EXECUTIVE SUMMARY
TR 13-2X (Pinellas Vo Tech)
Pinellas County
Basin 16, S32, T29S, R16E
16-020-018

February 14, 1985 Jim Clayton

I. SITE LOCATION AND DESCRIPTION

The TR 13-2X wellsite is located near the St. Pete-Clearwater Airport, in Pinellas County, Florida. The wellsite is located approximately 1.5 miles southwest of Old Tampa Bay and 7.6 miles east of the Gulf of Mexico. The wellsite can be found by proceeding 0.5 mile south on U.S. 19 from S.R. 686 (East Bay Drive); and then proceeding east 0.6 miles on 150th Avenue. The wellsite can be found on the north side of 150th Avenue, just after crossing 62nd Street. The wellsite encompasses a 100' x 100' temporary construction easement and a 20' x 40' permanent easement. The TR 13-2X wellsite is located in the SW 1/4 of SW 1/4 of SE 1/4 of Section 32, Township 29 South, Range 16 East; at latitude 27^0 54' 30" North, longitude 82^0 43' 14" West.

II. TYPE AND PURPOSE OF MONITORS

The primary objectives of these three (3) monitor wells are: to monitor the permeable zone at the base of the Suwannee and the top of the Ocala Limestone (permeable Zone B in Floridan Aquifer System - Fig. 1), to monitor the production zone in the Tampa and upper Suwannee Formations (permeable Zone A in Floridan Aquifer System - Fig. 1), and to monitor and record fluctuations in the water table. Water quality changes, potentiometric surface levels, changes in hydraulic head, and degree of salt-water intrusion will all be monitored at TR 13-2X.

These monitor wells (deep, intermediate, and shallow) are designed to emulate several City of Clearwater and City of Dunedin wells that are or will be constructed in the near future. Most of these wells along with the TR14 and TR13 series' wells will monitor the same hydrogeologic zones. All these wells establish a much needed network of data points that can be used to more accurately define the geology, hydrology and salt-water intrusion in the northern half of Pinellas County.

III. GEOLOGY

The TR 13-2X wellsite is located on the Pamlico Terrace (of Pleistocene age) at an elevation of approximately 16.75' above MSL. The geology at this site was interpreted from the 677.5' core at this site as well as the geophysical logs from the core hole. The interpreted stratigraphic sequence for this wellsite is as follows:

FIELD OPERATIONS
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Depth in feet below LSD	Stratigraphic Unit/Age	Lithologic Description
0' - 39'	**Undifferentiated Sands** (Pleistocene)	Sand; quartz, clear-light gray, very fine-medium grained, unconsolidated, approx. 30% porosity, some organics, abundant shell fragments at 10 ft, some sandy clay.
39' - 123.5'	**Hawthorn Fm.** (Upper Miocene)	Sand; quartz, clear-gray, very fine-fine grained, unconsolidated, 10%-30% porosity—Clay; bluish green - grayish green, gumbo—Dolomite; light gray-tan, sandy, firm-hard, microcrystalline- very fine crystalline, low porosity—Limestone; white-light gray, marly in part, crypto-microcrystalline, sandy, clayey, poor-moderate induration, poor porosity, thin sand stringers and clay seams.
123.5' - 218'	**Tampa Fm.** (Lower Miocene)	Limestone; very pale orange-light gray, moderately indurated, 5% - 30% porosity—Chert; olive gray, very hard, massive, vugular in part—Dolomite; light gray-yellowish gray-light olive gray, 10%-20% porosity, clayey, crypto-microcrystalline, good induration—Clay; light gray-yellowish gray, trace organics.
218' - 563'	**Suwannee Fm.** (Oligocene)	Limestone; predominantly calcarenite with some micrite, very pale orange-yellowish gray-light gray, 10%-35% porosity, biogenic, clayey in part, poor-moderate induration—Dolomite; dusky yellow-yellowish gray-light olive gray, 5%-20% porosity, some fractured, cryptocrystalline-very fine crystalline, sucrosic in part.
563' - 677.5' TD	**Ocala Group** (Eocene)	Limestone; predominantly calcarenite with some micrite, very pale orange-yellowish gray, 15%-30% porosity, clayey in part, poor-moderate induration, biogenic, Lepidocyclina and Nummulites (Operculinoides?)—Clay; very pale orange, poorly indurated, calcareous.

*Note: A lithologic column from TR 13-2X is presented in Figure 1.

IV. HYDROGEOLOGY AND WATER QUALITY

Two aquifers were identified at the TR 13-2X wellsite, the Surficial Aquifer (water table) and the Floridan Aquifer System (See Figure 1).

The Surficial Aquifer extends from LSD to the first bedded clay at approximately 16' below LSD. It is expected that the water table will be within 5 feet of land surface. The following parameters were taken from Appendix B-Summary of Aquifer Parameters for Pinellas County in the "Interim Report 1: Pinellas County Saltwater Modeling Project" prepared by GeoTrans for the Southwest Florida Water Management District. For the Surficial Aquifer; transmissivity (T) was calculated between 200 ft^2/d and 6700 ft^2/d by Spechler (1983), vertical hydraulic conductivity (K_v) was estimated by Hickey (1980) at .36 ft/d to 13 ft/d (avg. 2.6 ft/d), and horizontal hydraulic conductivity (K_h) was estimated at 33 ft/d by Hickey (1980). The unconsolidated sands of this aquifer are quite porous and permeable. Due to the sensitivity of this aquifer to precipitation, drought, and pumpage it is expected that the water level will fluctuate considerably in the water table monitor well.

The confining bed between the Surficial Aquifer and the Floridan Aquifer System is primarily composed of gray-green gumbo clay and sandy clay with some sandy dolomite and sandy limestone. This confiner extends from approximately 16'-123.5' below LSD. This encompasses the entire Hawthorn Formation. This material is expected to be an adequate confiner locally but may be leaky or missing in its lateral extent. The following parameters were taken from Appendix B in the "Interim Report 1" by GeoTrans. The vertical hydraulic conductivity (K_v) for this Hawthorn confining unit is estimated at 2 X 10^{-2} ft/d by Hutchinson (1983), 3 X 10^{-3} ft/d by Rosentein and Hickey (1977), and 1.3 X 10^{-4} ft/d by Hickey (1980). These values being orders of magnitude apart illustrate the variability of K_v for this confiner and/or they illustrate the difficulty in determining an accurate K_v.

As per John J. Hickey in the USGS Water-Supply Paper 2183 the Floridan Aquifer in Pinellas County "includes permeable parts of the Hawthorn Formation that are in hydrologic contact with the rest of the aquifer, and all or parts of the Tampa Limestone, Suwannee Limestone, Ocala Limestone, Avon Park Limestone, and Lake City Limestone." The core at TR 13-2X demonstrated no hydrologic contact between the Hawthorn Formation and the Floridan Aquifer System, therefore, for this site the top of the Floridan Aquifer and the top of the Tampa Formation are coincident.

The core at TR 13-2X went to a total depth of 677.5' below LSD, into the Williston Formation of the Ocala Group. The Avon Park and Lake City Formations were not penetrated. As discussed in the USGS Water-Supply Paper 2183 there are four (4) permeable zones in the Floridan Aquifer System, Zones A,B,C, and D from top to bottom. Only Zones A and B were penetrated in this core hole (See Figure 1).

Permeable Zone A includes the entire Tampa Formation and the upper Suwannee Formation and extends from about 123.5' - 330' below LSD at this wellsite. Estimated porosities from core samples in this zone range from about 15% to 30%. From the USGS Paper 2183, Hickey (1982) calculates a T of 2.5 - 3.0 X 10^4 ft^2/d while Spechler (1983) in the GeoTrans "Interim Report

1" estimates the T at 2.2 - 7.4 X 10^4 ft^2/d. Hickey (1980) in the "Interim Report 1" figures the horizontal hydraulic conductivity (K_h) to be 167 ft/d.

Water throughout the Tampa Formation at TR 13-2X is considered potable as far as chlorides and sulfates are concerned (less than 250 mg/l), although total dissolved solids (TDS) are slightly above drinking water limits. The limit for TDS is 500 mg/l while maximum TDS in the Tampa Formation are about 620 mg/l. Water levels fluctuated during the coring operation from 10.30' to 11.05' below LSD in the Tampa Formation. Generally the water level gradually dropped with increasing depth and decreasing water quality.

The upper Suwannee Formation (bottom of permeable Zone A) is characterized by an increase in conductivity, chlorides, and TDS above the potable limits. Conductivity doubles from 650 UMHOS (213.5') to 1300 UMHOS (223.5'), chlorides rose from 120 mg/l to 260 mg/l while TDS continued to rise further above the potable limit. Sulfates don't exceed the potable limit until about 400' below LSD. The water level rose from 10.90' below LSD at the base of the Tampa Formation to 10.30' below LSD at the top of the Suwannee Formation. This represented a 0.60' rise in water level even as the quality of the water deteriorated. This rise was quickly negated by an increase in water density with increasing depth.

The semiconfiner between permeable Zones A and B, the Suwannee semiconfiner, is composed of limestone (calcarenite) and dolomite and extends from approximately 330'-513' below LSD at the TR13-2X well site. K_v from the "Interim Report 1" by GeoTrans for this semiconfiner is estimated at 1.3 X 10^{-3} ft/d to 2.5 ft/d (avg. 0.6 ft/d) by Hickey (1980) and .1 to 1 ft/d by Hickey (1982) from the USGS Water-Supply Paper 2183. Again these values illustrate the probable lateral variability of this semiconfiner. Porosities in this semiconfiner can be as high as 30% but permeabilities are low.

Water quality in the Suwannee semiconfiner continued to deteriorate with increasing depth. Specific conductivity ranged from 7000 UMHOS at 313.5', slightly above the semiconfiner, to 34,750 UMHOS at 508.5'. Chlorides ranged from 2225 mg/l at 313.5' to 5400 mg/l at 468.5' while sulfates increased from 49 mg/l to 224 mg/l through the same interval. Total Dissolved Solids increased from 8673 mg/l at 348.5' to 27,251 mg/l at 468.5'. Water levels fell from 12.50' below LSD at 323.5' to 19.20' below LSD at 508.5'. This steady decline in water level was due to increasing water density with depth.

Permeable Zone B includes the lower Suwannee Formation and the upper Crystal River Formation of the Ocala Group. This zone is composed of limestone (predominantly calcarenite) and extends from approximately 513'-588' below LSD. Transmissivity of Zone B is estimated at 1.33 X 10^5 to 9.36 X 10^5 ft^2/d by Seaburn & Robertson, Inc. (1983) from the "Interim Report 1" by GeoTrans, Appendix B. From the USGS Paper 2183 specific capacity values for Zones A and B can be compared. Permeable Zone A had a specific capacity of 228 gpm/ft while Zone B had an average specific capacity of 13 gpm/ft. Hickey (1982) suggests that T for Zone B is relatively lower than that for Zone A, based on comparison of the above specific capacities. If the T values presented in this text for Zones A and B are accurate, then Hickey's suggestion is in error. The figures indicate that the T value for Zone B is

approximately one order of magnitude higher than that of Zone A. Estimated porosities from core samples in Zone B range from 15% to 30%, while permeability ranges from low to high.

The water in Zone B has an average conductivity of 33,000 UMHOS and can be considered sea water. Due to the density of this saltwater the water level through this zone averaged about 18.80' below LSD.

The semiconfiner between permeable Zones B and C, the Ocala semiconfiner, was not penetrated in the monitor well but was partially penetrated in the core hole. The core hole at TR13-2X penetrated 89.5' of this semiconfiner from 588'-677.5' below LSD and includes the lower part of the Crystal River Formation and the upper part of the Williston Formation, both of the Ocala Group. This semiconfiner is composed of calcarenitic limestone with minor amounts of interbedded clay and calcilutite. Vertical hydraulic conductivity (K_v) for this zone is estimated at 1.3×10^{-3} ft/d to 2.6 ft/d (avg. 0.6 ft/day) by Hickey (1980) from GeoTrans' "Interim Report 1" and .1 to 1 ft/d by Hickey (1982) from USGS Water-Supply Paper 2183. Hickey also states that there is "little or no difference between vertical and horizontal hydraulic conductivities in the semiconfining beds," referring to the semiconfiners between permeable Zones A and B and between Zones B and C. It should be noted that K_v values for this semiconfiner are equivalent to the values for the semiconfiner between Zones A and B. Observed core porosities at this site were as high as 30% but as Hickey (1982) states "the physical nature of the permeability of the semiconfining beds is not completely known." The core samples through this zone indicated possibly high permeabilities but with as much as 10% interstitial clay and clay sized particles. This interstitial clay coupled with a general lack of fractures probably inhibits permeability to a substantial degree. As Hickey (1982) postulates "the primary pores of the rock probably control the permeability of the semiconfining beds."

Water quality and levels in this semiconfiner did not appreciably change from those of permeable Zone B. As in Zone B the water level remained at approximately 18.80' below LSD while the conductivity averaged 31,500 UMHOS.

Wireline thief samples of borehole water taken during construction of the monitor well gave us reason to suspect that the quality of water sampling during the coring operation was not as accurate as hoped. It is apparent that the deeper water samples were partially mixed with better quality water from further up the hole. This was due in part to a lack of water production throughout this semiconfining bed, in part to the washing-out of the calcarenite around the core barrel which allowed formation water to pass freely and in part to over-pumping while collecting water samples during coring. Consequently, water samples taken during coring between 323' and 463' were considerably lower in specific conductivity, chlorides, sulfates, and total dissolved solids than they should have been. Over-pumping was discovered at 463' and subsequent water samples, pumped at a much reduced rate, were only slightly mixed.

V. WELL DESIGN AND CONSTRUCTION

A. Water Table Monitor

A shallow surficial monitor was designed to monitor and record any fluctuations in the water table. Given its location and its sensitivity to changes in precipitation and pumping it is expected the water level will be quite variable. The water level at the time of drilling (1-16-85) was about 9' below LSD.

This well's construction was initiated by drilling a 15 1/4" borehole to 16' below LSD(TD). A 1' section of 6" PVC (15'-16') to serve as a sediment trap was coupled with 5' of 6" PVC (.030" slotted) well screen (10'-15'). 12' of 8" PVC casing was then coupled to the 6" wellscreen. This left about 2' of 8" PVC casing above LSD. The borehole was then packed with 6-20 type silica sand (2'-16'). The remaining 2' to LSD was filled with neat cement grout. A protective piece of 14" steel casing was then installed around the exposed 8" PVC casing and set about 1' into the cement grout.

B. Intermediate Monitor

The intermediate monitor well was designed to monitor upward migration of saltwater and to monitor a permeable zone in the base of permeable Zone A (See Fig. 1).

Construction started by drilling a 15 1/4" borehole (LSD to 149'), 1' into a massive chert lense. 10" PVC casing was then installed (LSD-149') and cement grouted to surface. A 10" nominal borehole was then drilled (149'-280'). The monitor tube was then constructed by connecting 1' of 6" PVC casing (279'-280'), used as a sediment trap, to 10' of 6" PVC (.030" slot) well screen (269-279'). This was coupled to 272' (+3 - 269') of 6" PVC casing. The bottom of the hole (258'-280'), encompassing the screened interval, was then filled with 6-20 type silica sand. The remainder of the borehole was then cement grouted to surface (LSD-258').

C. Deep Monitor (Dual zone)

The deep monitor well was designed to monitor head changes in a "production zone" (highly permeable zone) within permeable Zone B (Fig. 1) in the lower Suwannee Formation. A second zone, open hole interval, was left to monitor water quality changes in the Tampa Formation, upper permeable Zone A.

Construction commenced by drilling a 22" nominal borehole to 60' below LSD and installing and grouting to surface 16" steel casing (LSD-60'). A 15 1/4" hole was drilled out from the 16" casing to 146', top of a dark, massive chert lense. 10" PVC casing was then installed and cement grouted (LSD-146'). A 10" nominal borehole was then drilled out from the 10" PVC casing (146'-551'). The monitor tube was constructed by coupling a 1' section of 4" PVC casing (550'-551'), used as a sediment trap, to 20' of .030" slot, 4" PVC well screen (530-550'). The wellscreen was then connected to 534' of 4" PVC casing (+4-530'). Silica sand, 6-20

type, was then used to pack the screened interval of the borehole (520'-551'). The borehole was then cement grouted (190'-520'), leaving 44' of open hole (146'-190') in the Tampa Formation.

VI. GEOPHYSICAL LOGS

Geophysical logs were run on both the core hole and monitor well with Southwest Florida Water Management District's (SWFWMD) and Northwest Florida Water Management District's (NWFWMD) logging equipment. Refer to Table 1 below for specifics.

Monitor Well	Core Hole		
SWFWMD Equipment	NWFWMD Equipment	SWFWMD Equipment	Logs Run
X		X	Caliper
		X	E-log — Spontaneous Potential & Single Point Resistivity
	X		E-log — Long & Short Normal
X		X	Fluid Conductivity
		X	Gamma Ray
	X		Neutron Porosity
X		X	Temperature

Table 1. Geophysical Logs Run at TR 13-2X (Pinellas Vo Tech)

Some of the data obtained from these geophysical logs are:

A. Physical conditions, rugosity, diameter of borehole
B. Zones of relative high and low transmissivity
C. Lithology
D. Formational contacts
F. Depths of temperature changes
G. Depths of water quality changes
    1. Borehole fluid conductivity
    2. Formational pore fluid resistivity

Outside Sources Used:

John J. Hickey, 1982; Hydrogeology and Results of Injection Tests at Waste-Injection Test Sites in Pinellas County, Florida, United States Geological Survey Water-Supply Paper 2183.

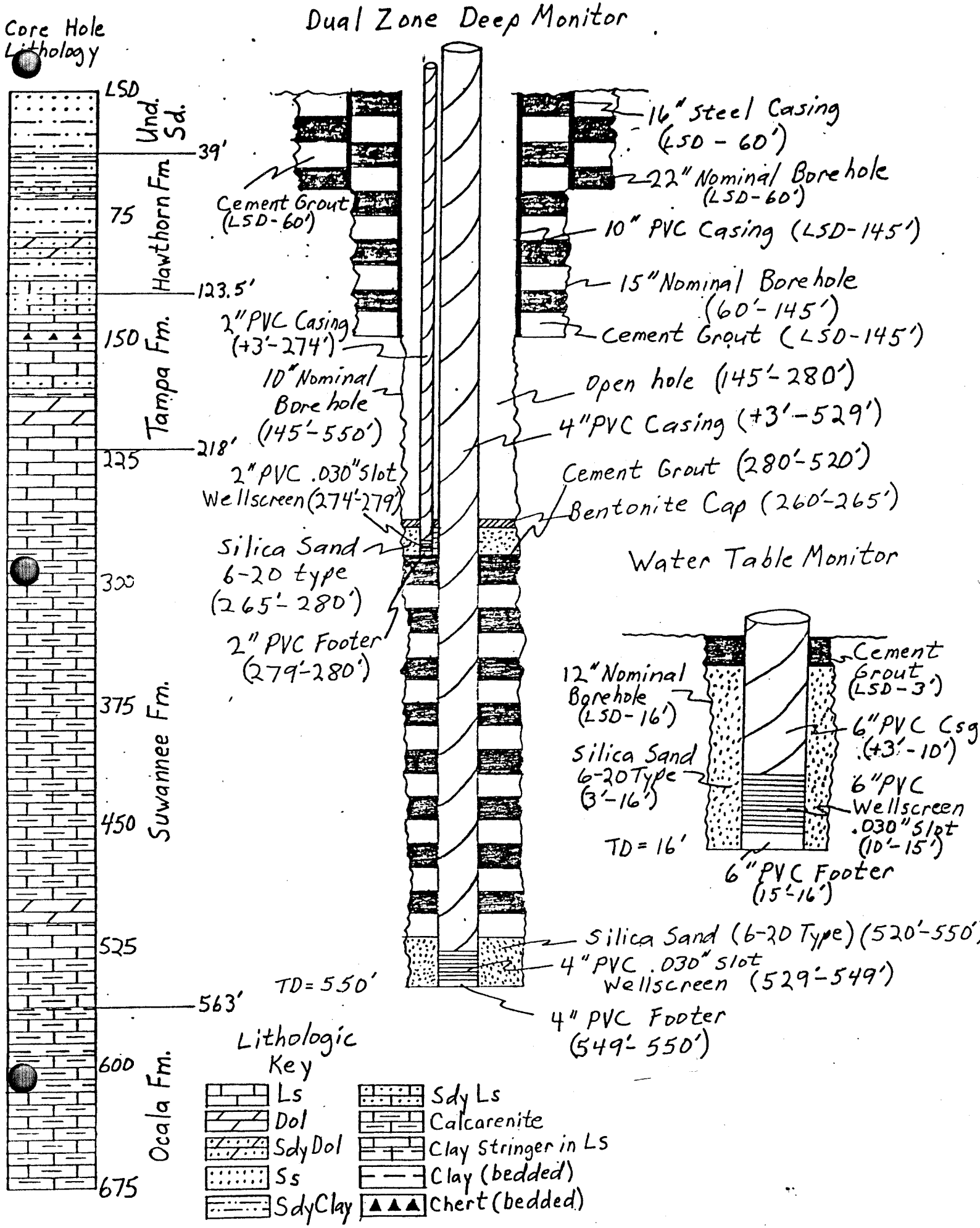
GeoTrans, Inc., June 5, 1984; Preliminary Conceptual Model and Analysis of Existing Data, Interim Report 1: Pinellas County Saltwater Modeling Project.

JC:cwp

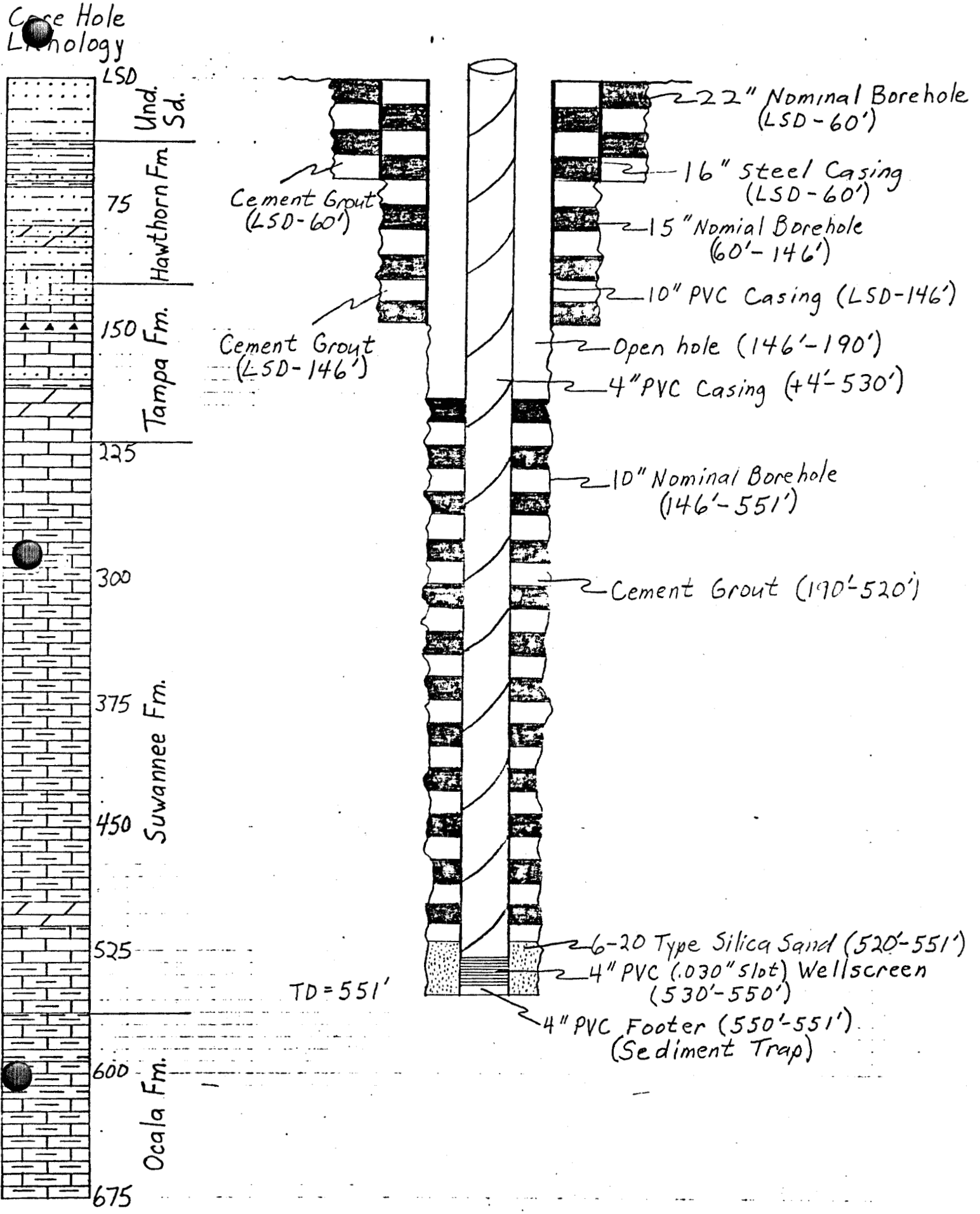
ESTR13-2X

PRELIMINARY WELL DESIGN
TR: 2X (Pinellas Vo Tech)

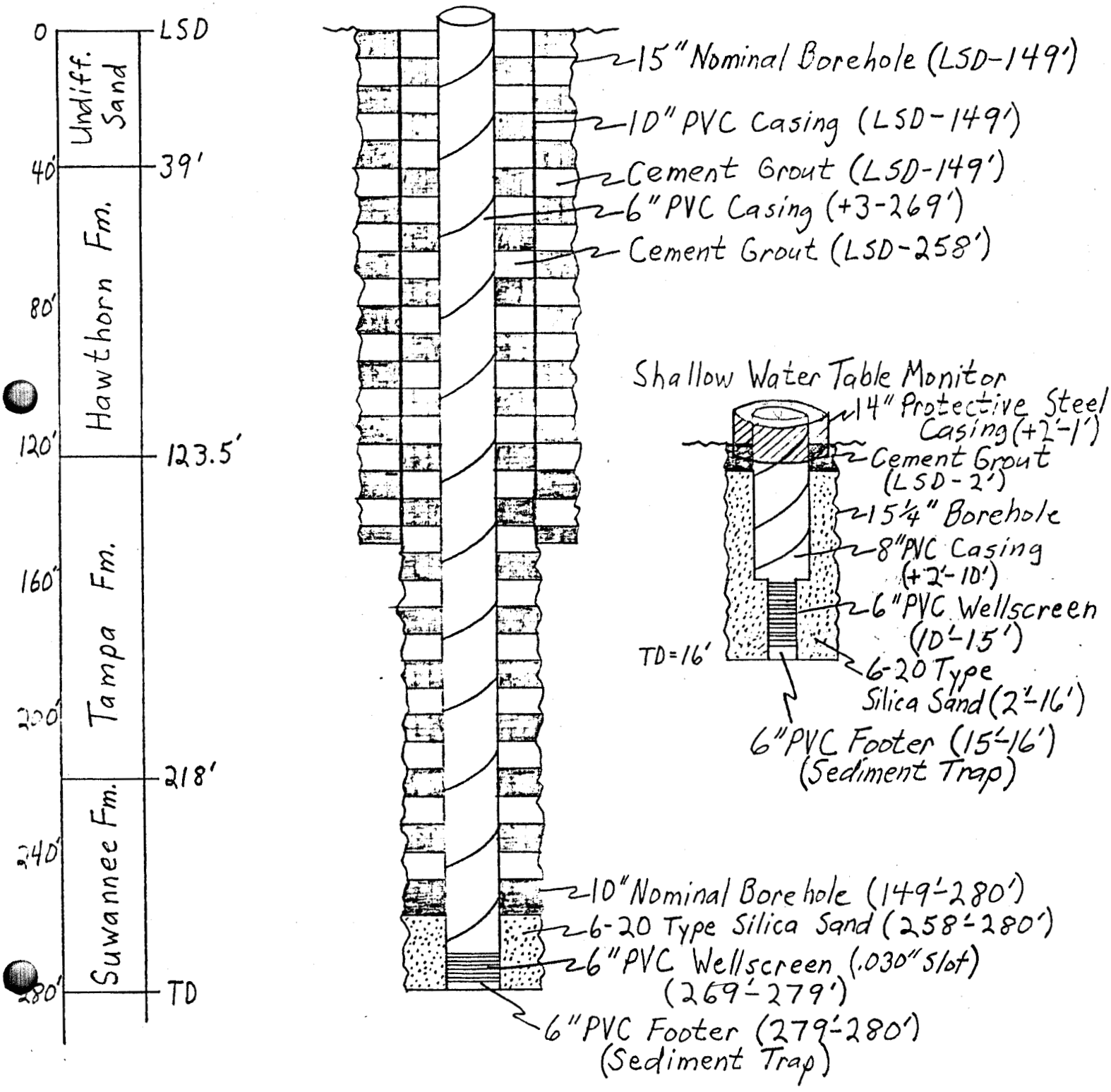
Jim Clayton
10-17-84



TRI-IX (East Bay) Deep Monitor "As Built" Well Diagram



TR 13-1X (East Bay)
Intermediate and Shallow Monitors
"As Built" Well Diagrams



LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16197
TOTAL DEPTH: 677.5 FT.
99 SAMPLES FROM 117 TO 671 FT.

COUNTY - PINELLAS
LOCATION: T.29S R.16E S.32CD
LAT = N 27D 54M 30
LON = W 82D 43M 14

COMPLETION DATE - 09/26/84
ELEVATION - 017 FT
OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER: SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, ROMP TR-13-2X

WORKED BY: HYDROLOGIST - JIM CLAYTON, CORED 8-7-84 TO 9-26-84
FAIR CORE SAMPLES; AVERAGE CORE RECOVERY = 40.65%
LOG ENTERED BY T.L.SEAL
TOP OF HAWTHORN FORMATION PICKED AT TOP OF FIRST GAMMA PEAK
4" CASING SET AT 113' - STARTED CORING AT 116' BELOW LSD
CUTTINGS COLLECTED FROM LSD TO 116' AND FOR VERY LOW RECOVERY RUNS

0.	39.	TERRACE SANDS
39.	218.	HAWTHORN GROUP
123.	218.	TAMPA MEMBER OF ARCADIA FM.
218.	563.	SUWANNEE LIMESTONE
563.	.	OCALA GROUP

0 - 7 SAND; ; UNCONSOLIDATED;
FOSSILS: FOSSIL FRAGMENTS, ORGANICS;
ALL DESCRIBED SAMPLES FROM 0-116' ARE CUTTINGS, THESE CUTTINGS HAVE MINIMAL DESCRIPTIONS

7 - 12 SAND; ; UNCONSOLIDATED;
FOSSILS: ORGANICS, FOSSIL FRAGMENTS;

12 - 17 AS ABOVE
AT 16', A BLUE-GREEN "GUMBO" CLAY, WITH ABUNDANT SHELL FRAGMENTS

17 - 21.5 SAND; ; UNCONSOLIDATED;
ACCESSORY MINERALS: CLAY-10%;
FOSSILS: FOSSIL FRAGMENTS;

21.5- 26.5 AS ABOVE

26.5- 31.5 SAND; ; UNCONSOLIDATED;
ACCESSORY MINERALS: CLAY-10%;
FOSSILS: ORGANICS;

31.5- 36.5 AS ABOVE

36.5- 41.5 SAND; ; UNCONSOLIDATED;
ACCESSORY MINERALS: CLAY-20%;
FOSSILS: ORGANICS;

41.5- 46.5 SAND; ; UNCONSOLIDATED;
FOSSILS: FOSSIL FRAGMENTS;
VERY FINE-GRAINED WHITE SAND TO 44', THEN 2.5'THICK SHELL BED WITH VERY FINE SAND, MARLY IN PART, SOME WOOD FRAGMENTS

46.5- 51.5 SAND; ;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
ACCESSORY MINERALS: CLAY- %;
FOSSILS: FOSSIL FRAGMENTS;
WHITE-GRAY MARLY, SANDY CLAY WITH ABUNDANT SHELL & WOOD FRAGMENTS

51.5- 56.5 AS ABOVE

56.5- 61.5 CLAY; ;
ACCESSORY MINERALS: QUARTZ SAND-10%;
FOSSILS: FOSSIL FRAGMENTS;

61.5- 66.5 AS ABOVE

66.5- 71.5 AS ABOVE

71.5- 76.5 SAND; ;
ACCESSORY MINERALS: CLAY-20%, PHOSPHATIC SAND-01%;
CLAY 20% ; QUARTZ SAND 70% ; OLIVE-GREEN SILTSTONE = 10%

76.5- 81.5 AS ABOVE

81.5- 86.5 SAND; ;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
ACCESSORY MINERALS: PHOSPHATIC SAND-0D%;
50% SANDSTONE; 40% CLAY, 10% SILTSTONE(?)

86.5- 91.5 AS ABOVE
AT 88-91.5', SANDY DOLOMITE WITH CLAY

91.5- 96.5 DOLOSTONE; ;
ACCESSORY MINERALS: QUARTZ SAND- %, CLAY-%;

96.5- 101.5 AS ABOVE
INCREASING CLAY CONTENT WITH DEPTH; MORE CLAY LENSES PRESENT

101.5- 106.5 CLAY; ;
ACCESSORY MINERALS: QUARTZ SAND- %;
FOSSILS: FOSSIL FRAGMENTS;
CLAY WITH ABUNDANT CAVING; ACCESSORY SAND AND SHELLS

106.5- 111.5 CLAY; ;
SAME GRAY-GREEN CLAYS

111.5- 116 CLAY; ;
CLAY AS ABOVE TO 113', THEN MIXTURE OF CLAY, DOLOMITE AND A TRACE OF LIMESTONE AND CHERT;
LIMESTONE IS MARLY IN PART, CRYPTOCRYSTALLINE TO MICROCRYSTALLINE AND A LOW POROSITY
CUTTINGS DESCRIPTIONS END; CORE DESCRIPTION BEGIN AT 116'

116 - 118.5 CALCILUTITE; VERY LIGHT GRAY TO GRAYISH GREEN; 02% POROSITY, FRACTURE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, MOTTLED,
ACCESSORY MINERALS: CLAY-30%, QUARTZ SAND-04%;
OTHER FEATURES: CALCAREOUS, PARTINGS, VARIEGATED;
FOSSILS: NO FOSSILS, ORGANICS;
SMALL SAND STRINGERS AT 116.7 AND 118' (IN GREEN CLAY)

118.5- 119 CALCILUTITE; VERY LIGHT GRAY TO GRAYISH GREEN; 02% POROSITY, FRACTURE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, MOTTLED,
ACCESSORY MINERALS: CLAY-30%, QUARTZ SAND-04%;
OTHER FEATURES: CALCAREOUS, PARTINGS, VARIEGATED;
FOSSILS: NO FOSSILS, ORGANICS;

119 - 123.5 LIMESTONE; VERY LIGHT GRAY TO LIGHT GRAY; 03% POROSITY, FRACTURE, MOLDIC, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: CRYPTOCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-15%, QUARTZ SAND-20%, ANHYDRITE-0D%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, WEATHERED, VARIEGATED;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, ORGANICS;
GREEN-GRAY CLAY AT 118.8 & 120.1; 40% RECOVERY 118.5-123.5

123.5- 128.5 LIMESTONE; VERY LIGHT GRAY; 05% POROSITY, FRACTURE, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, INTRACLASTS;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED,
ACCESSORY MINERALS: CHERT-01%, CLAY-10%, QUARTZ SAND-12%, PHOSPHATIC SAND-02%;
OTHER FEATURES: CALCAREOUS, VARIEGATED, WEATHERED, VARVED, STROMATAL;
FOSSILS: ALGAE, ORGANICS;

128.5- 129.5 LIMESTONE; VERY LIGHT GRAY; 05% POROSITY, FRACTURE, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, INTRACLASTS;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED,
ACCESSORY MINERALS: CHERT-01%, CLAY-10%, QUARTZ SAND-12%, PHOSPHATIC SAND-02%;
OTHER FEATURES: CALCAREOUS, VARIEGATED, WEATHERED, VARVED, STROMATAL;
FOSSILS: ALGAE, ORGANICS;

129.5- 131.4 LIMESTONE; WHITE TO VERY LIGHT GRAY; 05% POROSITY, INTERGRANULAR, FRACTURE,
LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, STREAKED,
ACCESSORY MINERALS: CLAY-05%, QUARTZ SAND-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: NO FOSSILS, ORGANICS;

131.4- 133.5 LIMESTONE; WHITE TO VERY LIGHT ORANGE; 07% POROSITY, INTERGRANULAR, PIN POINT VUGS,
LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
ACCESSORY MINERALS: CLAY-05%, QUARTZ SAND-12%;
OTHER FEATURES: CALCAREOUS, GRANULAR, CHALKY;
FOSSILS: NO FOSSILS;
88% RECOVERY 128.5-133.5; 2" LIMESTONE LAYER AT 132.7

133.5- 136.2 LIMESTONE; VERY LIGHT ORANGE TO VERY LIGHT GRAY; 04% POROSITY, INTERGRANULAR,
PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
ACCESSORY MINERALS: CLAY-10%, QUARTZ SAND-05%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: NO FOSSILS;

136.2- 137.3 LIMESTONE; VERY LIGHT GRAY; 07% POROSITY, FRACTURE, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: CRYPTOCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, MOTTLED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, VARVED;
FOSSILS: NO FOSSILS;

137.3- 138.3 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 18% POROSITY, MOLDIC, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, DOLOMITE-01%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, HIGH RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, FOSSIL FRAGMENTS;
95% RECOVERY - PELECYPODA AND GASTROPODA FRAGMENTS

138.3- 140.5 LIMESTONE; VERY LIGHT ORANGE TO VERY LIGHT GRAY; 10% POROSITY, INTERGRANULAR, FRACTURE,
VUGULAR;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-07%, CHERT-01%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;

140.5- 141.7 LIMESTONE; VERY LIGHT ORANGE; 15% POROSITY, MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%, SPAR-01%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;

141.7- 142.4 LIMESTONE; VERY LIGHT GRAY TO LIGHT GRAY; 12% POROSITY, MOLDIC, FRACTURE,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-04%, SPAR-01%, CHERT-01%;
OTHER FEATURES: CALCAREOUS, WEATHERED;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS, ORGANICS;

142.4- 143.5 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 20% POROSITY, MOLDIC, INTRAGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: SPAR-01%;
OTHER FEATURES: CALCAREOUS, REEFAL;
FOSSILS: CORAL, MOLLUSKS, MILIOLIDS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
90% RECOVERY 138.5-143.5

143.5- 145.6 LIMESTONE; VERY LIGHT ORANGE; 25% POROSITY, MOLDIC, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, CHALKY, REEFAL, MEDIUM RECRYSTALLIZATION;
FOSSILS: CORAL, MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
0.5 INCH DARK BROWN CHERT LENSE AT 145.0 FEET

145.6- 146.6 CHERT; OLIVE GRAY TO DARK YELLOWISH BROWN; 02% POROSITY, VUGULAR; GOOD INDURATION;
CEMENT TYPE(S): SILICIC CEMENT;
SEDIMENTARY STRUCTURES: MASSIVE,
ACCESSORY MINERALS: LIMESTONE-10%;
OTHER FEATURES: REEFAL, HIGH RECRYSTALLIZATION;
FOSSILS: CORAL, FOSSIL MOLDS;

146.6- 146.8 LIMESTONE; VERY LIGHT ORANGE; 15% POROSITY, INTERGRANULAR, VUGULAR, MOLDIC;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: REEFAL, CHALKY, CALCAREOUS;
FOSSILS: CORAL, FOSSIL MOLDS;

146.8- 148.5 CHERT; OLIVE GRAY; 10% POROSITY, VUGULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GOOD INDURATION;
CEMENT TYPE(S): SILICIC CEMENT;
SEDIMENTARY STRUCTURES: MASSIVE,
ACCESSORY MINERALS: LIMESTONE-10%;
OTHER FEATURES: REEFAL, HIGH RECRYSTALLIZATION;
FOSSILS: CORAL, FOSSIL MOLDS;
80% RECOVERY 143.5-148.5

148.5- 153.5 CHERT; OLIVE GRAY; 12% POROSITY, VUGULAR, LOW PERMEABILITY; GOOD INDURATION;
CEMENT TYPE(S): SILICIC CEMENT;
SEDIMENTARY STRUCTURES: MASSIVE,
ACCESSORY MINERALS: LIMESTONE-15%;
OTHER FEATURES: HIGH RECRYSTALLIZATION;
FOSSILS: FOSSIL MOLDS;
65% RECOVERY 148.5-153.5

153.5- 158.5 LIMESTONE; VERY LIGHT ORANGE; 15% POROSITY, MOLDIC, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, CHALKY, REEFAL;
FOSSILS: CORAL, MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS;
36% RECOVERY 153.5-158.5

158.5- 162 LIMESTONE; VERY LIGHT ORANGE TO LIGHT GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, CALCITE-01%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, REEFAL, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, MILIOLIDS, BRACHIOPOD, CORAL, FOSSIL MOLDS;

162 - 163.5 LIMESTONE; VERY LIGHT ORANGE TO VERY LIGHT GRAY; 15% POROSITY, INTERCRYSTALLINE, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-01%, SPAR-05%;
OTHER FEATURES: CALCAREOUS, REEFAL, SUCROSIC;
FOSSILS: CORAL, MOLLUSKS, FOSSIL MOLDS;
75% RECOVERY 158.5-163.5

163.5- 168.5 LIMESTONE; VERY LIGHT ORANGE TO LIGHT GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, BRACHIOPOD, MILIOLIDS, FOSSIL MOLDS;
80% RECOVERY 163.5-168.5

168.5- 173.5 LIMESTONE; VERY LIGHT ORANGE TO LIGHT GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-04%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, BRACHIOPOD, MILIOLIDS, FOSSIL MOLDS;
60% RECOVERY 168.5-173.5

173.5- 174.8 LIMESTONE; VERY LIGHT ORANGE TO VERY LIGHT GRAY; 20% POROSITY, MOLDIC, PIN POINT VUGS, INTERGRANULAR;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, CHALKY, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;

174.8- 178.5 CALCARENITE; YELLOWISH GRAY TO OLIVE GRAY; 08% POROSITY, INTERGRANULAR, FRACTURE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED,
ACCESSORY MINERALS: CLAY-20%, QUARTZ SAND-20%;
OTHER FEATURES: CALCAREOUS, GRANULAR, VARIEGATED, VARVED, STROMATAL;
FOSSILS: ALGAE, ORGANICS;
38% RECVOERY 173.5-178.5

178.5- 179.5 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 15% POROSITY, MOLDIC, PIN POINT VUGS;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, WEATHERED, VARVED, STROMATAL;
FOSSILS: ALGAE, MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS, ORGANICS;

179.5- 183.5 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 05% POROSITY, INTERGRANULAR,
LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-20%;
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, CHALKY, VARIEGATED, STROMATAL;
FOSSILS: ALGAE, MOLLUSKS, ORGANICS;
30% RECOVERY 178.5-183.5

183.5- 184.2 CLAY; YELLOWISH GRAY TO LIGHT GRAY; 05% POROSITY, FRACTURE, INTERGRANULAR,
LOW PERMEABILITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: LIMESTONE-20%, QUARTZ SAND-05%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: NO FOSSILS, ORGANICS;

184.2- 185 CLAY; MODERATE LIGHT GRAY TO MODERATE GRAY; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: LIMESTONE-03%;
OTHER FEATURES: CALCAREOUS, PLASTIC, GREASY;
FOSSILS: NO FOSSILS, ORGANICS;

185 - 186.2 DOLOSTONE; LIGHT OLIVE GRAY; 12% POROSITY, VUGULAR, LOW PERMEABILITY;
0-10% ALTERED; ANHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-20%;
OTHER FEATURES: CALCAREOUS, WEATHERED, LOW RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

186.2- 188.5 DOLOSTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 10% POROSITY, VUGULAR,
LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: CRYPTOCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;
75% RECOVERY 183.5-188.5

188.5- 191.7 DOLOSTONE; YELLOWISH GRAY TO GRAYISH GREEN; 10% POROSITY, VUGULAR, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: CRYPTOCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, MOTTLED, MASSIVE,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

191.7- 193.5 DOLOSTONE; YELLOWISH GRAY TO GRAYISH GREEN; 10% POROSITY, VUGULAR, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: CRYPTOCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, MOTTLED, MASSIVE,
ACCESSORY MINERALS: CLAY-20%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;
MANY GREEN CLAY-FILLED VUGS; 75% RECOVERY 188.5-193.5

193.5- 195.7 DOLOSTONE; YELLOWISH GRAY TO GRAYISH GREEN; 08% POROSITY, VUGULAR, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, MOTTLED, MASSIVE,
ACCESSORY MINERALS: CLAY-30%;
OTHER FEATURES: CALCAREOUS, WEATHERED, MEDIUM RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

195.7- 198.5 DOLOSTONE; YELLOWISH GRAY; 20% POROSITY, VUGULAR,
POSSIBLY HIGH PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: GRADED BEDDING, MASSIVE,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, WEATHERED;
FOSSILS: NO FOSSILS;
80% RECOVERY 193.5-198.5

198.5- 200.6 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY; 10% POROSITY, VUGULAR, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; SUBHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-03%;
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

200.6- 203.5 LIMESTONE; VERY LIGHT ORANGE; 20% POROSITY, MOLDIC, INTERCRYSTALLINE,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, DOLOMITE-02%, QUARTZ SAND-02%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
78% RECOVERY 198.5-203.5

203.5- 208.5 LIMESTONE; YELLOWISH GRAY TO LIGHT GRAY; 15% POROSITY, FRACTURE, VUGULAR;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BANDED, BRECCIATED, INTERBEDDED, MOTTLED, LAMINATED,
ACCESSORY MINERALS: CLAY-15%, DOLOMITE-02%;
OTHER FEATURES: STROMATAL, DOLOMITIC, PARTINGS, WEATHERED, VARVED;
FOSSILS: ALGAE;

208.5- 210.3 LIMESTONE; YELLOWISH GRAY TO MODERATE YELLOWISH BROWN; 18% POROSITY, FRACTURE, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-10%, DOLOMITE-02%;
OTHER FEATURES: CALCAREOUS, WEATHERED, LOW RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

210.3- 213.5 LIMESTONE; LIGHT GRAY TO GRAYISH BROWN; 10% POROSITY, FRACTURE, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BRECCIATED, MOTTLED,
ACCESSORY MINERALS: CLAY-07%, DOLOMITE-04%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, VARVED, STROMATAL;
FOSSILS: ALGAE, ORGANICS;
65% RECOVERY 208.5-213.5

213.5- 218.5 LIMESTONE; LIGHT GRAY TO GRAYISH BROWN; 10% POROSITY, FRACTURE, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BRECCIATED, MOTTLED,
ACCESSORY MINERALS: CLAY-07%, DOLOMITE-04%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, VARVED, STROMATAL;
FOSSILS: ORGANICS, ALGAE;
15% RECVOERY; UNCONSOLIDATED CALCARENITE COLLECTED

218.5- 218.8 LIMESTONE; GRAYISH BROWN TO YELLOWISH GRAY; 30% POROSITY, INTERGRANULAR, PIN POINT VUGS,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: NO FOSSILS;

218.8- 223.5 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 20% POROSITY, FRACTURE, INTERGRANULAR,
PIN POINT VUGS;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-15%, DOLOMITE-02%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, WEATHERED;
FOSSILS: NO FOSSILS;
65% RECOVERY 218.5-223.5

223.5- 228.5 CALCARENITE; VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%;
OTHER FEATURES: CALCAREOUS, GRANULAR, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, FOSSIL FRAGMENTS;
PELECYPOD AND GASTROPOD MOLDS 68% RECVOERY 223.5-228.5

228.5- 231.7 CALCARENITE; VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%;
OTHER FEATURES: CALCAREOUS, GRANULAR, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, FOSSIL FRAGMENTS;

231.7- 232.3 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 35% POROSITY, INTERGRANULAR, PIN POINT VUGS,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED;
FOSSILS: MOLLUSKS;

232.3- 233.5 LIMESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY; 10% POROSITY, FRACTURE, INTERGRANULAR,
LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-25%, DOLOMITE-01%;
OTHER FEATURES: CALCAREOUS, WEATHERED, LOW RECRYSTALLIZATION, MEDIUM RECRYSTALLIZATION,
CRYSTALLINE;
FOSSILS: ORGANICS;

233.5- 234.3 LIMESTONE; LIGHT GREENISH GRAY TO LIGHT GRAY; 15% POROSITY, FRACTURE, INTERCRYSTALLINE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-20%;
OTHER FEATURES: CALCAREOUS, WEATHERED;
FOSSILS: NO FOSSILS;

LIGHT GREEN CLAY SEAM AT 233.6

234.3- 236 LIMESTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN; 20% POROSITY, FRACTURE, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, STREAKED,
ACCESSORY MINERALS: CLAY-20%, DOLOMITE-01%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;

236 - 238.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 30% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, DOLOMITE-01%, CALCITE-01%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, GRANULAR;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
82% RECOVERY 233.5-238.5

238.5- 243.5 LIMESTONE; VERY LIGHT ORANGE; 22% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
60% RECOVERY 238.5-243.5

243.5- 248.5 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 15% POROSITY, FRACTURE, PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, LAMINATED,
ACCESSORY MINERALS: CLAY-25%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: NO FOSSILS;
80% RECOVERY

248.5- 253.5 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 15% POROSITY, FRACTURE, PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, LAMINATED,
ACCESSORY MINERALS: CLAY-25%;
OTHER FEATURES: CALCAREOUS, CHALKY;
FOSSILS: NO FOSSILS;
70% RECOVERY 248.5-253.5

253.5- 256.8 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 35% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS;

256.8- 258.3 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 25% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, SPAR-01%, CALCITE-01%, ANHYDRITE-0G%;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS;

258.3- 258.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS;
60% RECOVERY 253.5-258.5

258.5- 263.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 35% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%, SPAR-01%, CALCITE-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MILIOLIDS, FOSSIL MOLDS;
20% RECOVERY 258.5-263.5; CALCARENITE SAMPLE COLLECTED

263.5- 268.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 35% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS;
10% RECOVERY 263.5-268.5; CALCARENITE SAMPLE COLLECTED

268.5- 269.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 30% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC;
FOSSILS: MOLLUSKS, MILIOLIDS, FOSSIL MOLDS;

269.5- 270.3 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 25% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: MOLLUSKS, MILIOLIDS, FOSSIL MOLDS;

270.3- 273.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC;
FOSSILS: MILIOLIDS, MOLLUSKS, FOSSIL MOLDS;
50% RECOVERY 268.5-273.5

273.5- 278.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, MOLDIC, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC;
FOSSILS: MILIOLIDS, MOLLUSKS, FOSSIL MOLDS;
18% RECOVERY 273.5-278.5 CALCARENITE SAMPLE COLLECTED

278.5- 283.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: SPAR-01%, CLAY-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC, REEFAL;
FOSSILS: MILIOLIDS, MOLLUSKS, FOSSIL MOLDS, CORAL;
40% RECOVERY 278.5-283.5

283.5- 303.5 0% RECOVERY; CALCARENITE SAMPLE COLLECTED

303.5- 308.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA;
1% RECOVERY, CALCARENITE SAMPLE COLLECTED

308.5- 313.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR, CHALKY, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA;
5% RECOVERY 308.5-313.5

313.5- 319.6 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-02%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;

319.6- 322.4 PROBABLE UNCONSOLIDATED CALCARENITE LENSE

322.4- 323.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT GRAY; 18% POROSITY, INTERGRANULAR, MOLDIC, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
45% RECOVERY 318.5-323.5

323.5- 328.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%, SPAR-01%, CALCITE-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS;
THIN LENSE OF HARD SILICEOUS GRAY LIMESTONE AT 324.6, 48% RECOVERY 323.5-328.5

328.5- 330.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, PIN POINT VUGS, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-07%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;

330.5- 333.5 LIMESTONE; VERY LIGHT GRAY TO VERY LIGHT ORANGE; 15% POROSITY, INTERGRANULAR, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-07%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
45% RECOVERY 328.5-333.5

333.5- 333.6 LIMESTONE; VERY LIGHT GRAY; 10% POROSITY, INTERCRYSTALLINE, PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA;

333.6- 338.5 CALCARENITE; VERY LIGHT GRAY TO VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, CHALKY, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MILIOLIDS, FOSSIL MOLDS;
7% RECOVERY 333.5-338.5

338.5- 343.5 NO SAMPLES

343.5- 343.7 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, GRANULAR, CHALKY, LOW RECRYSTALLIZATION;
FOSSILS: MILIOLIDS;

343.7- 348.5 LIMESTONE; VERY LIGHT GRAY TO LIGHT GRAY; 12% POROSITY, INTERCRYSTALLINE, PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, CHALKY, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, WORM TRACES, FOSSIL MOLDS, FOSSIL FRAGMENTS;

15% RECOVERY 343.5-348.5

348.5- 383.5 NO SAMPLES
0% RECOVERY FROM 348.5-373.5 - 25' OF CORE MISSING

383.5- 373.6 LIMESTONE; LIGHT GRAY; 10% POROSITY, PIN POINT VUGS, INTERCRYSTALLINE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: NO FOSSILS;

373.6- 373.8 CALCARENITE; GRAYISH BROWN TO LIGHT GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, MOLLUSKS, FOSSIL MOLDS;

373.8- 378.5 LIMESTONE; LIGHT GRAY TO LIGHT OLIVE GRAY; OR% POROSITY, PIN POINT VUGS, FRACTURE, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: CORAL, BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
10% RECOVERY 373.5-378.5; CALCARENITE SAMPLE COLLECTED

378.5- 383.5 LIMESTONE; LIGHT GRAY; 10% POROSITY, INTERCRYSTALLINE, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL MOLDS, WORM TRACES;
19% RECOVERY

383.5- 383.6 CALCARENITE; YELLOWISH GRAY TO LIGHT GRAY; 25% POROSITY, INTERGRANULAR, VUGULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, WORM TRACES;

383.6- 388.5 CALCARENITE; VERY LIGHT ORANGE; 10% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-30%;
OTHER FEATURES: CALCAREOUS, GRANULAR, CHALKY, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA;
67% RECOVERY 383.5-388.5

388.5- 393.5 LIMESTONE; YELLOWISH GRAY; 15% POROSITY, INTERGRANULAR, MOLDIC, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, DOLOMITE-01%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, CHALKY, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BRACHIOPOD, FOSSIL MOLDS;
22% RECOVERY 388.5-393.5

393.5- 398.5 0% RECOVERY 393.5-398.5; CALCARENITE SAMPLE COLLECTED

398.5- 403.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT GRAY; 17% POROSITY, INTERGRANULAR, MOLDIC,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, WORM TRACES;
10% RECOVERY 398.5-403.5; SAMPLE OF CALCARENITE COLLECTED

403.5- 408.5 CALCARENITE; VERY LIGHT ORANGE TO PINKISH GRAY; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, WORM TRACES;
60% RECOVERY 403.5-408.5

408.5- 413.5 CALCARENITE; VERY LIGHT ORANGE TO PINKISH GRAY; 25% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
92% RECOVERY 408.5-413.5

413.5- 418.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
5% RECOVERY 413.5-418.5; SAMPLE OF CALCARENITE COLLECTED

418.5- 423.5 CALCARENITE; YELLOWISH GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-07%, CALCITE-01%, DOLOMITE-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION, DOLOMITIC;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BRACHIOPOD;
25% RECOVERY 418.5-423.5

423.5- 424 CALCARENITE; YELLOWISH GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;

424 - 424.5 CALCARENITE; MODERATE DARK GRAY; 15% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-25%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: NO FOSSILS, ORGANICS;

424.5- 428.5 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 10% POROSITY, INTERGRANULAR,
PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED, LAMINATED, STREAKED,
ACCESSORY MINERALS: CLAY-25%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION, VARIEGATED, VARVED, WEATHERED;
FOSSILS: NO FOSSILS, ORGANICS;

428.5- 430.3 CLAY; LIGHT OLIVE GRAY; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: LIMESTONE-20%;
OTHER FEATURES: CALCAREOUS, PLASTIC, MUDDY, WEATHERED;
FOSSILS: NO FOSSILS;

430.3- 433.5 CALCARENITE; LIGHT OLIVE GRAY TO LIGHT GRAY; 22% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-20%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED;
FOSSILS: MOLLUSKS, WORM TRACES, FOSSIL MOLDS, ORGANICS;
40% RECOVERY 428.5-433.5

433.5- 438.5 0% RECOVERY 433.5-438.5

438.5- 438.8 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 30% POROSITY, INTERGRANULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; POOR INDURATION;
CEMENT TYPE(S): SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: SPAR-02%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, WORM TRACES;

438.8- 443.5 CALCARENITE; YELLOWISH GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
OTHER FEATURES: CALCAREOUS;
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, WORM TRACES, MOLLUSKS, FOSSIL MOLDS;
23% RECOVERY 438.5-443.5

443.5- 448.5 CALCARENITE; YELLOWISH GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
OTHER FEATURES: CALCAREOUS;
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, MOLLUSKS, WORM TRACES, FOSSIL MOLDS;
15% RECOVERY 443.5-448.5

448.5- 450.5 CALCARENITE; YELLOWISH GRAY; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM; POOR INDURATION;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-15%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS;

450.5- 453.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, MILIOLIDS, FOSSIL MOLDS, WORM TRACES;
55% RECOVERY 448.5-453.5

453.5- 458.5 CALCARENITE; YELLOWISH GRAY; 22% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: GRADED BEDDING, BIOTURBATED,
ACCESSORY MINERALS: CLAY-12%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, ORGANICS, FOSSIL MOLDS, WORM TRACES;
30% RECOVERY 453.5-458.5

458.5- 463.5 CALCARENITE; YELLOWISH GRAY TO MODERATE LIGHT GRAY; 20% POROSITY, INTERGRANULAR, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, PEAT-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, ORGANICS, FOSSIL MOLDS, WORM TRACES;
22% RECOVERY 458.5-463.5

463.5- 468.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, MOLDIC, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, PEAT-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL MOLDS, WORM TRACES, ORGANICS;
30% RECOVERY 463.5-468.5

468.5- 473.5 CALCARENITE; YELLOWISH GRAY TO LIGHT GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS, WORM TRACES, ECHINOID;
15% RECOVERY 468.5-473.5

473.5- 474.5 CALCARENITE; YELLOWISH GRAY; 25% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED;
FOSSILS: ECHINOID, MOLLUSKS, WORM TRACES, FOSSIL MOLDS, BENTHIC FORAMINIFERA;

LARGE ECHINOID FRAGMENT

474.5- 483.5 CALCARENITE; YELLOWISH GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED;
FOSSILS: MOLLUSKS, ECHINOID, BENTHIC FORAMINIFERA, FOSSIL MOLDS;
20% RECOVERY 478.5-483.5

483.5- 487.5 20% RECOVERY 478.5-483.5

487.5- 488.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION, WEATHERED;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS, WORM TRACES, BENTHIC FORAMINIFERA;
20% RECOVERY 483.5-488.5

488.5- 493.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, WEATHERED, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS, WORM TRACES, BENTHIC FORAMINIFERA;
40% RECOVERY 488.5-493.5

493.5- 494.9 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 22% POROSITY, INTERGRANULAR, MOLDIC,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%;
OTHER FEATURES: CALCAREOUS, WEATHERED, LOW RECRYSTALLIZATION, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS, WORM TRACES;

494.9- 495.3 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 05% POROSITY, INTERCRYSTALLINE, FRACTURE,
LOW PERMEABILITY; 0-10% ALTERED; ANHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED,
ACCESSORY MINERALS: HEAVY MINERALS-01%;
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

495.3- 498.5 38% RECOVERY 493.5-498.5

498.5- 498.6 DOLOSTONE; DARK GRAYISH YELLOW TO YELLOWISH GRAY; 10% POROSITY, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; ANHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
MODERATE INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED,
OTHER FEATURES: CALCAREOUS, MEDIUM RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

498.6- 500.2 DOLOSTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 10% POROSITY, INTERCRYSTALLINE, FRACTURE,
VUGULAR; 10-50% ALTERED; SUBHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION, SUCROSIC;
FOSSILS: MOLLUSKS, FOSSIL MOLDS, BENTHIC FORAMINIFERA;

500.2- 503.5 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 05% POROSITY, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; SUBHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-01%, MANGANESE OXIDE-01%;
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;
78% RECOVERY 498.5-503.5

503.5- 508.5 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 05% POROSITY, INTERCRYSTALLINE,
LOW PERMEABILITY; 10-50% ALTERED; SUBHEDRAL;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO GRANULE; GOOD INDURATION;
CEMENT TYPE(S): DOLOMITE CEMENT;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-01%, MANGANESE OXIDE-01%;
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION;
FOSSILS: NO FOSSILS;

508.5- 509.2 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 0R% POROSITY, INTERCRYSTALLINE,
LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE;
GOOD INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
ACCESSORY MINERALS: CLAY-15%, DOLOMITE-02%;
OTHER FEATURES: CALCAREOUS, DOLOMITIC, CHALKY, WEATHERED;
FOSSILS: FOSSIL MOLDS;

509.2- 513.5 CLAY; OLIVE GRAY TO DARK GREENISH GRAY; 05% POROSITY, FRACTURE, LOW PERMEABILITY;
MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE, STREAKED,
OTHER FEATURES: CALCAREOUS, VARIEGATED;
FOSSILS: ORGANICS;
20% RECOVERY 508.5-513.5

513.5- 518.5 CALCARENITE; YELLOWISH GRAY TO LIGHT GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; POOR INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CALCITE-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, COQUINA;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS, WORM TRACES, BRYOZOA;
17% RECOVERY

518.5- 523.5 LIMESTONE; LIGHT GRAY; 15% POROSITY, INTERGRANULAR, VUGULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CALCITE-01%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, BRYOZOA, FOSSIL FRAGMENTS, FOSSIL MOLDS, ECHINOID;
SEVERAL CALCARENITE-FILLED VUGS; 23% RECOVERY 518.5-523.5

523.5- 528.5 LIMESTONE; VERY LIGHT ORANGE; 15% POROSITY, INTERCRYSTALLINE, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: MICROCRYSTALLINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: ANHYDRITE- %;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
30% RECOVERY 523.5-528.5

528.5- 533.5 CALCARENITE; VERY LIGHT ORANGE TO LIGHT GRAY; 15% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-03%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
10% RECOVERY 528.5-533.5

533.5- 543.5 CALCARENITE; VERY LIGHT ORANGE; 18% POROSITY, INTERGRANULAR, PIN POINT VUGS, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, SUCROSIC, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, ECHINOID, FOSSIL FRAGMENTS;
LEPIDOCYCLINA PRESENT; 44% RECOVERY 538.5-543.5

543.5- 548.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, PIN POINT VUGS, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE, BIOGENIC;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, SUCROSIC, MEDIUM RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, ECHINOID, FOSSIL FRAGMENTS;
60% RECOVERY 543.5-548.5

548.5- 553.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, SUCROSIC;
FOSSILS: MOLLUSKS, ECHINOID, CORAL, FOSSIL FRAGMENTS, BRYOZOA;
60% RECOVERY 548.5-553.5

553.5- 558.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, FRACTURE,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
ACCESSORY MINERALS: DOLOMITE- %;
OTHER FEATURES: COQUINA, CALCAREOUS;
FOSSILS: MOLLUSKS, ECHINOID, CORAL, FOSSIL FRAGMENTS, FOSSIL MOLDS;
71% RECOVERY 553.5-558.5

558.5- 563.5 CLAY; VERY LIGHT ORANGE; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: LIMESTONE-40%;
OTHER FEATURES: CALCAREOUS, PLASTIC, CHALKY;
FOSSILS: NO FOSSILS;
50% RECOVERY 558.5-563.5, LIMESTONE GRAVEL IN CLAY/CALCARENITE

563.5- 568.5 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, CALCITE-02%;
OTHER FEATURES: CALCAREOUS, WEATHERED, CHALKY;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS;
ABUNDANT OPERCULINOIDES, LEPIDOCYCLINA 43% RECOVERY 563.5-568.5

568.5- 573.5 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, CALCITE-02%;
OTHER FEATURES: CALCAREOUS, WEATHERED, CHALKY;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS;

573.5- 573.5 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%, CALCITE-02%;
OTHER FEATURES: CALCAREOUS, WEATHERED, CHALKY;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS;

573.5- 578.5 CALCARENITE; VERY LIGHT ORANGE; 18% POROSITY, INTERGRANULAR, PIN POINT VUGS,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS;
60% RECOVERY 573.5-578.5

578.5- 583.5 CALCARENITE; VERY LIGHT ORANGE; 15% POROSITY, INTERGRANULAR, PIN POINT VUGS,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;
20% RECOVERY 578.5-583.5

583.5- 588.5 CALCARENITE; VERY LIGHT ORANGE; 15% POROSITY, INTERGRANULAR, PIN POINT VUGS,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;
15% RECOVERY 583.5-588.5

588.5- 593.5 CLAY; VERY LIGHT ORANGE TO YELLOWISH GRAY; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
OTHER FEATURES: CALCAREOUS;
FOSSILS: FOSSIL FRAGMENTS;

593.5- 593.5 CLAY; VERY LIGHT ORANGE TO YELLOWISH GRAY; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
OTHER FEATURES: CALCAREOUS;
FOSSILS: FOSSIL FRAGMENTS;
ABUNDANT LIMESTONE IN CLAY MATRIX GRADING TO PURE CLAY

593.5- 598.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 20% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, CALCITE-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS;

65% RECOVERY 593.5-598.5; OPERC.,GASTOPOD & PELECYPOD MOLDS

598.5- 603.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 22% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-07%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION, MEDIUM RECRYSTALLIZATION, FROSTED, POOR SAMPLE;
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS;
OPERCULINOIDES, LEPIDOCYCLINA

603.5- 608.5 CLAY; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
OTHER FEATURES: PLASTIC, CALCAREOUS;
FOSSILS: NO FOSSILS, ORGANICS;
63% RECOVERY 603.5-608.5

608.5- 610.5 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL MOLDS, ECHINOID;

610.5- 611.4 CLAY; YELLOWISH GRAY TO LIGHT OLIVE GRAY; NOT OBSERVED; POOR INDURATION;
SEDIMENTARY STRUCTURES: GRADED BEDDING,
OTHER FEATURES: CALCAREOUS, PLASTIC;
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID;

611.4- 613.5 CLAY MATRIX WITH UNCONSOLIDATED CALCARENITE; OPERC. & LEPIDO. 38% RECOVERY 608.5-613.5

613.5- 618.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 25% POROSITY, INTERGRANULAR,
PIN POINT VUGS, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;
10% RECOVERY 613.5-618.5

618.5- 619.3 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;

619.3- 619.4 CLAY; MODERATE RED; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
OTHER FEATURES: CALCAREOUS, PLASTIC;
FOSSILS: NO FOSSILS;

619.4- 619.5 CALCARENITE; VERY LIGHT ORANGE; 25% POROSITY, INTERGRANULAR, VUGULAR,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;

619.5- 619.6 CLAY; VERY LIGHT ORANGE; NOT OBSERVED; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
OTHER FEATURES: CALCAREOUS, PLASTIC;
FOSSILS: NO FOSSILS;

619.6- 623.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, PIN POINT VUGS,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, SUCROSIC;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS;
85% RECOVERY 618.5-623.5; OPERCULINOIDES AND LEPIDOCYCLINA

623.5- 628.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS;
44% RECOVERY 623.5-628.5

628.5- 633.5 CALCARENITE; VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, PIN POINT VUGS,
LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID;
44% RECOVERY 628.5-633.5

633.5- 643.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 25% POROSITY, INTERGRANULAR, MOLDIC,
POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS, LOW RECRYSTALLIZATION;
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS;
15% RECOVERY 633.5-643.5

643.5- 663.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY; 30% POROSITY, INTERGRANULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT;
SEDIMENTARY STRUCTURES: BEDDED, BIOTURBATED,
ACCESSORY MINERALS: CLAY-05%, SPAR-01%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BRACHIOPOD, ECHINOID, FOSSIL MOLDS;
AVERAGE 25% RECOVERY FROM 643.5-663.5; HOMOGENEOUS LIMESTONE

663.5- 668 CALCARENITE; YELLOWISH GRAY TO GRAYISH BROWN; 25% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE; UNCONSOLIDATED;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-12%;
OTHER FEATURES: CALCAREOUS, GRANULAR, LOW RECRYSTALLIZATION;
FOSSILS: MOLLUSKS, BRACHIOPOD, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, FOSSIL MOLDS;
SAMPLE WAS MIXED IN CORING BARREL

668 - 668.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 20% POROSITY, INTERGRANULAR, PIN POINT VUGS, LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
SEDIMENTARY STRUCTURES: INTERBEDDED,
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: CALCAREOUS;
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;

668.5- 673.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 30% POROSITY, INTERGRANULAR, PIN POINT VUGS, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
SEDIMENTARY STRUCTURES: BEDDED,
ACCESSORY MINERALS: CLAY-05%;
OTHER FEATURES: CALCAREOUS, GRANULAR;
FOSSILS: ECHINOID, MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS;
55% RECOVERY 668.5-673.5

673.5- 677.5 0% RECOVERY 673.5-677.5 DRILL HOLE TERMINATED DUE TO QUALITY OF HOLE CONDITIONS

677.5 TOTAL DEPTH