Specific Capacity (gpm/ft)	Time until pumping stabilized (min)	Comments
850-900	Ocala Limestone	FAS confining unit	3	125	0.024	2	Annulus drawdown - 1.25 ft
800-900	Ocala Limestone	FAS confining unit	4.3	110	0.039	10	
956-996	Ocala Limestone	FAS confining unit	2.3	118	0.019	10	
999-1045	Ocala Limestone	FAS confining unit	2	130	0.015	8	
1115-1215	Avon Park Formation	FAS confining unit	10.6	50	0.212	10	semi-permeable zone
1465-1515	Avon Park Formation	FAS permeable zone	15	70	0.214	2	
1983-2090	Avon Park Formation	FAS permeable zone	4.2	75	0.056	9	
2034-2090	Sub-FL evaporites	Sub-FL confining zone	4	145	0.028	10	

Table 8. Well Construction Details

fig8.wpg

Well No.	Formation Monitored	Aquifer Monitored	Casing Interval	Monitored Interval
MW-1	USD, Peace River Fm.	Surficial	4" PVC Casing (+3' - 7.5')	4" PVC Screen (7.5' - 22.5')
MW-2	Undifferentiated Arcadia Fm.	Middle Intermediate	8" PVC Casing (+1' - 282')	7-7/8" Open Hole (282' - 417')
MW-3	Undifferentiated Arcadia Fm.	Lower Intermediate	8" PVC Casing (+2' - 510')	7-7/8" Open Hole (510' - 592')
MW-4	Suwannee Lm.	Floridan	6" PVC Casing (+2' - 671')	12" Open Hole (671' - 786')
MW-5	Avon Park Fm.	Floridan	6" PVC Casing (+3' - 1550')	12" Open Hole (1550' - 1600')
Temporary	USD, Peace River Fm.	Surficial, Upper Intermediate	4" PVC Casing (+2'- 5')	4" PVC Screen (5' - 24')
Temporary Dual Zone (1)	Undifferentiated Arcadia Fm.	Middle Intermediate	2" PVC Casing (LSD - 280')	2" PVC Screen (280' - 415')
Temporary Dual Zone (2)	Undiff. Arcadia, Nocatee Mbr.	Lower Intermediate	2" PVC Casing (LSD - 510')	2" PVC Screen (510' - 595')
Temporary	Suwannee Lm.	Floridan	2" PVC Casing (+3' - 670')	2" PVC Screen (670' - 780')

APPENDIX A

ROMP 13 LITHOLOGIC LOG

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-17392 COUNTY - DESOTO
TOTAL DEPTH: 2090 FT. LOCATION: T.39S R.27E S.21 cb
SAMPLES - NONE LAT = 27D 04M 17S
LON = 81D 36M 57S
COMPLETION DATE: 07/01/82 ELEVATION: 60 FT
OTHER TYPES OF LOGS AVAILABLE - CALIPER, ELECTRIC, GAMMA, TEMPERATURE, INDUCT

OWNER/DRILLER:SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
SWFWMD ROMP 13/"TIPPEN BAY" (BOB PAUL, INC. PROPERTY)

WORKED BY:DOUG RAPPUHN (SWFWMD GEOLOGIST). J. PAT MEADORS (SWFWMD DRILLER):
HOLLOW-STEM AUGER, WIRELINE CORING FROM LSD-1544' BLS.
THIS SAMPLE DESCRIPTION IS A COMPOSITE OF TWO CLOSELY SPACED BORINGS:
(A) HOLLOW-STEM AUGER SAMPLES: 0-49'; (B) WIRELINE CORE: 49-1544' (1994)
WIRELINE CORING ACCOMPLISHED USING PLAIN WATER AS DRILLING FLUID,
ALLOWING ROUTING POTENTIOMETRIC PROFILING AND WATER SAMPLING DURING THE
COURSE OF CORING. DETAILED INFORMATION AVAILABLE FROM SWFWMD
GEOHYDROLOGIC DATA SECTION.
SURFICIAL AQUIFER: LSD-19' BLS.
INTERMEDIATE AQUIFER: 19-665' BLS.
UPPER FLORIDAN AQUIFER: 665-
REVERSE-AIR DRILLING BY LAYNE DRILLING (CONTRACTED DRILLER) 1579-2075-
DRILL CUTTINGS; 2075-2090 4"CORE BARREL. THIS PHASE OF DRILLING WAS TO
LOCATE THE SUB-FLORIDAN CONFINING UNIT-(THE EVAPORITES). PREVIOUS DRILLING
AT THIS ROMP SITE WAS PERFORMED FROM LAND SURFACE TO 1544 FT.
2050 - 2090 TOP OF EVAPORITES

0.	-	19.	090UDSC	UNDIFFERENTIATED SAND AND CLAY
19.	-	704.	122HTRN	HAWTHORN GROUP
19.	-	207.5	122PCRV	PEACE RIVER FM.
207.5	-	581.	122ARCA	ARCADIA FM.
581.	-	704.	122NOCA	NOCATEE MEMBER OF ARCADIA FM.
704.	-	777.	123SWNN	SUWANNEE LIMESTONE
777.	-	1054.	124OCAL	OCALA GROUP
1054.	-	2050.	124AVPK	AVON PARK FM.

0 - 0.5 SHELL DRILL PAD

0.5- 1.5 SAND; DARK GRAY TO YELLOWISH GRAY
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: PLANT REMAINS-20%
FOSSILS: ORGANICS
CONTAINS THATCHY LAYER ASSOCIATED WITH ORIGINAL LAND
SURFACE.

1.5- 2 SAND; GRAYISH BROWN TO MODERATE BROWN
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): IRON CEMENT, ORGANIC MATRIX
ACCESSORY MINERALS: PLANT REMAINS-10%, IRON STAIN-05%
FOSSILS: ORGANICS
IRON-STAINED QTZ SAND. MOIST.

2 - 2.8 SAND; GRAYISH BROWN TO MODERATE BROWN
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED

ACCESSORY MINERALS: CLAY-03%, IRON STAIN-02%
TRACE VERY FINE PHOSPHATE.

2.8- 4 SAND; GRAYISH BROWN TO PINKISH GRAY
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
ROUNDNESS: ROUNDED TO SUB-ANGULAR; HIGH SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: LIMONITE-02%
OTHER FEATURES: SUCROSIC
CLEAN QTZ SAND. SCANT TRACE VERY FINE PHOSPHATE. SOME LIMONITIC CONCRETION.

4 - 5 SAND; GRAYISH BROWN RED
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN-03%, PLANT REMAINS-02%

5 - 8 SAND; MODERATE REDDISH BROWN TO MODERATE ORANGE PINK
30% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): IRON CEMENT
ACCESSORY MINERALS: IRON STAIN-06%, PLANT REMAINS-03%
FOSSILS: ORGANICS
IRON-STAINED QTZ SAND WITH TREE ROOTS OR WOODY FRAGMENTS.

8 - 10 SAND; DARK YELLOWISH ORANGE TO LIGHT BROWN
35% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: ROUNDED TO SUB-ANGULAR; HIGH SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN-04%
WELL SORTED PERMEABLE IRON-STAINED QTZ SAND. SCANT TRACE PHOSPHATE.

10 - 10.5 SAND; LIGHT GRAYISH BROWN
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-05%, IRON STAIN-03%
PLANT REMAINS-10%
FOSSILS: ORGANICS
THIN BED, RICH IN FIBROUS PLANT MATERIAL (PALMETTO?). SOME SMALL SHELL FRAGMENTS.

10.5- 11.5 SAND; GRAYISH BROWN
30% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN-04%, PHOSPHATIC SAND-01%

11.5- 14 SAND; GRAYISH ORANGE TO DARK BROWN
30% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): IRON CEMENT
SEDIMENTARY STRUCTURES: STREAKED
ACCESSORY MINERALS: IRON STAIN-06%, PHOSPHATIC SAND-01%
OTHER FEATURES: VARIEGATED
VARIEGATED QTZ SAND CONTAINING BRANDS AND NODULES OF IRON-CEMENTED SAND, AND VERY PALE ORANGE QTZ SAND.

14 - 19 NO SAMPLES
AUGERED EASILY. ABSOLUTELY NO SAMPLE RETRIEVED. PROBABLY POROUS SAND BED.

19 - 20 SAND; YELLOWISH GRAY TO VERY LIGHT GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-01%
OTHER FEATURES: SPLINTERY, PARTINGS
UPPERMOST CLAYEY UNIT.

20 - 21.5 CLAY; GRAYISH GREEN TO VERY LIGHT GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-02%
OTHER FEATURES: PLASTIC, PARTINGS, VARIEGATED
INTERBEDDED CLEAN BLUE-GREEN CLAY AND THIN STRINGERS OF QTZ-PHOS SAND.

21.5- 31 CLAY; GRAYISH GREEN TO LIGHT OLIVE GRAY
05% POROSITY: NOT OBSERVED; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BANDED, STREAKED
ACCESSORY MINERALS: QUARTZ SAND-04%, PHOSPHATIC SAND-01%
OTHER FEATURES: PLASTIC, PARTINGS, VARIEGATED
CLEAN COLOR-STREAKED CLAY WITH MINOR QTZ-PHOS SAND STRINGERS.

31 - 32 SAND; GRAYISH GREEN TO DARK GREENISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-10%
OTHER FEATURES: SPECKLED, SPLINTERY

32 - 33 CLAY; YELLOWISH GRAY TO OLIVE GRAY
12% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED, NODULAR
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC SAND-05%
OTHER FEATURES: VARIEGATED, SPLINTERY
PALE GREEN CLAY CONTAINING BURROW DEPOSITS OF QTZ-PHOS SAND.

33 - 37 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-08%
OTHER FEATURES: SPECKLED, MUDDY
UNIT GRADES CLAYIER WITH DEPTH.

37 - 38 CLAY; LIGHT OLIVE GRAY
05% POROSITY: NOT OBSERVED; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-05%
OTHER FEATURES: PLASTIC, VARIEGATED
PALE CLEAN CLAY WITH THIN STRINGERS OF QTZ-PHOS SAND.

38 - 47 CLAY; GRAYISH GREEN
05% POROSITY: NOT OBSERVED; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
ACCESSORY MINERALS: QUARTZ SAND-05%
OTHER FEATURES: PLASTIC

47 - 49 SAND; GRAYISH GREEN TO DARK GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-08%
OTHER FEATURES: SPECKLED, MUDDY
CLAYEY QTZ-PHOS SAND WITH STRINGERS OF CLEAN CLAY. CEASED AUGERING AND MOVED TO COREHOLE #1.

49 - 53 NO SAMPLES
SAMPLE NOT RETRIEVED DUE TO OVER-DRILLING WHEN MOVED TO NEXT BOREHOLE.

53 - 58 CLAY; GRAYISH OLIVE TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-20%, QUARTZ SAND-15%
PHOSPHATIC SAND-08%
SAMPLE DESCRIBED FROM A FEW CORE FRAGMENTS: 48-58'.

58 - 59 LIMESTONE; BLACK TO YELLOWISH GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: MICROCRYSTALLINE TO CRYPTOCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED
ACCESSORY MINERALS: DOLOMITE-40%, PYRITE-01%
GLAUCONITE- %
OTHER FEATURES: DOLOMITIC, VARIEGATED, WEATHERED
HARD ALTERED DENSE DOLOMITIC LIMESTONE. CONTAINS ENCRUSTING MICROCRYSTALLINE PYRITE AND SWIRLS OF DARK MINERAL. VERY LITTLE CORE RETRIEVED 49-59'. THIS APPEARS TO BE A SECONDARY INFILL LITHOLOGY IN CLAYEY SAND.

59 - 65 CALCILUTITE; VERY LIGHT GRAY TO YELLOWISH GRAY
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO CRYPTOCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: CLAY-15%
OTHER FEATURES: CHALKY
64-65 IS CLAYEY.

65 - 66 CALCILUTITE; YELLOWISH GRAY
18% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC

25% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

66 - 71 CALCARENITE; LIGHT GRAY
28% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
FOSSILS: FOSSIL MOLDS, MOLLUSKS, CORAL, WORM TRACES
MUCH LAMINATED MOLDIC POROSITY (MOLLUSCAN, CORALLINE).

71 - 79 CALCILUTITE; WHITE TO VERY LIGHT GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-15%, CLAY-02%
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
CLAY IS AS BLEBS.

79 - 84.5 CLAY; LIGHT YELLOWISH GREEN
POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, CALCILUTITE-10%
NO CORE RECOVERY - DESCRIBE FROM CUTTINGS, CORE 84-84.5'.

84.5- 91 CALCILUTITE; VERY LIGHT GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-20%, QUARTZ SAND-05%, PYRITE-01%
INTERBEDDED CALCILUTITE, LESSER CALCAREOUS CLAY, TRACE
PYRITE IN CLAY. 40% CLAY IN TOP AND BOTTOM 1'.

91 - 98.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, PELLET
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-15%, QUARTZ SAND-10%
OTHER FEATURES: PARTINGS
VARIABLY INDURATED CLAYEY CALCILUTITE.

98.5- 110 LIMESTONE; YELLOWISH GRAY TO LIGHT GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC SAND-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, MOLLUSKS, WORM TRACES
BRITTLE MOLDIC RECRYSTALLIZED LIMESTONE. MUCH MOLLUSCAN FAUNA. SOME PELLETAL ZONES. TRANSMISSIVE.

110 - 113 CALCILUTITE; GREENISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, PELLET
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-04%
CLAY-10%
OTHER FEATURES: VARIEGATED
FOSSILS: MOLLUSKS
STURDY GREEN SANDY CALCILUTITE. DOLOMITIC ?

113 - 115.5 CALCILUTITE; LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-20%, QUARTZ SAND-05%
PHOSPHATIC SAND-04%
OTHER FEATURES: VARIEGATED, SPLINTERY, PARTINGS
FOSSILS: FOSSIL FRAGMENTS

115.5- 119.2 SAND; YELLOWISH GRAY TO GREENISH GRAY
12% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: CLAY-25%, CALCILUTITE-15%
PHOSPHATIC SAND-04%
OTHER FEATURES: PARTINGS, VARIEGATED
VARIABLY CALCAREOUS - UP TO 40%.

119.2- 128.7 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: QUARTZ SAND-30%, CLAY-15%
PHOSPHATIC SAND-06%
OTHER FEATURES: VARIEGATED, PARTINGS
FOSSILS: MOLLUSKS
VARIABLY QUARTZ SANDY (15-30%) & CLAYEY (10-20%).

128.7- 134 SANDSTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-05%
OTHER FEATURES: SPECKLED
INTERBEDDED SANDSTONE AND SAND. POOR CORE RECOVERY.

134 - 143.5 SAND; GREENISH GRAY

32% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
ROUNDNESS: ROUNDED TO SUB-ANGULAR; HIGH SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-05%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: VARIEGATED
WELL SORTED QUARTZ SAND WITH GREEN INTERSTITIAL CLAY. MINOR CLAYEY (30%) STRINGERS, AND 10% PHOSPHATIC SAND IN LOWER 1'. BOTTOM 3" IS CALCAREOUS.

143.5- 146 CALCILUTITE; VERY LIGHT GRAY TO YELLOWISH GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-14%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: SPECKLED, CHALKY
FOSSILS: SHARKS TEETH
MUCH PHOSPHATIC SAND IN MODERATELY HARD CHALKY CALCILUTITE.

146 - 149 SANDSTONE; LIGHT GRAYISH GREEN TO GRAYISH GREEN
28% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-12%
PHOSPHATIC GRAVEL-01%, CALCILUTITE-07%
OTHER FEATURES: SPECKLED, CALCAREOUS

149 - 159 SAND; LIGHT OLIVE TO LIGHT GRAYISH GREEN
32% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC SAND-12%
CALCILUTITE-07%
OTHER FEATURES: SPECKLED, CALCAREOUS
PHOSPHATIC CLAYEY SANDSTONE. MINOR THIN STRINGERS OF GREEN CLAY.

159 - 162 SANDSTONE; LIGHT OLIVE
28% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-25%, PHOSPHATIC SAND-10%
CLAY-15%
OTHER FEATURES: CALCAREOUS, SPECKLED
CONTAINS THIN STREAKS OF CALCAREOUS CLAY.

162 - 164 SAND; DARK GRAY
40% POROSITY: INTERGRANULAR
GRAIN SIZE: COARSE; RANGE: FINE TO VERY COARSE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; HIGH SPHERICITY
UNCONSOLIDATED

ACCESSORY MINERALS: PHOSPHATIC SAND-35%, CALCILUTITE-03%
PHOSPHATIC GRAVEL-02%
OTHER FEATURES: SPECKLED, VARIEGATED

164 - 165 CALCILUTITE; BROWNISH GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-02%
OTHER FEATURES: CHALKY

165 - 174.2 CLAY; GRAYISH GREEN TO GREENISH GRAY
20% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED, STREAKED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-15%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: PLATY, PARTINGS, VARIEGATED, GRANULAR
VERY SANDY (VERY FINE -FINE) CLAY, CONTAINING STREAKS OF
CLEAN GREEN CLAY WITH INTERBEDS OF UNCONSOLIDATED
PHOSPHATIC (30%) QUARZT SAND. CLAYS CONTAIN PHOSPHATIC SAND
TO 30% ALSO.

174.2- 175.5 LIMESTONE; YELLOWISH GRAY TO GREENISH GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED, NODULAR
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-18%
QUARTZ SAND-04%
EXTREMELY PHOSPHATIC (VERY FINE - FINE).

175.5- 181 CLAY; GRAYISH GREEN TO MODERATE GRAYISH GREEN
18% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-20%
CALCILUTITE-10%
OTHER FEATURES: PARTINGS, VARIEGATED, GRANULAR
UNIT IS VERIABLY PHOSPHATIC 10-25%. CONTAINS BRECCIATED
CLACILUTITIC BED AT 178'. EXHIBITS DESICCATION/INFILL
STRUCTURES.

181 - 189.7 CLAY; YELLOWISH GRAY TO GRAYISH OLIVE GREEN
15% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: CALCILUTITE-30%, PHOSPHATIC SAND-10%
OTHER FEATURES: CALCAREOUS, PARTINGS
UNIT IS VARIABLY CALCAREOUS. CALCILUTITE IS BOTH
DISSEMINATED IN THE CLAY (MARLY) AND AS THIN BEDS OF MOLDIC
LIMESTONE OR AN APPARENT BRECCIA OF CLASTS AND SHELL
FRAGMENTS IN CLAYEY MATRIX.

189.7- 195 CALCILUTITE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
17% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST, SKELETAL
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ACCESSORY MINERALS: CLAY-25%, PHOSPHATIC SAND-06%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: MUDDY, PLATY, POOR SAMPLE
MEDIUM RECRYSTALLIZATION, GREASY
UNIT CONTAINS HARD STRINGERS OF MOLDIC CALCILUTITE.

195 - 204 CLAY; GRAYISH OLIVE GREEN TO LIGHT GRAYISH GREEN
12% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-20%, PHOSPHATIC SAND-06%
QUARTZ SAND-05%, PHOSPHATIC GRAVEL-01%
FOSSILS: ALGAE, DIATOMS
VARIABLY PHOSPHATIC. UNIT APPEARS BURROWED IN UPPER 1' AND
CONTAINS MINOR PHOSPHATIC GRAVEL. UNIT GRADES MORE
CALCAREOUS (TO 25%) WITH DEPTH.

204 - 207.5 CLAY; LIGHT OLIVE GRAY
12% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-15%
CALCILUTITE-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
CONTAINS OCCASIONAL QTZ-PHOS SAND STRINGERS.

207.5- 214 CALCILUTITE; WHITE TO MODERATE GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: PHOSPHATIC SAND-18%, QUARTZ SAND-12%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: SPECKLED, CHALKY, VARIEGATED
FOSSILS: MOLLUSKS
UPPER 1' CONTAINS INTERBEDS OF PREVIOUS SANDY CLAY
LITHOLOGY. RICH IN MOLLUSK FOSSILS.

214 - 219 PHOSPHATE; DARK GRAY
30% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-35%, CALCILUTITE-25%
OTHER FEATURES: SPECKLED, CALCAREOUS
INTERBEDDED PHOSPHATIC SAND, QUARTZ SAND & CALCILUTITE
(CUTTINGS).

219 - 221.8 CALCILUTITE; MODERATE GRAY
22% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, SKELTAL CAST, SKELETAL
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-25%, QUARTZ SAND-20%
SHELL-20%
OTHER FEATURES: SPECKLED, GRANULAR, PLATY
FOSSILS: MOLLUSKS, FOSSIL MOLDS, WORM TRACES
PHOSPHATE-SANDY FOSSILIFEROUS CALCILUTIE. PELYCYPODS

GASTROPODS.

221.8- 224 CLAY; YELLOWISH GRAY TO LIGHT OLIVE GRAY
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, PHOSPHATIC SAND-18%
QUARTZ SAND-12%
OTHER FEATURES: CALCAREOUS, PLATY, SPECKLED, GRANULAR
FOSSILS: MOLLUSKS, FOSSIL MOLDS

224 - 228 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-10%
QUARTZ SAND-10%
OTHER FEATURES: PARTINGS, MUDDY, SPECKLED
FOSSILS: MOLLUSKS
INTERBEDDED VARIABLY HARD, VARIABLY CLAYEY (35-48%) SANDY
CALCILUTITE. QUARTZ & PHOSPHATIC SAND STINGERS &
DISSEMINATED.

228 - 238 CALCILUTITE; LIGHT GRAYISH GREEN TO LIGHT OLIVE GRAY
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC SAND-16%
QUARTZ SAND-14%
OTHER FEATURES: MUDDY, PARTINGS, SPECKLED
INTERBEDDED VARIABLY INDURATED, VARIABLY CLAYEY (TO 60%)
UNIT. SOME RELATIVELY PURE THIN GREEN CLAY STRINGERS. MUCH
MATRIX CLAY.

238 - 243.6 CALCILUTITE; LIGHT GRAYISH GREEN TO LIGHT GREENISH GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-30%, PHOSPHATIC SAND-12%
QUARTZ SAND-08%, SHELL-05%
OTHER FEATURES: MUDDY, PARTINGS, SPECKLED
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
INTERBEDDED VARIBLY CLAYEY (25-50%) PHOSPHATIC CALCILUTITE.

243.6- 248.5 CLAY; OLIVE GRAY TO GREENISH GRAY
05% POROSITY: LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED, STREAKED
ACCESSORY MINERALS: CALCILUTITE-15%, PHOSPHATIC SAND-10%
QUARTZ SAND-10%
OTHER FEATURES: PLATY, PARTINGS, CALCAREOUS
STIFF SOMEWHAT SANDY, SLIGHTLY CALCAREOUS CLAY.

248.5- 251.5 CALCILUTITE; YELLOWISH GRAY TO GREENISH GRAY
GRAIN TYPE: CALCILUTITE, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-28%, PHOSPHATIC SAND-16%
QUARTZ SAND-12%
OTHER FEATURES: SPECKLED, VARIEGATED

251.5- 253 CLAY; OLIVE GRAY TO GREENISH GRAY
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: SHELL-05%, PHOSPHATIC SAND-22%
QUARTZ SAND-20%, CALCILUTITE-05%
OTHER FEATURES: GRANULAR, PARTINGS, SPECKLED, VARIEGATED
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
EXTREMELY SANDY, FRAGMENTED GREEN CLAY.

253 - 254 CALCILUTITE; WHITE TO MODERATE GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-18%, QUARTZ SAND-12%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: VARIEGATED, GRANULAR, PLATY
FOSSILS: MOLLUSKS, ECHINOID

254 - 257 CALCILUTITE; LIGHT OLIVE GRAY TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-30%, QUARTZ SAND-10%
CLAY-25%
OTHER FEATURES: SPECKLED, GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS
GUMMY PHOSPHATE-RICH CLAYEY CALCILUTITE.

257 - 259 CALCILUTITE; LIGHT OLIVE GRAY TO WHITE
14% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: STREAKED, BEDDED
ACCESSORY MINERALS: CLAY-35%, SHELL-20%
PHOSPHATIC SAND-08%, QUARTZ SAND-08%
OTHER FEATURES: PARTINGS, PLATY, VARIEGATED, MUDDY
FOSSILIFEROUS
FOSSILS: MOLLUSKS
TRANSITIONAL BED - LOWER PORTION CONTAINS LITTLE CLAY
NUMEROUS FOSSILS - LARGE MOLLUSKS.

259 - 262.5 CALCILUTITE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-05%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS
GUMMY, VARIABLY HARD CALCILUTITE, OYSTERS?

262.5- 271 CLAY; OLIVE GRAY TO LIGHT OLIVE GRAY
02% POROSITY: NOT OBSERVED; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: PHOSPHATIC SAND-02%
OTHER FEATURES: PLATY, VARVED
FOSSILS: NO FOSSILS
DENSE, HARD, WAXY CLAY. UPPER 1' CONTAINS CALCILUTITE STRINGERS WITH OYSTER(?) SHELL.

271 - 274 LIMESTONE; YELLOWISH GRAY TO MODERATE DARK GRAY
26% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: CALCILUTITE-70%, PHOSPHATIC GRAVEL-20%
PHOSPHATIC SAND-08%
OTHER FEATURES: SPECKLED, VARIEGATED, FOSSILIFEROUS
FOSSILS: MOLLUSKS, ECHINOID, CORAL
PEBBLE PHOSPHATE CONGLOMERATE WITH CALCILUTITIC MATRIX.

274 - 283 LIMESTONE; LIGHT GRAY TO MODERATE GRAY
20% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-65%, CLAY-25%, DOLOMITE- %
PHOSPHATIC SAND-03%
OTHER FEATURES: MUDDY, FOSSILIFEROUS, PARTINGS
FOSSILS: MOLLUSKS
VARIABLY INDURATED & CLAYEY (DOLOMITIC?) LIMESTONE.

283 - 303.5 CALCARENITE; VERY LIGHT GRAY TO YELLOWISH GRAY
26% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, CLAY-07%
PHOSPHATIC SAND-01%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
MEDIUM RECRYSTALLIZATION
FOSSILS: MOLLUSKS
INTERBEDDED CHALKY FOSSILIFEROUS CALCILUTUITE AND LESSER CLAYEY LIMESTONE AND OLIVE CLAY CONTAINING CALCAREOUS INTERCLASTS AND PELLETS. ALL BEDS GENERALLY MOLLUSK-RICH.

303.5- 310.5 LIMESTONE; YELLOWISH GRAY TO WHITE
22% POROSITY: INTERGRANULAR, MOLDIC

GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ACCESSORY MINERALS: CALCILUTITE-50%, PHOSPHATIC GRAVEL-03%
PHOSPHATIC SAND-03%, CLAY-03%
OTHER FEATURES: CHALKY, GRANULAR, MUDDY, FOSSILIFEROUS
GRAINY MODERATELY SOFT LIMESTONE CONTAINING PHOSPHATIC
GRAVEL & CLASTS 1-4 CM LONG.

310.5- 312.5 DOLOSTONE; LIGHT OLIVE GRAY
05% POROSITY: LOW PERMEABILITY, PIN POINT VUGS
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: PHOSPHATIC SAND-02%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: GRANULAR

312.5- 314 LIMESTONE; LIGHT OLIVE GRAY TO MODERATE OLIVE BROWN
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-75%, DOLOMITE-15%, CLAY-08%
PHOSPHATIC SAND-02%
OTHER FEATURES: MUDDY, GRANULAR, DOLOMITIC

314 - 320.5 LIMESTONE; VERY LIGHT GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-50%, PHOSPHATIC SAND-08%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: FOSSILIFEROUS, PLATY, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA
ECHINOID, BRYOZOA
EXTREMELY MOLDIC UNIT. RICH IN MOLLUSK FAUNA. SORTIES.
DISSEMINATED PHOSPHATE SAND AND CONCENTRATED STRINGERS.

320.5- 323 SANDSTONE; LIGHT OLIVE TO GRAYISH OLIVE GREEN
18% POROSITY: INTERGRANULAR, MOLDIC
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; MODERATE INDURATION
CEMENT TYPE(S): SILICIC CEMENT, CALCILUTITE MATRIX
CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: CLAY-25%, CALCILUTITE-15%
PHOSPHATIC SAND-07%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: MUDDY, VARIEGATED, CALCAREOUS
FOSSILS: MOLLUSKS
VARIABLY CLAYEY SANDSTONE WITH LARGE MOLLUSK FRAGMENTS.

323 - 326 CALCARENITE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE

MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-45%, PHOSPHATIC SAND-04%
PHOSPHATIC GRAVEL-01%, QUARTZ-01%
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL MOLDS
FAIRLY TIGHT, VERY FINE CALCARENITE, CONTAINS VEINLETS AND LIMITED VUG-FILL OF SECONDARY, OFTEN EUHEDRAL QUARTZ, SOME PHOSPHATIC STRINGERS.

326 - 336 LIMESTONE; VERY LIGHT GRAY TO WHITE
30% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELTAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-45%, CHERT-06%, QUARTZ-05%
PHOSPHATIC SAND-02%
OTHER FEATURES: FOSSILIFEROUS, CHALKY
FOSSILS: MOLLUSKS
RICH MOLLUSCAN FAUNA - EUHEDRAL QUARTZ VUG FILL AND CHERT BRECCIA - FILL. DOLOMITIC?

336 - 339.5 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
28% POROSITY: MOLDIC, INTERGRANULAR; 0-10% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%, PHOSPHATIC SAND-08%
CHERT-02%, CLAY-02%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: MOLLUSKS
EXTREMELY MOLDIC (MOLLUSK). BROWN CHERT VUG FILL. SOME OPALESCENT WHITE SANDY CLAY VUG FILL.

339.5- 356 LIMESTONE; VERY LIGHT GRAY TO WHITE
30% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELTAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-45%, QUARTZ-08%
PHOSPHATIC SAND-05%, CLAY-01%
OTHER FEATURES: FOSSILIFEROUS, CHALKY
FOSSILS: MOLLUSKS, CORAL
MOLDIC (MOLLUSK, CORAL) BURROWED UNIT. CONTAINS SOME EUHEDRAL QUARTZ VUG FILL. THIN CLAY LENS AT 342.5'. UNUSUAL CHERT REPLACEMENT STRUCTURE AT 351'.

356 - 357 LIMESTONE; MODERATE GRAY TO LIGHT GRAY
16% POROSITY: LOW PERMEABILITY, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
ACCESSORY MINERALS: CALCILUTITE-60%, SHELL-15%
QUARTZ SAND-15%, PHOSPHATIC SAND-10%
OTHER FEATURES: SPECKLED, VARIEGATED

FOSSILS: MOLLUSKS, CORAL, BENTHIC FORAMINIFERA
THIN HARD SILICEOUS UNIT. SOME EUHEDRAL QUARTZ IN VUGS.
CHERTY? SORITES.

357 - 364 CALCILUTITE; VERY LIGHT GRAY TO WHITE
18% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-06%, QUARTZ SAND-08%
QUARTZ-02%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS
POROSITY VARIES FROM 12% INTERGRANULAR TO 25% MOLDIC.
SORITES.

364 - 372.5 CALCILUTITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELTAL CAST
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-08%, PHOSPHATIC SAND-07%
OTHER FEATURES: CHALKY, FOSSILIFEROUS
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA
INTERBEDDED VERY MOLDIC CALCILUTITE AND VERY MOLDIC SANDY
CALCILUTITE. GASTROPODS, BIVALVES, SORITES.

372.5- 374 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-03%, CALCILUTITE-20%
OTHER FEATURES: FOSSILIFEROUS, CALCAREOUS
FOSSILS: MOLLUSKS, FOSSIL MOLDS

374 - 376 CALCILUTITE; VERY LIGHT GRAY TO WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-14%, PHOSPHATIC SAND-10%
OTHER FEATURES: CHALKY, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
GRADES SANDIER WITH DEPTH.

376 - 377 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CRYSTALS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-20%, PHOSPHATIC SAND-12%
QUARTZ SAND- %

OTHER FEATURES: FOSSILIFEROUS, GRANULAR, SPECKLED
MEDIUM RECRYSTALLIZATION
FOSSILS: MOLLUSKS
DOLOMITIC?

377 - 378.5 CALCARENITE; YELLOWISH GRAY TO MODERATE GRAY
16% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: CALCILUTITE-30%, QUARTZ SAND-15%
PHOSPHATIC SAND-08%, DOLOMITE- %
OTHER FEATURES: VARVED, VARIEGATED
FOSSILS: MOLLUSKS, FOSSIL MOLDS
IRREGULAR PILLOWY-BEDDED CALCARENITE AND QTZ-PHOS SANDY
CALCILUTITE.

378.5- 383.7 DOLOSTONE; LIGHT OLIVE GRAY TO GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%, QUARTZ SAND-15%
PHOSPHATIC SAND-15%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS, SPECKLED
PARTINGS
FOSSILS: FOSSIL MOLDS, MOLLUSKS
BOTTOM 1' MOSTLY HARD BEDDED DOLOMITIC CALCILUTITE.

383.7- 387 CALCARENITE; LIGHT OLIVE GRAY TO MODERATE GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-25%, QUARTZ SAND-25%
PHOSPHATIC SAND-23%, DOLOMITE- %
OTHER FEATURES: SPECKLED, GRANULAR

387 - 390.5 LIMESTONE; LIGHT OLIVE GRAY
35% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE-35%, CALCILUTITE-20%
QUARTZ SAND-14%, PHOSPHATIC SAND-10%
OTHER FEATURES: FOSSILIFEROUS, SPECKLED, DOLOMITIC
FOSSILS: MOLLUSKS, FOSSIL MOLDS, ECHINOID, CORAL

390.5- 400 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-05%

DOLOMITE- %
OTHER FEATURES: CHALKY, SPECKLED, DOLOMITIC
FOSSILS: ECHINOID
1% OF QUARTZ SAND IS VERY COARSE SIZE AND WELL-ROUND, REST IS FINE SIZE. VARIABLY PHOSPHATIC. SOMEWHAT DOLOMITIC? IN LOWER PART.

400 - 402 DOLOSTONE; YELLOWISH GRAY TO DARK GREENISH GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED, NODULAR
ACCESSORY MINERALS: QUARTZ SAND-25%, CALCILUTITE-20%
PHOSPHATIC SAND-08%
OTHER FEATURES: CALCAREOUS, PARTINGS, SPECKLED
INTERBEDS OF MODERATELY HARD QTZ-PHOSPHATIC SANDY CALCAREOUS DOLOMITE AND PASTY POORLY INDURATED SAME. QTZ SAND RANGES 15-40%.

402 - 408.5 CALCILUTITE; WHITE TO VERY LIGHT GRAY
24% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: QUARTZ SAND-12%, PHOSPHATIC SAND-05%
CHERT-01%
OTHER FEATURES: FOSSILIFEROUS, CHALKY, GRANULAR
FOSSILS: MOLLUSKS, FOSSIL MOLDS
EXTREMELY MOLLUSK-RICH UNIT. BROWN CHERT TUBE AT 403.5'.

408.5- 412 LIMESTONE; PINKISH GRAY TO LIGHT OLIVE GRAY
16% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-18%, PHOSPHATIC SAND-08%
OTHER FEATURES: PARTINGS, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS
THIN ZONE OF VARIABLE LITHOLOGY: BEDS OF QTZ-PHOS SANDY MOLDIC CALCILUTITE, DENSE QTZ-PHOS SANDY DOLOMITE & POORLY CONSOLIDATED PASTY, QTZ-PHOS SANDY CALCILUTITE.

412 - 415.5 CALCILUTITE; VERY LIGHT GRAY TO LIGHT GRAY
26% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-24%, PHOSPHATIC SAND-12%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA SORITES. QTZ + PHOS SAND TO 50% TOWARD UNIT BOTTOM.

415.5- 418.5 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 0-10% ALTERED
ANHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-25%, QUARTZ SAND-20%
PHOSPHATIC SAND-06%
OTHER FEATURES: CALCAREOUS, SPECKLED
VERY HARD, DENSE & IMPERMEABLE.

418.5- 420.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-08%
DOLOMITE- %
OTHER FEATURES: PARTINGS, SPECKLED
INTERBEDDED MODERATELY HARD QTZ-PHOS SANDY CALCILUTITE AND
SOFT PASTY QTZ-PHOS SANDY CALCILUTITE.

420.5- 424.3 CALCARENITE; YELLOWISH GRAY
24% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELTAL CAST
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-08%
OTHER FEATURES: FOSSILIFEROUS, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA
SORITES.

424.3- 437.5 CALCILUTITE; YELLOWISH GRAY
16% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-05%
INTERBEDDED MODERATELY AND POORLY INDURATED VERY SANDY
UNIT. PHOSPHATIC SAND % INCREASES TOWARD BASE TO 20%.

437.5- 439.5 CALCILUTITE; VERY LIGHT GRAY TO WHITE
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-06%
OTHER FEATURES: GRANULAR, CHALKY, PARTINGS
FOSSILS: MOLLUSKS, FOSSIL MOLDS
INTERBEDDED VARIABLY INDURATED UNIT. TWO INCH LAYER OF
PURE, MOLDIC CALCILUTITE AT BASE.

439.5- 442 CALCILUTITE; VERY LIGHT GRAY TO LIGHT GRAY
18% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, INTRACLASTS, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO COARSE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-06%
OTHER FEATURES: GRANULAR, CHALKY, PARTINGS, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS
THIN INTERBEDS OF MOLLUSCAN CALCILUTITE AND VERY QTZ-SANDY (TO 45%) CALCILUTITE.

442 - 445 SAND; VERY LIGHT GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%, PHOSPHATIC SAND-10%
OTHER FEATURES: CALCAREOUS, SPECKLED

445 - 453.5 SANDSTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, PHOSPHATIC SAND-12%
OTHER FEATURES: CALCAREOUS, PARTINGS, SPECKLED, MUDDY
FOSSILS: ECHINOID
VARIABLY INDURATED (POOR TO MODERATE) CALCILUTITE MATRIX.

453.5- 460.5 CALCILUTITE; LIGHT OLIVE GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-38%, PHOSPHATIC SAND-08%
OTHER FEATURES: GRANULAR, FOSSILIFEROUS
FOSSILS: MOLLUSKS
INTERBEDDED GRANULAR FOSSILIFEROUS HARD SANDY CALCILUTITE AND SOFT SANDY NON-FOSSILIFEROUS CALCILUTITE.

460.5- 461.8 LIMESTONE; WHITE TO VERY LIGHT GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: SKELTAL CAST, CALCILUTITE, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-75%, PHOSPHATIC SAND-15%
QUARTZ SAND-10%
OTHER FEATURES: FOSSILIFEROUS, GRANULAR, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS

461.8- 469.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: CALCILUTITE-15%, QUARTZ SAND-30%
PHOSPHATIC SAND-05%
OTHER FEATURES: GRANULAR
POORLY INDURATED VERY FINE SANDY CALCARENITE & MODERATELY HARD SAME.

469.5- 472.5 LIMESTONE; YELLOWISH GRAY TO LIGHT GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%, QUARTZ SAND-25%
PHOSPHATIC SAND-15%
OTHER FEATURES: FOSSILIFEROUS, GRANULAR, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS

472.5- 482 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
16% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, STREAKED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-14%
OTHER FEATURES: VARIEGATED, GRANULAR, PARTINGS, SPECKLED
VERIABLY (POORLY TO MODERATELY) INDURATED, VERY SANDY UNIT.

482 - 482.5 CHERT; YELLOWISH GRAY TO LIGHT BLUISH GRAY
04% POROSITY: LOW PERMEABILITY, FRACTURE; GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%, QUARTZ SAND-05%
PHOSPHATIC SAND-05%
OTHER FEATURES: VARIEGATED
HARD CHERT LENS.

482.5- 485 LIMESTONE; WHITE TO MODERATE GRAY
18% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST, SKELETAL
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-45%, QUARTZ SAND-20%
PHOSPHATIC SAND-20%
OTHER FEATURES: FOSSILIFEROUS, GRANULAR, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS

485 - 490.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-08%
CLAY- %
OTHER FEATURES: VARIEGATED, SPECKLED
CONSISTANT UNIT. SAND IS VERY FINE. CLAYEY? UPWARD-FINING FROM NEXT UNIT.

490.5- 495.7 CALCILUTITE; LIGHT OLIVE GRAY TO GREENISH GRAY

16% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: QUARTZ SAND-34%, PHOSPHATIC SAND-15%
CLAY- %
OTHER FEATURES: GRANULAR, SPECKLED, FOSSILIFEROUS
FOSSILS: MOLLUSKS
COARSER SANDY MEMBER OF FINING-UPWATD SEQUENCE DESCRIBED ABOVE. SOME CHALKY MOLLUSK FRAGMENTS AND MORE CALCAREOUS IN LOWER 2'.

495.7- 496.8 CALCILUTITE; WHITE TO YELLOWISH GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, SKELETAL
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO GRAVEL; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, NODULAR
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-02%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: SPLINTERY
FOSSILS: MOLLUSKS
GUMMY CALCILUTITE.

496.8- 501.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: STREAKED, GRADED BEDDING
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-18%
QUARTZ SAND-03%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: VARIEGATED, SPECKLED, PARTINGS, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
UPPERMOST 2-4' IS COARSER LAYER CONTAINING 3 CM CALCILUTITE CLASTS AND MUCH COARSE PHOSPHORITE. OTHERWISE IS A FINING-UPWARD SEQUENCE WITH MUCH QTZ-PHOS SAND IN LOWER HALF, CLAY AND LESS SAND IN UPPER. SLUMP STRUCTURES IN UPPER BED.

501.5- 503.7 CLAY; DARK GREENISH GRAY
08% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: STREAKED
ACCESSORY MINERALS: CALCILUTITE-25%, PHOSPHATIC SAND-12%
QUARTZ SAND-03%
OTHER FEATURES: CALCAREOUS, GRANULAR, SPECKLED, PARTINGS
FOSSILS: MOLLUSKS

503.7- 506 CALCILUTITE; LIGHT OLIVE GRAY TO OLIVE GRAY
16% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-14%
QUARTZ SAND-05%
OTHER FEATURES: PARTINGS, GRANULAR, SPECKLED

LOWER HALF OF UNIT IS CLAYIER THAN TOP.

506 - 520 LIMESTONE; VERY LIGHT GRAY TO WHITE
22% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, INTRACLASTS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: CALCILUTITE-45%, DOLOMITE-20%
PHOSPHATIC SAND-08%, QUARTZ SAND-05%
OTHER FEATURES: SPECKLED, CHALKY
FOSSILS: MOLLUSKS, FOSSIL MOLDS, CORAL
VARIABLY QUARTZ SANDY (2-15%), VARIABLY CLAYEY (0-15%)
CALCILUTITIC LIMESTONE CONTAINING MANY DOLOMITIC CLASTS AND
PHOSPHATIC SAND AND GRAVEL.

520 - 526 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, MOTTLED
ACCESSORY MINERALS: CLAY-25%, QUARTZ SAND-14%
PHOSPHATIC SAND-10%
OTHER FEATURES: MUDDY, GRANULAR, VARIEGATED
FINING-UPWARD BED. LOWER HALF CONTAINS MUCH SAND (50%) AND
CALCILUTITE INTERCLASTS, UPPER HALF IS CLAYEY. BOTTOM 4" IS
SANDY CALCAREOUS CLAY.

526 - 529.2 DOLOSTONE; VERY LIGHT GRAY TO WHITE
24% POROSITY: VUGULAR, INTERGRANULAR; 0-10% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: CALCILUTITE-20%, PHOSPHATIC GRAVEL-10%
PHOSPHATIC SAND-05%, QUARTZ SAND-03%
OTHER FEATURES: CALCAREOUS
UNIT CONTAINS MUCH APPARENT POROSITY DUE TO WASH-OUT OF
VUG-FILL DURING CORING. THIN (0.2') LAYER OF EXTREMELY
MOLDIC RECRYSTALLIZED GOLDEN DOLOMITE.

529.2- 534 SAND; YELLOWISH GRAY TO GREENISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-03%
CALCARENITE-02%
INTERBEDDED, UNCONSOLIDATED, VERY FINE QUARTZ SAND AND THIN
LENSES OF POORLY CONSOLIDATED GREEN CLAYEY SAND & CLAY.
POOR CORE RECOVERY.

534 - 539 SAND; YELLOWISH GRAY TO GREENISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED

CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-10%, LIMESTONE-05%
PHOSPHATIC SAND-03%, CALCARENITE-02%
INTERBEDDED, UNCONSOLIDATED VERY FINE QUARTZ SAND AND THIN LENSES OF MODERATELY CONSOLIDATED QUARTZ ARENITE AND QUARTZ-SANDY RECRYSTALLIZED MOLDIC LIMESTONE. POOR CORE RECOVERY.

539 - 544 SAND; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
CEMENT TYPE(S): CLAY MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-30%, CLAY-10%
PHOSPHATIC SAND-03%, SPAR-02%
INTERBEDDED UNCONSOLIDATED VERY FINE-SILT SIZE QUARTZ SAND AND LENSES OF MODERATELY HARD RECRYSTALLIZED MOLDIC LIMESTONE WITH SOME EUHEDRAL CALCITE MOLD-FILL. POOR CORE RECOVERY.

544 - 549 SAND; GREENISH GRAY TO LIGHT OLIVE GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-15%, LIMESTONE-10%
CLAY-05%, PHOSPHATIC SAND-03%
INTERBEDDED UNCONSOLIDATED VERY FINE QUARTZ SAND AND BEDS OF SANDY HARD BUFF CALCILUTITE AND RECRYSTALLIZED MOLDIC LIMESTONE. POOR CORE RECOVERY.

549 - 554 SAND; LIGHT OLIVE GRAY
22% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-20%, CLAY-10%
PHOSPHATIC SAND-02%
INTERBEDDED UNCONSOLIDATED VERY FINE QUARZT SAND AND BEDS OF VERY SANDY, CLAYEY POORLY CONSOLIDATED CALCILUTITE.

554 - 559 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-20%, CLAY-08%
PHOSPHATIC SAND-02%
INTERBEDDED UNCONSOLIDATED VERY FINE QUARTZ SAND AND BEDS OF VERY SANDY, EXTREMELY HARD DENSE LIMESTONE AND CALCAREOUS QUARTZ SANDSTONE. POOR CORE RECOVERY.

559 - 562 LIMESTONE; GRAYISH ORANGE TO LIGHT YELLOWISH ORANGE
45% POROSITY: POSSIBLY HIGH PERMEABILITY, FRACTURE, MOLDIC
GRAIN TYPE: CRYSTALS; 35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: SPAR-85%, CALCILUTITE-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, MOLLUSKS
EXTREMELY TRANSMISSIVE, RECRYSTALLIZED LIMESTONE WITH EUHEDRAL CALCITE CRYSTALS IN VUGS AND FRACTURES.

562 - 562.5 CLAY; GRAYISH OLIVE GREEN TO VERY LIGHT GRAY
POROSITY: NOT OBSERVED; GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE- %
OTHER FEATURES: PARTINGS
VERY THIN CLAY LENSES SANDWICHING A THIN CHALKY CALCILUTITE BED.

562.5- 564 NO SAMPLES
PROBABLY VERY FINE QUARTZ SAND.

564 - 566 SANDSTONE; GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED, FISSILE
ACCESSORY MINERALS: CLAY-35%, CALCILUTITE-12%
PHOSPHATIC SAND-02%, SHELL-02%
OTHER FEATURES: VARVED, PARTINGS, CALCAREOUS, VARIEGATED
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
GREEN CLAY INCLUDED AS VARVES NEAR TOP AND AS ROUNDED CLASTS (TO 1 CM) NEAR BOTTOM.

566 - 570.3 CLAY; DARK GREENISH GRAY
04% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED, FISSILE, INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-15%, QUARTZ SAND-15%
OTHER FEATURES: VARVED, PARTINGS
CLAY WITH INTERBEDS OF LIMESTONE AND CALCAREOUS CLASTS (568.5') IN UPPER SECTION. CLAY WITH VARVES OF SAND IN LOWER SECTION.

570.3- 571 LIMESTONE; LIGHT OLIVE GRAY
10% POROSITY: LOW PERMEABILITY
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: CLAY-25%, QUARTZ SAND-06%
PHOSPHATIC SAND-01%
OTHER FEATURES: VARVED, PARTINGS, GRANULAR

571 - 574 SAND; LIGHT OLIVE GRAY TO MODERATE LIGHT GRAY
14% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
LOW SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-09%, CALCARENITE-02%
OTHER FEATURES: SPECKLED
DESCRIBED FROM CUTTINGS - POOR CORE RECOVERY.

574 - 577.8 SANDSTONE; LIGHT GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY

MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-15%, PHOSPHATIC SAND-04%
OTHER FEATURES: SPECKLED, CALCAREOUS
FOSSILS: FOSSIL MOLDS
MODERATELY DURABLE CALCAREOUS SANDSTONE WITH MINOR MOLDIC CLACAREOUS LENSES.

577.8- 580 LIMESTONE; GRAYISH ORANGE TO YELLOWISH GRAY
38% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: OOLITE CLAST, SKELTAL CAST, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: SPAR-35%, QUARTZ SAND-30%
PHOSPHATIC SAND-05%
OTHER FEATURES: COQUINA, HIGH RECRYSTALLIZATION
FOSSILS: MOLLUSKS, FOSSIL MOLDS
VARIABLY QUARTZ SANDY (15-40%) RECRYSTALLIZED COQUINA BED.

580 - 580.5 CALCILUTITE; YELLOWISH GRAY
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: QUARTZ SAND-25%, CLAY-15%
OTHER FEATURES: PARTINGS

580.5- 589 SAND; GREENISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, CALCARENITE-03%
DESCRIBED FROM CUTTINGS. 584-589' APPEARS TO BE VERY FINE GRAINED.

589 - 594 MUDSTONE; LIGHT OLIVE GRAY
POROSITY: NOT OBSERVED
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-20%, CLAY-20%
CALCILUTITE-06%
OTHER FEATURES: VARVED, CALCAREOUS
FOSSILS: NO FOSSILS
LOWER SECTION CONTAINS VARVES OF DARK GREEN CLAY.

594 - 601.3 SANDSTONE; DARK GREENISH GRAY
05% POROSITY: LOW PERMEABILITY
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MEDIUM SPHERICITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC SAND-02%
OTHER FEATURES: PARTINGS, GRANULAR, LOW RECRYSTALLIZATION
INTERBEDDED HARD CLAYEY SAND, AND VERY SANDY SOFT CLAY OR CLAYEY SAND. UPPER HALF OF SECTION IS LESS SANDY.

601.3- 604 NO SAMPLES
PROBABLY SAND AS DESCRIBED BELOW.

604 - 609 SAND; GREENISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, CALCARENITE-02%
CLAY- %
OTHER FEATURES: MUDDY
DESCRIBED FROM CUTTINGS.

609 - 613.5 SANDSTONE; LIGHT GRAY
18% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-03%
OTHER FEATURES: SUCROSIC
UNIT SHOWS IRREGULAR EROSIONAL/FILL SURFACES. CLAY IS
DISSEMINATED AND AS CLASTS, FILL.

613.5- 618 SANDSTONE; GRAYISH OLIVE GREEN
14% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-02%
CALCILUTITE-03%
OTHER FEATURES: VARVED, PARTINGS
FOSSILS: NO FOSSILS
CLAY IS DISSEMINATED? AS VARVES.

618 - 625.5 CALCILUTITE; LIGHT OLIVE GRAY TO VERY LIGHT GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED
ACCESSORY MINERALS: QUARTZ SAND-40%, CLAY-07%
PHOSPHATIC SAND-03%
OTHER FEATURES: GRANULAR
PRIMARILY A VERY SANDY, HARD CALCILUTITE WITH INTERBEDS OF
QTZ - SANDY CALCARENITE AND CLAYEY SAND. SOME CLAYEY
SAND-FILLED BURROWS IN THE CALCILUTITE.

625.5- 631.5 CLAY; DARK GREENISH GRAY
05% POROSITY: INTERGRANULAR, LOW PERMEABILITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-03%
OTHER FEATURES: PARTINGS, VARIEGATED, PLATY
FOSSILS: SHARKS TEETH
INTERBEDDED CLEAN DENSE DARK OLIVE CLAY AND VERY SANDY
(15-40%) CLAY.

631.5- 639 SANDSTONE; DARK GREENISH GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MEDIUM SPHERICITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC SAND-05%
OTHER FEATURES: MUDDY
CLAY % IS BOTH DISSEMINATED AND AS BLEBS AND STRINGERS.

639 - 644 SAND; DARK GREENISH GRAY
13% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: STREAKED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC SAND-04%
OTHER FEATURES: MUDDY

644 - 654 SAND; DARK GREENISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-10%, PHOSPHATIC SAND-07%
OTHER FEATURES: SPECKLED
SAMPLE DESCRIPTION FROM CUTTINGS.

654 - 665 SANDSTONE; GRAYISH GREEN TO DARK GREENISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MEDIUM SPHERICITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: CLAY-10%, PHOSPHATIC SAND-08%
CALCILUTITE-05%
LOWER 0.4' CONTAINS SMALL LIMESTONE CLASTS.

665 - 668.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
28% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-08%
OTHER FEATURES: FOSSILIFEROUS, SPECKLED
FOSSILS: MOLLUSKS, FOSSIL MOLDS
MUCH MOLDIC POROSITY.

668.5- 670 LIMESTONE; YELLOWISH GRAY TO LIGHT GRAY
05% POROSITY: LOW PERMEABILITY, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC SAND-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, MOLLUSKS
HARD DENSE BED. TOP 3" BED OF UNCONSOLIDATED CALCARENITE.

670 - 673 CALCARENITE; YELLOWISH GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-04%
OTHER FEATURES: FOSSILIFEROUS, GRANULAR, SPLINTERY
FOSSILS: CRUSTACEA, FOSSIL MOLDS, MOLLUSKS
LOWER HALF OF BED IS VERY FRIABLE. CRAB CLAWS.

673 - 676.5 LIMESTONE; YELLOWISH GRAY
18% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-04%
OTHER FEATURES: FOSSILIFEROUS, PARTINGS
LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, MOLLUSKS, MILIOLIDS, CRUSTACEA
MOLDIC INTERVAL 673-674'; REST OF UNIT IS TIGHT (10-15% POROSITY) WITH SOME THIN SOFT ZONES.

676.5- 679 NO SAMPLES
PROBABLY AS BELOW, OR UNCONSOLIDATED CALCILUTITE.

679 - 683.8 CALCARENITE; YELLOWISH GRAY
16% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-06%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, MILIOLIDS, CRUSTACEA

683.8- 692.5 LIMESTONE; YELLOWISH GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CRYSTALS
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-03%
SPAR-10%
OTHER FEATURES: FOSSILIFEROUS, COQUINA, SPLINTERY
FOSSILS: FOSSIL MOLDS, MOLLUSKS, CRUSTACEA, BRYOZOA
VERY POROUS SHELL HASH WITH ENCRUSTING EUHEDRAL QUARTZ VUG-FILL.

692.5- 694.5 CALCARENITE; YELLOWISH GRAY
06% POROSITY: MOLDIC, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
ACCESSORY MINERALS: CALCILUTITE-15%, QUARTZ-10%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: MILIOLIDS, FOSSIL MOLDS, MOLLUSKS, CORAL
HARD SILISIC MILIOLID-RICH. MOLDIC AT BASE (MOLLUSKS).

694.5- 696.2 LIMESTONE; LIGHT GRAY TO MODERATE GRAY
32% POROSITY: MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%, PHOSPHATIC SAND-07%
QUARTZ SAND-15%, QUARTZ-05%

OTHER FEATURES: FOSSILIFEROUS, SPLINTERY
FOSSILS: FOSSIL MOLDS, MOLLUSKS, MILIOLIDS
POROUS MOLDIC LIMESTONE.

696.2- 697.5 CALCARENITE; YELLOWISH GRAY
10% POROSITY: MOLDIC, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%, QUARTZ-05%
QUARTZ SAND-02%, PHOSPHATIC SAND-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: MILIOLIDS, FOSSIL MOLDS, MOLLUSKS
DENSE HARD BED. EUHEDRAL QUARTZ VUG: MOLDIC LINING.

697.5- 698.8 LIMESTONE; LIGHT GRAY TO MODERATE GRAY
32% POROSITY: MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%, QUARTZ SAND-25%
PHOSPHATIC SAND-15%, QUARTZ-04%
OTHER FEATURES: FOSSILIFEROUS, SPLINTERY
FOSSILS: FOSSIL MOLDS, MOLLUSKS
POROUS MOLDIC PHOSPHATIC SANDY LIMESTONE.

698.8- 704 LIMESTONE; LIGHT GRAY TO VERY LIGHT ORANGE
18% POROSITY: FRACTURE, MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: CALCILUTITE-30%, CALCARENITE-50%
QUARTZ SAND-16%, PHOSPHATIC SAND-04%
OTHER FEATURES: VARIEGATED, SPECKLED, GRANULAR
FOSSILS: FOSSIL MOLDS, MOLLUSKS
AGGREGATION OF HAWTHORN PHOSPHATIC-QUARTZ SANDY LIMESTONE
AND SUWANNEE (PALE ORANGE) SKELETAL PACKSTONE/CALCARENITE.
MAY REPRESENT HAWTHORN INFILL ON ERODED OR DESICCATED
SUWANNEE SURFACE OR REWORKED SUWANNEE CLASTS (3-5 CM) IN
HAWTHORN BED.

704 - 706 CALCARENITE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: FOSSIL MOLDS, MILIOLIDS
TOP OF TYPICAL WEST-CENTRAL FLORIDA SUWANNEE LITHOLOGY.
THIS UNIT IS VARIABLY INDURATED (POOR-MODERATE).

706 - 710.5 CALCARENITE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS

MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%, SPAR-01%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL MOLDS, MOLLUSKS, WORM TRACES, MILIOLIDS
FOSSIL FRAGMENTS

710.5- 718 PACKSTONE; VERY LIGHT ORANGE
23% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-10%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, MOLLUSKS

718 - 719 CALCARENITE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS

719 - 735.3 CALCARENITE; VERY LIGHT ORANGE
23% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%
OTHER FEATURES: GRANULAR, LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, WORM TRACES, ECHINOID
BENTHIC FORAMINIFERA
VARIABLY MOLDIC UNIT. TRACE AMOUNTS BLACK SPECKS 719-733'
INCREASING TO 1-2% AT 733-735.3'. SORITES.

735.3- 738.8 CALCARENITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS

738.8- 749 CALCARENITE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, MOLLUSKS
THIN HARDER LENSES AT 740' AND 749'.

749 - 751 CALCARENITE; YELLOWISH GRAY TO LIGHT GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, CALCILUTITE-10%
OTHER FEATURES: SPECKLED, GRANULAR
FOSSILS: MILIOLIDS, MOLLUSKS, FOSSIL MOLDS
PHOSPHATIC SAND CONCENTRATION 5-25% DECREASES WITH DEPTH.

751 - 769.2 CALCARENITE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, PHOSPHATIC SAND-01%
OTHER FEATURES: GRANULAR
FOSSILS: MILIOLIDS, FOSSIL MOLDS, MOLLUSKS, ECHINOID

769.2- 777 CALCARENITE; YELLOWISH GRAY TO WHITE
28% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL MOLDS, MOLLUSKS, FOSSIL FRAGMENTS
UPPER 2' SLIGHTLY FINER-GRAINED THAN REMAINDER.

777 - 779 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
18% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-35%
HARD BED (778-778.8') BETWEEN SOFTER OCALA-LIKE LITHOLOGY.

779 - 788 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
UNCONSOLIDATED
ACCESSORY MINERALS: CALCILUTITE-05%
FOSSILS: NO FOSSILS
SAMPLE DESCRIBED FROM CUTTINGS. POORLY TO UNCONSOLIDATED
CALCAREOUS SAND.

788 - 809 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
16% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
BRYOZOA
VERY FINE GRAINED MICRITIC CALCARENITE. OBSCURE TRACES
LEPIDOCYCLINA. TRACE FINE PHOSPHATE.

809 - 814 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA
MINOR LEPIDOCYCLINA, INTERBEDS MODERATE TO POORLY
CONSOLIDATED.

814 - 815 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY

815 - 818.7 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS

818.7- 829.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA

829.5- 834 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS

834 - 844 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE

70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%, PHOSPHATIC SAND-01%
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS, WORM TRACES
LEPIDOCYCLINA. NUMMULITES. SOME POSSIBLE SHRINKAGE - CHALK
INFILL OF GRAY (CLAYEY?) CALCILUTITE.

844 - 872 CALCILUTITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
12% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR

872 - 885.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
FOSSILS: BENTHIC FORAMINIFERA, SPICULES
LEPIDOCYCLINA. FEW NUMMULITES. CONTAINS SOME THIN BEDS OF
POORLY INDURATED GRAINY CALCILUTITE.

885.5- 892 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
17% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
LEPIDOCYCLINA. FEW NUMMULITES. TRACE GRAY DOLOMITIC OR
PHOSPHATIC GRAINS.

892 - 925 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, CALCILUTITE, BIOGENIC
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-25%
OTHER FEATURES: FOSSILIFEROUS, CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
UNIT CONTAINS SEVERAL GRADED SUBUNITS. ABUNDANCE OF
LEPIDOCYCLINA (UP TO 40% OF UNIT IS SKELETAL), ALTHOUGH
ABSENT FROM FINER CALCILUTITE INTERBEDS. SOME NUMMULITES
OCCASIONAL ECHINOID, CORAL, TRACE OF ALTERED/DOLOMITIC
(GRAY) FORAM SKELETONS AND GRAINS. BELOW 911' SEQUENCE
PICKS UP SOME DISSEMINATED OLIVE GRAY CLAY OR DOLOSILT.

925 - 928.6 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
13% POROSITY: INTERGRANULAR, MOLDIC

GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-45%
OTHER FEATURES: CHALKY, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS
FOSSIL FRAGMENTS
APPROXIMATE 3% ALTERED/DOLOMITIC FORAM SKELETONS (GRAY).
INTERBEDDED FORAMINIFEROUS VERY FINE GRAINED CALCARENITE
AND SOFTER CALCILUTITE (SLIGHTLY CLAYEY). LEPIDOCYCLINA &
NUMMULITES.

928.6- 937.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: FOSSILIFEROUS, CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ABUNDANT LEPIDOCYCLINA, LESSER NUMMULITES SKELETONS. SOME
(1-2%) ALTERED, HIGH ANGLE FRACTURES @ 931'.

937.5- 938.8 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
13% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: FOSSILIFEROUS, CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
CRUMBLY BED.

938.8- 963 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
13% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: FOSSILIFEROUS, CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
ABUNDANT LEPIDOCYCLINA (30-35%) IN VERY FINE MATRIX. HIGH
ANGLE FRACTURE AT 955'.

963 - 968.6 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
11% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: CALCARENITE-25%, CLAY- %
OTHER FEATURES: MUDDY, PARTINGS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
INTERBEDDED PALE OLIVE CLAYEY(?) CALCILUTITE AND

FORAMINIFEROUS CALCARENITE AS ABOVE.

968.6- 991.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
13% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ABUNDANT LEPIDOCYCLINA HASH (30-40%) IN VERY FINE - FINE GRAINED CALCARENITE MATRIX. IRREGULAR GRAINY CALCILUTITE LENSES ALSO COMMON. SOME OLD HIGH ANGLE FRACTURE.

991.5- 1004.2 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
11% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-40%, CLAY- %
OTHER FEATURES: CHALKY, GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
UNIT CONTAINS GRADED SUBUNITS WITH VARIABLE AMOUNTS LEPIDOCYCLINA HASH (5-30%). VERY FINE - FINE FORAMINIFEROUS CALCARENITE TO GRAINY CALCILUTITE. SLIGHTLY CLAYEY BED AT 1004'.

1004.2- 1004.6 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
13% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
CONTAINS ALTERED (DOLOMITIC?) GRAY FORAM FRAGMENTS TO 8%.

1004.6- 1012.2 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
13% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA
LEPIDOCYCLINA COMMON.

1012.2- 1014.8 CALCARENITE; YELLOWISH GRAY
11% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA
LEPIDOCYCLINA.

1014.8- 1030 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
13% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA
TRACE AMOUNTS DARK, FINELY GRANULAR MINERAL (SPECKS FRACTURE- COATING). LOWER 3' CONTAINS APPROX 40% CALCILUTITE.

1030 - 1032 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE-30%
OTHER FEATURES: GRANULAR

1032 - 1044.3 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
LEPIDOCYCLINA SCARCE. FAINT MOTTLING (BIOTURBATION) IN LOWER 8'.

1044.3- 1046 CALCILUTITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE-40%
OTHER FEATURES: GRANULAR

1046 - 1054.2 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
SOME NUMMULITES. TRACE AMOUNTS CARBONACEOUS DEBRIS OR ALTERED SKELETAL FRAGMENTS. RECRYSTALLIZED (ORGANIC?) STRUCTURE AT 1053'.

1054.2- 1059.2 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR

GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY, VARIEGATED
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
TRACE OF SMALL EUHEDRAL QUARTZ LINING SOME MOLDS.
OCCASIONAL COILED FORAM. SOME MOLLUSK FRAGS.

1059.2- 1060 CALCILUTITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE-40%
OTHER FEATURES: MUDDY, GRANULAR
OLIVE-TAN LIMY MUD WITH POORLY INDURATED CALCARENITE
STRINGERS.

1060 - 1060.9 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-20%
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, FOSSIL MOLDS
GASTROPOD, BIVALVE MOLDS. TRACE FINE EUHEDRAL QUARTZ IN
MOLDS.

1060.9- 1061.9 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED
ACCESSORY MINERALS: CALCILUTITE-50%
OTHER FEATURES: MUDDY, VARIEGATED
FOSSILS: MOLLUSKS, WORM TRACES, ECHINOID, FOSSIL MOLDS
MOTTLED BED ATOP LOWER ORGANIC STRINGER CONTAINING NUMEROUS
ECHINOIDS.

1061.9- 1063.5 CALCARENITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-15%
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, WORM TRACES, FOSSIL MOLDS

1063.5- 1077.5 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
16% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL, CALCILUTITE, CRYSTALS

50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-50%, SPAR-15%, DOLOMITE- %
OTHER FEATURES: PARTINGS, SPLINTERY, VARIEGATED
FOSSILS: ECHINOID, WORM TRACES
BANDED INTERBEDDING OF SLIGHTLY DOLOMITIC CALCILUTITE (5% POROSITY)AND RECRYSTALLIZED ECHINOID (NEOLAGANUM) HASH (15-20% POROSITY).BEDS ALTERNATE EVERY 2-5 CM. HASH BEDS MAY BE RESULT OF WINNOWING AWAY FINES.

1077.5- 1081 PACKSTONE; VERY LIGHT ORANGE
22% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL, BIOGENIC, CRYSTALS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: SHELL-45%, CALCARENITE-25%, SPAR-15%
QUARTZ-03%
OTHER FEATURES: SPLINTERY, PARTINGS
FOSSILS: ECHINOID, WORM TRACES
VERITABLE SMORGASBORD OF ECHINOID SHELLS AND WORM TUBES. EUHEDRAL QUARTZ SHELL-FILL AND MUCH SPARRY CALCITE. SOME STRINGERS OF DOLOMITIC CALCILUTITE. WINNOWED HASH RESIDIUM BED?

1081 - 1091 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED, BEDDED
ACCESSORY MINERALS: CALCARENITE-25%, SHELL-15%, SPAR-05%
OTHER FEATURES: DOLOMITIC, GREASY
FOSSILS: ECHINOID
VARIABLY THINLY BEDDED TO VARVED DOLOMITIC CALCILUTITE (PALE TO DARK OLIVE) CONTAINING MODERATE QUANTITY OF ECHINOIDS. INTERBEDS OF FINE-MED GRAINED CALCARENITE CONTAINING SUBSTANTIAL CONCENTRATION OF ECHINOIDS - 15% POROSITY. CYCLICAL DEPOSITION REGIME OR DEPOSITION & WINNOWING.

1091 - 1092.5 PACKSTONE; VERY LIGHT ORANGE
22% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL, BIOGENIC, CRYSTALS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCARENITE-50%, SHELL-25%, SPAR-15%
CALCILUTITE-10%
OTHER FEATURES: FOSSILIFEROUS, SPLINTERY, GRANULAR
FOSSILS: ECHINOID, WORM TRACES, ORGANICS
MEDIUM GRAINED CALCARENITE CONTAINING ABUNDANT ECHINOIDS AND WORM TUBES. THIN ORGANIC STRINGERS AT TOP & BOTTOM.

1092.5- 1100.2 CALCARENITE; YELLOWISH GRAY

10% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: ECHINOID, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
VERY FINE GRAINED, TIGHT DOLOMITIC (?)
CALCARENITE/CALCILUTITE. ECHINOIDS COMMON. LAMINATED AND
VARVED NEAR UNIT BOTTOM WITH A FEW COARSER CALCARENITE
STRINGERS, SLIGHTLY DOLOMITIC?

1100.2- 1106.2 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
15% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, SPAR-15%, SHELL-15%
INTERBEDDED SOMEWHAT RECRYSTALLIZED FOSSILIFEROUS
(ECHINOIDS, WORM TUBES, FRAGMENTS) CALCARENITE AND
DOLOMITIC (?) THINNLY BEDDED, TIGHT CALCILUTITE.

1106.2- 1110.2 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-45%, DOLOMITE- %
OTHER FEATURES: VARVED, GRANULAR, VARIEGATED
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, CONES
INTERBEDDED FINE CALCARENITE AND LAMINATED PALE OLIVE
CALCILUTITE/ VERY FINE CALCARENITE. ECHINOIDS COMMON IN
COARSER GRAINED BEDS AND UPPER 1'. HARD DOLOMITE STRINGER
AT 1107'. DICTYOCONUS AT 1106.4'. MILIOLIDS OR OTHER FORAMS
ALSO.

1110.2- 1111 PACKSTONE; VERY LIGHT ORANGE
16% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CRYSTALS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: CALCARENITE-50%, SPAR-15%
CALCILUTITE-10%
OTHER FEATURES: FOSSILIFEROUS, SPLINTERY, GRANULAR
FOSSILS: ECHINOID, WORM TRACES, SPICULES
ABUNDANT ECHINOIDS, EUHEDRAL CALCITE-FILL. BOTTOM OF BED IS
A SCOUR SURFACE.

1111 - 1125.5 CALCARENITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED, MOTTLED
ACCESSORY MINERALS: CALCILUTITE-20%
OTHER FEATURES: GRANULAR
FOSSILS: ECHINOID, WORM TRACES
COMPLEXLY BEDDED UNIT. DOMINANT LITHOLOGY IS FINE-MED GRAINED CALCARENITE WITH APPARENT SCOUR & FILL SURFACES RIP-UP CLASTS, DESICCATION AND INFILL STRUCTURES, SLOPED INTERBEDS. NUMEROUS VERTICLE FEATURES/SURFACES 1111-1113'.

1125.5- 1132.5 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: MUDDY, PARTINGS, GRANULAR
FOSSILS: ECHINOID, WORM TRACES, BENTHIC FORAMINIFERA
OSTRACODS, CONES
VARIABLY INTERBEDDED FINE GRAINED CALCARENITE AND CALCILUTITE/ CALCARENITES. SOME THIN ORGANIC LAMINAE. SOME DICTYOCUNUS.

1132.5- 1143.5 PACKSTONE; VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, OOLITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: GRANULAR
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA
SKELETAL PACKSTONE OF WORM TUBES, FORAMS, FRAGMENTS & OOLITES. A FEW INTERCLASTS. DICTYOCONUS.

1143.5- 1146.8 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%, PLANT REMAINS-10%
OTHER FEATURES: VARVED, MUDDY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
UNIT CONTAINS MUCH DISSEMINATED SILT-SIZE ORGANIC SPECKS. SOME ORGANIC VARVES. INTERCLASTS AND STRINGERS OF CLEANER CALCARENITE.

1146.8- 1151.5 CALCARENITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: GRANULAR, PARTINGS, FROSTED
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS, ORGANICS
CONTAINS THIN BEDS OF OLIVE CALCILUTITE/CALCARENITE IN

LOWER HALF OF UNIT. SOFT SEDIMENT SLUMP FEATURES AT 1148.5'.

1151.5- 1155 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-45%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
CRUSTACEA, ORGANICS
BANDED WITH SLIGHTLY SOFTER HORIZONS. OCCASIONAL DICTYOCONUS.

1155 - 1157 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-20%
OTHER FEATURES: GRANULAR
FOSSILS: WORM TRACES, BENTHIC FORAMINIFERA
FOSSIL FRAGMENTS, ORGANICS, CONES
RARE DICTYOCONUS.

1157 - 1159.6 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRANULE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: PARTINGS, GRANULAR, VARIEGATED
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS, ORGANICS
UNIT CONTAINS VARIOUS FINE (ORGANIC PARTINGS) TO COARSE (CALCARENITE CLASTS) HORIZONS, ALSO DISSEMINATED ORGANIC SPECKS. MAY BE SEVERAL GRADED UNITS.

1159.6- 1166 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%, CLAY-02%
OTHER FEATURES: GRANULAR
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA
CLAY STRINGERS AT 1160.5'. A FEW ORGANIC LAMINATIONS.

1166 - 1168 CALCARENITE; VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: PARTINGS, GRANULAR, CHALKY
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS, ORGANICS
UNIT CONTAINS ABUNDANT PAPER-THIN LAMINATIONS OF TAN-BROWN ORGANIC CLAY OR MICRITE; ALSO THIN BANDS OF GRAY CLAYEY MICRITE.

1168 - 1173.8 CALCARENITE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-45%, CLAY-10%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
FOSSILS: ECHINOID, FOSSIL FRAGMENTS, ORGANICS, WORM TRACES
INTERBEDDED SOFT CLAYEY VERY FINE CALCARENITE/CALCILUTITE AND GRANULAR ECHINOID-RICH, VARIABLY ORGANIC-LAMINATED CALCARENITE. SCOUR AND FILL STRUCTURES. POROSITY VARIES: 8-16%.

1173.8- 1177.5 CALCARENITE; VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: BENTHIC FORAMINIFERA, WORM TRACES, MOLLUSKS

1177.5- 1180.5 CALCARENITE; LIGHT OLIVE TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-40%, CLAY-10%
OTHER FEATURES: PARTINGS, GRANULAR, CHALKY
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS, CONES
THINNLY INTERBEDDED, BANDED GRANULAR CALCARENITE AND GRAY-GREEN CLAYEY CALCILUTITE. A FEW DICTYOCONUS.

1180.5- 1197.2 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-40%, CLAY-06%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
FOSSILS: WORM TRACES, BENTHIC FORAMINIFERA, ECHINOID MOLLUSKS
SEVERAL GRADED-BED SEQUENCES: FINE-MED FOSSILIFEROUS CALCARENITE GRADING TO SOMEWHAT CLAYEY GRAY-GREEN CALCILUTITE, LOWER 2' IS SOMEWHAT MOTTLED, BRECCIATED

CONTAINS PARTIALLY HEALED HIGH ANGLE FRACTURE.

1197.2- 1209.4 CALCARENITE; VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: CONES, FOSSIL FRAGMENTS, ECHINOID
BENTHIC FORAMINIFERA
RELATIVELY CONSISTENT FINE-MED GRAINED CALCARENITE WITH A FEW VERY FINE AND CALCILUTITE INTERBEDS. SOME ANHEALED HIGH ANGLE FRACTURES.

1209.4- 1214.4 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-40%, CLAY-08%, DOLOMITE-05%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA, MOLLUSKS, ORGANICS
FINE GRAINED CALCARENITE WITH THIN INTERBEDS OF LAMINATED CLAYEY CALCILUTITE AND TAN DOLOMITE.

1214.4- 1218.5 LIMESTONE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, CLAY-15%, DOLOMITE-08%
OTHER FEATURES: PARTINGS, VARVED, GRANULAR, VARIEGATED
FOSSILS: ORGANICS, WORM TRACES, CONES, ECHINOID
BENTHIC FORAMINIFERA
UNIT CONTAINS GRADED BEDS (POORLY SORTED WITH PEBBLE-SIZE CLASTS TO CALCILUTITE), AND INTERBEDS (FINE-MED CALCARENITES). ORGANIC AND DOLOMITIC VARVES.

1218.5- 1223 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA, ECHINOID
INTERBEDDED GRAINY FINE-MED CALCARENITE (16% POROSITY) AND VERY FINE CALCARENITE/CALCILUTITE. SOME VARVED HORIZONS.

1223 - 1224.8 DOLOSTONE; GRAYISH ORANGE TO DARK GRAYISH YELLOW
16% POROSITY: MOLDIC, FRACTURE, INTERCRYSTALLINE

0-10% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-15%, PLANT REMAINS-03%
OTHER FEATURES: GRANULAR
FOSSILS: ECHINOID

1224.8- 1226.8 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-35%, CALCILUTITE-15%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: ECHINOID
CONTAINS THIN INTERBEDS OF CALCILUTITE AND FOSSILIFEROUS
NON- DOLOMITIC CALCARENITE.

1226.8- 1231 CALCARENITE; VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%, PLANT REMAINS-01%
OTHER FEATURES: GRANULAR
FOSSILS: ECHINOID, CONES, WORM TRACES, ORGANICS
BENTHIC FORAMINIFERA
DICTYOCONUS; COSKINOLINA OR LITUONELLA.

1231 - 1234.3 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WORM TRACES, ECHINOID
BANDED VARIATIONS OF VERY FINE TO FINE GRAINED CALCARENITE.

1234.3- 1236.3 LIMESTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
12% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: INTRACLASTS, BIOGENIC, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: CHALKY, GRANULAR, MUDDY, VARIEGATED
PARTINGS
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS, ECHINOID, ORGANICS
POORLY SORTED UNIT CONTAINING CALCILUTITE TO 3 CM CARBONATE
CLASTS. ORGANIC VARVES. SOME HIGH ANGLE FRACTURES.

1236.3- 1238.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY

10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: BIOGENIC, PELLET, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-20%, CLAY-06%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA
FINE GRAINED CALCARENITE WITH THIN BANDS OF CLAYEY
CALCILUTITE.

1238.5- 1241.8 LIMESTONE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-42%, CALCARENITE-42%
DOLOMITE-10%, PLANT REMAINS-04%
OTHER FEATURES: VARIEGATED, GRANULAR, PARTINGS
FOSSILS: ECHINOID, FOSSIL FRAGMENTS
UNIT CONTAINS FREQUENT IRREGULAR THIN BEDS OF DOLOMITIC
LIMESTONE AND MANY ORGANIC PARTINGS.

1241.8- 1247.7 PACKSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: WORM TRACES, BENTHIC FORAMINIFERA, CONES
POROUS (20%) SKELETAL PACKSTONE WITH SOME THIN BEDS OF
ORGANIC CALCILUTITE.

1247.7- 1255 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
16% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-30%, CLAY-04%, ORGANICS-01%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA, ORGANICS, ECHINOID
CONTAINS THIN INTERBEDS OF VERY FINE
CALCARENITE/CALCILUTITE. UPPER 0.3' CONTAINS ORGANIC
VARVES. SOME HIGH ANGLE FRACTURES.

1255 - 1267.7 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-15%
OTHER FEATURES: GRANULAR, CHALKY, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, CONES
ECHINOID
INTERBEDDED FINE-MED SKELETAL PACKSTONE 18% AND VERY
FINE-FINE CALCARENITE 12%. SOME ORGANIC VARVES AT 1258'.
SOME DOLOMITIC GRAINS?

1267.7- 1269.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
16% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-25%, DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WORM TRACES
VARIABLY GRADED. SKELETAL & INTERCLASTIC DOLOSILT AT BASE.
MOLDIC CALCILUTITE AT TOP. FABULARIA?

1269.5- 1277.4 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, NODULAR
ACCESSORY MINERALS: CALCARENITE-40%, CALCILUTITE-25%
DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WORM TRACES, ORGANICS
VERY POORLY SORTED CLASTIC CARBONATE. CLASTS TO 4 CM IN A
FINE-MED GRAINED CALCARENITE MATRIX GRADES UPWARD TO
CALCARENITE/CALCILUTITE

1277.4- 1281.5 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH ORANGE
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, PELLET
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED, GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: GRANULAR, PARTINGS
INTERBEDDED VERY FINE-FINE CALCARENITE (12% POROSITY) &
PELLETAL/ SKELETAL PACKSTONE (25% POROSITY) WITH THIN BANDS
OF CALCILUTITE; ORGANIC LAMINATIONS CONTAINING CLEAR
EUHEDRAL CALCITE GRAINS.

1281.5- 1285.5 LIMESTONE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED, INTERBEDDED

ACCESSORY MINERALS: CALCARENITE-50%, CALCILUTITE-50%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES
BENTHIC FORAMINIFERA
INTERBEDDED FINE-MED SKELETAL CALCARENITE AND GRAINY SKELETAL CALCILUTITE. FABULARIA? MILIOLIDS?

1285.5- 1287.4 CALCARENITE; YELLOWISH GRAY TO DARK YELLOWISH BROWN
14% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED, NODULAR
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-05%
OTHER FEATURES: PARTINGS, GRANULAR, VARIEGATED
FOSSILS: ORGANICS, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
INTERBEDDED BROWN LITHIC ORGAIC CALCILUTITE/CALCARENITE AND FINE- MEDIUM GRAINED CALCARENITE. ORGANICS ARE FINELY DISSEMINATED IN BROWN BEDS AND AS LARGER SPECKS, VARVES AND ACCUMULATIONS. UNIT CONTAINS ANGULAR CALCAREITE CLASTS (2-35 MM).

1287.4- 1290 CALCILUTITE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
06% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO GRAVEL; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR, INTERBEDDED
ACCESSORY MINERALS: CALCARENITE- %, CLAY- %
OTHER FEATURES: PARTINGS, VARIEGATED
FOSSILS: FOSSIL FRAGMENTS
SOMEWHAT SOFT DENSE CLAYEY CALCILUTITE BEDDED WITH AND ABUTTING A LITHIC (TO 3 CM) CALCARENITE. SOME HIGH ANGLE SLICKENSIDES.

1290 - 1295 LIMESTONE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELETAL
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-55%, CALCARENITE-40%
OTHER FEATURES: GRANULAR
UNIT CONTAINS 5% ALTERED (DOLOMITIC OR PHOSPHATIC) CLASTS OR SKELETAL MATERIAL. HIGH ANGLE FRACTURE WITH CALCITIC SLICKENSIDES AT 1294'.

1295 - 1304.1 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH ORANGE
22% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, PELLET, BIOGENIC
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-10%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES
BENTHIC FORAMINIFERA, CONES
WINNOWED DEPOSIT. GENERALLY COARSER (MED-COARSE), AND MORE

PELLETAL AND MORE POROUS IN UPPER HALF.

1304.1- 1305.4 LIMESTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-08%
OTHER FEATURES: PARTINGS, VARVED, SPLINTERY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
VARIABLY THINNLY BEDDED, VARIABLY SORTED ORGANIC LIMESTONES. ABUNDANT ANGULAR CALCAREOUS GRAVEL IN SOME BEDS.

1305.4- 1308.8 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-03%
OTHER FEATURES: PARTINGS, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES
BENTHIC FORAMINIFERA, CONES, MILIOLIDS
INTERBEDDED VERY FINE CALCARENITE WITH LESSER LITHIC ORGANIC CALCILUTITE/CALCARENITE, AND MEDIUM GRAINED SKELETAL CALCARENITE.

1308.8- 1312 PACKSTONE; MODERATE ORANGE PINK TO GRAYISH ORANGE
18% POROSITY: INTERGRANULAR
GRAIN TYPE: PELLET, SKELETAL; 95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: GRANULAR
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS
WELL-SORTED PELLETAL/SKELETAL PACKSTONE. A FEW ANHEALED HIGH ANGLE FRACTURES.

1312 - 1315.2 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH ORANGE
22% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, CONES

1315.2- 1319.5 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, PELLET
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: GRANULAR, CHALKY

FOSSILS: FOSSIL FRAGMENTS
UPPER TIGHT BED ATOP A LOWER MORE POROUS BED.

1319.5- 1321.2 WACKESTONE; GRAYISH BROWN
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE- %, CALCILUTITE-40%
ORGANICS-06%
OTHER FEATURES: GRANULAR, MUDDY
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, ORGANICS
ORGANIC-RICH, POORLY SORTED LITHIC LIMESTONE. ORGANICS ARE
DISSEMINATED AND AS SURFACE COATINGS.

1321.2- 1334.8 WACKESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: CALCARENITE-35%, CALCILUTITE-35%
OTHER FEATURES: VARIEGATED, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES
VERY POORLY SORTED UNIT: ANGULAR & SUBROUNDED LITHIC CLASTS
IN A WELL-INDURATED FINE MUDDY CALCARENITE.

1334.8- 1337 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED, BANDED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-04%
DOLOMITE- %
OTHER FEATURES: PARTINGS, VARVED, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, WORM TRACES, ECHINOID
THINNLY BANDED FINE-MED CALCARENITE (DOLOMITIC?) & VARIABLY
ORGANIC CALCILUTITE/CALCARENITE. SOME LARGE (2 CM) ROUNDED
FLAT CLASTS.

1337 - 1338.5 LIMESTONE; YELLOWISH GRAY TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, INTRACLASTS
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO GRANULE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-50%, ORGANICS-07%
OTHER FEATURES: PARTINGS, MUDDY
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, ECHINOID
MUDDY HARD UNIT, VARIABLY LAMINATED WITH ORGANIC HORIZONS.

1338.5- 1344 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO GRAVEL

GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: PARTINGS, VARIEGATED, LOW RECRYSTALLIZATION SPLINTERY
FOSSILS: FOSSIL FRAGMENTS
INTERBEDDED SOMEWHAT RECRYSTALLIZED CALCARENITE, WACKE, AND LAMINATED CHALKY GRANULAR CALCILUTITES. SOME VERTICAL FRACTURES.

1344 - 1351.8 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-10%, ORGANICS-04%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ORGANICS
FINE-MED SKELETAL CALCARENITE WITH LESSER INTERBEDS OF ORGANIC GRAINY CALCILUTITE. INTERTONGUING WITH FINER CALCARENITES IN LOWER 2-5'.

1351.8- 1359.1 WACKESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, NODULAR, MOTTLED
ACCESSORY MINERALS: CALCILUTITE-30%, ORGANICS-06%
OTHER FEATURES: PARTINGS, VARIEGATED, GRANULAR, MUDDY
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WORM TRACES, ORGANICS
INTERBEDDED VARIABLY ORGANIC LITHIC CALCARENITE (CALCAREOUS CONGLOMERATE) AND MEDIUM GRAIND CALCARENITE. CONCENTRATION OF ORGANICS AT 1355', 1359'. SLICKENSIDES AT 1359'.

1359.1- 1368 CALCARENITE; YELLOWISH GRAY
18% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-20%, ORGANICS-02%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WORM TRACES, ORGANICS
FINE-MED POROUS CALCARENITE WITH LESSER INTERBEDS OF ORGANIC CALCILUTITE (WITH 1" STRINGER OF COAL) AT 1361' AND LITHIC CALCARENITE 1365-1368'.

1368 - 1372.7 WACKESTONE; GRAYISH BROWN TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-08%
DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, VARIEGATED
VARIABLY ORGANIC LITHIC CALCARENITE/CALCAREOUS CONGLOMERATE.

1372.7- 1377 CALCARENITE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, VUGULAR, FRACTURE
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
OTHER FEATURES: GRANULAR, LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES
BENTHIC FORAMINIFERA, MILIOLIDS
CALCARENITES: UPPER VERY FINE GRAINED & LOWER SOMEWHAT
RECRYSTALLAIZED BED WITH ORGANIC COATING ON FRACTURE.

1377 - 1380 WACKESTONE; GRAYISH BROWN TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-04%
DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, VARIEGATED
FOSSILS: BENTHIC FORAMINIFERA
LITHIC CALCARENITE/CALCAREOUS CONGLOMERATE.

1380 - 1392.5 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: CALCILUTITE-25%, ORGANICS-02%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
GRADED BEDS OF CALCARENITE CAPPED WITH ORGANIC
VARVED/LAMINATED BEDS. LOWER 2' SHOW SOME, HIGH ANGLE
FRACTURES. UP TO 6% ALTERED (DOLOMITIC?) GRAY GRAINS.

1392.5- 1398 LIMESTONE; OLIVE GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED, BANDED
ACCESSORY MINERALS: CALCILUTITE-45%, ORGANICS-40%, CLAY-10%
SPAR-05%
OTHER FEATURES: VARVED, PARTINGS, VARIEGATED
FOSSILS: ORGANICS
THINNLY BANDED UNIT CONTAINING ABUNDANT ORGANICS LAYERED
BETWEEN BANDS OF PURE AND CLAYEY CALCILUTITE. SOME EUHEDRAL
CALCITE AND RECRYSTALLIZED QUARTZ SAND AS VUG FILL.

1398 - 1403 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-45%, DOLOMITE- %
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
CONTAINS UP TO 15% ALTERED (DOLOMITIC?) SHELL FRAGMENTS.
FABULARIAS.

1403 - 1405.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCARENITE-30%, CLAY-15%
OTHER FEATURES: PARTINGS, VARIEGATED
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
SLIGHTLY SOFT CALCILUTITE ATOP BANDED VFINE
CALCARENITE/CLAYEY CALCILUTITE OR DOLOSILT. ALTERED
SKELETAL FRAGMENTS.

1405.5- 1410.5 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-40%, DOLOMITE- %
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
GENERALLY FULL OF FABULARIA (?) AND UP TO 15% ALTERED
SKELETAL FRAGMENTS. UPPER 2' IS WELL FRACTURED.

1410.5- 1432 CALCARENITE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: BIOGENIC, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-25%, ORGANICS-01%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, ORGANICS
FAINTLY BANDED IN PART. DISTINCT BLACK ORGANIC STREAKS (TO
2 CM) IN UPPER 8'. SOME RELATIVELY ANHEALED VERTICAL
FRACTURES.

1432 - 1441 CALCARENITE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-30%, DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, CHALKY
FOSSILS: FOSSIL FRAGMENTS
FAINTLY BANDED UNIT. SOMEWHAT DOLOMITIC? SOME FRACTURING AT 1435' AND 1440.5'.

1441 - 1445 CALCARENITE; GRAYISH ORANGE
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-20%, DOLOMITE- %
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, MILIOLIDS
VARIABLY POROUS (12-18%).

1445 - 1445.5 CALCILUTITE; VERY LIGHT ORANGE
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE-35%
OTHER FEATURES: GRANULAR

1445.5- 1451 CALCARENITE; GRAYISH BROWN TO GRAYISH ORANGE
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: CALCILUTITE-30%, DOLOMITE-20%
SILT-SIZE DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, CONES
ORGANICS
VARIABLY BANDED & POROUS UNIT (10-18%). UPPER HALF CONTAINS ORGANIC VARVES. LOWER HALF CONTAINS DOLOMITIC CLASTS (4-40 MM) & ORGANIC STREAKS.

1451 - 1455 CALCARENITE; LIGHT GRAYISH BROWN TO GRAYISH BROWN
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX
SEDIMENTARY STRUCTURES: BANDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-25%, ORGANICS-18%
DOLOMITE- %
OTHER FEATURES: VARVED, PARTINGS, GRANULAR, SPECKLED
FOSSILS: ORGANICS, FOSSIL FRAGMENTS, ECHINOID
ORGANIC CALCARENITE, BANDED TO LAMINATED WITH ORGANIC-RICH HORIZONS. POORLY SORTED. OCCASIONAL VUG FILL OF EUHEDRAL CLEAR CALCITE (LOOSE) SAND.

1455 - 1457.5 LIMESTONE; YELLOWISH GRAY
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR, FRACTURE

GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCARENITE-50%, CALCILUTITE-45%
ORGANICS- %
OTHER FEATURES: GRANULAR, SPECKLED
MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, CONES, ORGANICS
HARD RECRYSTALLIZED UNIT CONTAINING 5% ALTERED (DOLOMITIC?)
CLASTS AND MODERATE AMOUNT CHALKY WHITE FORAM TESTS.
DICTYOCONUS, CRIBROBULIMINA, FABULARIA.

1457.5- 1465.5 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-02%
CALCITE-01%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
INTERBEDDED FINE CALCARENITE AND ORGANIC-VARVED
CALCARENITE. SOME SCATTERED (LOOSE) EUHEDRAL CALCITE SAND.

1465.5- 1472.5 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-02%
CALCITE-02%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, ORGANICS, CONES
INTERBEDDED MEDIUM CALCARENITE AND ORGANIC LAMINATED
CALCARENITES. SCATTERED AND BEDDED LOOSE EUHEDRAL CALCITE.

1472.5- 1482 CALCARENITE; YELLOWISH GRAY TO LIGHT GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-30%, SHALE-02%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, ORGANICS
INTERBEDDED FINE-MEDIUM CALCARENITE AND LESSER CALCILUTITE
AND ORGANIC-VARVED CALCARENITE.

1482 - 1485.2 CALCARENITE; YELLOWISH GRAY TO DARK GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-35%, ORGANICS-14%
CALCITE-01%
OTHER FEATURES: GRANULAR, PARTINGS, VARVED
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, WORM TRACES
INTERBEDDED FINE-MEDIUM CALCARENITE AND LAMINATED VERY ORGANIC LIMESTONE, LOOSE EUHEDRAL CALCITE IN ORGANIC BED AT 1482' WITH CALCAREOUS CLASTS TO 4 MM.

1485.2- 1488.5 CALCARENITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: CALCILUTITE-25%, DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, CONES
FAINTLY LAMINATED DOLOMITIC CALCARENITE. PARTLY ANHEALED/ DEVELOPING HIGH ANGLE FRACTURES. DICTYOCONUS.

1488.5- 1500.3 CALCARENITE; YELLOWISH GRAY TO DARK YELLOWISH BROWN
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRANULE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-18%, ORGANICS-10%
DOLOMITE- %
OTHER FEATURES: GRANULAR, PARTINGS, VARVED, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, CONES, WORM TRACES
BENTHIC FORAMINIFERA
INTERBEDDED DOLOMITIC MEDIUM CALCARENITE AND VARIABLY CLASTIC ORGANIC-RICH/ORGANIC VARVED CALCARENITE. ANHEALED VUGS OF GRANULAR EUHEDRAL CLEAR CALCITE AT 1492' & 1500'. DICTYOCONUS.

1500.3- 1512 LIMESTONE; YELLOWISH GRAY TO DARK GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, INTRACLASTS
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED, BANDED
BRECCIATED
ACCESSORY MINERALS: CALCILUTITE-50%, CALCARENITE-42%
ORGANICS-08%, CALCITE-01%
OTHER FEATURES: PARTINGS, VARVED, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, WORM TRACES
INTERBEDDED GRANULAR CALCILUTITE/CALCARENITE AND BRECCIATED VERY FINELY VARVED ORGANIC LIMESTONE (VARIABLY CALCILUTITIC AND GRANULAR).

1512 - 1514.3 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
22% POROSITY: INTERCRYSTALLINE, VUGULAR; 10-50% ALTERED EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED, LAMINATED

ACCESSORY MINERALS: CALCITE-25%, CALCILUTITE-20%
ORGANICS-06%
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION
GRANULAR, PARTINGS
FOSSILS: ORGANICS
THIN BEDS OF MEDIUM-GRAINED EUHEDRAL CALCITE, VFINE/FINE
DOLOMITE AND ORGANIC-LAMINATED, VARIABLY DOLOMITIC
CALCILUTITE.

1514.3- 1531.5 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH BROWN
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BANDED
ACCESSORY MINERALS: CALCILUTITE-25%, DOLOMITE-15%
ORGANICS- %
OTHER FEATURES: GRANULAR, DOLOMITIC, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, WORM TRACES, CONES
BENTHIC FORAMINIFERA, ORGANICS
INTERBEDDED FINE-MED CALCARENITE AND VARIABLY
ORGANIC-VARVED DOLOMITIC VFINE CALCARENITE. DICTYOCONUS.

1531.5- 1533.1 DOLOSTONE; GRAYISH BROWN TO LIGHT GRAYISH BROWN
16% POROSITY: FRACTURE, VUGULAR; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CALCILUTITE-03%, ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: ECHINOID
EXCEPTIONAL EXAMPLE OF GRADATION OF CALCARENITE INTO
DOLOMITE AND BACK TO CALCARENITE. SINUOUS NEAR-VERTICAL
FRACRUTE LINED WITH EUHEDRAL DRUSY DOLOMITE XLS.

1533.1- 1535.5 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH BROWN
14% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-25%, DOLOMITE-20%
ORGANICS-03%
OTHER FEATURES: CHALKY, CRYSTALLINE, PARTINGS, GRANULAR
FOSSILS: FOSSIL FRAGMENTS

1535.5- 1538.5 CALCARENITE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-25%, CALCILUTITE-20%
OTHER FEATURES: DOLOMITIC, MEDIUM RECRYSTALLIZATION
GRANULAR, PARTINGS
FOSSILS: CORAL, SPICULES
INTERBEDDED DOLOMITIC CALCARENITE, DOLOMITE BANDED
CALCARENITE, AND GRANULAR CRYSTALLINE DOLOMITE. ORGANIC

LAMINATIONS SOME OF THE DOLOMITE.

1538.5- 1544 CALCARENITE; GRAYISH ORANGE TO VERY LIGHT ORANGE
14% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BRECCIATED
ACCESSORY MINERALS: DOLOMITE-20%, CALCILUTITE-15%
ORGANICS-04%
OTHER FEATURES: DOLOMITIC, GRANULAR, PARTINGS
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
INTERBEDDED FINE DOLOMITIC CALCARENITE (VERTICALLY FRACTURED) AND INFILLED BRECCIATED DOLOMITIC CALCARENITE. BRECCIA CONTAINS CLASTS GREATER THAN 5 CM. INFILL IS SOMEWHAT ORGANIC. WIRELINE CORING ENDS AT 1544'.

1544 - 1579 NO SAMPLES
BEGIN PART 3 OF DESCRIPTION WHICH STARTS AT 1579'BLS.

1579 - 1585 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH BROWN
16% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-75%, DOLOMITE- %
OTHER FEATURES: DOLOMITIC, GRANULAR, VARIEGATED
SOMEWHAT DOLOMITIC FINE-GRAINED CALCARENITE.

1585 - 1591 CALCARENITE; MODERATE YELLOWISH BROWN TO VERY LIGHT ORANGE
16% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-20%, DOLOMITE-30%
OTHER FEATURES: DOLOMITIC, GRANULAR, VARIEGATED
FOSSILS: MILIOLIDS
GRANULAR DOLOMITIC CALCARENITE.

1591 - 1597 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR, VUGULAR, PIN POINT VUGS
10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-10%, CALCARENITE-05%
ORGANICS-02%
OTHER FEATURES: GRANULAR, SUCROSIC
FOSSILS: ORGANICS
CONSOLIDATED SUCROSIC FINE-GRAINED DOLOSTONE WITH LESSER INTERBEDS OF RECRYSTALLIZED CRYPTOCRYSTALLINE DOLOMITE.

1597 - 1599 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
15% POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: GRANULAR, CRYSTALLINE
FOSSILS: ORGANICS
HARD CRYSTALLINE, VARIABLY GRANULAR DOLOSTONE. MAY BE

FRACTURED. (PREVIOUS WELL HIT MAJOR FRACTURE PERMEABILITY AT 159(5)? MAKES MUCH WATER HERE BUT NOT AS MUCH AS PREVIOUS HOLE.)

1599 - 1601 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE BROWN
15% POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-04%
OTHER FEATURES: GRANULAR, MEDIUM RECRYSTALLIZATION
FOSSILS: ORGANICS
SOME LITHOLOGIC SURFACES SHOW VERY FINE EUHEDRAL DOLOMITE CRYSTALS. FRACTURED? ORGANIC SPECKS & STREAKS.

1601 - 1607 DOLOSTONE; DARK YELLOWISH BROWN TO DARK BROWN
10% POROSITY: PIN POINT VUGS, VUGULAR; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, GRANULAR
VARIEGATED
FOSSILS: ORGANICS
DARK & LIGHTER BROWN DOLOSTONE. EUHEDRAL DOLOMITE CRYSTALS IN VUGS.

1607 - 1609 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
12% POROSITY: VUGULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: ORGANICS
MORE EUHEDRAL DOLOMITE CRYSTALS IN VUGS.

1609 - 1615 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
16% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: GRANULAR, MEDIUM RECRYSTALLIZATION
FOSSILS: ORGANICS
CONTINUED EUHEDRAL DOLOMITE CRYSTALS IN VUGS & ON SURFACES.
LIGNITE BED AT 1609-1609.5

1615 - 1627 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
40% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCARENITE-30%, ORGANICS-01%
OTHER FEATURES: CRYSTALLINE, PARTINGS
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, FOSSIL FRAGMENTS
VERY PERMEABLE INTERBEDS OF INDURATED FINE-MEDIUM EUHEDRAL DOLOMITE CRYSTALS. MASSES & CRYSTALLINE DOLOSTONE COVERED WITH EUHEDRAL DOLOMITE CRYSTALS. ALSO BEDS OF MODERATELY INDURATED FINE-GRAINED BIOGENIC CALCARENITE.

1627 - 1631 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
35% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; EUHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCARENITE-15%
OTHER FEATURES: CRYSTALLINE, PARTINGS
FOSSILS: FOSSIL FRAGMENTS
VERY PERMEABLE MASSES OF POROUS, INDURATED DOLOMITE CRYSTALS INTERBEDDED WITH CRYSTALLINE DOLOMITE AND DOLOMITIC BIOGENIC CALCARENITE.

1631 - 1641 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
25% POROSITY: INTERCRYSTALLINE, VUGULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: ORGANICS
HARD RECRYSTALLIZED DOLOSTONE CONTAINING VUGULAR HORIZONS INFILLED WITH DRUSY EUHEDRAL DOLOMITE.

1641 - 1660 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
30% POROSITY: INTERCRYSTALLINE, VUGULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION
INTERBEDDED CRYSTALLINE DOLOSTONE, INDURATED EUHEDRAL DOLOMITE CRYSTAL MASSES, AND BLACKISH HIGHLY POROUS CRYSTAL BOXWORKS.

1660 - 1663 DOLOSTONE; DARK BROWN TO DARK YELLOWISH BROWN
14% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE
CONTAINS SMALL AMOUNTS OF EUHEDRAL DOLOMITE MASSES. VERY HARD.

1663 - 1676 DOLOSTONE; MODERATE YELLOWISH BROWN TO TRANSPARENT
8X% POROSITY: VUGULAR; 50-90% ALTERED; EUHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
WELL INDURATED GRANULAR EUHEDRAL DOLOSTONE. MATRIX MATERIAL STILL EXISTS. HARD FINER-GRAINED (MICROCRYSTALLINE) 1673-1676.

1676 - 1678 DOLOSTONE; BLACK TO DARK BROWN
08% POROSITY: LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE
VERY HARD BLACK DOLOSTONE.

OTHER FEATURES: CRYSTALLINE
HARD CRYSTALLINE DOLOSTONE AND DARKER SECONDARY BANDS OF RECRYSTALLIZED DOLOMITE, FACED WITH DRUSY CRYSTALS.

1729 - 1740 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: NOT OBSERVED; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE, PARTINGS
FOSSILS: ORGANICS
HARD BROWN DOLOSTONE, SLIGHTLY PALER AND OFTEN CONTAINING ORGANIC LAMINAE 1735-1740.

1740 - 1755 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK BROWN
12% POROSITY: INTERGRANULAR, FRACTURE; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCARENITE-10%, CALCILUTITE-05%
OTHER FEATURES: CRYSTALLINE, PARTINGS, VARIEGATED
INTERBEDDED HARD TAN DOLOSTONE (WITH SOME DRUSY SURFACES) AND DARK ORGANIC-STREAKED DOLOSTONE. DARK UNIT CONTAINS SOME WHITE LITHIC FRAGMENTS AND OCCASIONAL UNDOLOMITIZED MASSES.

1755 - 1772 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY: LOW PERMEABILITY, VUGULAR; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-15%
OTHER FEATURES: CALCAREOUS, PARTINGS
CALCAREOUS PALE DOLOSTONE WITH LIGHT-BROWN CRYSTALLINE DOLOSTONE 1758-1767. UNIT HAS MORE BULK POROSITY THAN ABOVE. BUT MAY LACK FRACTURES.

1772 - 1830 DOLOSTONE; GRAYISH ORANGE
14% POROSITY: PIN POINT VUGS, INTERGRANULAR; 0-10% ALTERED
ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CALCAREOUS, CHALKY, GRANULAR
INTERBEDDED CALCAREOUS TAN DOLOSTONE AND DOLOMITIC CREAM CHALKY LIMESTONE. LIMESTONE TEXTURE IS EARTHY. OCCASIONAL TRACE ORGANICS AS SHARDS OR LAMINAE. NO APPARENT FOSSILS.

1830 - 1855 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
12% POROSITY: PIN POINT VUGS; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-01%
OTHER FEATURES: CRYSTALLINE
FOSSILS: ORGANICS
MODERATE BROWN CRYSTALLINE DOLOSTONE WITH THIN INTERBEDS OF CALCAREOUS DOLOSTONE (1835-1842) AND GRAY CRYSTALLINE

1678 - 1688 DOLOSTONE; MODERATE BROWN TO GRAYISH BROWN
10% POROSITY: LOW PERMEABILITY; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE, GRANULAR
SOME DRUSY EUHEDRAL COATINGS.

1688 - 1698 DOLOSTONE; MODERATE YELLOWISH BROWN TO MODERATE BROWN
08% POROSITY: LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE, GRANULAR
HARD. 1688-1690 & 1696-1698 ARE TAN. 1690-1696 ARE BROWN.

1698 - 1704 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: PIN POINT VUGS; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: STREAKED
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CRYSTALLINE
FOSSILS: ORGANICS
HARD. SOME CUTTINGS SHOW DRUSY CRYSTAL ON SIDES. VARIABLY STREAKED.

1704 - 1709 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK BROWN
10% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE, VARIEGATED
FOSSILS: ORGANICS
APPARENT ORGANIC-RELATED COLOR-STREAKING. MUCH EUHEDRAL DRUSY DOLOMITE CRYSTALS ON CUTTING SURFACES.

1709 - 1714 DOLOSTONE; GRAYISH BROWN
06% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE
HARD, LESS DRUSY CRYSTALS THAN ABOVE. BELOW MAJOR FRACTURE ZONE?

1714 - 1719 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: NOT OBSERVED; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CRYSTALLINE
HARD PALE DOLOSTONE. SOME LESS-DEVELOPED DRUSY SURFACES. SOME DARK VEINLETS. (OLD ORGANICS?)

1719 - 1729 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BANDED

DOLOSTONE (1847-1852).

1855 - 1863 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: PIN POINT VUGS; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ-01%
TRACE AMOUNTS OF TINY EUHEDRAL QUARTZ CRYSTALS IN SOME VUGS.

1863 - 1889 DOLOSTONE; MODERATE ORANGE PINK TO DARK YELLOWISH BROWN
05% POROSITY: LOW PERMEABILITY, PIN POINT VUGS
10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-05%, ORGANICS-03%
OTHER FEATURES: CRYSTALLINE, GRANULAR
INTERBEDDED CRYSTALLINE GRANULAR ORGANIC DOLOSTONES VARIABLY 0 TO 10% GYPSUM. THE GYPSUM FILLS PORES AND VUGS WHERE PRESENT. ORGANICS ARE SCATTERED. SOME GYPSIFEROUS CALCAREOUS DOLOMITE IN UPPER 5' AND DARKER DOLOMITE IN LOWER 6'.

1889 - 1894 DOLOSTONE; MODERATE YELLOWISH BROWN
04% POROSITY: LOW PERMEABILITY, PIN POINT VUGS
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: ORGANICS-10%, GYPSUM-07%
DARK, HIGHLY ORGANIC GRANULAR DOLOSTONE CONTAINING PORE AND VUG- FILL OF GYPSUM.

1894 - 1900 DOLOSTONE; MODERATE YELLOWISH BROWN TO MODERATE BROWN
12% POROSITY: VUGULAR, INTERGRANULAR; 10-50% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: SUCROSIC, GRANULAR
MEDIUM RECRYSTALLIZATION
SUCROSIC BUT WELL CEMENTED WITH VARIABLE AMOUNTS VUGULAR POROSITY. GOLDEN COLOR. LOWER CONCENTRATION OF GYPSUM.

1900 - 1904 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-IS%, GYPSUM-01%
OTHER FEATURES: CALCAREOUS, GRANULAR, CRYSTALLINE
FOSSILS: BENTHIC FORAMINIFERA
GRANULAR CRYSTALLINE DOLOSTONE CONTAINING MANY CALCAREOUS LITHIC FRAGMENTS AND CHALKY SKELETAL REMAINS OF COILED FORAMS.

1904 - 1909 DOLOSTONE; VERY LIGHT ORANGE
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: CALCILUTITE-20%, GYPSUM-02%
OTHER FEATURES: CALCAREOUS, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
FOSSILIFEROUS CALCAREOUS DOLOSTONE VARIABLY CONTAINING TRACE AMOUNTS OF GYPSUM.

1909 - 1914 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-04%, GYPSUM-0 %
OTHER FEATURES: CRYSTALLINE, GRANULAR

1914 - 1920 DOLOSTONE; VERY LIGHT ORANGE
08% POROSITY: LOW PERMEABILITY; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-35%, ANHYDRITE-03%
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS
GENERALLY A VERY FINE-GRAINED CALCAREOUS CHALKY DOLOSTONE WITH LESSER INTERBEDS OF DARKER CRYSTALLINE DOLOMITE. CHIPS OF PURE ANHYDRITE IN CUTTINGS.

1920 - 1933 DOLOSTONE; GRAYISH BROWN
08% POROSITY: LOW PERMEABILITY, INTERGRANULAR
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-04%, GYPSUM-01%
OTHER FEATURES: CRYSTALLINE

1933 - 1946 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%, GYPSUM-? %
OTHER FEATURES: CALCAREOUS, GRANULAR, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
DOLOMITIC PACKSTONE OF FINE TO MEDIUM CALCAREOUS FRAGMENTS AND SKELETAL PARTS WITH A CALCAREOUS-DOLOMITE MATRIX. APPEARS TO HAVE SOME GYPSUM IN MATRIX.

1946 - 1952 DOLOSTONE; MODERATE YELLOWISH BROWN TO WHITE
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: GYPSUM-30%, ORGANICS-01%
OTHER FEATURES: CRYSTALLINE, PARTINGS
CRYSTALLINE TAN DOLOSTONE. ALL GYPSUM/ANHYDRITE IS IN PURE INTERBEDS.

1952 - 1959 DOLOSTONE; MODERATE YELLOWISH BROWN

08% POROSITY: LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%, ORGANICS-01%
OTHER FEATURES: CRYSTALLINE
CRYSTALLINE TAN DOLOSTONE AS ABOVE.

1959 - 1999 DOLOSTONE; GRAYISH BROWN
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: FOSSILIFEROUS, GRANULAR, CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DOLOMITIC PACKSTONE OF FINE-MEDIUM CALCAREOUS FRAGMENTS AND SKELETAL DEBRIS SIMILAR TO 1933-1946. MATRIX GYPSUM? SOME ORGANIC LAMINAE AND MORE CRYSTALLINE MATRIX 1987-1999

1999 - 2002 DOLOSTONE; DARK YELLOWISH BROWN TO WHITE
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: CRYSTALLINE, PARTINGS
THIN BED OF CRYSTALLINE DOLOSTONE WITH PURE GYPSUM PARTINGS OR VUG FILL.

2002 - 2007 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR
10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR, CRYSTALLINE

2007 - 2028 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-40%
OTHER FEATURES: CALCAREOUS, GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
INTERBEDDED VARIATIONS OF DOLOMITIC PACKSTONE OF FINE-MEDIUM CALCAREOUS FRAGMENTS AND SKELETAL DEBRIS.

2028 - 2032 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: CRYSTALLINE
THIN BED OF CRYSTALLINE DOLOSTONE WITH TRACE FLAKES OF PURE GYPSUM.

2032 - 2049 DOLOSTONE; VERY LIGHT ORANGE
10% POROSITY: LOW PERMEABILITY, INTERGRANULAR

10-50% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-40%, GYPSUM-02%
OTHER FEATURES: CALCAREOUS, GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, CORAL, FOSSIL FRAGMENTS
DOLOMITIC PACKSTONE OF CALCAREOUS FRAGMENTS AND SKELETAL DEBRIS. MATRIX IS DOLOMITE WITH SOME VUG AND PORE FILL OF GYPSUM. THIN DARK BROWN CRYSTALLINE DOLOMITE BED AT 2045.

2049 - 2060 DOLOSTONE; MODERATE YELLOWISH BROWN TO MODERATE BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-06%
OTHER FEATURES: CRYSTALLINE, PARTINGS
CRYSTALLINE DOLOSTONE WITH INTERBEDS OR VUG-FILL OF PURE GYPSUM.

2060 - 2064 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
0L% POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE-20%, GYPSUM-20%, SHELL-03%
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
SUBEQUAL INTERBEDDING OF DOLOMITIC PACKSTONE OF CALCAREOUS CLASTS AND SKELETON FRAGMENTS, AND DARK AND PALE GYPSIFEROUS DOLOSTONE.

2064 - 2069 DOLOSTONE; MODERATE BROWN TO GRAYISH BROWN
08% POROSITY: LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: CRYSTALLINE
BROWN CRYSTALLINE DOLOSTONE, SOME WITH VUGULAR GYPSUM.

2069 - 2071 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
08% POROSITY: LOW PERMEABILITY, PIN POINT VUGS
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PEAT-06%, GYPSUM-03%
OTHER FEATURES: CRYSTALLINE, PARTINGS
FOSSILS: ORGANICS
CRYSTALLINE DOLOMITE WITH MODERATE AMOUNTS OF POORLY INDURATED LIGNITE AND ORGANICS. ALSO SMALL CONCENTRATIONS OF PURE GYPSUM.

2071 - 2075 DOLOSTONE; DARK YELLOWISH BROWN
08% POROSITY: LOW PERMEABILITY, PIN POINT VUGS
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED

ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: CRYSTALLINE, PARTINGS
INTERBEDDED CRYSTALLINE DOLOMITE AND PURE GYPSUM. GRADES TO MORE CALCAREOUS AT BASE OF UNIT.

2075 - 2090 DOLOSTONE; DARK YELLOWISH BROWN
01% POROSITY: LOW PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA
FROM 4" CORE 2075-2090 DOLOSTONE WITH GYPSUM-FILLED VUGS AND FRACTURES. END OF DRILLING.

2090 TOTAL DEPTH