Hydrogeology, Water Quality, and Well Construction at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

Southwest Florida Water Management District
Geohydrologic Data Section

November 2016

Cover Photo: Permanent monitor wells at the ROMP 117 – Lake Okahumpka Well Site in Sumter County, Florida. Photograph of completed well site taken by Julia Zydek on August 4, 2015.

Hydrogeology, Water Quality, and Well Construction at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

By James M. Clayton, P.G.

November 2016

Southwest Florida Water Management District
Geohydrologic Data Section

Southwest Florida Water Management District

Operations, Lands and Resource Monitoring Division
Ken Frink, P.E., Director

Data Collection Bureau
Roberta Starks, Chief

Geohydrologic Data Section
Sandie Will P.G., Manager

Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899

For ordering information:

World Wide Web: http://www.watermatters.org/documents

Telephone: 1-800-423-1476

For more information on the Southwest Florida Water Management District and its mission to manage and protect water and related resources:

World Wide Web: http://www.watermatters.org

Telephone: 1-800-423-1476

Suggested citation:
Clayton, J.M., 2016, Hydrogeology, Water Quality, and Well Construction at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, FL; Southwest Florida Water Management District, 335 p.

The hydrogeologic evaluations and interpretations contained in *Hydrogeology, Water Quality, and Well Construction at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida* have been prepared by or approved by a licensed Professional Geologist in the State of Florida, in accordance with Chapter 492, Florida Statutes.

James M. Clayton

JAMES M. CLAYTON LICENSE No. PG381 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

James M. Clayton
Professional Geologist
State of Florida License No. P.G. 381

Date: 10/31/2016

Foreword

The Geohydrologic Data Section administers the Regional Observation and Monitor-well Program (ROMP) at the Southwest Florida Water Management District (District). The ROMP was started in 1974 in response to the need for hydrogeologic information by the District. The focus of the ROMP is to quantify the flow characteristics and water quality of the groundwater systems that serve as the primary source of water supply within southwest Florida. The original design of the ROMP consisted of a 10-mile grid network composed of 122 well sites and a coastal transect network composed of 24 coastal monitor transects of two to three well sites each. The number of wells at a well site varies with specific regional needs; usually two to five permanent monitor wells are constructed at each site. The numbering system for both networks generally increase from south to north with ROMP-labeled wells representing the inland grid network and TR-labeled wells representing the coastal transect network.

The ROMP networks have been the primary means for data collection; however, in recent years, changing District directives have created the need for more project-specific data collection networks outside the original two well networks for various programs throughout the District. The broad objectives at each well site are to determine the geology, hydrology, water quality, and hydraulic properties, and to install wells for long-term monitoring, depending on the goal of each project. Site activities include coring, testing, and well construction. These activities provide data for the hydrogeologic and groundwater quality characterization of the well sites. These characterizations are used to ensure the monitor wells are properly designed. At the completion of each well site, a summary report is generated and can be found at the District's website at www.watermatters.org/data. The monitor wells form the backbone of the District's long-term aquifer monitoring networks, which supply critical data for the District's regional models and hydrologic conditions reporting.

Sandie Will

Manager

Contents

Figures

Tables

Conversion Factors and Datums

Multiply	By	To obtain
	Length	
inch (in)	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	0.004047	square kilometer (km^2)
square foot (ft^2)	0.09290	square meter (m^2)
square mile (mi^2)	2.590	square kilometer (km^2)
	Volume	
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m^2)
cubic foot (ft^3)	0.02832	cubic meter (m^3)
	Flow Rate	
foot per day (ft/d)	0.3048	meters per day (m/d)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per day (ft^3/d)	0.02832	cubic meter per day (m^3/d)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
	Pressure	
atmosphere, standard (atm)	101.3	kilopascal (kPa)
bar	100	kilopascal (kPa)
	Transmissivity*	
foot squared per day (ft^2/d)	0.09290	meter squared per day (m^2/d)
	Temperature	
Celsius (°C)	°F = (1.8 x °C) + 32	Fahrenheit (°F)
Fahrenheit (°F)	°C = (°F – 32) / 1.8	Celsius (°C)

Vertical Coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD) and the National Geodetic Vertical Datum of 1929 (NGVD). The vertical conversion from NGVD to NAVD is -0.90 ft at the ROMP 117 site. (NAVD = NGVD - 0.90 ft)

Elevation, as used in this report, refers to distance above the vertical datum.

*Transmissivity: The standard unit for Transmissivity (T) is cubic feet per day per square foot times feet of aquifer thickness [(ft^3/day)/ft^2]ft. In this report, the mathematically reduced form, feet squared per day (ft^2/day), is used for convenience.

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 ^{o}C)

Concentrations of chemical constituents in water are given in milligrams per liter (mg/L).

Abbreviations and Acronyms

%	percent
° ’ ”	degrees minutes seconds
°C	degrees Celsius
µg/L	micrograms per liter
µS/cm	microSiemens per centimeter
access.	accessory
als	above land surface
APT	aquifer performance test
AVE	avenue
aq	aquifer
bls	below land surface
Ca^{2+}	calcium
$CaCO_3$	calcium carbonate or limestone
CH	core hole
Cl^{1-}	chloride
CME	Central Mine Equipment
CO_3^{2-}	carbonate
cond.	conductance
CPS	counts per second
D	degrees
DEG F	degrees Fahrenheit
District	Southwest Florida Water Management District
Diversified	Diversified Drilling Corporation
EPA	U.S. Environmental Protection Agency
FAS	Floridan aquifer system
Fe^{2+}	iron
FGS	Florida Geological Survey
fig.	figure
FIPS	Federal Information Processing Standards
Fm	formation
ft	feet
ft/day	feet per day
ft^2/day	square feet per day
GAM	gamma
gpm	gallons per minute
Grosch	Grosch Drilling and Irrigation
H_2CO^3	carbonic acid
HARN	High Accuracy Reference Network
HQ	3-inch temporary steel casing
Huss	Huss Drilling, Inc.
HW	4-inch temporary steel casing
K	hydraulic conductivity

Abbreviations and Acronyms Continued

K^{1+}	potassium
KGS	Kansas Geological Survey
L	Lower
L FLDN AQ	Lower Floridan Aquifer
LAT	latitude
LFA	lower Floridan aquifer
LON	longitude
Ls	limestone
M	minutes
MCU I	middle confining unit I
MCU II	middle confining unit II
meq/L	milliequivalents per liter
mg/L	milligrams per liter
Mg^{2+}	magnesium
ml	milliliter
NA	not applicable
Na^{1+}	sodium
NAD	North American Datum
NAVD	North American Vertical Datum of 1988
NDWRAP	Northern District Water Resources Assessment Project
NGVD	National Geodetic Vertical Datum of 1929
NM	no measurement
No.	number
NQ	3-inch core rods
NRQ	3-inch core rods
OB	observation
OHM-M	ohm meter
P.G.	Professional Geologist
perm	permeable
pH	hydrogen ion concentration
PVC	polyvinyl chloride
PW	production well
RES	resistance
RES (16N)	short normal resistivity
RES (64N)	long normal resistivity
ROMP	Regional Observation and Monitor-well Program
S	seconds
SCH	schedule
Schultes	A. C. Schultes of Florida
SDR	standard dimension ratio
Si	silicon
SID	site identification

Abbreviations and Acronyms Continued

SiO_2	silicon dioxide
SO_4^{2-}	sulfate
Sp. Cond.	specific conductance
Sr^{2+}	strontium
ST	slug test
SU	standard units
SURF AQ	surficial aquifer
SW	southwest
TD	total depth
TDS	total dissolved solids
TEMP	temperature
TPKE	turnpike
U	Upper
U FLDN AQ	Upper Floridan aquifer
UDR	Universal Drill Rig
UFA	Upper Floridan aquifer
undiff	undifferentiated
US HWY	United States Highway
W	west
WL	water level
WMIS	Water Management Information System
WQ	water quality
WQMP	Water Quality Monitoring Program

Hydrogeology, Water Quality, and Well Construction at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

By James M. Clayton, P.G.

Introduction

The Southwest Florida Water Management District's (District) Regional Observation and Monitor-well Program (ROMP) completed a hydrogeologic investigation on a site in northeast Sumter County named ROMP 117 – Lake Okahumpka. The ROMP 117 – Lake Okahumpka (herein referred to as ROMP 117) well site is part of the ROMP 10-mile grid network, the Northern District Water Resources Assessment Project (NDWRAP) (Basso, 2007), and the Northern Sumter County Data Collection Project (Basso, 2008). The ROMP 117 well site was acquired by the SWFWMD from Sumter County. The investigation was designed to delineate the hydrogeologic framework in the area of the well site by characterizing all subsurface aquifers and confining units, which include the surficial aquifer, the confining unit between the surficial aquifer and the Upper Florida aquifer, the Upper Floridan aquifer, middle confining unit I, and the Lower Floridan aquifer below middle confining unit I. This report will summarize data collection, well construction, and hydraulic testing at the ROMP 117 well site.

Exploratory core drilling, hydraulic testing, and monitor well construction were accomplished in several phases. Phase one included exploratory core drilling with the District-owned Central Mine Equipment (CME) 85 core drilling rig and collection of hydraulic (slug tests and water levels) and hydrogeologic data. Phase two included contractor construction of all permanent and observation wells. Phase three included deep exploratory core drilling out the bottom of the Lower Floridan aquifer monitor well, whereas; phase four included aquifer performance testing of the Upper and Lower Floridan aquifers. Phase five included lining the permanent Upper and Lower Floridan aquifer production/monitor wells with 6-inch polyvinyl chloride (PVC) casing and abandonment of the temporary dual zone (Upper and Lower Floridan aquifers) observation well. Data collected during all phases are presented in this report.

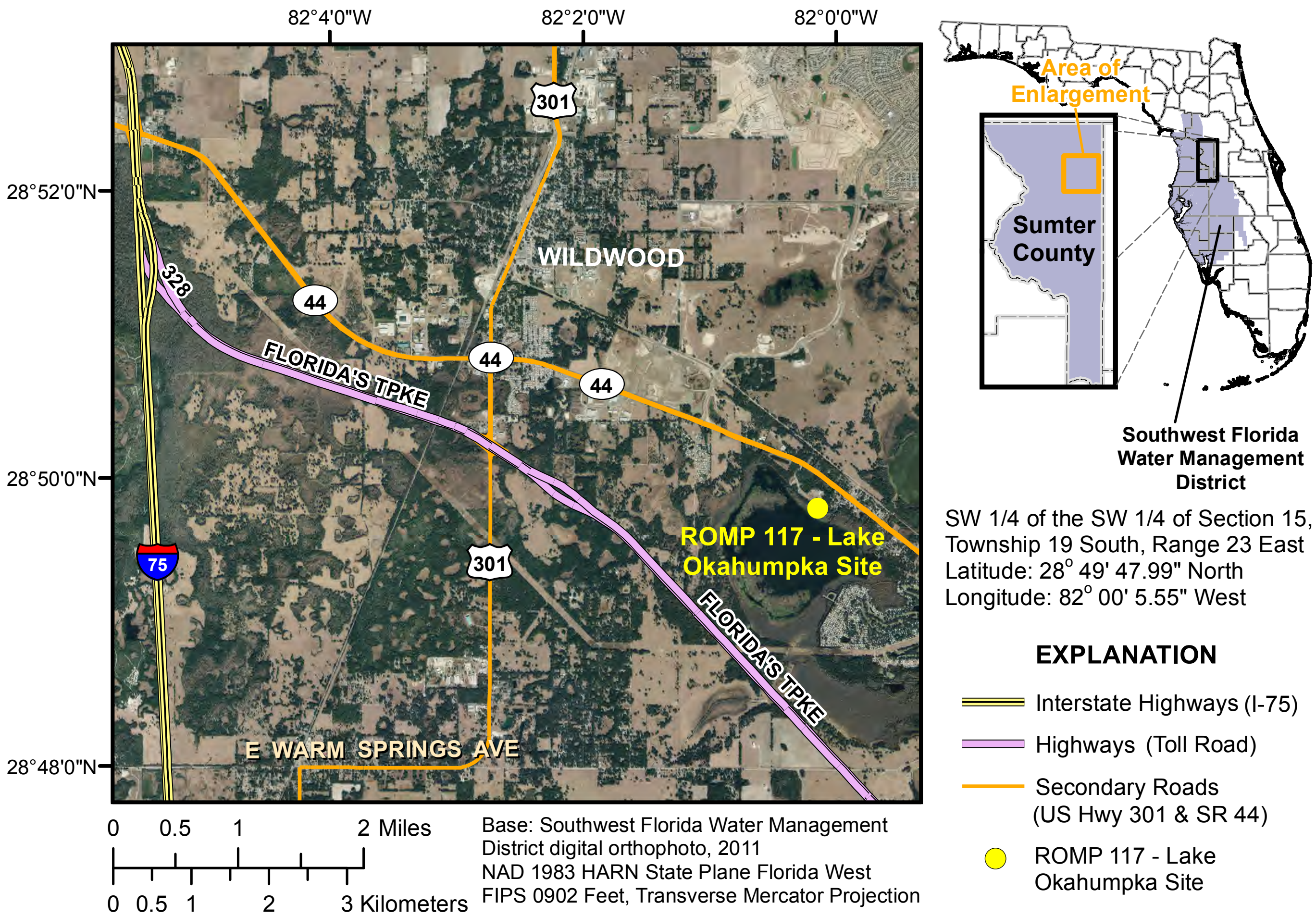
Acknowledgements

The Southwest Florida Water Management District would like to express sincere appreciation to Sumter County and the Sumter County Commission for conveying this out-parcel of Lake Okahumpka Park to the Southwest Florida Water Management District so that it may be used to further the District's goal of monitoring and managing the water resources in all potable aquifers on site. This information will be combined with regional data to help manage the water resources in northern Sumter County.

Site Location

The ROMP 117 well site is located in northeast Sumter County approximately three miles southeast of the town of Wildwood within Sumter County's Lake Okahumpka Park (fig. 1). The site lies within the southwest quarter of the southwest quarter of Section 15, Township 19 South, Range 23 East at latitude 28°49' 47.99" North, longitude 82°00' 05.55" West. Land surface elevation at the location of core hole 1 (COREHOLE 1) is 62.17 feet above the North American Vertical Datum of 1988 (NAVD), whereas; land surface of the permanent easement is 60.59 ft NAVD. The ROMP 117 well site can be located by traveling approximately 6.6 miles east from Interstate-75 on State Road 44, crossing over US 301 and turning south on County Road 171 after passing the entrance to Lake Okahumpka Park. The gated entrance to the ingress/egress easement of the site is approximately 450 feet south of State Road 44 at the end of County Road 171. The site consists of a 50-foot wide ingress/egress easement, a perpetual easement measuring 20 by 80 feet, and a temporary construction easement that measures 125 by 300 feet (fig. 2). The District identifies the 20 by 80 foot perpetual easement as parcel number 19-020-028.

The site is situated on the northwestern edge of the Lake Harris Cross Valley which connects the Western Valley to the Central Valley within the Central Highlands region of the Midpeninsular physiographic zone of Florida (White, 1970). The elevation of this area suggests surface sediments were deposited during the Sangamon interglacial period of the Pleistocene epoch as part of the Penholoway Terrace or its related shoreline (Cooke, 1945; Healy, 1975). The Lake Harris Cross Valley, which separates the Lake Upland from the Sumter Upland, is approximately 8 to 10 miles long (east to west), 3 to 5 miles wide (north to south), and is characterized



[AVE, Avenue; E, east; FIPS, Federal Information Processing Standards; HARN, High Accuracy Reference Network; I-75, Interstate-75; N, north; NAD, North American Datum; ROMP, Regional Observation and Monitor-well Program; S, south; SR, State Road; SW, southwest; TPKE, Turnpike; US Hwy, United States Highway; W, west; º, degrees; ‘, minutes; “, seconds]

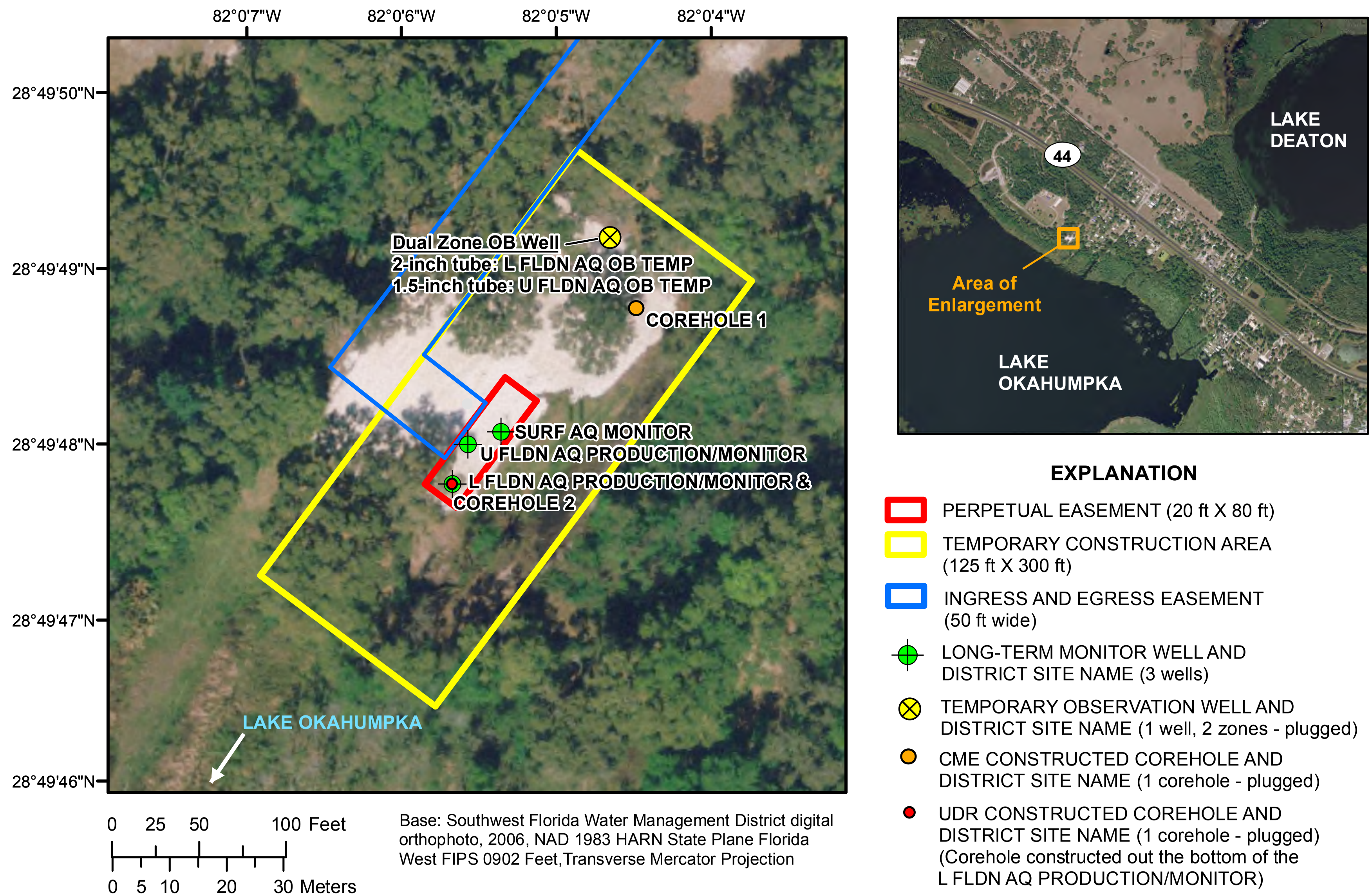
Figure 1. Location Map of the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

by swampy terrain with small differences in elevation (Simonds, 1980). Drainage in the valley is dominated by a series of lakes and their associated swamps, suggesting the drainage at the ROMP 117 well site is connected with that of Lake Okahumpka whose open waters lay approximately 400 feet southwest of the perpetual easement, although the littoral zone (shallow, submerged, nearshore area of the lake where plants abound) is first encountered approximately 50 feet southwest of the perpetual easement.

Methods

The overall objective of the data collection effort was to identify and characterize the hydrogeologic system present at the ROMP 117 well site. This was accomplished by the following program of exploratory core drilling, testing, and data analysis. Data collected during all exploratory drilling and testing activities, monitor-well construction, and aquifer performance testing at the ROMP 117 well site are presented in this report. Exploratory core drilling and testing include continuous core collection, lithologic description, monitoring airlift discharge, water quality analysis, monitoring water level fluctuations, and hydraulic testing.

The District collected the majority of the hydrogeologic data during the exploratory core drilling and testing phase of the project while utilizing the District-owned CME 85 core drilling rig and crew to collect core samples from land surface to 1,500 feet below land surface (bls). The District-owned Universal Drill Rig (UDR) 200DLS core drilling rig and crew were used to collect core samples from 1,500 to 2,037 feet bls. High-quality lithologic core samples were collected during the coring operation, whereas hydraulic and water quality data were collected primarily during packer testing. Additional water level data were collected prior to initiating daily coring operations and additional water quality data were collected between core runs when the core hole was airlifted to remove



[AQ, aquifer; CME, Central Mine Equipment; FLDN, Floridan; ft, feet; L, Lower; N, north; OB, observation; SURF, surficial; TEMP, temporary; U, Upper; UDR, Universal Drill Rigs; W, west]

Figure 2. Layout of the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

drill cuttings prior to adding additional core rods to advance the core hole. These additional water level and water quality data were collected from the composite core hole (the entire open interval) as a packer was not generally set during this data collection. Geophysical logging was conducted in both core holes, providing additional hydrogeologic data. After well construction, an aquifer performance test (APT) was conducted on each of the major aquifers encountered at the site, which include the Upper Floridan aquifer (UFA) and the Lower Floridan aquifer (LFA) below middle confining unit I (MCU I). A detailed description of ROMP data collection methods can be found in appendix A. Temporal data collected from this site are available online from the District's Water Management Information System (WMIS) within the ROMP 117 – Lake Okahumpka portfolio or by searching the District's site name "ROMP 117." Available data types include water level, water quality, aquifer performance testing, stratigraphy, geophysical logs, and well construction.

Well Construction

Core holes 1 and 2 were constructed by the District. The CME 85 core drilling rig and staff were used to collect lithologic samples from land surface to 1,500 feet bls from August 30, 2006 to May 15, 2007 (appendix B, fig. B1). During the coring operation for COREHOLE 1, an attempt was made to advance the 4-inch HW temporary steel casing from 201 to approximately 600 feet bls an effort to isolate the UFA from the LFA. This attempt left a 130-foot length of HW casing stuck in the core hole from 148 to 278 feet bls (appendix B, fig. B1). Fortunately, the position of the HW casing permitted continued coring and 3-inch HQ temporary steel casing was set through the HW casing to 601 feet bls and coring continued to 1,500 feet bls. COREHOLE 1 was plugged and abandoned with the CME 85 core drilling rig and crew from May 21 to 31, 2007. Core hole 2 (COREHOLE 2) was constructed out the bottom of the previously constructed Lower Floridan aquifer production/monitor well (L FLDN AQ PRODUCTION/MONITOR) from 1,466 to 2,037 feet bls using the UDR 200DLS core drilling rig from October 27, 2007 to May 13, 2008 (appendix B, fig. B2). COREHOLE 2 was terminated at 2,037 feet bls due to the crumbly core being recovered, which often broke up into rubble that would frequently get lodged in the core rods. This would cause hours to sometimes days of difficulty. CORE-HOLE 2 was plugged utilizing the UDR 200DLS core drilling rig and crew from May 13 to June 16, 2009.

Geophysical logs were collected several times during the coring operation of COREHOLE 1 (appendix C), typically at casing advancement/placement points. At a depth of 740 feet bls, gamma and caliper logs were run prior to reaming the hole to advance the 4-inch HW casing to approximately 600 feet bls to isolate the UFA from the LFA. The core hole was obstructed at 278 feet bls, probably due to rock debris from the 3-foot cavity from 271.5 to 274.5 feet bls (appendix C, fig. C6) that was noted as a bit drop during coring. Three casing points that verify contractor casing placement are also represented in several of the COREHOLE 1 geopyhsical logs. Sixteen-inch polyvinyl chloride (PVC) casing set at 85 feet bls is shown in appendix C, figure C1; 4-inch HW casing set at 201 feet bls is illustrated in appendix C1, figures C2 and C3; and temporary 3-inch HQ casing set at 601 feet bls is shown in appendix C, figure C5. The gamma curves on all of the logs presented in appendix C show elevated gamma counts from approximately 185 to 360 feet bls that are indicative of organic laminations, organic lenses, and thin clays in the top of the Avon Park dolostones.

Geophysical logs from COREHOLE 2 (appendix C) were somewhat difficult to obtain due to unstable core hole conditions, which required geophysical tools to be run through various lengths of NRQ core rods to avoid treacherous areas in the core hole. The interval from approximately 1,700 to 1,730 feet bls was a problematic portion of the core hole due to the crumbly, fractured nature of the formation. Logging through and out the bottom of the NRQ core rods allowed this portion of the core hole to be bypassed, thereby reducing the risk of tool damage or loss. It also required that the smaller diameter geophysical tools be used since they were the only tools that would fit in the NRQ core rods and through the core bit. These geophysical tools include the slim-line electric probe that produces three curves: the gamma, spontaneous potential, and single-point resistance curves; and the gamma/caliper probe that produces only those two curves. The gamma/caliper probe was run through the core rods but, due to an obstruction, failed to penetrate any deeper than 1,855 feet bls. The slim-line electric probe, however, did pass through the obstruction at 1,855 feet bls and logged to a depth of 2,027 feet bls.

Appendix C, figures C7 and C8 show the gamma/caliper logs collected from approximately 1,410 to 1,855 feet bls in COREHOLE 2 with the interval from approximately 1,700 to 1,730 feet bls being bypassed by the caliper. The electric logs (appendix C, figs. C9 and C10) essentially logged through and bypassed the same interval, however, the obstruction at approximately 1,855 feet bls was not encountered. Therefore, the total depth of logging for this tool was 2,027 feet bls. Only gamma radiation can be recorded through the NRQ core rods, but it is muted by the steel rods. The gamma curves from these logs show relatively low gamma counts, with the highest being only 65 counts per second (cps) at about 1,804 feet bls. The majority of elevated gamma counts in these logs are caused by accessory organics (flecks, laminae, plant remains, and thin organic clays). The caliper logs show that the core hole remained very close to gauge except where fractures, sucrosic dolostones, or friable limestones were encountered and allowed or induced to wash out during coring. This is most obvious on the caliper log (appendix C, fig. C7) from about 1,660 to 1,700 feet bls where hole size varies from approximately 3 to 7.5 inches. It is presumed that the interval that was shielded by the NRQ core rods during logging (approximately 1,700 to 1,730 feet bls) would be equally if not more fractured and unstable than the interval from 1,660 to 1,700 feet bls. The electric log curves (spontaneous potential and single-point resistance) from appendix C, figure C9 show a distinct change in profile at about 1,540 feet bls as depth increases where the spontaneous potential decreases to negative millivolts and the single-point resistance curve increases from approximately 350 to 875 ohms. This is indicative of a more electrically resistive formation that coincides with a formation material change from limestone (packstone) to dense, crystalline dolostone as depth increases.

A total of one temporary well and three permanent wells were constructed by contractors at the ROMP 117 well site (figure 2). Well construction, including lining pumped wells and abandoning the temporary dual zone observation well, was completed in four phases and a total of four contractors were utilized. Phase one was accomplished by Diversified Drilling Corporation (Diversified), phase two utilized Grosch Drilling and Irrigation Company (Grosch), phase three utilized Huss Drilling, Inc. (Huss), and phase four was accomplished by A. C. Schultes of Florida (Schultes).

Phase one began with Diversified constructing the Upper Floridan aquifer observation well (U FLDN AQ OB TEMP) and the Lower Floridan aquifer observation well (L FLDN AQ OB TEMP), a dual zone monitor, from February 4 to March 31, 2008. The weathered Ocala Limestone from 90 to 192.5 feet bls created dredging problems, which forced temporary 8-inch steel casing to be set from 2 feet above land surface (als) to 222 feet bls (appendix B, fig. B3). This temporary casing was removed as the Upper Floridan aquifer interval (74 to 352 feet bls) was gravel packed.

The gamma and caliper logs collected from the dual zone observation well prior to installation of the PVC casing (appendix C, fig. C11) show the temporary 8-inch steel casing set at 222 feet bls as well as high gamma counts (over 200 cps) from 600 to 607 feet bls caused by abundant organic inclusions and laminations and from 963 to 967 feet bls caused by a lignite seam and abundant organic laminations. The caliper curve also confirms the previously mentioned cavity in COREHOLE 1 from 271.5 to 274.5 feet bls. Toward the end of this construction and due to the friable nature of the weathered Ocala Limestone encountered during construction of the dual zone well, Grosch was brought in to set 224 feet of 22-inch steel casing for the L FLDN AQ PRODUCTION/MONITOR from March 25 to March 29, 2008, and 224 feet of 14-inch steel casing for the U FLDN AQ PRODUCTION/MONITOR from March 29 to March 31, 2008 as phase two of drilling utilizing the dual rotary method of drilling. The dual rotary method of drilling has a lower and an upper rotary drive. The lower rotary drive can impart pulldown, pullback, and rotational forces to the well casing, while the upper rotary drive handles the inner drill string that can drill through the casing. Since the rotary drives can be operated independently of each other, the drill string and casing can be rotated in the same or opposite direction with the drill bit ahead of or within the casing. This method allowed the casing to be easily set through the friable material of the Ocala Limestone. Diversified, in a continuation of phase one drilling, completed the L FLDN AQ PRODUCTION/MONITOR (appendix B, fig. B4) and the U FLDN AQ PRODUCTION/MONITOR (appendix B, fig. B5) through the casings that Grosch set. Phase three of well construction occurred between August 10 and August 12, 2009, using Huss to construct the surficial aquifer monitor well (SURF AQ MONITOR) (appendix B, fig. B6). No surficial aquifer observation (OB) well was constructed. Phase four included lining the L FLDN AQ PRODUCTION/MONI-TOR (appendix B, fig. B7) and the U FLDN AQ PRODUC-TION/MONITOR (appendix B, fig. B8) with 6-inch PVC casing and then plugging and abandoning the dual zone well by Schultes, which occurred between March 28 and April 14, 2011 after all aquifer testing had been completed.

Geology

Geology of this site was described from continuous core collected from COREHOLE 1 (land surface to 1,500 feet bls) and COREHOLE 2 (1,466 to 2,037 feet bls). Refer to figure 2 for the location of both core holes. Holocene to late Paleocene age material was cored, described, photographed, and archived at the Florida Geological Survey (FGS) in Tallahassee, Florida. Appendix D presents lithologic descriptions for all exploratory core drilling; appendix D1 from COREHOLE 1 and appendix D2 from COREHOLE 2. Appendix E provides digital photographs of all recovered core in core boxes; appendix E1 from COREHOLE 1 and appendix E2 from COREHOLE 2. Figure 3 presents the hydrogeology at the ROMP 117 well site. It should be noted that appendix D is the result of the FGS description of the archived core samples. These core samples had been archived for approximately three years prior to FGS description. This allowed for the desiccation of interstitial clays, which made an accurate estimation of the percentage of interstitial clay almost impossible.

The geologic units underlying the study area, in ascending order (oldest to youngest), are the Cedar Keys Formation, Oldsmar Formation, Avon Park Formation, Ocala Limestone, and the undifferentiated sand and clay deposits.

Cedar Keys Formation (Late Paleocene)

The late Paleocene age Cedar Keys Formation was encountered from 1,737.5 to 2,037 feet bls, the total depth of coring at the ROMP 117 well site. The contact between the Cedar Keys and Oldsmar Formations is disconformable and is identified between a dark brown, coarse grained dolostone of the Oldsmar Formation and a light cream, often fractured, coarse dolostone of the Cedar Keys Formation. There was a lack of identifiable fossils such as the foram *Borelis gunteri* that would help date the formation as Late Paleocene. It is, however, common for *Borelis gunteri* to be absent or unidentifiable in the upper portion of the formation since the dolomitization process often obliterates the fossils in the original limestone (Miller, 1986).

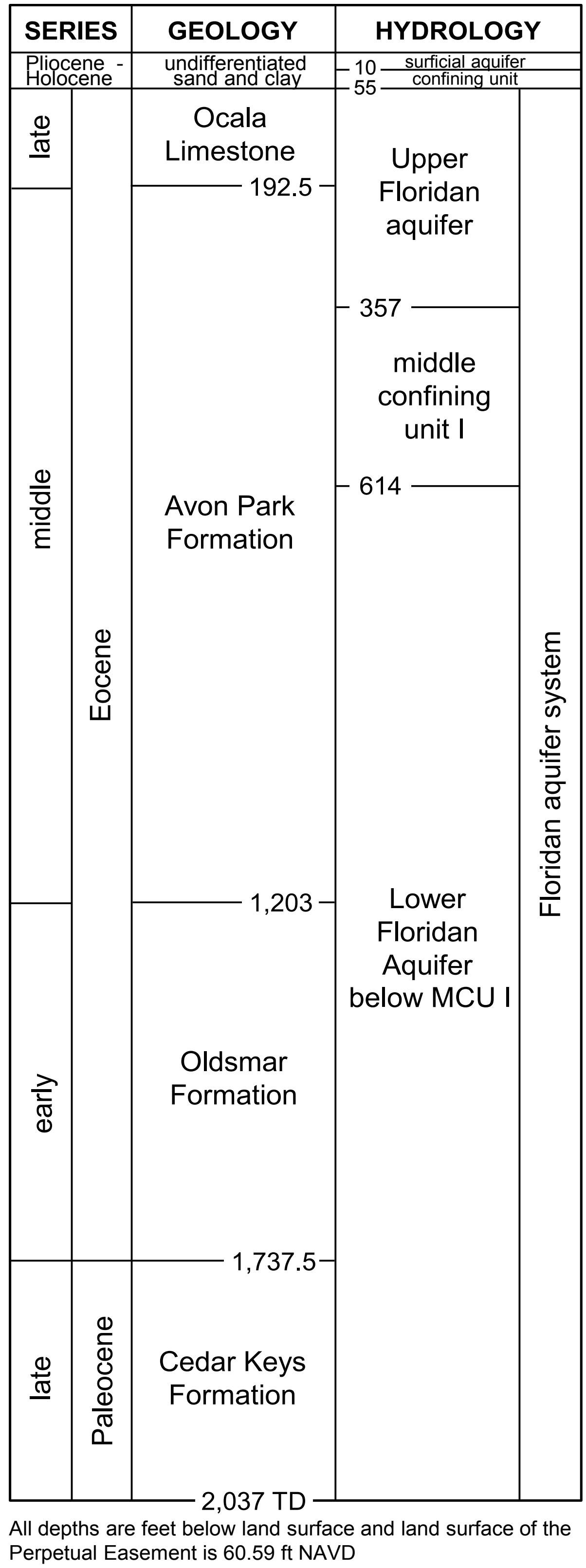
The 299.5-foot portion of the Cedar Keys Formation penetrated at this site is composed predominantly of dolostones (89.8 percent) that are light gray to olive gray to gray brown to yellow brown, moderately to well indurated, micro to finely crystalline with abundant accessory organic laminations and minor amounts of accessory pyrite, chert, and clay. The remainder of the Cedar Keys Formation is composed of limestone (9.4 percent) and clay (0.8 percent). The 9.4 percent limestone is further divided into 5.0 percent wackestone, 2.9 percent undifferentiated limestone, 1.3 percent mudstone, and 0.2 percent packstone. Porosity within the Cedar Keys Formation is quite variable; from less than 5 percent intercrystalline to 15 to 20 percent intercrystalline and intergranular to 20 to 40 percent vugular and fracture. Fossils observed within the Cedar Keys Formation include mollusks and echinoid molds, bryozoa, and rare plant remains.

Oldsmar Formation (Early Eocene)

The early Eocene age Oldsmar Formation was encountered from 1,203 to 1,737.5 feet bls (fig. 3). Although the contact between the Oldsmar Formation and the overlying Avon Park Formation is possibly conformable and often difficult to recognize in west-central Florida (Arthur, 2008), it is somewhat conspicuous at the ROMP 117 well site. The contact at 1,203 feet bls is located at the base of a yellow brown, sucrosic dolostone that overlies a light gray to yellow gray to very pale brown, dolomitic wackestone with increased moldic and intergranular porosity.

Lithology of the Oldsmar Formation consists primarily of thinly to thickly interbedded fossiliferous limestones and dolostones. The dolostones often exhibit moderate fracture porosity. Limestone beds range from less than 1 foot to approximately 81 feet thick, whereas the dolostone beds range from approximately 2.5 to 181 feet thick. Limestone makes up approximately 34 percent of the Oldsmar Formation, whereas dolostone, the dominant lithology of the Oldsmar Formation, makes up approximately 66 percent (appendices D1 and D2). Clays account for less than one percent of the Oldsmar Formation lithology.

The 355 feet of Oldsmar dolostones are yellow gray to gray brown to yellow brown, moderately to well indurated with anhedral to euhedral crystallinity (predominantly subhedral) and generally range from microcrystalline to medium grained with accessory pyrite, calcite, a green clay mineral (possibly glauconite), organic laminations, and white to clear quartz crystals often found in vugs that formerly contained gypsum. Estimation of porosity within the Oldsmar dolostones ranges from 5 to 30 percent intercrystalline, fracture, moldic, vugular, intergranular and pin point vugular. The caliper log run in COREHOLE 2 (appendix C, figure C7) shows abrupt borehole size changes between 1,660 and 1,700 feet bls within the Oldsmar dolostones that are indicative of fractured



(MCU I, middle confining unit I NAVD, North American Vertical Datum of 1988; TD, total depth)

Figure 3. Hydrogeology at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

dolostones. Limestones ranged from mudstone to grainstone with packstone being dominant. Some limestones with mixed textural characteristics were classified as undifferentiated. The 34 percent limestone is further divided into packstone (15.4 percent), grainstone (7.1 percent), undifferentiated (7.1 percent), wackestone (2.9 percent), and mudstone (1.5 percent).

The 179 feet of Oldsmar Formation limestones are yellow gray to white to light olive gray to green gray, moderately to well indurated, with biogenic, skeletal, crystal, and intraclasts as grain types, fine grained to gravel sized, with calcilutite and occasional clay matrices. Accessory constituents include: brown rhombic dolomite crystals, white to clear quartz crystals in vugs formerly filled with gypsum nodules, organic laminations and specs, heavy minerals, and sparry calcite. Estimation of porosity within the Oldsmar limestones range from 5 to 25 percent intercrystalline, intergranular, moldic, pin point vugular, vugular, and fracture.

The former gypsum filled vugs that now contain white to clear quartz crystals in both dolostones and limestones of the Oldsmar Formation are common between 1,345 and 1,442 feet bls. Some loose quartz “balls” about one half to three quarters of an inch in diameter that resembled hail were observed between 1,441 and 1,442 feet bls. It was apparent that these quartz “balls” were removed from the aforementioned vugs during the coring and airlifting process.

Clays, which are a minor constituent of the Oldsmar Formation and account for a total thickness of less than 3 feet, are yellow gray to gray green to dark green gray to green black, poorly indurated with accessory limestone, calcite and silt, and fossil plant remains. These thin intermittent clay beds were encountered between 1,493 and 1,880 feet bls. Approximately 1.5 feet of these clays were organic-rich, whereas the others were not. Effective porosity in these clays is quite low.

Fossils observed in the Oldsmar Formation include the foraminifera *Helicostegina gyralis* and echinoids, mollusks, bryozoa, miliolids, plant remains, organic laminations and flecks, and fossil molds. *Helicostegina gyralis*, characteristic of, but not exclusive to, the Oldsmar Formation (Miller, 1986), are often observed in abundance near the contact with the Avon Park Formation. At the ROMP 117 site there were numerous, nondescript weathered fossil molds near the top of the Oldsmar Formation that could have been molds of the *Helicostegina gyralis*, however, only a few fossils were positively identified. *Helicostegina gyralis* was first identified during the coring operation at about 1,208 feet bls, only five feet below the top of the Oldsmar Formation.

Avon Park Formation (Middle Eocene)

The middle Eocene age Avon Park Formation extends from 192.5 to 1,203 feet bls (fig. 3). It is composed of dolostone (85.5 percent), limestone (13.6 percent), organics (0.5 percent), quartz sand (0.2 percent), and clay (0.2 percent). The 13.6 percent limestone is further divided into approximately 1 percent mudstone, 2.1 percent wackestone, 1 percent packstone, 0.5 percent grainstone and 9 percent undifferentiated limestone (appendix D1).

The dolostones, which dominate the Avon Park lithology, are gray orange to dark yellow orange to yellow gray to gray brown, poorly to well indurated with generally subhedral crystallinity, and are microcrystalline to fine to rarely coarse grained. Accessory minerals include pyrite, heavy minerals, clear and white quartz crystals in vugs and molds between 830 and 927.7 feet bls, organic flecks and laminations, and rare black chert. The aforementioned vugs with quartz crystals inside were probably formerly filled with gypsum nodules and may very well be a relic of middle confining unit II (MCU II). The interval between 830 and 927.7 feet bls does correlate well with what Miller (1986) suggested for MCU II. Due to persistent flushing with freshwater over millennia, the gypsum nodules dissolved and quartz crystals grew in the secondary porosity that developed due to the flushing. Porosity within the dolostone ranges from 5 to 30 percent moldic, intercrystalline, vugular, intergranular and fracture. A bit drop of about 3 feet from 271.5 to 274.5 feet bls in the upper Avon Park dolostones suggesting a cavity was verified with the caliper log where the short arms of the caliper opened to their fullest extent of 20 inches (appendix C, fig. C2).

The Avon Park limestones vary from mudstone to grainstone as mentioned above and are yellow gray to light gray to very light orange to dark yellow brown to gray brown, poorly to well indurated with skeletal, pellet, crystal, and biogenic grain types, microcrystalline to gravel grain size, dolomitic in part, and sometimes weathered. Accessory minerals include: calcite, pyrite, dolomite, lignite, and other organics (flecks and laminations). Porosity within these limestones range from 5 to 30 percent intergranular, moldic and intercrystalline.

Fossils identified within the Avon Park Formation include: Echinoids (*Eupatagus sp*., *Neolaganum dalli*), Forams (*Cushmania americana*, *Fabiana cubensis*, *Fabularia vaughani*, and miliolids), bryozoa, organics (flecks, laminations and plant remains), and fossil molds.

Ocala Limestone (Late Eocene)

The late Eocene age Ocala Limestone extends from 55 to 192.5 feet bls and is composed entirely of limestone with the exception of an approximate 1 foot dark brown chert lens from approximately 85 to 86 feet bls (appendix D1). The chert lens is apparent in the gamma/caliper log as the more competent material that leaves a closer to gauge hole size (appendix C, fig. C1). The limestone varies from mudstone to grainstone with packstone being dominant at 52.2 feet (38.0 percent). There is also 36.6 feet of undifferentiated limestone (26.6 percent), 27.3 feet of wackestone (19.9 percent), 13.5 feet of mudstone (9.8 percent), 6.9 feet of grainstone (5.0 percent) and 1 feet of chert (0.7 percent). The Ocala Limestone is generally white to light olive gray to yellow gray and has poor to good induration, skeletal and pellet grain types, very fine to gravel grain size with accessory calcite crystals. Porosity within these limestones ranges from 10 to 40 percent intergranular, intercrystalline and moldic. Fossils include: mollusks and forams (*Lepidocyclina ocalana, Nummulites vanderstoki*, and miliolids).

Undifferentiated Sand and Clay (Pliocene to Holocene)

The undifferentiated sand and clay deposits are the first encountered during exploratory core drilling at the ROMP 117 well site and they extend from land surface to 55 feet bls. These sediments are composed of quartz sands, clayey sands, and clays (appendix D1).

Clean quartz sand extends from land surface to 10 feet bls and is light gray to gray orange, unconsolidated, sub-rounded to sub-angular with medium sphericity, fine to coarse grained with accessory black organics in the top five feet. Intergranular porosity within this 10 feet of sand is approximately 25 percent.

The sediment between 10 and 15 feet bls is clayey sand and is composed of yellow gray, sub-angular to sub-rounded, fine to coarse grained, unconsolidated, quartz sand. The sand grains appear to be coated with a pinkish colored clay-like material that reduces effective porosity by filling in intergranular pore space.

The material from 15 to 30 feet bls is a clayey sand that ranges in clay content from 20 to approximately 50 percent. These clayey quartz sands are yellow gray to greenish gray to light yellow orange, very fine to coarse grained, sub-angular to sub-rounded with a white clay matrix from 15 to 28 feet bls and a light green and light yellow orange clay matrix from 28 to 30 feet bls. Effective porosity within these clayey sands is quite low.

The interval between 30 and 38.6 feet bls is predominantly composed of clay with approximately 3 feet of sandy clay from 35 to 38 feet bls. The clay is light green gray to yellow gray to white to red brown with a trace of sand and very low effective porosity. The sandy clay from 35 to 38 feet bls has a sand content as high as 40 percent, is light gray to yellow gray in color and is quite low in porosity. The interval from 38 to 38.6 feet bls is made up of grayish olive to reddish brown, low permeability clay with only a trace of quartz sand.

The interval from 38.6 to 55 feet bls is composed of quartz sand with up to 30 percent interstitial clay. The sand is yellow gray to gray olive, unconsolidated to moderately cemented with clay, very fine to fine grained, sub-angular to sub-rounded with accessory clay, chert and possibly phosphatic sand. The chert was described at the bottom of the section, very near the contact with the Ocala Limestone.

Hydrogeology

Hydrogeology at the ROMP 117 well site relates to how the lithologic and hydraulic properties of the aquifers and confining units contribute to overall water movement, storage, and levels. The ROMP 117 hydrogeology was characterized using lithologic samples, water level measurements, and hydraulic tests, including slug tests and APTs.

The District encountered five hydrogeologic units at the ROMP 117 well site. They include, in descending order: the surficial aquifer, a confining unit, the UFA, middle confining unit I, and the LFA (figures 3 and 4). The surficial aquifer is rather insignificant in the area of the well site due to the close proximity of Lake Okahumpka and because the surficial aquifer is only 10 feet thick in the area of the well site. The surficial aquifer was delineated and a monitor well was installed but no APT was conducted. The UFA is a productive artesian aquifer that contains productive, weathered limestones in the Ocala Limestone and some sucrosic and fractured dolostones towards its base in the Avon Park Formation. MCU I (Miller, 1986) separates the UFA from the LFA and demonstrates lower overall permeability than either the UFA or the LFA. Based only on ROMP 117 slug test data, hydraulic conductivity estimates for the UFA and LFA averaged 67 feet per day (ft/day) and 76 ft/day, respectively, whereas MCU I averaged 35 ft/day. These averages are based on slug test results, which excluded the upper 30 feet of productive, weathered limestone of the UFA because it was too friable in which to set a packer. It also excluded any intervals not tested between slug test intervals, and it did not consider implications of overlapping test intervals. Simply estimated, MCU I is approximately half as permeable as either the UFA or the LFA. The LFA is also a productive artesian aquifer that contains sucrosic and moderately fractured dolostones. MCU II was not present and the base of the Floridan aquifer system (FAS) was not definitively penetrated at the ROMP 117 well site. The base of the FAS, however, was located at the top of a massive anhydrite bed at 1,941 feet bls (1,877 feet NAVD) at the ROMP 115 – Royal well site approximately 9.8 miles to the northwest of the ROMP 117 well site.

Consistent hydrogeologic unit references and nomenclature are essential to ensure clear and concise hydrogeologic interpretation. A correlation chart showing present and past references for the hydrogeologic units encountered within the District can be seen in figure 4. In this figure, the interpretation of the FAS by J. A. Miller (1986) is used in this report.

The aquifers underlying this site are separated by varying degrees of confinement. The UFA is separated and confined from the overlying surficial aquifer by 45 feet of clayey sand, sandy clay, and clay. The LFA is separated and confined from the UFA by 257 feet of the predominantly low to the occasionally moderately permeable dolostones of MCU I (Miller, 1986).

Potentiometric levels, profiled from 85.5 to 1,500 feet bls in COREHOLE 1 are presented in appendix F, table F1. Potentiometric levels from 1,466 to 2,017 feet bls in COREHOLE 2 and from the U FLDN AQ PRODUCTION/MONITOR are presented in appendix F, table F2. Daily coring and slug test water level data are compared in figure 5 along with the hydraulic conductivity estimates for all 36 slug tests conducted

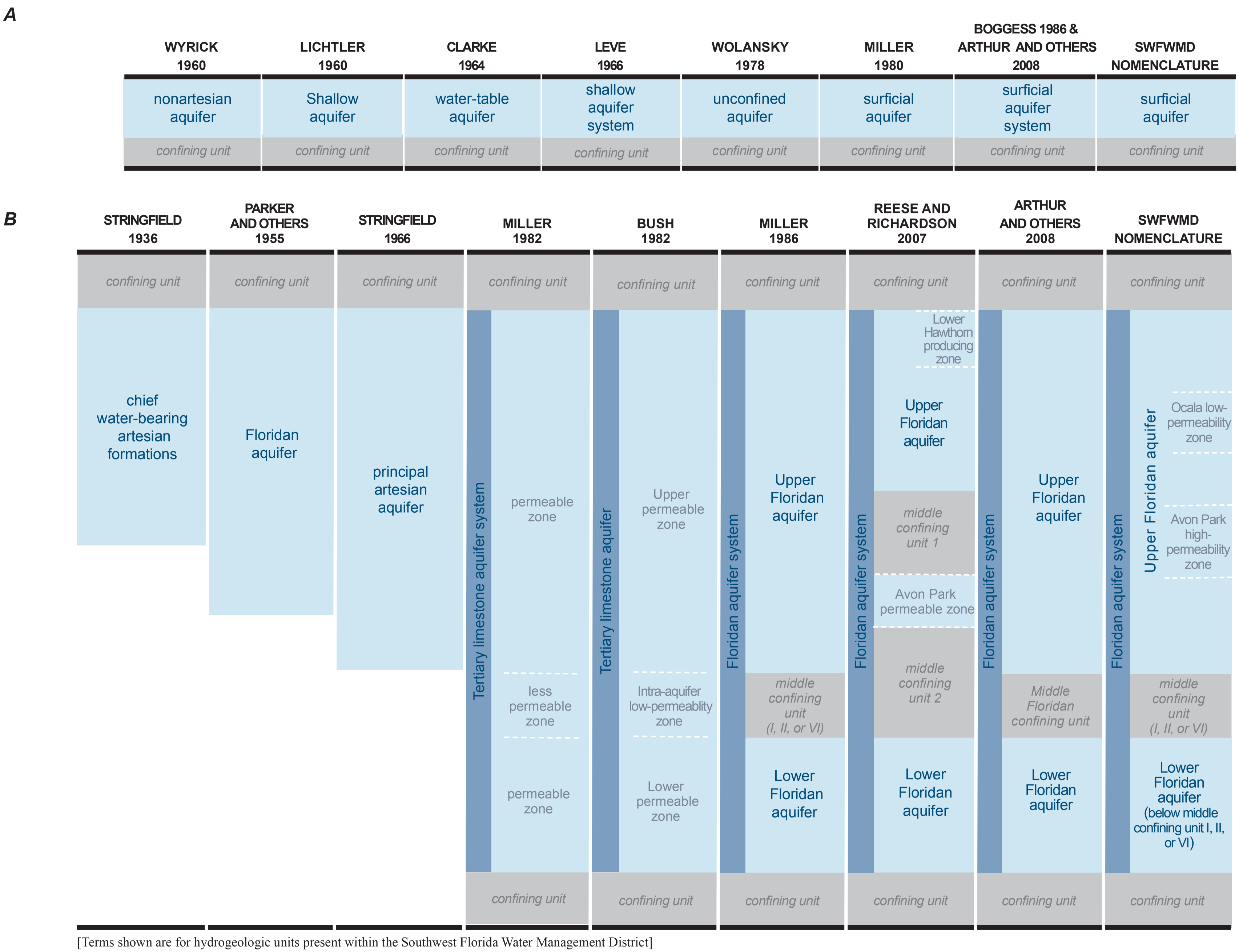


Figure 4. Nomenclature of (A) the surficial aquifer and (B) the Floridan aquifer system used for the ROMP 117 – Lake Okahumpka well site compared to names in previous publications.

in core holes 1 and 2 (table 1). Water level readings were taken during the coring operation, usually in the mornings to allow for stabilization overnight. These water level data are of a composite nature as the interval that provides the water level can be variable in length depending on how far the drill bit is off bottom and how well the annulus around the bit and core rods is hydraulically connected to the borehole below the bit. A slug test water level is from an interval that is typically isolated above by a packer or a casing point and below by the bottom of the core hole and it provides a more zone-specific water level.

A total of 36 slug tests were conducted during the coring operation at the ROMP 117 well site between 89.5 and 1,947 feet bls: 33 in COREHOLE 1 and 3 in COREHOLE 2 (table 1 and appendix G). Slug tests provide hydraulic conductivity estimates for discrete depth intervals. Hydraulic conductivity values estimated from slug tests, combined with water level, water quality, lithologic, and geophysical data, facilitated the aquifer delineation necessary to design monitor wells and an aquifer testing plan.

Composite water levels and slug test water levels from core holes 1 and 2 (fig. 5, appendix F, tables F1 and F2) generally show increasing water level elevations with depth. During coring, the UFA water level remained very near 6 feet bls (appendix F, table F1). The water level continued to fluctuate very near 6 feet bls in the upper portion of MCU I but rose to approximately 5 feet bls toward its base. Water levels rose abruptly to approximately 2 feet bls once penetrating the LFA. This persistent rise in water level as deeper aquifers were penetrated is indicative of a discharging system. Figure 6 also demonstrates that all aquifers on site (surficial, UFA, and LFA) typically have higher water levels than the surface of Lake Okahumpka. The LFA potentiometric surface is higher than that of the UFA, which is higher than the lake level. The surficial aquifer water level is highly variable since it responds so quickly to rainfall and it fluctuates above and below the water level of the UFA, but it remains above the lake water level. The water level of Lake Okahumpka in figure 6 only fluctuated through a range of 1 foot (54.1 to 55.1 feet NAVD) during the 13 month coring operation. Figure 6 also suggests that the water level of Lake Okahumpka is buoyed up by the potentiometric levels of the artesian aquifers (UFA and LFA) below it and by lateral drainage from the surficial aquifer. The Harris Chain of Lakes, where water levels are structurally controlled for recreational purposes, is about 8 miles to the east of the well site, and may help stabilize the level of Lake Okahumpka, nearby lakes and the surficial aquifer in the vicinity of the ROMP 117 site.

Surficial Aquifer

The surficial aquifer at the ROMP 117 well site consists of fine to coarse grained quartz sand from land surface to 10 feet bls with approximately 25 percent intergranular porosity. The SURF AQ MONITOR was installed by a contractor after coring operations had been completed and all other wells had been constructed. Therefore, no surficial aquifer water levels were recorded during coring and drilling operations. As of July 6, 2014, the WMIS provides a daily surficial aquifer water level of 57.91 feet NAVD at the ROMP 117 well site (table 2). No hydraulic tests were performed on the surficial aquifer.

Confining unit

The confining unit between the surficial aquifer and the UFA extends from 10 to 55 feet bls at the ROMP 117 well site and is made up of clayey sand, sandy clay, and clay. No hydraulic tests were performed on this unit but it is competent enough, at least locally, to confine the UFA and act as a base for the surficial aquifer.

Upper Floridan Aquifer

At the ROMP 117 well site, the Floridan aquifer system consists of the UFA and the LFA, separated by MCU I (Miller, 1986). MCU II (Miller, 1986) was not encountered at the ROMP 117 well site. The UFA is present between 55 and 357 feet bls and includes the Ocala Limestone from 55 to 192.5 feet bls and the upper portion of the Avon Park Formation from 192.5 to 357 feet bls.

The Ocala Limestone portion of the UFA is composed of limestone (mudstone to grainstone) with 15 to 30 percent intergranular porosity. The majority of this interval was quite weathered and friable. The caliper and gamma logs in appendix C, figure C1, from 85 to 200 feet bls, show that the majority of COREHOLE 1 is larger than 12 inches in diameter and is larger than 20 inches in several places. Since a gauge core hole would have a 3-inch nominal diameter, the enlarged core hole would be indicative of granular, often weathered limestone that is easily washed out with water movement during the coring process.

Homogeneity of hydraulic properties is not consistent throughout the UFA, although it is a single aquifer. Contrasts in hydraulic conductivity, both substantially higher and lower than what is characteristic of the entire aquifer, have been recorded and mapped for many years. These substantially different intervals are referred to as “zones” (Laney and Davidson, 1986). Within the District, there are two such “zones” often identified within the UFA: the Ocala low-permeability zone and the Avon Park high-permeability zone. Although the hydrogeology at the ROMP 117 well site appears to have remnant features of the Ocala low-permeability and Avon Park high-permeability zones, neither are persistent enough to be conclusively identified at this well site.

Slug tests 1 through 3 were performed in the Ocala Limstone portion of the UFA (table 1 and appendix G). Slug test 1 (85.5 to 105 feet bls) and 2 (85.5 to 140 feet bls) were conducted without the use of a packer. The HW casing seat at 85.5 feet bls was used instead. Slug test 3 (134 to 180 feet bls) did use the packer assembly. Slug test 1 produced a hydrau-

Table 1. Summary of core hole slug test results at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

[bls, below land surface; CH, corehole; Fm, Formation; ft, feet; ft/day, feet per day; KGS, Kansas Geological Survey; LFA, Lower Floridan aquifer; MCU I, middle confining unit I; NAVD, North American Vertical Datum of 1988; No., number; UFA, Upper Floridan aquifer; land surface elevation for CH 1 was 62.17 ft NAVD and for CH 2 was 60.6 ft NAVD. Slug tests 1-33 performed in CH 1, slug tests 34-36 performed in CH 2]

Slug Test No.	Date (MM/DD/YY)	Test Interval (ft bls)	Lithology	Geologic/Hydrogeologic Unit	Analytical solution	Water Level Elevation (ft NAVD)	Water Level (ft bls)	Hydraulic Conductivity [K] (ft/d)
1	09/07/06	85.5-105[a]	Weathered fossiliferous limestone, poor induration	Ocala Limestone/ UFA	KGS	56.24	5.93	14
2	09/13/06	85.5-140[a]	Weathered fossiliferous limestone, poor induration	Ocala Limestone/ UFA	KGS	56.28	5.89	24
3	09/14/06	134-180	Fossiliferous packstone, moderate to good induration	Ocala Limestone/ UFA	Butler (1998)	56.31	5.86	44
4	10/03/06	218-240	Subhedral dolostone, good induration	Avon Park Fm/UFA	Butler (1998)	56.56	5.61	79
5	10/05/06	243-280	Subhedral dolostone, moderate - good indur-ation, possible 3 ft cavity (271.5 - 274.5 ft bls)	Avon Park Fm/UFA	Butler (1998)	56.55	5.62	123
6	10/09/06	299-325	Subhedral dolostone, moderate - good induration, sucrosic in part, some fractures	Avon Park Fm/UFA	Butler (1998)	56.13	6.04	113
7	10/12/06	329-380b	Subhedral dolostone, moderate induration, sucrosic	Avon Park Fm/UFA	Butler (1998)	56.10	6.07	73
8	10/13/06	382-420	Subhedral dolostone, moderate induration	Avon Park Fm/MCU I	Butler (1998)	56.19	5.98	16
9	10/17/06	422-465	Subhedral dolostone, moderate - good induration, sucrosic in part	Avon Park Fm/MCU I	Butler (1998)	56.05	6.12	52
10	10/19/06	505-540	Subhedral dolostone, moderate - good induration	Avon Park Fm/MCU I	Butler (1998)	56.72	5.45	33
11	10/24/06	562-590	Subhedral dolostone, poor - moderate induration	Avon Park Fm/MCU I	Butler (1998)	57.41	4.76	40
12	10/27/06	614-640	Subhedral dolostone, moderate - good induration, quite moldic	Avon Park Fm/LFA	Butler (1998)	60.52	1.65	137
13	11/01/06	652-690	Subhedral dolostone, good induration, some fractures	Avon Park Fm/LFA	Butler (1998)	60.64	1.53	98
14	11/03/06	702-740	Subhedral dolostone, moderate - good induration, moldic	Avon Park Fm/LFA	Butler (1998)	60.62	1.55	112
15	01/30/07	747-780	Subhedral dolostone, moderate - good induration	Avon Park Fm/LFA	Butler (1998)	60.47	1.70	30
16	02/07/07	793-830	Dolostone, moderate - good induration, some fractures, sucrosic, peat seam	Avon Park Fm/LFA	Butler (1998)	61.35	0.82	155
17	02/07/07	817-830	Subhedral dolostone, moderate induration	Avon Park Fm/LFA	KGS	61.28	0.89	1
18	02/15/07	836-870	Subhedral dolostone, moderate induration, some fractures	Avon Park Fm/LFA	Butler (1998)	61.03	1.14	82
19	02/21/07	878-910	Dolostone, moderate - good induration, some chert	Avon Park Fm/LFA	Butler (1998)	61.29	0.88	61
20	02/26/07	912-950	Subhedral dolostone, moderate - good induration, sucrosic in part, some fractures, Peat	Avon Park Fm/LFA	Butler (1998)	61.92	0.25	91
21	03/01/07	969-990	Dolostone, poor - moderate induration, calcareous	Avon Park Fm/LFA	Butler (1998)	62.28	-0.11	8
22	03/09/07	988-1030	Subhedral dolostone, moderate induration, fractures	Avon Park Fm/LFA	Butler (1998)	62.00	0.17	155
23	03/15/07	1031-1070	Subhedral dolostone, moderate - good induration, some fractures	Avon Park Fm/LFA	Butler (1998)	62.09	0.08	89

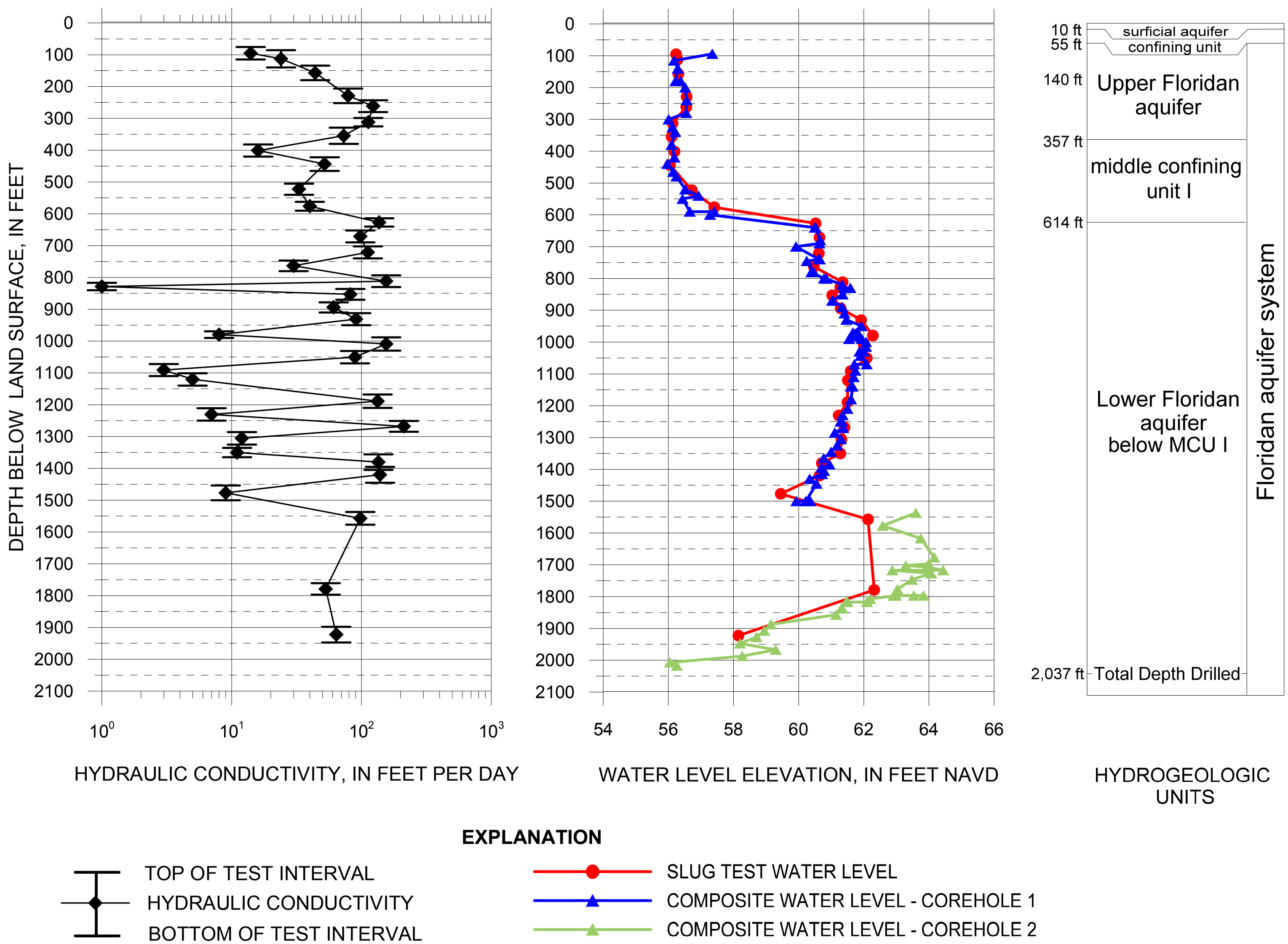
[a]No packer used (HW or HQ casing point used)
[b] Test interval spanned more than one hydrologic unit but was analyzed as unit shown

Table 1. Summary of corehole slug test results at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

[bls, below land surface; CH, corehole; Fm, Formation; ft, feet; ft/day, feet per day; KGS, Kansas Geological Survey; LFA, Lower Floridan aquifer; MCU I, middle confining unit I; NAVD, North American Vertical Datum of 1988; No., number; UFA, Upper Floridan aquifer; land surface elevation for CH 1 was 62.17 ft NAVD and for CH 2 was 60.6 ft NAVD. Slug tests 1-33 performed in CH 1, slug tests 34-36 performed in CH 2]

Slug Test No.	Date (MM/DD/YY)	Test Interval (ft bls)	Lithology	Geologic/Hydrogeologic Unit	Analytical solution	Water Level Elevation (ft NAVD)	Water Level (ft bls)	Hydraulic Conductivity [K] (ft/d)
24	03/21/07	1072-1110	Dolostone, moderate induration and Limestone, moderate induration, weathered	Avon Park Fm/LFA	Butler (1998)	61.60	0.57	3
25	03/26/07	1101-1140	Fossiliferous limestone, moderate induration, weathered, dolomitic in part	Avon Park Fm/LFA	Butler (1998)	61.51	0.66	5
26	03/29/07	1168-1210	Dolostone, some fractures, packstone/wackestone, moderate induration	Avon Park Fm & Oldsmar Fm/LFA	Butler (1998)	61.50	0.67	133
27	04/03/07	1211-1250	Fossiliferous packstone, moderate induration	Oldsmar Fm/LFA	Butler (1998)	61.23	0.94	7
28	04/05/07	1251-1285	Dolostone, moderate - good induration, fractures	Oldsmar Fm/LFA	Butler (1998)	61.41	0.76	212
29	04/11/07	1286-1325	Subhedral dolostone & Packstone, both moderately indurated	Oldsmar Fm/LFA	Butler (1998)	61.31	0.86	12
30	04/18/07	1335.5-1365	Subhedral dolostone, good induration, minor green clay	Oldsmar Fm/LFA	Butler (1998)	61.28	0.89	11
31	05/01/07	1356-1405	Dolostone, good induration, fractures	Oldsmar Fm/LFA	Butler (1998)	60.71	1.46	135
32	05/04/07	1395-1445	Undifferentiated limestone/mudstone/ wackestone/dolostone, fractures	Oldsmar Fm/LFA	Butler (1998)	60.64	1.53	139
33	05/10/07	1454-1500	Undifferentiated limestone/ grainstone/packstone/dolostone/clay	Oldsmar Fm/LFA	Butler (1998)	59.45	2.72	9
34	11/04/08	1,537-1,577	Anhedral - subhedral dolostone, few fractures/mudstone/wackestone/ Packstone	Oldsmar Fm/LFA	Butler (1998)	62.13	-1.53	98
35	12/15/08	1,761-1,797	Anhedral - subhedral dolostone, moderate - good induration / mudstone - packstone	Oldsmar Fm/LFA	Butler (1998)	62.32	-1.72	53
36	02/16/09	1,898-1,947	Anhedral - subhedral dolostone, moderate - good induration / mudstone - packstone	Oldsmar Fm/LFA	Butler (1998)	58.15	2.45	64

[a]No packer used (HW or HQ casing point used)
[b] Test interval spanned more than one hydrologic unit but was analyzed as unit shown



[MCU I, middle confining unit I; NAVD, North American Vertical Datum of 1988]

Figure 5. Graph showing hydraulic conductivity values and water levels from slug tests with aquifer delineation at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

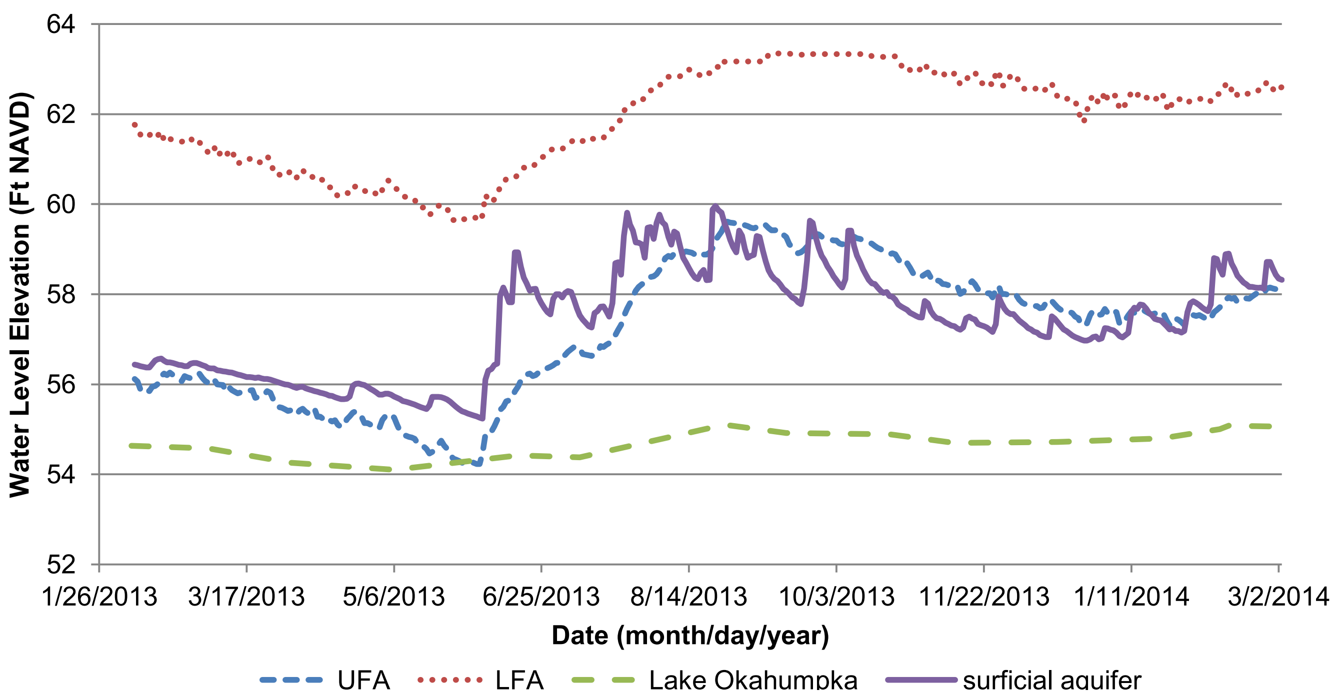
Table 2. Static water levels from completed monitor wells at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

[bls, below land surface; L FLDN AQ, Lower Floridan aquifer; NAVD, North American Vertical Datum of 1988; SURF AQ, surficial aquifer; U FLDN AQ, Upper Floridan aquifer; Well locations are shown in figure 2; As-Built diagrams are in Appendix B]

Well Name	Open Interval (ft bls)	Date (MM/DD/YY)	Static Water Level Elevation (ft NAVD)
ROMP 117 SURF AQ MONITOR	5 - 15	07/06/14	57.91
ROMP 117 U FLDN AQ PRODUCTION/MONITOR	225 - 352	07/06/14	58.78
ROMP 117 L FLDN AQ PRODUCTION/MONITOR	625 - 1,467	07/06/14	63.69

lic conductivity (K) estimate of 14 ft/day in a mudstone to grainstone, with 10 to 30 percent intergranular porosity. Slug test 2 produced a K value of 24 ft/day from the same interval as in slug test 1 plus an additional 35 feet (105 to 140 feet bls) of predominantly packstone with up to 25 percent intergranular porosity. Slug test 3 did utilize a packer and produced a K value of 44 ft/day from predominantly packstone with 20 to 25 percent intergranular porosity. Hydraulic conductivity estimates from slug tests 1 and 2 are more accurate because they were not subject to the packer orifice restriction that tends to reduce K values. Slug test 3 (134 to 180 feet bls) was, however, subject to the orifice restriction and still produced a higher K value (44 ft/day) than slug tests 1 and 2. This demonstrates that the interval for slug test 3 is considerably more productive than the intervals for slug tests 1 and 2.

The Avon Park Formation portion of the UFA is predominantly composed of subhedral dolostone with 10 to 30 percent moldic, intercrystalline and some fracture porosity. Slug test 4 through 7 were conducted in the Avon Park dolostones within the UFA (table 1 and appendix G). Slug test 4 (218 to 240 feet bls) produced a K value of 79 ft/day and slug test 7 (329 to 380 feet bls) yielded a K value of 73 ft/day. The two intervals



[Ft, Feet; LFA, Lower Floridan aquifer; NAVD, North American Vertical Datum of 1988; UFA, Upper Floridan aquifer]

Figure 6. Comparison of water level elevations in the Upper Floridan, Lower Floridan and surficial aquifer monitor wells and Lake Okahumpka at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

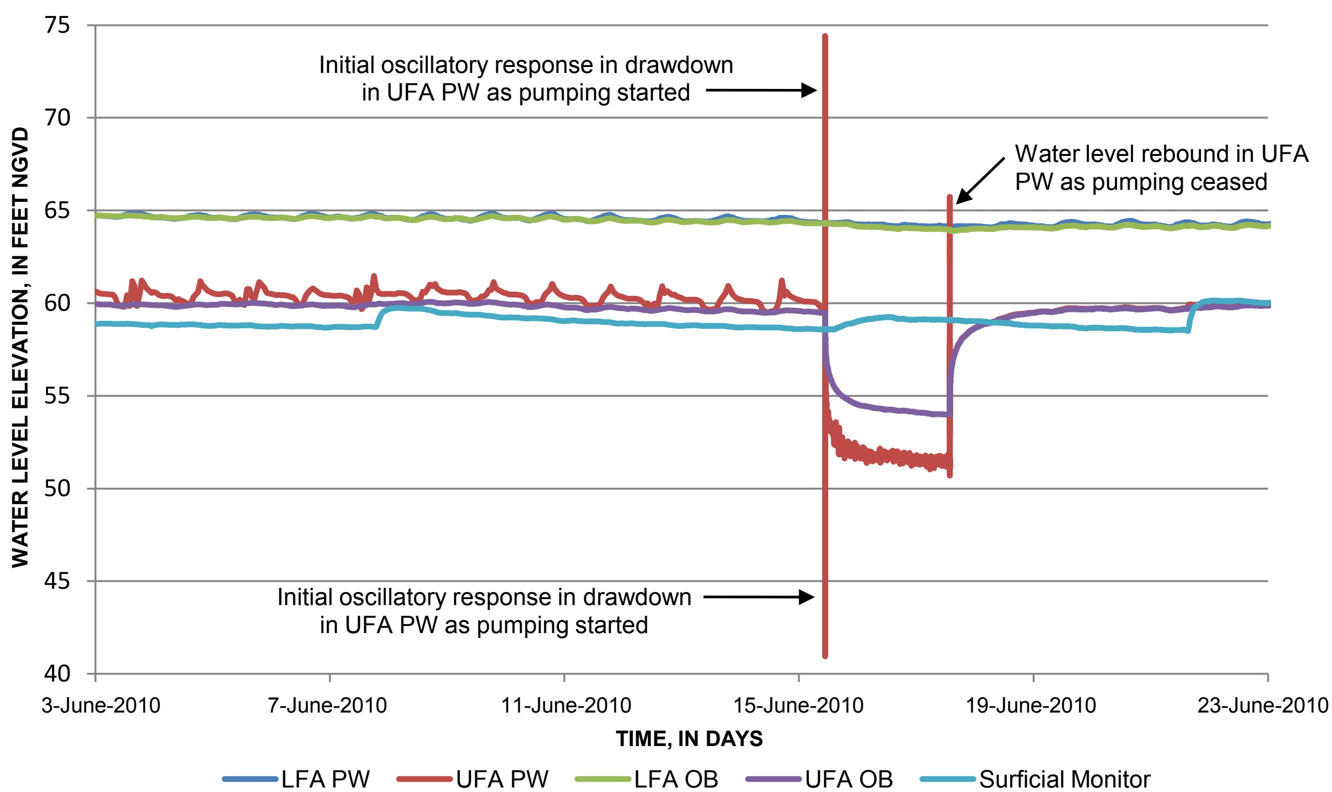
of slug tests 4 and 7 demonstrate mainly intergranular and intercrystalline porosity although there was some fracture porosity observed. Slug test 5 (243 to 280 feet bls) and 6 (299 to 325 feet bls) produced K values of 123 and 113 ft/day, respectively. Both of these intervals were described with some fracture porosity and sucrosic texture, however, slug test 5 also had an interval from approximately 271.5 to 274.5 feet bls that was recorded as a possible bit drop. This could have been an actual bit drop or it may have been a zone of quite sucrosic dolostone that offered little resistance to the weight and rotation of the core rods. In either case, these sucrosic and sometimes fractured dolostones did produce the highest K values of any of the slug tests conducted in the UFA at the ROMP 117 well site.

Slug test 7 (329 to 380 feet bls) actually straddled the boundary between the UFA and MCU I. This boundary was at 357 feet bls and the aquifer material above it was moderately porous and permeable, while the material below it was generally described as having lower porosity and permeability. Slug test 7 was analyzed as part of the UFA because it was expected that the more permeable material from 325 to 357 feet bls would hydraulically overwhelm the lower, less permeable material within MCU I (357 to 380 feet bls). Slug test 7 produced a K value of 73 ft/day, mostly attributable to the hydraulic properties of the interval from 325 to 357 feet bls.

Coring water levels fluctuated between 4.82 and 6.16 feet bls (appendix F, table F1). The 4.82 feet bls water level reading was the initial UFA water level reading which came from only an 8.5-foot open hole interval and may not be completely representative of the UFA. If the 4.82-foot reading is dismissed, the remaining coring water levels in the UFA fluctuated between 5.61 and 6.16 feet bls, a range of only 0.55 feet. Slug tests 1 through 7 water levels, while coring through the UFA, fluctuated between 5.61 (slug test 4) and 6.07 (slug test 7) feet bls, a range of 0.46 feet (table 1). In general, water levels only fluctuated slightly while coring through the UFA.

A constant rate UFA APT was conducted from June 15 to 17, 2010. Background, drawdown, and recovery water level fluctuations were recorded in all monitored aquifers on site. Figure 7 presents the hydrograph for background, drawdown, and recovery phases of the test.

The 14-inch U FLDN AQ PRODUCTION/MONITOR (appendix B, fig. B5) was pumped with an 8-inch vertical line shaft turbine pump at an average rate of 1,394 gallons per minute (gpm) for 2.13 days (51.1 hours). Discharge was directed approximately 200 feet southwest into Lake Okahumpka and measured with an in-line flow meter totalizer and verified with a manometer and orifice plate. The OB well was the U FLDN AQ OB TEMP (1.5-inch tube) in the dual zone monitor (appendix B, fig. B3) 143.2 feet northeast of the pumped well



[LFA, Lower Floridan aquifer; PW, pumped well; UFA, Upper Floridan aquifer; OB, observation well; NGVD, National Geodetic Vertical Datum of 1929]

Figure 7. Hydrograph of the Upper Floridan aquifer performance test conducted at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

(fig. 2). The pumped well had a 10-inch open hole pumped interval from 224 to 352 feet bls and the OB well had a 1.5-inch PVC screened interval from 83 to 338 feet bls. Maximum drawdown in the pumped well was approximately 8.8 feet and it was 5.9 feet in the OB well.

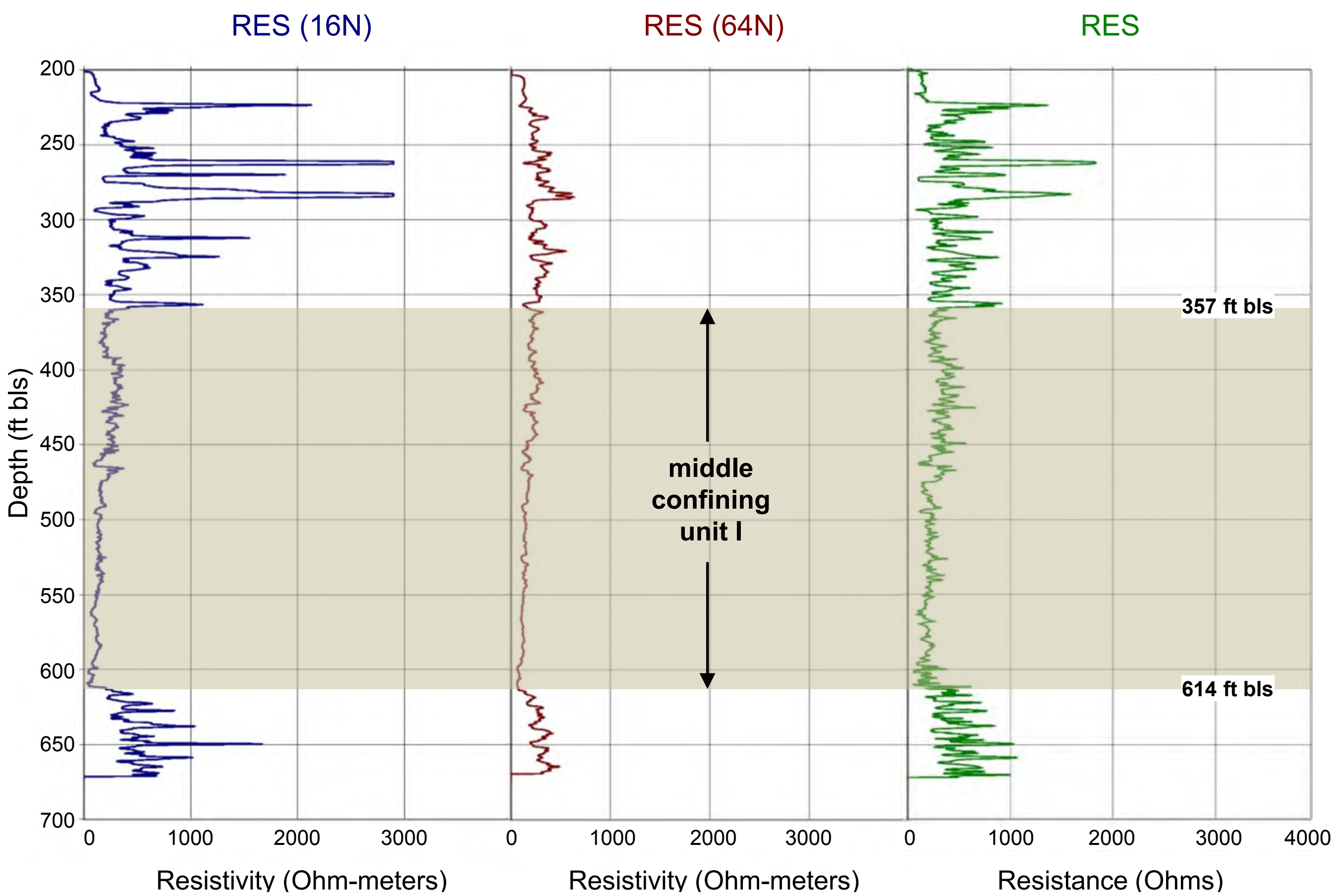
Drawdown and recovery phase water level fluctuations for the pumped and OB wells were recorded and subsequently analyzed using the Theis (1935)/Hantush (1961) method (appendix H, fig. H1). The transmissivity of the UFA is 103,000 square feet per day (ft^2/day) and the storativity is 4.42 x 10^{-5}. Early-time drawdown data were used in the analysis (Theis and derivative curves) since later data showed signs that a low-flow boundary, probably the confining unit between the surficial and UFA, had been reached. As of July 6, 2014, the WMIS provided a daily UFA water level of 58.78 feet NAVD at the ROMP 117 well site (table 2).

Middle Confining Unit I

Middle confining unit I (Miller, 1986) hydraulically separates the UFA from the LFA and was encountered from 357 to 614 feet bls. This unit is 257 feet thick and is contained entirely within the Avon Park Formation. Middle confining unit I is mainly composed of subhedral dolostone that varies from 5 to occasionally 30 percent moldic, intercrystalline and sometimes fracture porosity. The MCU I interval (357 to 614 feet bls) contains predominantly low permeability material but there are intervals with higher permeability interspersed within the low permeability material. There are also layers of silt-sized dolostone and organic layers within this hydrologic unit that contribute to the overall lack of vertical permeability within it.

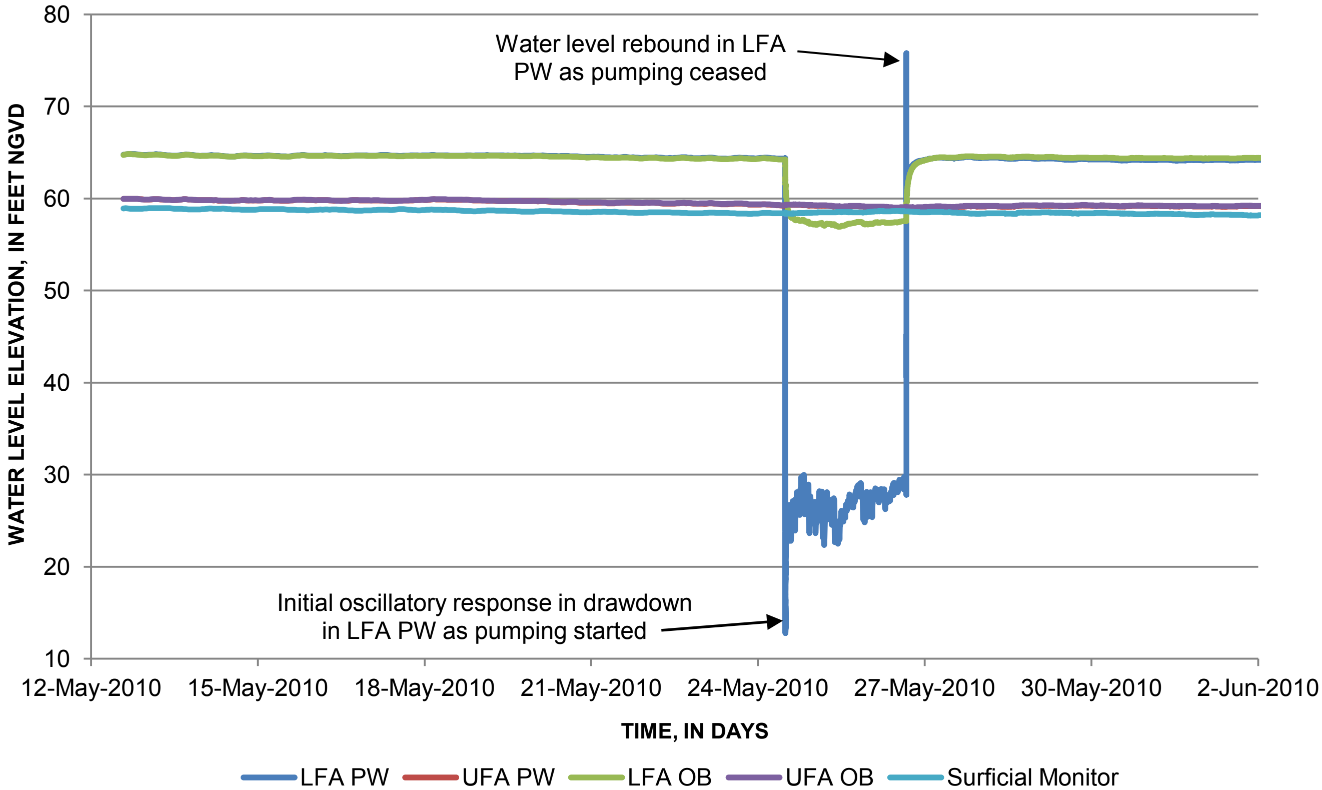
The vertical extent of MCU I was primarily defined using geophysical logs. O'Reilly (2002) states "the top of the unit generally is recognized on geophysical logs by a sharp decrease in formation resistivity." This is evident on figure 8 as the resistivity logs (16N, 64N, 16-inch (short), and 64-inch (long) Normal), as well as the resistance log (single point resistance (RES)), clearly show a marked reduction in resistivity and resistance for the entire MCU I interval (shaded).

In general, water levels during coring through MCU I slowly rose as the LFA was approached. Slug test water levels



[ft bls, feet below land surface; RES, resistance; RES (16N), resistivity (16-inch Normal); RES (64N), resistivity (64-inch Normal)]

Figure 8. Response of geophysical logs used to map the location and thickness of middle confining unit I at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.



[LFA, Lower Floridan aquifer; NGVD, National Geodetic Vertical Datum of 1929; OB, observation well; PW, pumped well; UFA, Upper Floridan aquifer]

Figure 9. Hydrograph of the Lower Floridan aquifer performance test at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

ranged from 6.02 (slug test 9) to 5.51 feet bls (slug test 11) (appendix F, table F1).

Four slug tests (slug tests 8 through 11) were conducted in MCU I during coring operations and they provided K values between 16 and 52 ft/day and averaged 35 ft/day (appendix F, table F1). These are horizontal K values and therefore do not adequately account for thin beds of low permeability within MCU I that would inhibit vertical water movement.

Lower Floridan Aquifer Below Middle Confining Unit I

The LFA was encountered from 614 feet bls to the total depth of drilling at 2,037 feet bls at the ROMP 117 well site. This includes the lower portion of the Avon Park Formation (614 to 1,203 feet bls), the entire Oldsmar Formation (1,203 to 1,737.5 feet bls) and the upper portion of the Cedar Keys Formation (1,737.5 to 2,037 feet bls). The formations within the LFA are predominantly composed of dolostone with about 14 percent limestone. The dolostones were described as having 5 to occasionally 30 percent intergranular, intercrystalline, vugular, and sometimes fracture porosity. The limestones were described as granular and having 5 to 20 percent intergranular, intercrystalline, and moldic porosity.

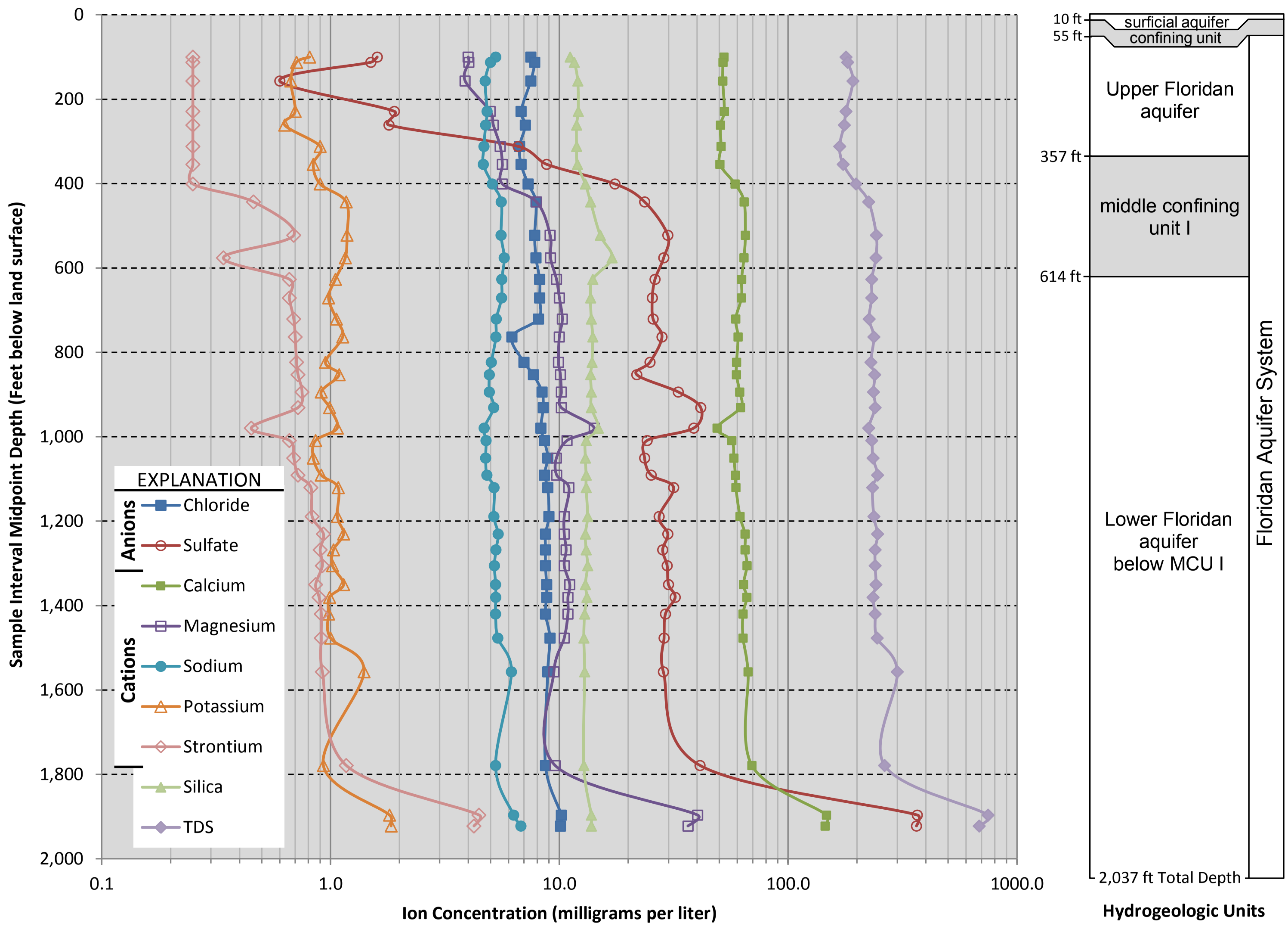
The base of MCU I and the top of the LFA were made apparent during coring when the water level rose 3.22 feet between coring depths of 600 and 640 feet bls. Also, slug test water levels for tests 11 (562 to 590 feet bls) and 12 (614 to 640 feet bls), which straddled the contact between MCU I and the LFA, showed a water level rise of 3.11 feet.

The abrupt reduction in formation resistivity and a water level rise of over 3 feet strongly suggest a change in hydrogeologic units, from MCU I to the LFA.

A total of 25 slug tests were performed in the LFA during coring operation (slug tests 12 through 36 in table 1). Slug test hydraulic conductivities fluctuated greatly and were highly variable, ranging from 1 to 212 ft/day (fig. 5). This is readily apparent in figure 5 with the plotted K values being connected with a solid black line. This highlights the variability of porosity and permeability within the LFA. Much of the porosity was secondary in nature, such as intercrystalline porosity from dolomitization (often sucrosic texture) and fracture porosity.

A constant rate LFA APT was conducted from May 24 to 26, 2010. Background, drawdown, and recovery water level fluctuations were recorded in all monitored aquifers on site. Figure 9 presents the hydrograph for background, drawdown, and recovery phases of the test.

The 16-inch L FLDN AQ PRODUCTION/MONITOR (appendix B, figure B7) was pumped with a 13-inch vertical line shaft turbine pump at an average rate of approxi-



[MCU I, middle confining unit I; TDS, Total Dissolved Solids]

Figure 10. Changes in ion concentration with depth for select water-quality constituents in slug test water samples collected at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

mately 2,200 gpm for 2.18 days (52.23 hours). Discharge was directed approximately 180 feet southwest into Lake Okahumpka and measured with an in-line flow meter totalizer and verified with a manometer and orifice plate. The OB well was the L FLDN AQ OB TEMP (2-inch tube) in the dual zone monitor (appendix B, figure B.3) 171.4 feet northeast of the pumped well (fig. 2). The L FLDN AQ PRODUCTION/MONITOR had an 8-inch pumped interval from 620 to 1,452 feet bls and the 2-inch PVC screen in the OB well is located between 600 to 1000 feet bls. Maximum drawdown in the pumped well was approximately 51.4 feet and 7.3 feet in the OB well.

Drawdown and recovery phase water level fluctuations for the pumped and observation wells were recorded and subsequently analyzed using the Theis (1935)/Hantush (1961) methods (appendix H, fig. H2). Transmissivity and storativity are 68,570 ft^2/day and 1.81×10^{-3}, respectively. As of July 6, 2014, the WMIS provided a daily LFA water level of 63.69 feet NAVD at the ROMP 117 well site (table 2).

Water Quality

Water quality was profiled with depth throughout coring operations. Water quality samples were collected between core runs and during slug tests. Samples collected between core runs were typically non-isolated, air-lifted samples, while isolated interval (using a packer), non-aerated water quality samples were collected using a nested bailer attached to the packer assembly. After slug testing, the isolated interval is purged for a water sample for field and laboratory analyses. Any reference to slug test water quality refers to a water sample taken from an isolated interval associated with a slug test. Field and laboratory analyzed water quality data are presented in appendix I, table I1 and I2, respectively. Presented in figure 10 is a graph of ion concentration of laboratory analyzed water samples. Figure 11 presents a Piper (1944) diagram displaying all laboratory results from all intervals slug tested in core holes 1 and 2 at the ROMP 117 well site.

Surficial Aquifer

The SURF AQ MONITOR (screened from 5 to 15 feet bls) was the last well to be constructed on the permanent easement and it was sampled by the Water Quality Monitoring Program (WQMP) on June 25, 2012. Laboratory analyses of this sample produced water with a specific conductance of 497 microsiemens per centimeter (µS/cm), chlorides of 44.4 milligrams per liter (mg/L), sulfates of 122 mg/L and total dissolved solids (TDS) of 342 mg/L (appendix I, table I2).

The above laboratory-analyzed water sample from the surficial aquifer was plotted on a Piper diagram (fig. 11). The Piper diagram shows that the water from the surficial aquifer is of a calcium sulfate type and has the poorest water quality of the three aquifers at this location (surficial aquifer, UFA, and LFA), although water quality is potable according to the National Secondary Drinking Water Standards (EPA, 2012) with respect to all parameters tested with the exception of iron. The secondary maximum contaminant level for iron is 300 micrograms per liter (µg/L), or 0.3 mg/L. This surficial well produced an iron concentration of 1,160 µg/L (1.16 mg/L). Water from the surficial monitor also showed that chlorides (44.4 mg/L) and sodium (26.4 mg/L) concentrations were above those of any sample collected in the UFA or LFA. The pH of the surficial aquifer was measured at 6.35 standard units. The ROMP 117 well site lies only about 200 feet from Lake Okahumpka and biodegradation of organic material along the shore of the lake and in the surficial aquifer can cause an increase in carbonic acid (H_2CO_3) in lake and surficial aquifer waters, which would render a lower, acidic pH (Smith and Doran, 1996). The slightly acidic waters of the surficial aquifer could very slowly erode the steel surface casings of the UFA and LFA monitor wells, therefore liberating minor amounts of iron into the waters of the surficial aquifer. The reason chloride and sodium concentrations in the surficial aquifer were higher than any other water encountered at this site during all drilling activities is not readily apparent.

Confining Unit

The confining unit that separates the surficial aquifer from the UFA (10 to 55 feet bls) was neither tested for hydraulic properties nor for water quality during coring or well construction operations.

Upper Floridan Aquifer

Water within the UFA (55 to 357 feet bls) remained potable based on National Secondary Drinking Water Standards for the entire thickness of the aquifer. Slug tests 1 through 7 were conducted within the UFA. Laboratory-analyzed water quality (appendix I, table I2) for the same seven slug tests produced a range of specific conductance values from 295 to 309 µS/cm, chlorides from 6.7 to 7.8 mg/L, sulfates from 0.6 to 8.8 mg/L and TDS from 168 to 192 mg/L. The most significant water quality feature in figure 10 in the UFA is the increase in sulfates from 0.6 mg/L collected during slug test 3 (134 to 180 feet bls) to 8.8 mg/L collected during slug test 8 (329 to 380 feet bls), an increase in sulfates by a factor of almost fifteen. Sulfate concentration started to climb as MCU I was approached.

As previously mentioned in the Hydrogeology section (Upper Floridan Aquifer), slug test 7 (329 to 380 feet bls) straddled the boundary between the UFA and MCU I. This boundary is at 357 feet bls and the aquifer material above it was moderately porous and permeable, while the material below it was generally described as having lower porosity and permeability. Slug test 7 was analyzed as part of the UFA because it was expected that the more permeable material from 325 to 357 ft bls would hydraulically overwhelm the

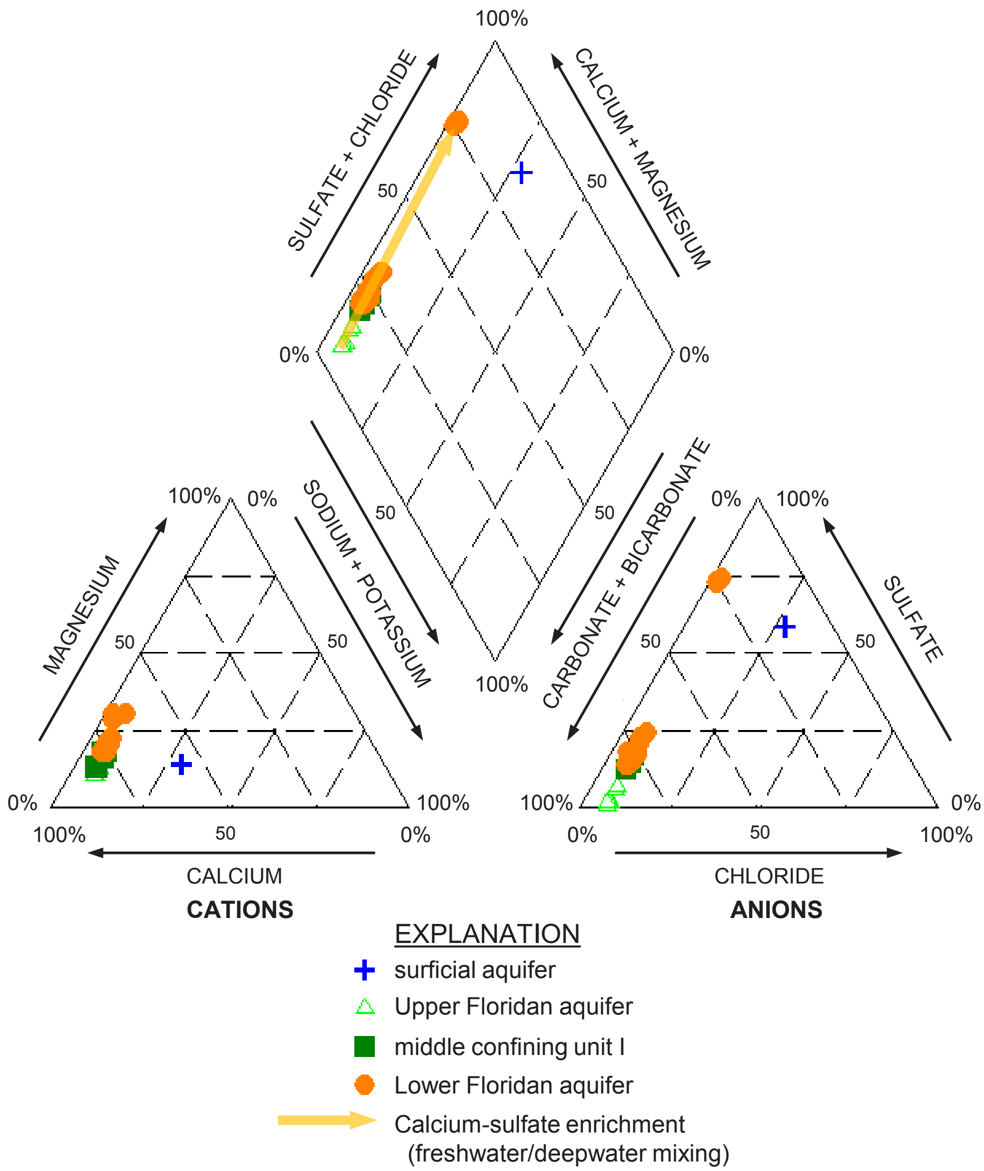


Figure 11. Piper diagram displaying laboratory analyzed water-quality data from the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

lower, less permeable material within MCU I (357 to 380 feet bls). This also holds true for water quality sampling in that the more permeable interval should produce the majority of the water that would be collected from the slug test interval. Laboratory analysis of water quality for slug test 7 yielded a specific conductance of 309 µS/cm, chlorides of 6.8 mg/L and sulfates of 8.8 mg/L (appendix I, table I2).

All UFA slug test water quality results are plotted on the Piper diagram (fig. 11) which shows that water within the UFA plotted along the fresher end of the freshwater-deepwater mixing line in the quadrilateral graph.

The U FLDN AQ PRODUCTION/MONITOR well, with an open interval from 225 to 352 feet bls, was sampled by the WQMP on June 25, 2012, and it yielded water with a specific conductance of 292 µS/cm, chlorides of 7.7 mg/L, sulfates of 1.7 mg/L, and TDS of 174 mg/L.

Middle Confining Unit I

Four slug tests were conducted solely within MCU I (357 to 614 feet bls). Laboratory-analyzed water quality samples from these slug tests (slug tests 8 through 11) indicated that water within MCU I remained potable throughout its vertical extent. Water samples from these tests showed a general trend of most constituents increasing slightly in concentration with depth. Laboratory results from these slug tests showed a range of specific conductance from 341 to 394 µS/cm, chlorides from 7.3 to 7.9 mg/L, sulfates from 17.5 to 29.8 mg/L, and TDS from 198 to 243 mg/L (appendix I, table I2).

Sulfates continued their trend of increasing slightly with depth as indicated above but remained well within potable limits. Sulfates rose from 8.8 mg/L during slug test 7 (329 to 380 feet bls) to 29.8 mg/L during slug test 10 (505 to 540 feet bls) and fell slightly to 28.6 mg/L during slug test 11 (562 to 590 feet bls).

All slug test water quality results from MCU I are plotted on the Piper diagram (figure 11) which indicates, like the UFA water quality samples, that all samples plotted along the fresher end of the freshwater-deepwater mixing line.

Lower Floridan Aquifer

Twenty-five slug tests (slug tests 12 through 36) were conducted in the LFA (614 feet to the total depth of exploration at 2,037 feet bls) and water quality from those tests remained potable through slug test 35 (1,761 to 1,797 feet bls). An airlifted water sample was collected from 1,896 to 1,897 feet bls, with the core bit only 1 foot off bottom, and sent to the District laboratory for standard complete analysis because the odor of hydrogen sulfide (H_2S), often associated with elevated sulfates, was quite apparent during airlifting. This water sample had a specific conductance of 978 µS/cm, chlorides of 10.2 mg/L, sulfates of 367 mg/L and TDS of 748 mg/L. The potable limit for sulfates is 250 mg/L and TDS is 500 mg/L (EPA, 2012). This was the first laboratory analyzed water sample during the coring operation at the ROMP 117 well site that indicated any constituent measured above the potable limit based on National Secondary Drinking Water Standards with the exception of iron in the surficial aquifer. Slug test 36 (1,898 to 1,947 feet bls) showed a similar water quality profile with specific conductance measuring 930 µS/cm, chlorides measuring 10.1 mg/L, sulfates measuring 364 mg/L, and TDS measuring 684 mg/L.

The sulfates curve in Figure 10 and laboratory water quality results in appendix I, table I2 show an obvious increase in concentration between 878 and 990 feet bls (slug tests 19 through 21), from 21.8 mg/L (slug test 18) to 41.5 mg/L (slug test 20) back down to 24.2 mg/L (slug test 22). These slug tests encompassed the majority of the interval (830 to 927.7 feet bls) previously mentioned in the Avon Park portion of the Geology section that had numerous vugs that contained quartz crystals. The elevated sulfates through this interval support the contention that these vugs formerly contained evaporitic mineral nodules of gypsum [$CaSO_4 \cdot 2(H_20)$] and/or anhydrite ($CaSO_4$) that were probable relics of MCU II and were dissolved during freshwater flushing, leaving elevated sulfates (SO_4) in that portion of the LFA.

Figure 10 indicates that all graphed water quality constituents showed increased ion concentrations between slug test 35 (1,761 to 1,797 feet bls) and slug test 36 (1,898 to 1,947 feet bls) which were separated by 101 feet of core hole (1,797 to 1,898 feet bls). Reverse-air discharge between core runs was usually measured for water quality (specific conductance, temperature, and pH) in the field (appendix I, table I1), which enables the depth at which the water quality exceeded potable limits between slug tests 35 and 36 to be approximated. An airlift sample was collected from the interval from 1,876 to 1,877 feet bls and yielded a specific conductance of 411 µS/cm. Ten feet later (1,886 to 1,887 feet bls) another reverse-air sample was taken, which yielded a field specific conductance of 963 µS/cm, a 134 percent increase in specific conductance in just 10 feet of coring. It was this ten-foot interval (1,877 to 1,887 feet bls) where specific conductance increased by a factor of 2.3 and rapid water quality degradation was initially encountered.

All LFA laboratory water quality results are plotted on the Piper diagram (figure 11), which indicates that the water within the LFA remained fresh and potable until the air-lifted water sample at 1,887 feet bls. The deepwater component of this sample and the nested bailer sample from slug test 36 are apparent on the Piper diagram and in appendix I, table I2, as both of these samples fall on the high end of the freshwater/deepwater mixing line in the quadrilateral.

The L FLDN AQ PRODUCTION/MONITOR, with an open interval from 625 to 1,467 feet bls, was sampled by the WQMP on June 25, 2012, and yielded water with a specific conductance of 391 µS/cm, chlorides of 8.2 mg/L, sulfates of 27 mg/L and TDS of 235 mg/L.

Summary

The overall objective of the data collection effort at the ROMP 117 – Lake Okahumpka well site was to delineate and characterize the hydrogeologic system present at the site. The Geohydrologic Data Section of the Data Collection Bureau collected the majority of the hydrogeologic data during the exploratory core drilling and testing phase of the project while utilizing both the CME 85 (land surface to 1,500 feet bls) and UDR 200DLS (1,466 ft to 2,037 feet bls) core drilling rigs and crews. Extensive testing and sampling were performed during development of this site including: lithologic (core) sampling, geophysical logging, water quality and water level profiling, slug testing, and aquifer performance testing. The 2,037 feet of core hole (core holes 1 and 2) were extensively slug tested. Both the UFA and LFA were aquifer performance tested but the surficial aquifer was not.

COREHOLE 1 was constructed with the District's CME 85 core drilling rig and crew and COREHOLE 2 was constructed using the District's UDR 200DLS core drilling rig and crew that was used to core out the bottom of the L FLDN AQ PRODUCTION/MONITOR well. COREHOLE 2 was back-plugged after exploration was completed.

A total of three permanent monitor wells were constructed at the ROMP 117 well site: the L FLDN AQ PRO-

DUCTION/MONITOR, the U FLDN AQ PRODUCTION/MONITOR, and the SURF AQ MONITOR. To aid in APT analysis, a temporary dual zone OB well was also constructed that monitored the UFA and the LFA. Both the U FLDN AQ PRODUCTION/MONITOR and L FLDN AQ PRODUCTION MONITOR were lined with 6-inch PVC after the APTs were completed and the temporary dual zone OB well was plugged and abandoned.

Geologic units underlying the study area, in ascending order (oldest to youngest) are the Cedar Keys Formation, Oldsmar Formation, Avon Park Formation, Ocala Limestone and the undifferentiated sands and clays (figure 3).

Hydrogeologic units encountered at the ROMP 117 well site include, in descending order: the surficial aquifer, a confining unit, the UFA, MCU I, and the LFA below MCU I. Middle confining unit II was not present at the ROMP 117 well site and the base of the FAS was not definitively penetrated at this site, although it was expected to be very near. The base of the FAS was definitively identified at the ROMP 115 – Royal well site, approximately 9.8 miles northwest of the ROMP 117 well site, at 1,941 feet bls or approximately 1,877 feet NAVD, at the top of a massive anhydrite bed.

Water levels were profiled with depth during coring operations with daily coring and slug test water levels being recorded. Water levels generally rose with increased penetration, indicating a discharging system. It is apparent that all aquifers generally have higher water levels than Lake Okahumpka. During exploratory core drilling, the level of Lake Okahumpka only fluctuated through a range of one foot. The water level of Lake Okahumpka may be buoyed up by the potentiometric levels of the artesian aquifers (UFA and LFA) below it and by lateral drainage from the surficial aquifer into the Lake. Lake Okahumpka also appears to be part of the wetlands system associated with Lake Harris, approximately eight miles to the east.

A total of 36 hydraulic tests (slug tests) were conducted during the coring operation at the ROMP 117 well site. Slug tests provide hydraulic conductivity data on discrete cored intervals that were used to help identify zones of relative permeability or confinement. These hydraulic conductivity values were instrumental in defining the hydrogeologic system at the ROMP 117 well site.

Water quality was potable in the surficial aquifer with the exception of the iron concentration which was 1,160 µg/L or 1.16 mg/L. The secondary maximum contaminant level for iron is 300 µg/L or 0.3 mg/L. The surficial water also showed higher chlorides (44.4 mg/L) and sodium (26.4 mg/L) concentrations than either the UFA or LFA.

In general, water quality remained potable through the Upper Floridan aquifer and well into the Lower Floridan aquifer below MCU I to a depth of about 1,887 feet bls where laboratory analysis of an airlifted water sample yielded a specific conductance value of 978 µS/cm and sulfate values of 748 mg/L, three times the potable limit of 250 mg/L.

Aquifer performance tests were conducted in the UFA and the LFA but not in the surficial aquifer. Using the Theis (1935)/Hantush (1961) method, the UFA produced a transmissivity of 103,000 ft^2/day and a storativity of 4.42 X 10^{-5}. The LFA produced a transmissivity of 68,570 ft^2/day and a storativity of 1.81 X 10^{-3} also using the Theis (1935)/Hantush (1961) method.

The data collected and analyzed from this site investigation and subsequent temporal data collection (changes in water level and water quality over time) will be used in the Northern District Water Resources Assessment Project (Basso, 2007), the Northern Sumter County Data Collection Project (Basso, 2008), the ROMP 10-mile grid network, and for parameterization of District groundwater flow models.

References

Arthur, J. D., Fischler, C., Kromhout, C., Clayton, J. M., Kelley, G. M., Lee, R. A., Li, L, O'Sullivan, M., Green, R. C., and Werner, C. L., 2008. Hydrogeologic Framework of the Southwest Florida Water Management District: Florida Geological Survey Bulletin No. 68.

Barr, G. L., 1996. Hydrogeology of the Surficial and Hawthorn Aquifer Systems in Sarasota and adjacent Counties, Florida: U. S. Geological Survey Water-Resources Investigations Report 96-4063.

Basso, R. J., 2007. Proposed Drilling and Testing Activities in the Northern District (2005-2015) Memorandum.

Basso, R. J., 2008. Northern Sumter County Data Collection Plan, Memorandum.

Boggess, D. M., Watkins, F. A., Jr., 1986. Surficial Aquifer System in Eastern Lee County, Florida: U. S. Geological Survey Water-Resources Investigations Report 85-4161.

Bush, P. W., 1982. Predevelopment Flow of the Tertiary Limestone Aquifer, Southeastern United States: U. S. Geological Survey Water-Resources Investigations Report 82-905.

Butler, J. J., Jr., 1998. The Design, Performance, and Analysis of Slug Tests: Kansas Geological Survey, Lewis Publishers, Florida.

Chen, C. S., 1965. The Regional Lithostratigraphic Analysis of Paleocene and Eocene Rocks of Florida: Florida Geological Survey Open File Report No. 45.

Clarke, W. E., Musgrove, R. M., Menke, G. C., and Cagle, J. W., Jr., 1964. Water Resources of Alachua, Bradford, Clay, and Union Counties, Florida: Florida Geological Survey Report of Investigations No. 35.

Cooke, C. W., 1945, Geology of Florida, Florida Geological Survey Bulletin 29.

DeWitt, D. J. and Mallams, J. L., 2007. The Hawthorn Aquifer System: A Proposal for Hydrostratigraphic Nomenclature Revision in Southwest Florida: Geological Society of America, Abstracts with Programs, 2007: Southeastern Section 56th Annual Meeting, v. 39, no. 2.

Driscoll, F. G., 1986. Groundwater and Wells: 2nd Edition: St. Paul Minnesota, Johnson Division.

Healy, H. G., 1975. Terraces and Shorelines of Florida: U. S. Geological Survey, Map Series No. 71, published by Bureau of Geology, Florida Department of Natural resources.

Hem, J. D., 1985. Study and Interpretation of the Chemical Characteristics of Natural Water: U. S. Geological Survey Water-Supply Paper 2254

Joyner, B. F., Sutcliffe, H., Jr., 1976. Water Resources of the Myakka River Basin Area, Southwest Florida: U. S. Geological Survey Water-Resources Investigations Report 76-58.

Keys, W. S. and MacCary, L. M., 1971. Applications of Borehole Geophysics to Water-Resources Investigations; Techniques of Water-Resources Investigations of the United States Geological Survey, Book 2, Chapter E1.

Knochenmus, Lari A., 2006. Regional Evaluation of the Hydrogeologic Framework, Hydraulic Properties, and Chemical characteristics of the Hawthorn Aquifer System Southern West-Central Florida: U. S. Geological Survey Water-Resources Investigations Report 2006-5013.

Krusemann, G. P. and de Ridder, N. A., 1994. Analysis and Evaluation of Pumping Test Data: Second Edition (completely revised), International Institute for Land Reclamation and Improvement, Publication 47.

Laney, R. L. and Davidson, C. B., 1986. Aquifer Nomenclature Guidelines: U. S. Geological Survey Open-File Report 86-534.

Leve, G. L., 1966. Ground Water in Duval and Nassau Counties, Florida: Florida Geological Survey Report of Investigations 43.

Lichtler, W. F., 1960. Geology and Ground-Water Resources of Martin County, Florida: Florida: Florida Geological Survey Report of Investigations 23.

Mallams, J. L., 2004. Nested-Bailer Method: Southwest Florida Water Management District , ROMP Instructional Memo Series 03-04.

Mallams, J. L., 2006. Slug Test Method and Analysis Recommendations: Southwest Florida Water Management District, ROMP Instructional Memo Series 01-06.

Miller, J. A., 1982. Geology and Configuration of the Base of the Tertiary Limestone Aquifer System, Southeastern United States: U. S. Geological Survey Water-Resources Investigations Report 81-1176.

Miller, J. A., 1986. Hydrogeology Framework of the Floridan Aquifer System in Florida and in Parts of Georgia, Alabama, and South Carolina: Regional Aquifer System Analysis, U. S. Geological Survey Professional Paper 1403-B.

Miller, W. L., 1980. Geological Aspects of the Surficial Aquifer in the Upper East Coast Planning Area, Southeast Florida: U. S. Geological Survey Water-Resources Investigations Open-File Report 80-586.

Parker, G. G., Ferguson, G. E., Love, S. K., and others, 1955. Water Resources of Southeastern Florida: U. S. Geological Survey Water-Supply Paper 1255.

Piper, A. M., 1944. A Graphic Procedure in the Geochemical Interpretation of Water Analyses: American Geophysical Union Transactions, v. 25.

Reese, R. S. and Richardson, E., 2007. Synthesis of the Hydrogeological Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida: U. S. Geological Survey Scientific Investigations Report 2007-5207.

Southeastern Geological Society, 1986. Florida Hydrogeologic Units; compiled by the Southeastern Geological Society Ad Hoc Committee on Florida Hydrostratigraphic Unit Definition, Florida Geological Survey Special Publication No. 28.

Scott, T. M., 1988. The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida: Florida Geological Survey, Bulletin No. 59.

Shuter, E. and Teasdale, W. E., 1989. Applications of Drilling, Coring and Sampling Techniques to Test Holes and Wells: U. S. Geological Survey Techniques of Water-Resources Investigations Report 02-F1.

Simonds, E. P. and German, E. R., 1980. Hydrology of the Lake Deaton and Lake Okahumpka Area, Northwest Sumter County, Florida: U. S. Geological Survey Water-Resources Investigations Open-File Report 80-733.

Smith, J. L. and Doran, J. W., 1996. Measurement and Use of pH and Electrical Conductivity for Soil Quality Analysis. In Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49: 169-162.

Sproul, C. R., Boggess, D. H., and Woodward, H. J., 1972. Saline-Water Intrusion from Deep Artesian Sources in the McGregor Isles area of Lee County, Florida: Florida Bureau of Geology Information Circular 75.

Stringfield, V. T., 1936. Artesian Water in the Floridan Peninsula: U. S. Geological Survey Water-Supply Paper 773-C.

Stringfield, V. T., 1966. Artesian Water in Tertiary Limestone in Southeastern United States: U. S. Geological Survey Professional Paper 517.

Tihansky, A. B., 2005. Effects of Aquifer Heterogeneity on Ground-Water Flow and Chloride Concentrations in the Upper Floridan Aquifer near and within an Active Pumping Well Field, West-Central Florida: U. S. Geological Survey Scientific Investigations Report 2005-5268.

Torres, A. E., Sacks, Lari, L. A., Yobbi, D. K., Knochenmus, L. A., and Katz, B. G., 2001. Hydrogeologic Framework and Geochemistry of the Hawthorn Aquifer System in Parts of Charlotte, De Soto and Sarasota Counties, Florida: U. S. Geological Survey Water-Resources Investigations Report 01-4015.

U.S. Environmental Protection Agency, 2012, Edition of the Drinking Water Standards and Health Advisories: U.S. Environmental Protection Agency Office of Water Publication no. EPA 822-R-09-011, 18 p.

Wedderburn, L. A., Knapp, M. S., Waltz, D. P., and Burns, W. S., 1982. Hydrogeologic Reconnaissance of Lee County, Florida: South Florida Water Management District Technical Publication 82-1.

White, W. A., 1970. Geomorphology of the Florida Peninsula: Florida Bureau of Geology Bulletin 51.

Wolansky, R. M., 1978. Feasibility of Water-Supply Development from the Unconfined Aquifer in Charlotte Florida: U. S. Geological Survey Water-Resources Investigations Report 78-26.

Wolansky, R. M., 1983. Hydrogeology of the Sarasota-Port Charlotte Area, Florida: U. S. Geological Survey Water-Resources Investigations Report 82-4089.

Wyrick, G. G., 1960. Ground-Water Resources of Volusia County, Florida: Florida Geological Survey Report of Investigations 22.

Appendix A. Methods of the Geohydrologic Data Section

The Southwest Florida Water Management District (District) collects the majority of the hydrogeologic data during the exploratory core drilling phase of the project. Lithologic samples will be collected during the core drilling process. Hydraulic and water quality data are collected primarily during packer tests as the core hole is advanced. Geophysical logging will be conducted on the core hole providing additional hydrogeologic data. After well construction, an aquifer performance test (APT) will be conducted on each of the major freshwater aquifers or producing zones encountered at the project site. These data will be uploaded into the District's Water Management Information System (WMIS).

Collection of Lithologic Samples

The District conducts hydraulic rotary core drilling, referred to as diamond drilling, with a Central Mining Equipment (CME) 85 core drilling rig and an Universal Drilling Rigs (UDR) 200D LS. The basic techniques involved in hydraulic rotary core drilling are the same as in hydraulic rotary drilling (Shuter and Teasdale, 1989). The District applies a combination of HQ, HW, NW, and PW gauge working casings along with NQ or NRQ core drilling rods, associated bits, and reaming shells from Boart Longyear®. The HQ, HW, NW, and PW working casings are set and advanced as necessary to maintain a competent core hole. The NQ and NRQ size core bits produce a nominal 3-inch hole. The HQ, HW, NW, and PW working casings and NQ and NRQ coring rods are removed at the end of the project. Details on the core drilling activities are recorded on daily drilling logs completed by the District's drilling crew and hydrogeologists.

Recovery of the core samples is accomplished using a wireline recovery system (fig. A1). The District's drilling crew uses the Boart Longyear® NQ wireline inner barrel assembly. This system allows a 1.87-inch by 5 or 10-foot section and a 1.99-inch by 10-foot section of core to be retrieved with the CME 85 rig and UDR 200D LS rig, respectively. The core is retrieved without having to remove the core rods from the core hole. Grab samples of core hole cuttings are collected and bagged where poor core recovery occurs because of drilling conditions or where the formation is unconsolidated or poorly indurated. The core samples are placed in core boxes, depths marked, and recovery estimates calculated. Core descriptions are made in the field using standard description procedures. Rock color names are taken from the "Rock-Color Chart" of the National Research Council (Goddard and others, 1948). The textural terms used to characterize carbonate rocks are based on the classification system of Dunham (1962). The core samples are shipped to the Florida Geological Survey for detailed lithologic descriptions of core, cuttings, and unconsolidated sediments. All lithologic samples will be archived at the Florida Geological Survey in Tallahassee, Florida.

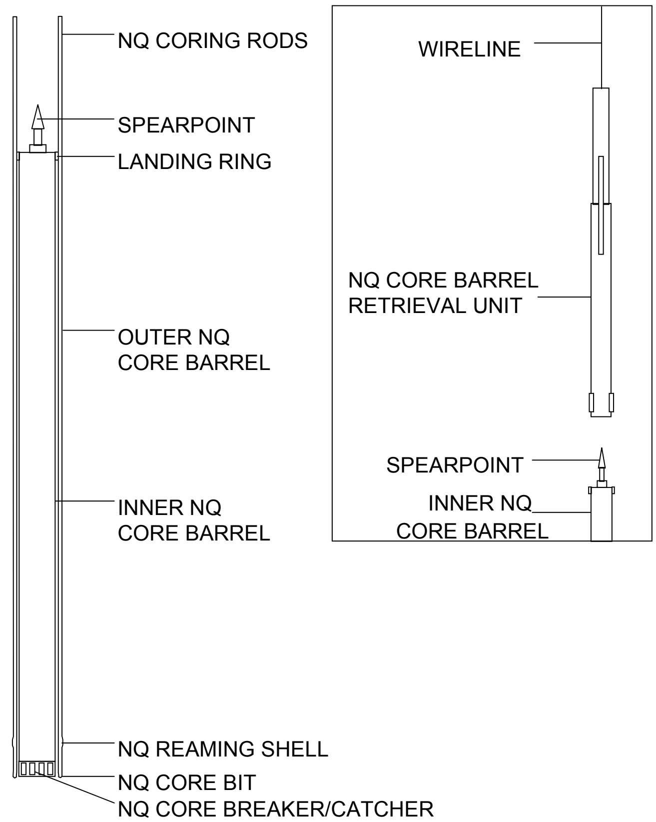


Figure A1. Boart Longyear® NQ Wireline Coring Apparatus.

Unconsolidated Coring

Various methods exist for obtaining unconsolidated material core samples, which is extremely difficult as compared to rock coring (Shuter and Teasdale, 1989). To ensure maximum sample recovery, the District drilling crew utilizes a punch shoe adapter on the bottom of the inner barrel along with an unconsolidated core catcher. The punch shoe extends the inner barrel beyond the bit allowing collection of the sample prior to disturbance by the bit or drilling fluid. A variety of bottom-discharge bits are used during unconsolidated coring. A thin bentonite mud may be used to help stabilize the unconsolidated material.

Rock Coring

During rock coring, the District drilling crew utilizes HQ, HW, NW, and PW working casings as well as permanent casings to stabilize the core hole. NQ and NRQ core drilling rods and associated products are employed during the core drilling process. Core drilling is conducted by direct-circulation rotary methods using fresh water for drilling fluid. Direct water is not effective in removing the cuttings from the core hole, therefore, a reverse-air (air-lift) pumping discharge method (fig. A2) is used to develop the core hole every 20 feet or as necessary. The District typically uses face-discharge bits for well indurated rock core drilling.

Formation Packer Testing

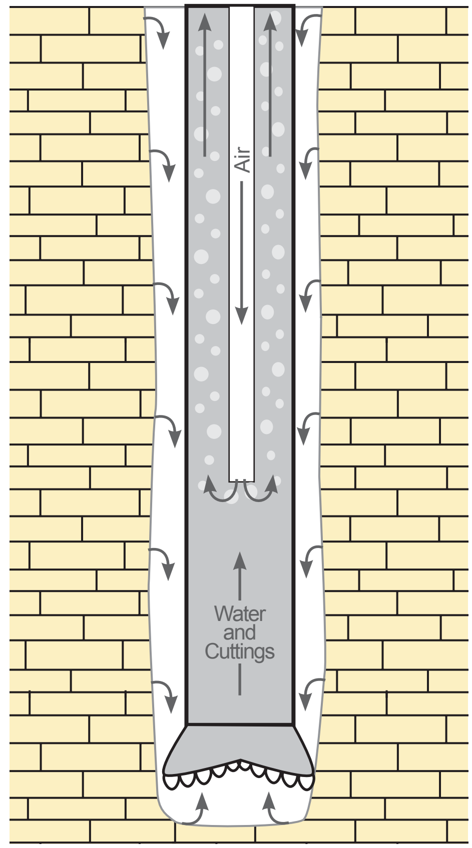
Formation (off-bottom) packer testing allows discrete testing of water levels, water quality, and hydraulic parameters. A competent core hole is necessary for packer testing, meaning unconsolidated sediments and some of the shallow weathered limestone cannot be tested using this technique. The packer assembly (fig. A3) is employed by raising the NQ or NRQ coring rods to a predetermined point, lowering the packer to the bottom of the rods by using a combination cable/air inflation line, and inflating the packer with nitrogen gas. This process isolates the test interval, which extends from the packer to the total depth of the core hole. Sometimes, the working casing may be used in place of the packer assembly. Test intervals are selected based on a regular routine of testing or at any distinct hydrogeologic change that warrants testing.

Collection of Water Level Data

Water level data is collected daily before core drilling. Additionally, water levels are recorded during each formation packer test after the necessary equilibration time. Equilibration is determined when the change in water level per unit time is negligible. Water levels are measured using a Solinst® water level meter. The water level is measured relative to an arbitrary datum near land surface, which is maintained throughout the project. These data provide a depiction of water level with core hole depth. However, these data are normally collected over several months and will include temporal variation.

Collection of Water Quality Data

Water quality samples are collected during each formation packer test. Sampling methods are consistent with the “Standard Operating Procedures for the Collection of Water Quality Samples” (Water Quality Monitoring Program, 2009). The procedure involves isolating the test interval with the off-bottom packer (fig. A3) as explained above, and air-lifting the water in the NQ or NRQ coring rods. To ensure a representative sample is collected, three core hole volumes of water are removed and temperature, pH, and specific conductance are monitored for stabilization using a YSI® multi-parameter meter. Samples are collected either directly from the air-lift



Reverse-air pumping
Reverse-air pumping allows cuttings to be removed without the introduction of man-made drilling fluids. As air bubbles leave the airline and move up inside the rods, they expand and draw water with them, creating suction at the bit. Groundwater comes from up-hole permeable zones and is natural formation water. Suction at the bit draws water and drill cuttings up the rods to be discharged at the surface.

Figure A2. Reverse-air drilling and water sampling procedure.

discharge point, with a wireline retrievable stainless steel bailer (fig. A4), or with a nested bailer. When sampling a poorly producing interval, the purge time may be substantial. The nested bailer is an alternative that is attached directly to the packer orifice thereby reducing the volume of water to be evacuated from the core hole because it collects water directly from the isolated interval through the orifice. Bailers are better for obtaining non-aerated samples, which are more representative because aerated samples may have elevated pH and consequently iron precipitation.

Once the water samples are at the surface, they are transferred into a clean polypropylene beaker. A portion of the sample is bottled according to standard District procedure for laboratory analysis (SWFWMD, 2009). A 500 ml bottle is filled with unfiltered water. Two bottles, one 250 ml and one 500 ml, are filled with water filtered through a 0.45-micron filter. A Masterflex® console pump is used to dispense the water into the bottles. The sample in the 250 ml bottle is acidified with nitric acid to a pH of 2 in order to preserve metals for analysis. The remainder is used to collect field parameters including specific conductance, temperature, pH, and chloride and sulfate concentrations. Temperature, specific conductance, and pH are measured using a YSI® multi-parameter handheld meter. Chloride and sulfate concentrations are analyzed with a YSI® 9000 photometer. The samples are delivered to the District's chemistry laboratory for additional analysis. A "Standard Complete" analysis that includes pH, calcium, chloride, ion balance, iron, magnesium, potassium, silica, sodium, strontium, specific conductance, sulfate, total dissolved solids (TDS), and total alkalinity is performed on each set of samples (SWFWMD, 2009). Chain of Custody forms are used to track the samples.

The analysis of the water quality data includes the evaluation of relative ion abundance and ion or molar ratios, and the determination of water type(s). The laboratory data are used to calculate milliequivalents per liter (meq/L) and percent meq/L. Using the criteria of 50 percent or greater of relative abundance of cations and anions, the water type for each sample is determined (Hem, 1985). The data are plotted on a Piper (1944) diagram to give a graphical depiction of the relative abundance of ions in an individual sample (Domenico and Schwartz, 1998) as well as how the individual samples compare to each other. Select ion ratios are calculated for each sample to further evaluate chemical similarities or differences among waters and to help explain why certain ions change with depth. Field pH is used in analyses because it is more likely to represent the actual conditions in the water since pH is sensitive to environmental changes (Driscolll, 1986; Fetter, 2001). Additionally, total alkalinity is used as bicarbonate concentration because hydroxyl ions generally are insignificant in natural groundwater and carbonate ions typically are not present in groundwater with a pH less than 8.3 (Fetter, 2001).

Collection of Slug Test Data

Some hydraulic properties can be estimated by conducting a series of slug tests. During slug tests, the static water level in the test interval is suddenly displaced, either up or down, and the water level response is recorded as it returns to a static state. Typically, the slug tests are conducted using the off-bottom packer assembly to isolate test intervals as the core hole is advanced. KPSI® pressure transducers are used to measure the water level changes in the test interval and the annulus between the HQ or HW casing and the NQ or NRQ coring rods. The annulus pressure transducer is used as a quality control device to detect water level changes indicative of a poorly seated packer or physical connection (i.e. fractures or very permeable rocks) within the formation. A third pressure transducer is used to measure air pressure during pneumatic slug testing. All pressure transducer output is recorded on a

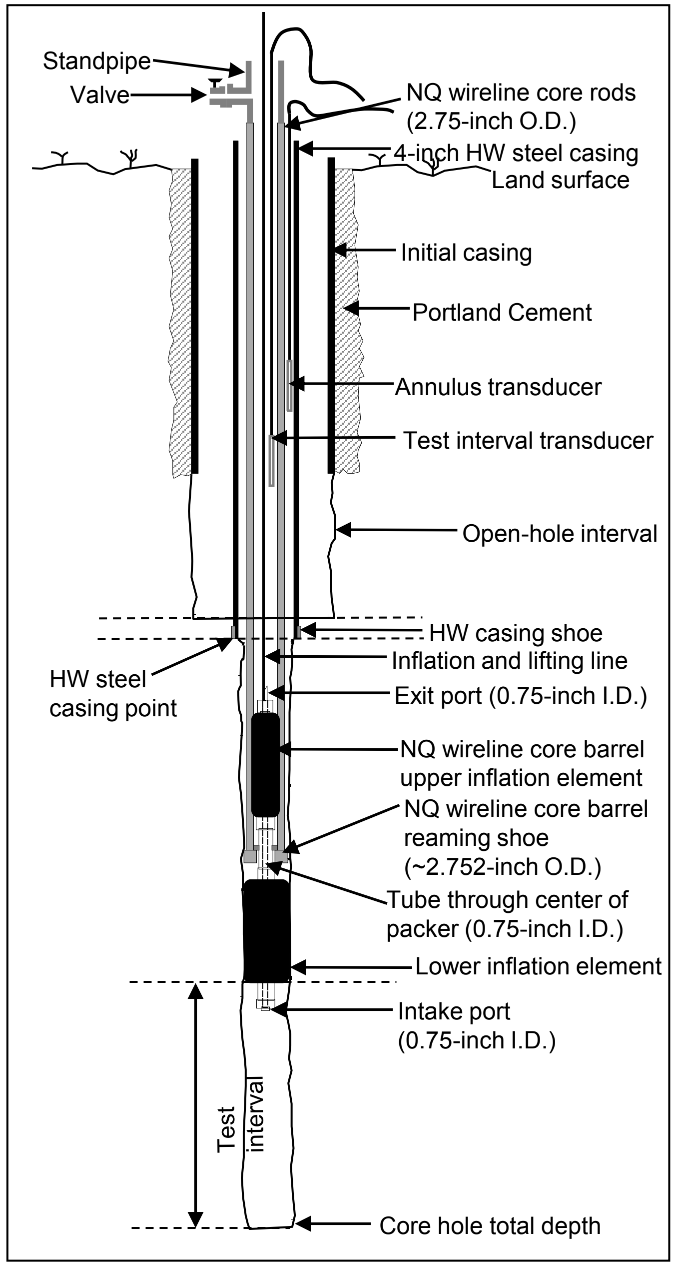


Figure A3. Formation (off-bottom) packer assembly deployed in the core hole.

Campbell Scientific, Inc. CR800 datalogger. Prior to all slug tests, the test interval is thoroughly developed.

Slug tests can be initiated several ways. The primary methods used by the District are the pneumatic slug method and the drop slug method. Core hole conditions and apparent formation properties dictate which method is used. The pneumatic slug method is used for moderate to high hydraulic conductivity formations because of the near instantaneous slug initiation. The pneumatic slug method uses a NQ rod modified to include a pressure gauge and regulator, and an electronic or manual valve. The opening is sealed with compression fittings. Air pressure is used to depress the static water level. The water

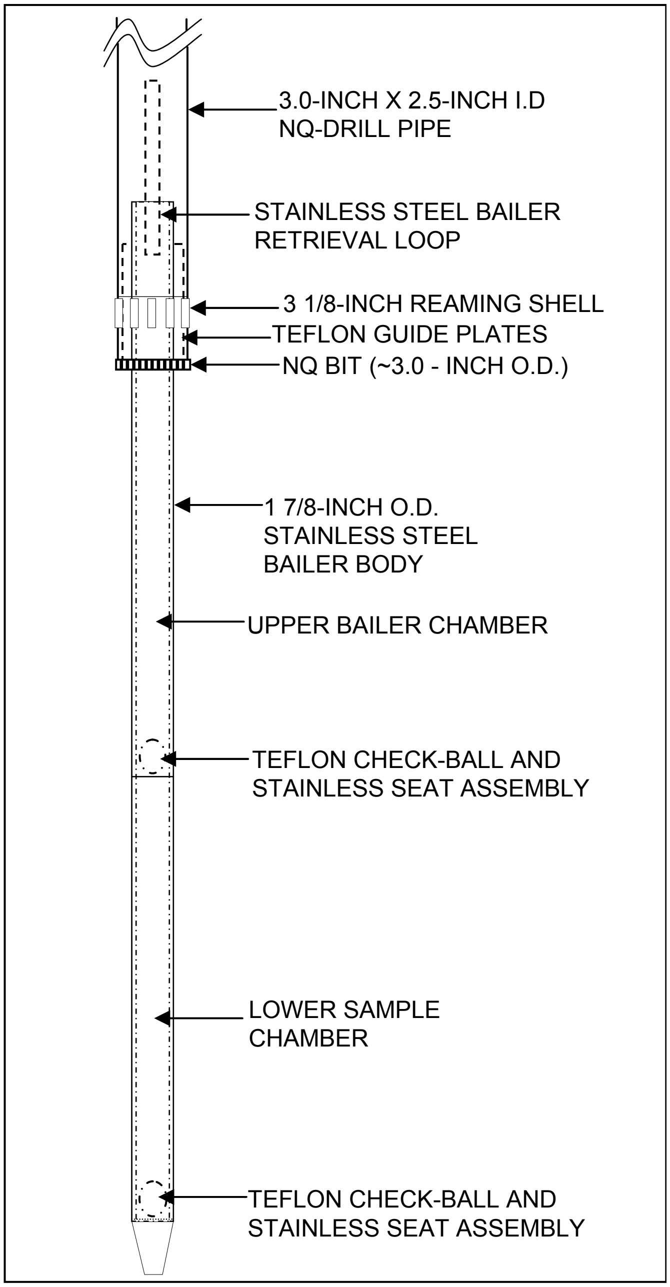


Figure A4. Diagram of the wireline retrievable bailer.

level is monitored for equilibration and once it returns to the initial static water level the test is initiated. The electronic or manual valve is opened to release the air pressure causing the water level to rise (rising head test). The water level is recorded until it reaches the initial static water level. The drop slug method is used for low hydraulic conductivity formations because of the slow slug initiation. This test initiation method is slower than the pneumatic method because the water has to travel down the core hole before reaching the test interval. The drop slug method involves adding a predetermined volume of water into the NQ or NRQ rods raising the static water level. A specially designed PVC funnel fitted with a ball valve placed over the NQ or NRQ rods is used to deliver the water. The valve is opened releasing the water causing the water level to rise. The water level is recorded until the raised level falls (falling head test) back to static level.

Several quality assurance tests are conducted in the field in order to identify any potential sources of error in the slug test data. The quality assurance tests include evaluation of the discrepancy between the expected and observed initial displacements (Butler, 1998), evaluation of the normalized plots for head dependence and evolving skin effects, and the evaluation of the annulus water level for movement. Lastly, estimates of the hydraulic conductivity values are made based on the slug test data using AQTESOLV® (Duffield, 2007) software by applying the appropriate analytical solution.

Slug tests in which the formation packer assembly is used all have one common source of error resulting from the orifice restriction (fig. A3). The water during the slug tests moves through NQ or NRQ coring rods with an inner diameter of 2.38 inches, the orifice on the packer assembly that has an inner diameter of 0.75 inch, and the core hole that has a diameter of approximately 3 inches. The error associated with this restriction is evident as head dependence in the response data of multiple tests conducted on the same test interval with varying initial displacements. The error associated with the orifice restriction will result in an underestimation of the hydraulic conductivity values. In order to reduce the error associated with the orifice restriction, the District inserts a spacer within the zone of water level fluctuation thereby reducing the effective casing radius from 1.19 inches to 0.81 inch. A second technique used to minimize the effects caused by the orifice restriction is the use of initial displacements (slugs) of less than 1.5-feet in height. Also, if the working casing is used instead of the packer, the error is eliminated.

Geophysical Logging

Geophysical logs are useful in determining subsurface geologic and groundwater characteristics (Fetter, 2001). Geophysical logs provide three major types of information from water wells: hydrologic (water quality, aquifer characteristics, porosity, and flow zone detection), geologic (lithology, formation delineation), and physical characteristics (depth, diameter, casing depth, texture of well bore, packer points, and integrity of well construction).

Geophysical logging entails lowering the geophysical tool into the monitor well on a wireline and measuring the tool's response to the formations and water quality in and near the core hole during retrieval. Core hole geophysical logs are run during various stages of core drilling. When feasible, geophysical logs are run prior to casing advancements, while the core hole is still open to the formation.

The District uses Century® geophysical logging equipment. The three types of geophysical probes used are the caliper/gamma, induction, and multifunction. The multifunction tool measures natural gamma-ray [GAM (NAT)], spontaneous potential (SP), single-point resistivity (RES), short [RES(16N)], long [RES(64N)] normal resistivity, fluid temperature (TEMP) and fluid specific conductance (SP COND). Each log type is explained below.

Caliper (CAL)

Caliper logs are used to measure the diameter of the borehole. This log can identify deviations from the nominal borehole diameter and, in turn, locate cavities, washouts, and build-up. This log is useful for determining packer and casing placement because competent, well-indurated layers can be located. The caliper log also aids in calculating volumes of material such as cement, gravel, sand, and bentonite needed when installing casing during well construction and filling open hole intervals for abandonment.

Gamma [GAM(NAT)]

Natural gamma-ray logs measure the amount of natural radiation emitted by materials surrounding the borehole. Natural gamma radiation is emitted from decaying radioactive elements present in certain types of geologic materials, thus specific rock materials can be identified from the log. Some of these materials include clays that trap radioactive isotopes as they migrate with groundwater, organic deposits, and phosphates. Clays contain high amounts of radioactive isotopes in contrast to more stable rock materials like carbonates and sands, therefore, can be identified easily. One advantage using natural gamma-ray radiation is that it can be measured through PVC and steel casing, although it is subdued by steel casing. Gamma-ray logs are used chiefly to identify rock lithology and correlate stratigraphic units because gamma-ray radiation can be measured through casing and is relatively consistent.

Spontaneous Potential (SP)

Spontaneous potential logs measure the electrical potential (voltages) that result from chemical and physical changes at the contacts between different types of geological materials (Driscoll, 1986). They must be run in fluid-filled, uncased boreholes, and function best when the fluid in the borehole is different from that in the formation. They are useful in identifying contacts between different lithologies and stratigraphic correlation.

Single-Point Resistance (RES)

Single-point resistance logs measure the electrical resistance, in ohms, from rocks and fluids in the borehole to a point at land surface. Electrical resistance of the borehole materials is a measure of the current drop between a current electrode placed in the borehole and the electrode placed on land surface. The log must be run in a fluid-filled, uncased borehole. They are used for geologic correlation, such as bed boundaries, changes in lithology, and identification of fractures in resistive rocks (Keys and MacCary, 1971).

Short-Normal [RES (16N)] and Long-Normal [RES (64N)] Resistivity

Short-normal and long-normal resistivity logs measure the electrical resistivity of the borehole materials and the surrounding rocks and water by using two electrodes. The 16 and 64 refers to the space, in inches, between the potential electrodes on the logging probe. The short-normal curve indicates the resistivity of the zone close to the borehole and the long-normal has more spacing between the electrodes, therefore measures the resistivity of materials further away from the borehole (Fetter, 2001). Short-normal and long-normal logs are useful in locating highly resistive geologic materials such as limestone, dolostone, and pure, homogenous sand and low resistivity materials like clay or clayey, silty sand. Also, the logs indicate water quality changes because fresh water has high resistivity whereas poor quality water has low resistivity. Resistivity logs must be run in fluid-filled, open boreholes.

Temperature (TEMP)

Temperature logs record the water temperature in the borehole. Temperature variations may indicate water entering or exiting the borehole from different aquifers. Thus, the log is useful in locating permeable zones. The log must be run in fluid-filled boreholes.

Specific Conductance (SP COND)

Specific Conductance logs measure the capacity of borehole fluid to conduct an electrical current with depth. The log indicates the total dissolved solids concentration of the borehole fluid. The specific conductance log may be useful in determining permeable zones because zones of increased inflow or outflow may show a change in water quality.

Aquifer Performance Tests

An APT is a controlled field experiment conducted to determine the hydraulic properties of water-bearing (aquifers) units (Stallman, 1976). APTs can be either single-well or multi-well and may partially or fully penetrate the aquifer. An APT involves pumping the aquifer at a known rate and monitoring the water level response. The general procedure, applied by the District, for conducting an APT involves design, field observation, and data analysis. Test design is based on the geologic and hydraulic setting of the site, such as knowledge of the aquifer thickness, probable range in transmissivity and storage, the presence of uncontrolled boundaries (sources/sinks), and any practical limitations imposed by equipment. Field observations of the discharge and water levels are recorded to ensure a successful test. The District measures the discharge rate using an impeller meter and circular orifice weir. The District measures water levels using pressure transducers and an electric tape. All the recording devices are calibrated and traceable to the National Institute of Standards and Technology.

Data analysis includes first making estimates of drawdown observed during the test and then using analytical and numerical methods to estimate hydraulic properties of the aquifer and adjacent confining units. Diagnostic radial flow plots and derivative analyses of APT data are valuable tools in characterizing the type of aquifer present and specific boundary conditions that may be acting on the system during an APT.

Single-Well Aquifer Performance Test

Single-well APTs includes one test (pumped) well within the production zone used for both pumping and monitoring the water level response. A single-well APT may include monitoring the background water level in the test well for a duration of at least twice the pumping period (Stallman, 1976). Background data collection may not be necessary if the duration of the single-well test is short and the on-site hydrogeologist does not consider background data necessary. After background data collection is complete and it is determined that a successful test can be accomplished, pumping is started. During the test, the discharge rate is monitored and controlled to less than 10 percent fluctuation to ensure a constant rate test. The water level is recorded in the test well during the drawdown (pumping) and recovery phases. Other wells outside of the production zone may be monitored in order to provide additional information on the flow system. The response data are used to estimate drawdown and then analyzed using analytical methods to estimate the hydraulic properties of the aquifer and adjacent confining units. Typically, response data is analyzed using AQTESOLV® (Duffield, 2007) software by applying the appropriate analytical solution.

Multi-Well Aquifer Performance Test

Multi-well APTs involve a test (pumped) well and at least one observation well for monitoring the water level response in the production zone. Background water level data is collected for a period of at least twice the planned pumping period (Stallman, 1976). The background data allows for the determination of whether a successful test can be conducted and permits the estimation of drawdown. After the background data collection period is complete and it is determined that a successful test can be completed, pumping is started. During the test, the discharge rate is monitored and controlled to less than 10 percent fluctuation. The water level response is recorded in both the test well and the observation well(s) during the drawdown (pumping) and recovery phases. Other wells outside of the production zone may be monitored in order to provide additional information on the flow system. The response data are used to estimate drawdown and then analyzed using analytical or numerical methods to estimate the hydraulic properties of the aquifer and adjacent confining units. Typically, response data is analyzed using AQTESOLV® (Duffield, 2007) software by applying the appropriate analytical solution.

References

Butler, J.J., 1998, The Design, Performance, and Analysis of Slug Testing: Boca Raton, Florida, Lewis Publishers, 252 p.

Domenico, P.A., and Schwartz, F.A., 1998, Physical and Chemical Hydrogeology (2d ed.): New York, John Wiley & Sons, Inc., 528 p.

Driscoll, Fletcher G., 1986, Groundwater and Wells (2d ed.): St. Paul, Minnesota, Johnson Division, 1089 p.

Duffield, G. M., 2007, AQTESOLV for Windows, Professional Version 4.5 [software]: Reston, VA, HydroSOLV, Inc.

Dunham, R. J., 1962, Classification of carbonate rocks according to depositional texture, in Ham, W. E. ed., Classification of carbonate rocks: American Association of Petroleum Geologists Memoir 1, p. 108-121.

Fetter, C.W., 2001, Applied Hydrogeology: Upper Saddle River, New Jersey, Prentice Hall, 598 p.

Goddard, E.N., and others, 1948, Rock-Color Chart: Washington, D.C., National Research Council, 6 p. (Republished by Geological Society of America, 1951; reprinted 1963, 1970, 1975).

Hem, J. D., 1985, Study and interpretation of the chemical characteristics of natural water (3d ed.): U.S. Geological Survey Water-Supply Paper 2254.

Keys, W. S., and MacCary, L. M., 1971, Application of Borehole Geophysics to Water-Resources Investigations: U.S. Geological Survey Techniques of Water-Resources Investigations Report, Chapter E1, Book 2, 126 p.

Piper, A.M., 1944, A graphic procedure in the geochemical interpretation of water analyses: American Geophysical Union Transactions, v. 25, p. 914-923.

Shuter, E., and Teasdale, W.E., 1989, Application of Drilling, Coring, and Sampling Techniques to Test Holes and Wells: U.S. Geological Survey Techniques of Water-Resources Investigations Report, Chapter F1, Book 2, 97 p.

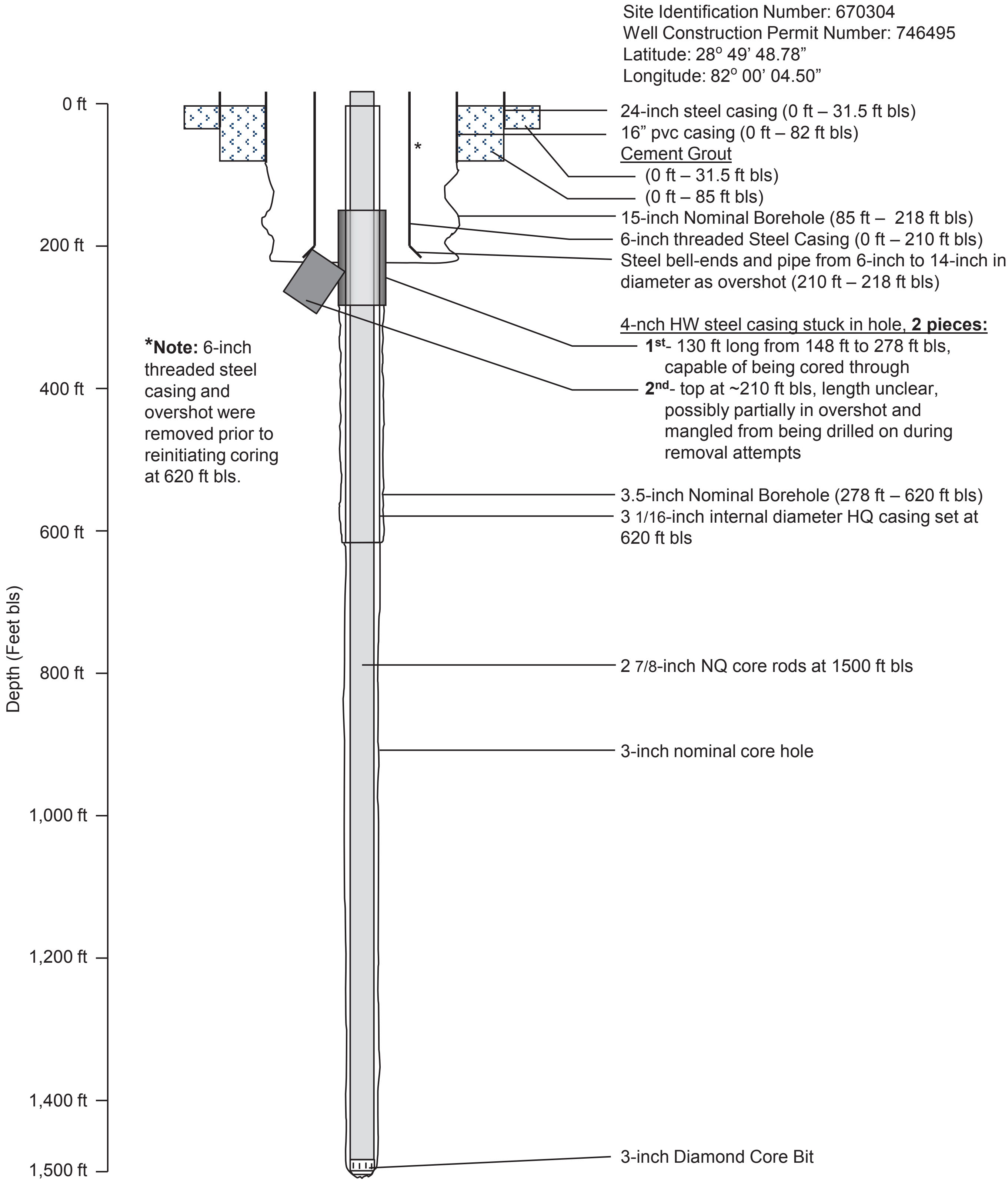
Southwest Florida Water Management District (SWFWMD), 2009, Quality Control for Southwest Florida Water Management District: Brooksville, Florida, Southwest Florida Water Management District, 125 p.

Stallman, R.W., 1976, Aquifer-Test Design, Observation and Data Analysis: U.S. Geological Survey Techniques of Water-Resources Investigations Report, Chapter B1, Book 3, 26 p.

Water Quality Monitoring Program, 2009, Standard Operating Procedures for the Collection of Water Quality Samples (rev. 8): Brooksville, FL., Southwest Florida Water Management District. 54 p.

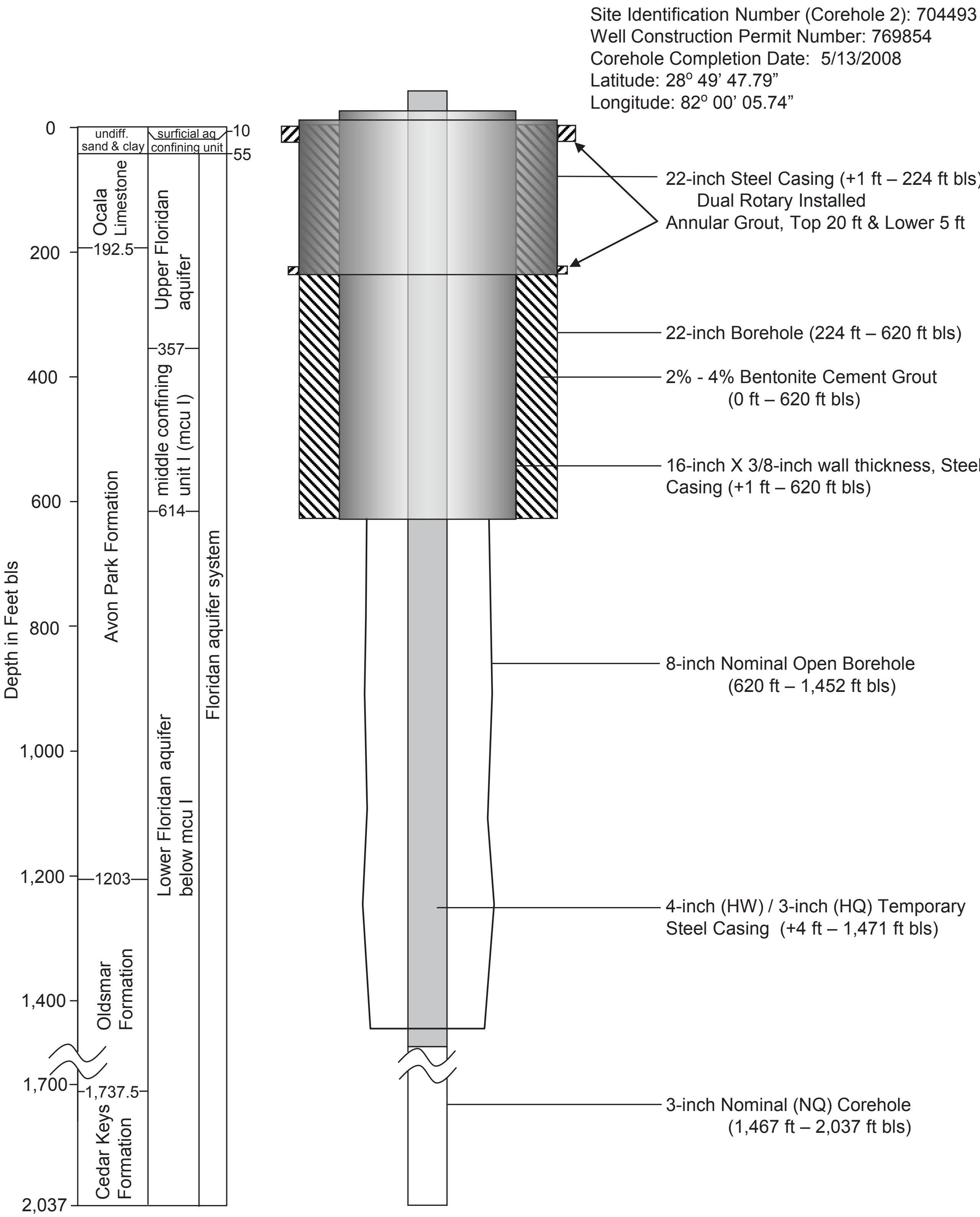
Page intentionally blank

Appendix B. As-built Diagrams for Wells Constructed at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida



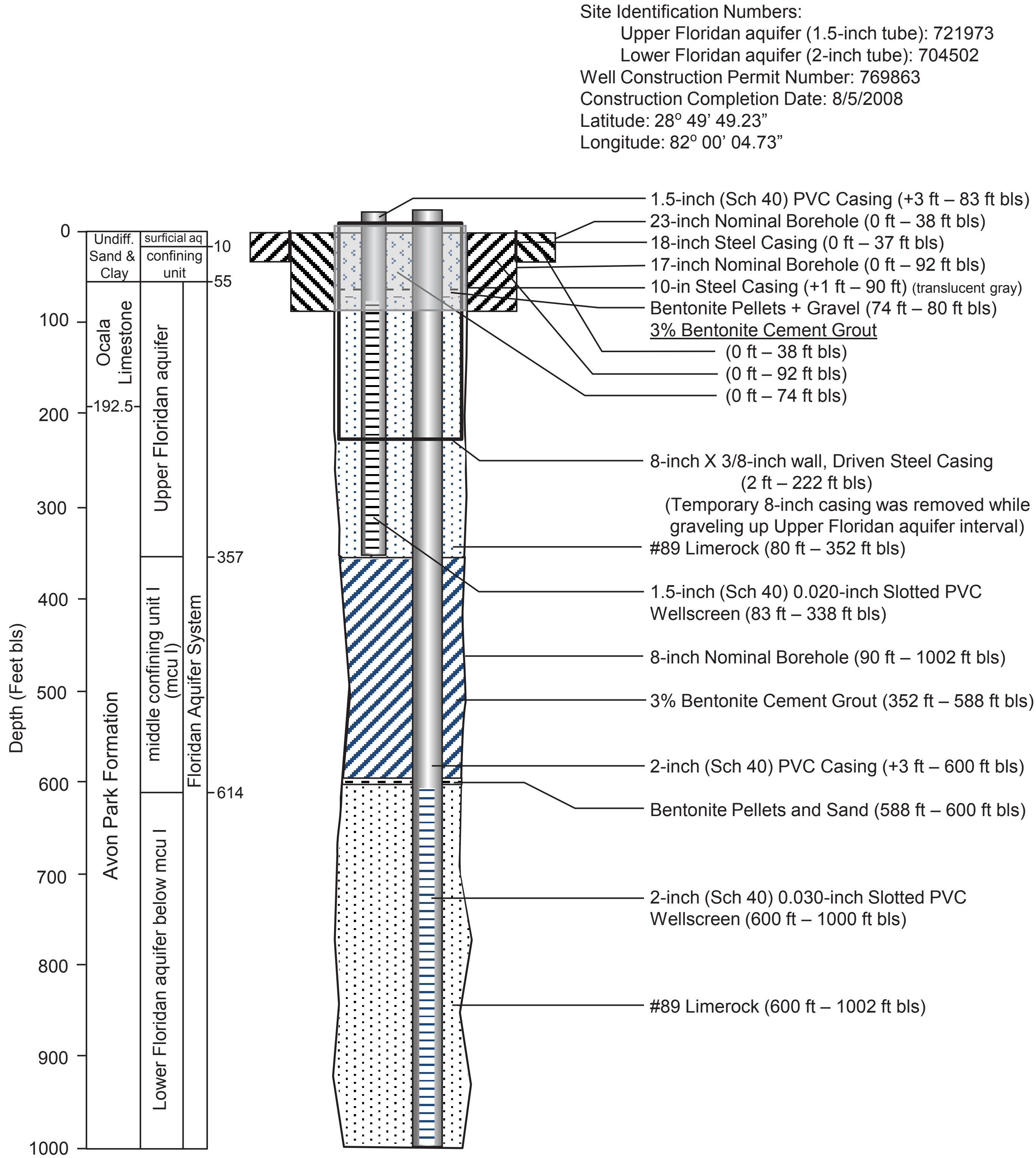
[ft bls, feet below land surface; HQ, 3-inch steel casing; HW, 4-inch steel casing; NQ, 3-inch core rods; pvc, polyvinyl chloride]

Figure B1. Configuration of COREHOLE 1 at total depth of coring at the ROMP 117 – Lake Okahumpka well site, including 4-inch HW steel casing that was stuck and left in the core hole. Also illustrates overshot used during removal attempts of stuck 4-inch HW casing.



[aq, aquifer; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; mcu I, middle confining unit I; NQ, 3-inch core rods; undiff, undifferentiated]

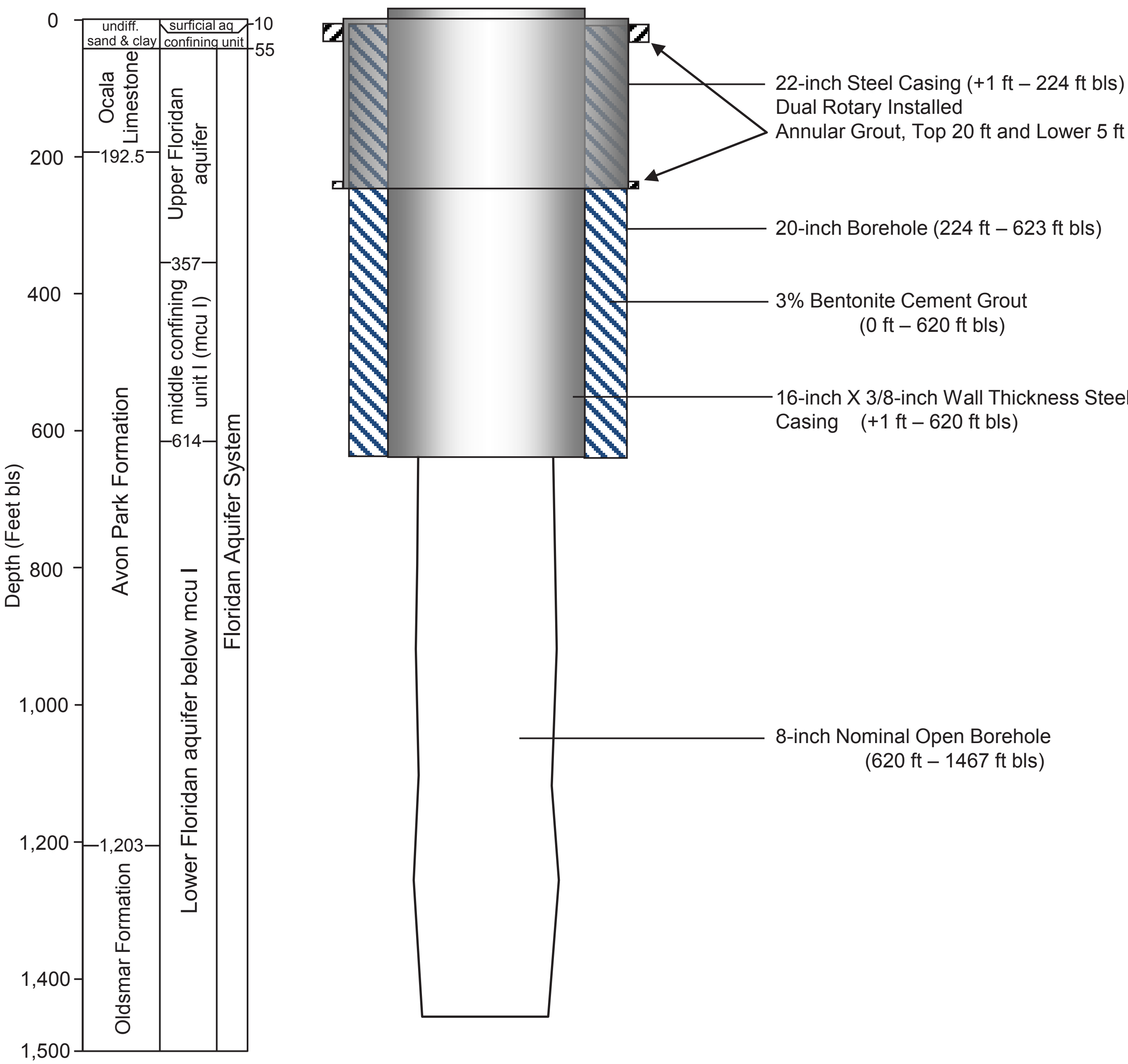
Figure B2. Configuration of Lower Floridan aquifer monitor during deep exploratory coring (COREHOLE 2) at the ROMP 117 – Lake Okahumpka well site prior to aquifer performance test and lining with 6-inch PVC.



[aq, aquifer; bls, below land surface; ft, feet; in, inch; mcu I, middle confining unit I; PVC, polyvinyl chloride; Sch, schedule; surf, surficial; undiff, undifferentiated]

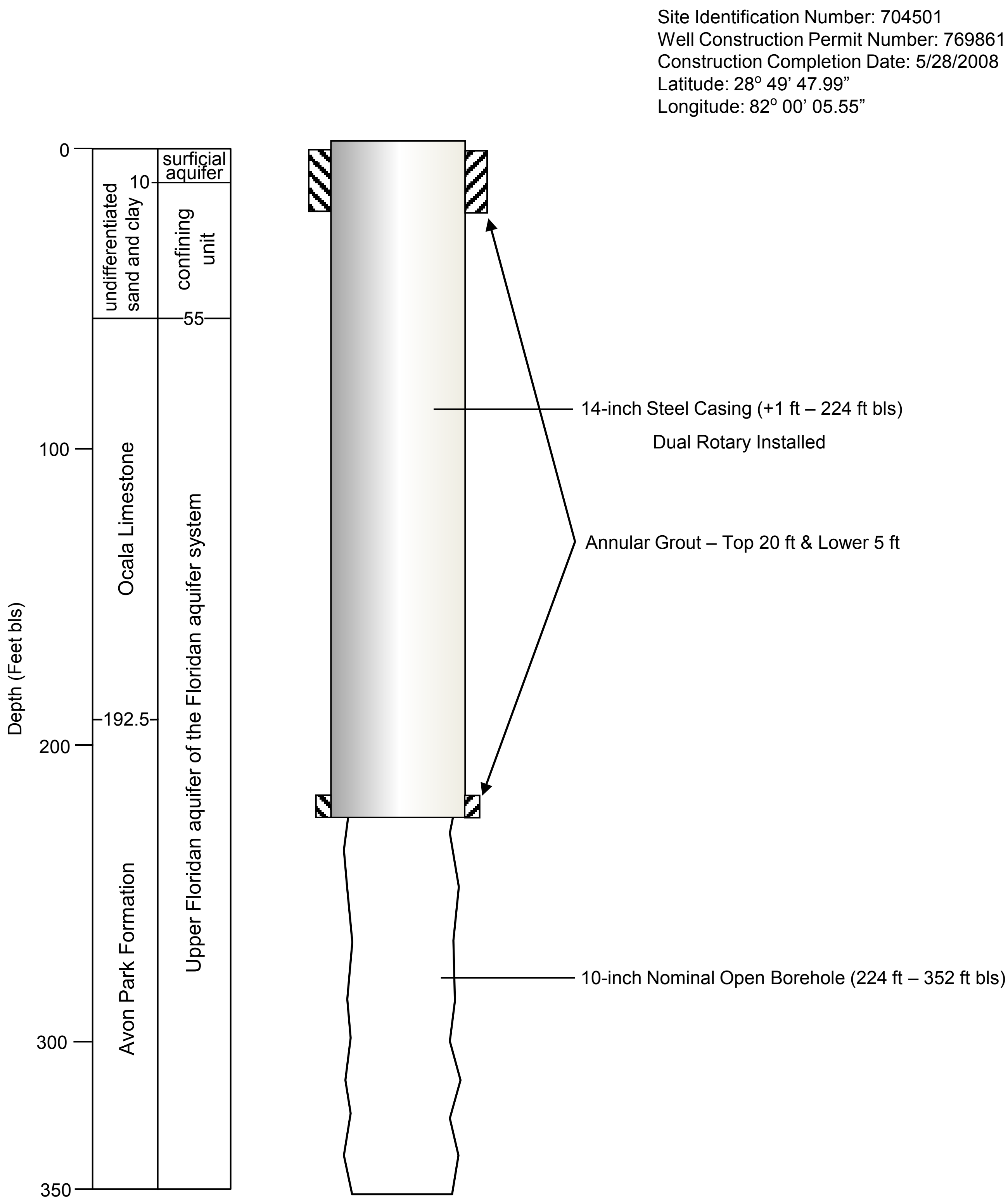
Figure B3. As-built well diagram for the dual zone observation well monitoring the Upper Floridan and Lower Floridan aquifers at the ROMP 117 – Lake Okahumpka well site.

Site Identification Number: 736139
Well Construction Permit Number: 769854
Construction Completion Date: 5/13/2008
Latitude: 28° 49' 47.77"
Longitude: 82° 00' 05.73"



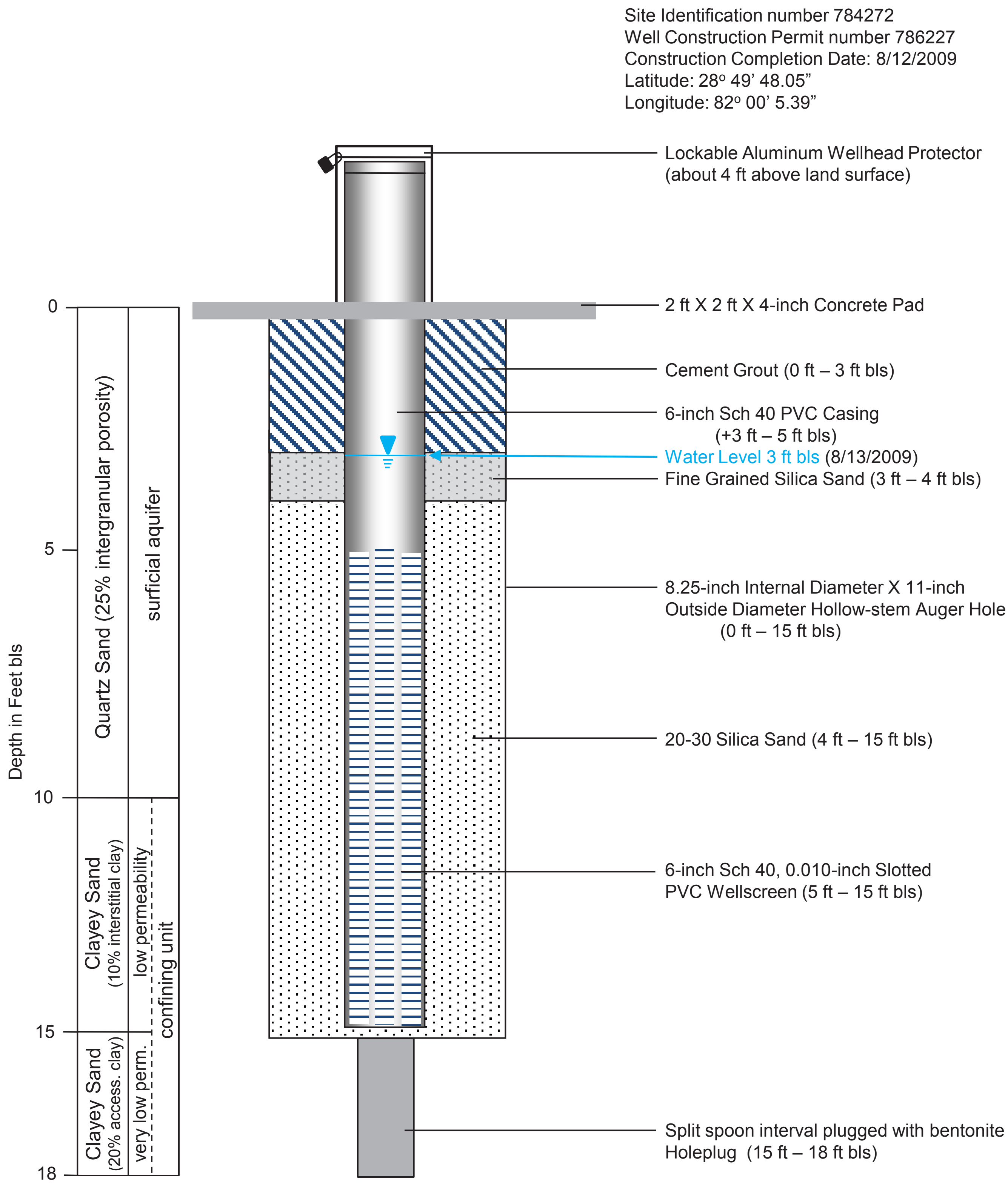
[aq, aquifer; bls, below land surface; ft, feet; mcu I, middle confining unit I]

Figure B4. As-built well diagram of the L FLDN AQ PRODUCTION/MONITOR well at the ROMP 117 – Lake Okahumpka well site prior to coring (COREHOLE 2) out the bottom of the well to 2,037 ft bls.



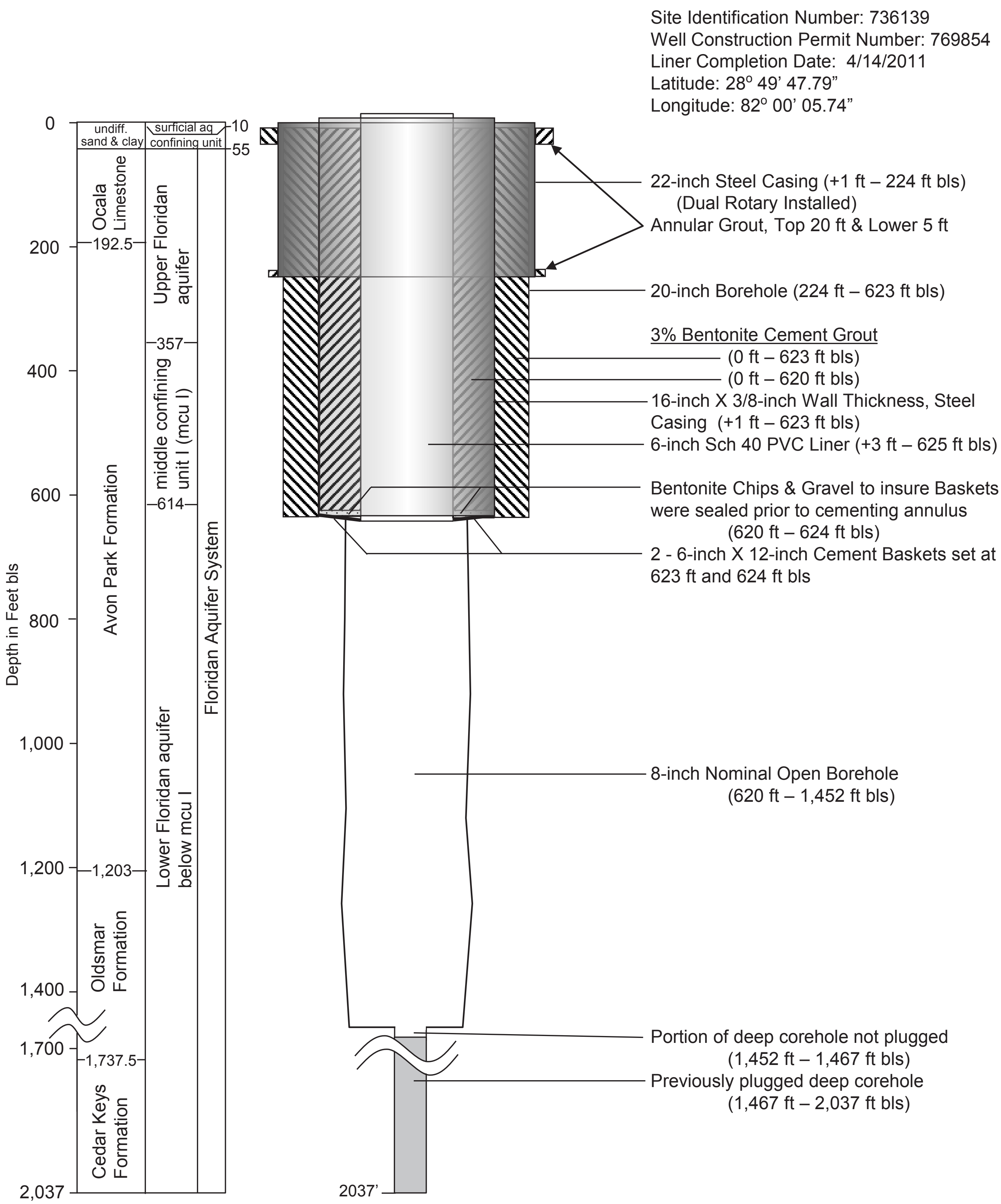
[bls, below land surface; ft, feet]

Figure B5. As-built well diagram for the U FLDN PRODUCTION/MONITOR well at the ROMP 117 – Lake Okahumpka well site prior to lining with 6-inch PVC.



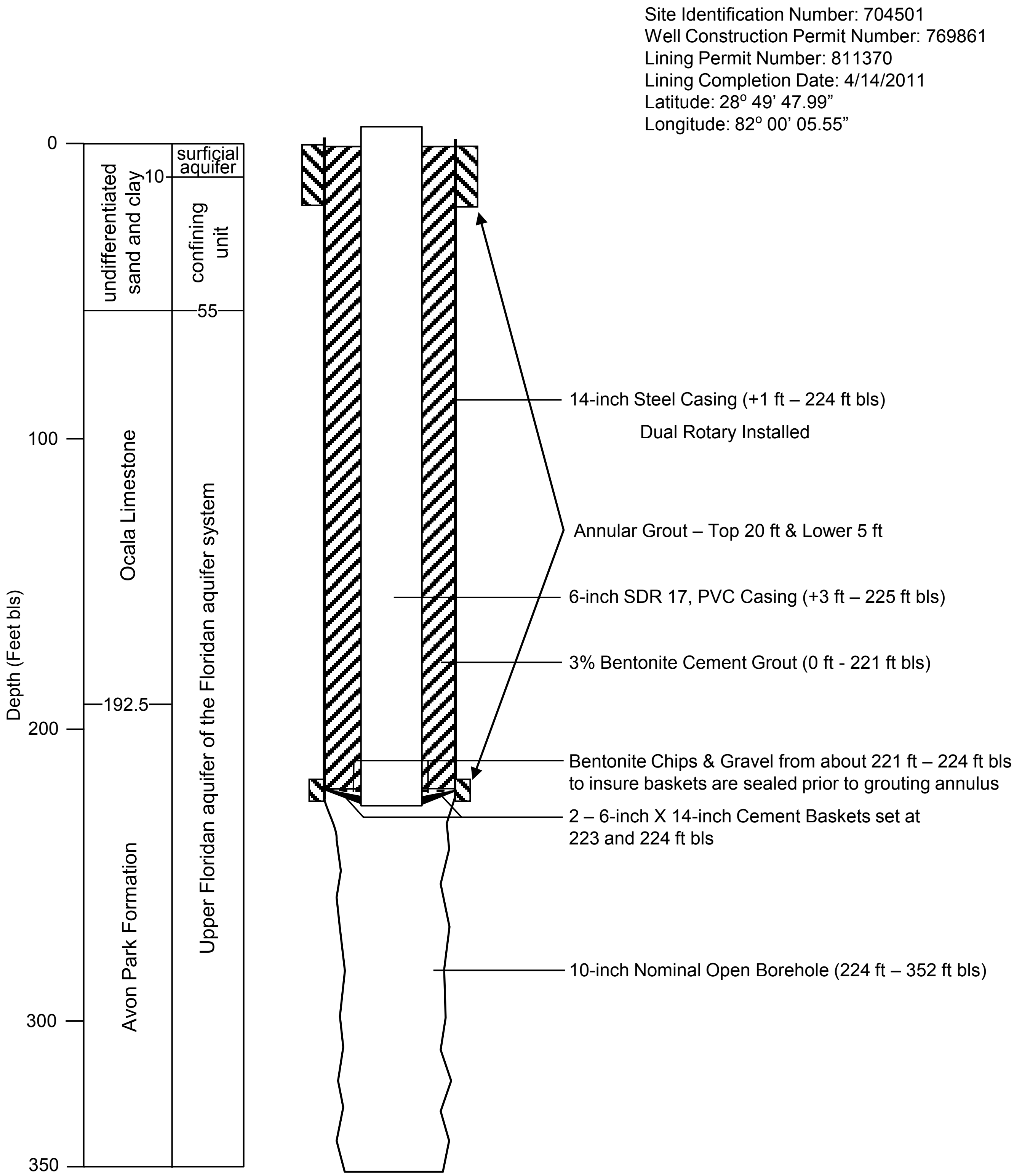
[access., accessory; bls, below land surface; ft, feet; perm., permeability; PVC, polyvinyl chloride; Sch, schedule]

Figure B6. As-built diagram of the SURF AQ MONITOR well at the ROMP 117 – Lake Okahumpka well site.



[aq, aquifer; bls, below land surface; ft, feet; mcu I, middle confining unit I; PVC, polyvinyl chloride; Sch, schedule; undiff., undifferentiated]

Figure B7. As-built well diagram for the L FLDN AQ PRODUCTION/MONITOR well at the ROMP 117 – Lake Okahumpka well site after lining with 6-inch PVC.



[bls, below land surface; ft, feet; PVC, polyvinyl chloride; SDR, standard dimension ratio]

Figure B8. As-built well diagram for the U FLDN AQ PRODUCTION/MONITOR well at the ROMP 117 – Lake Okahumpka well site after lining with 6-inch PVC.

Page intentionally blank

Appendix C. Geophysical Log Suites for the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

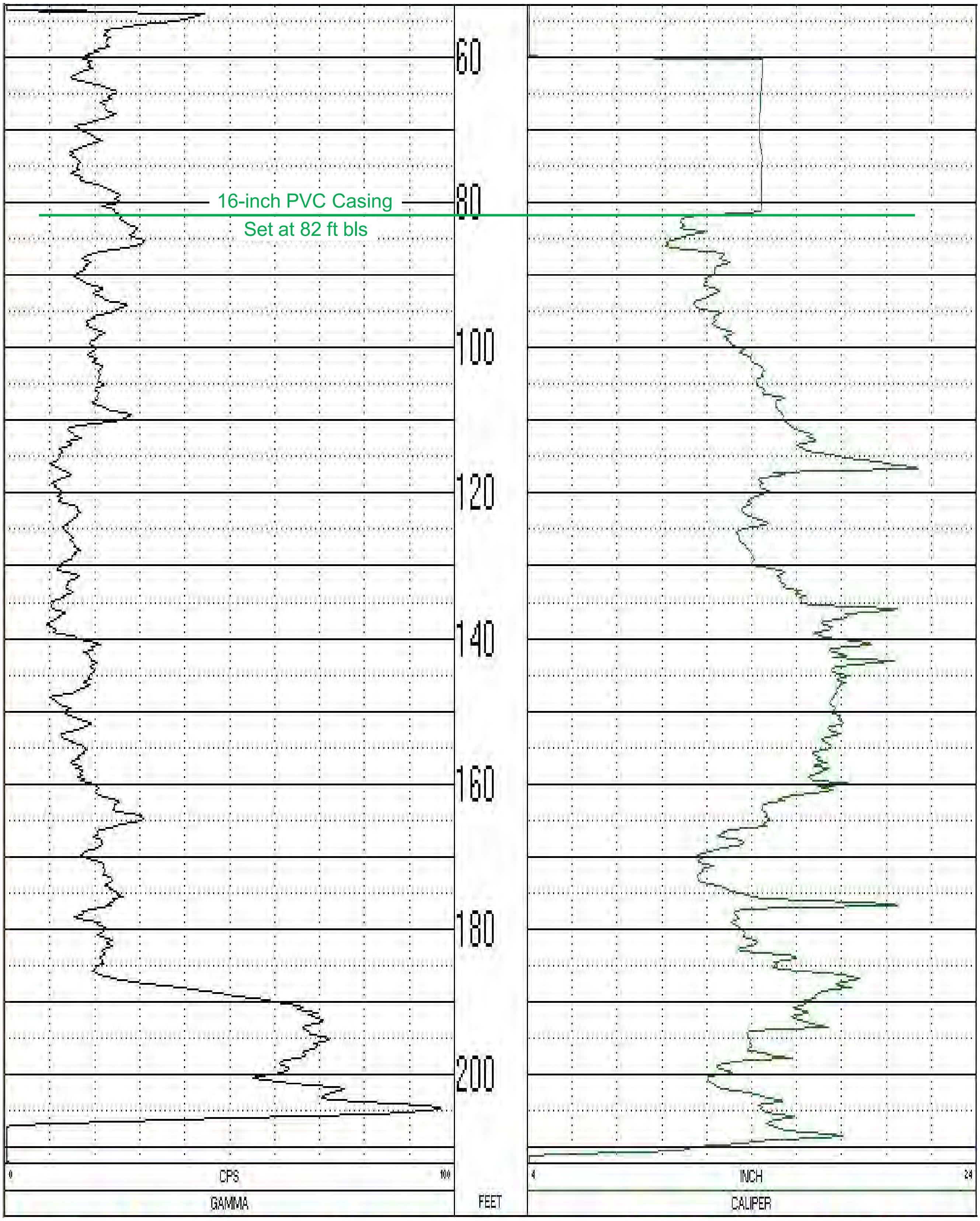


Figure C1. Gamma/caliper log of COREHOLE 1 run from land surface to 213 feet below land surface at ROMP 117 well site in Northeast Sumter County, Florida. Log run prior to setting 4-inch HW temporary steel casing at 201 feet below land surface.

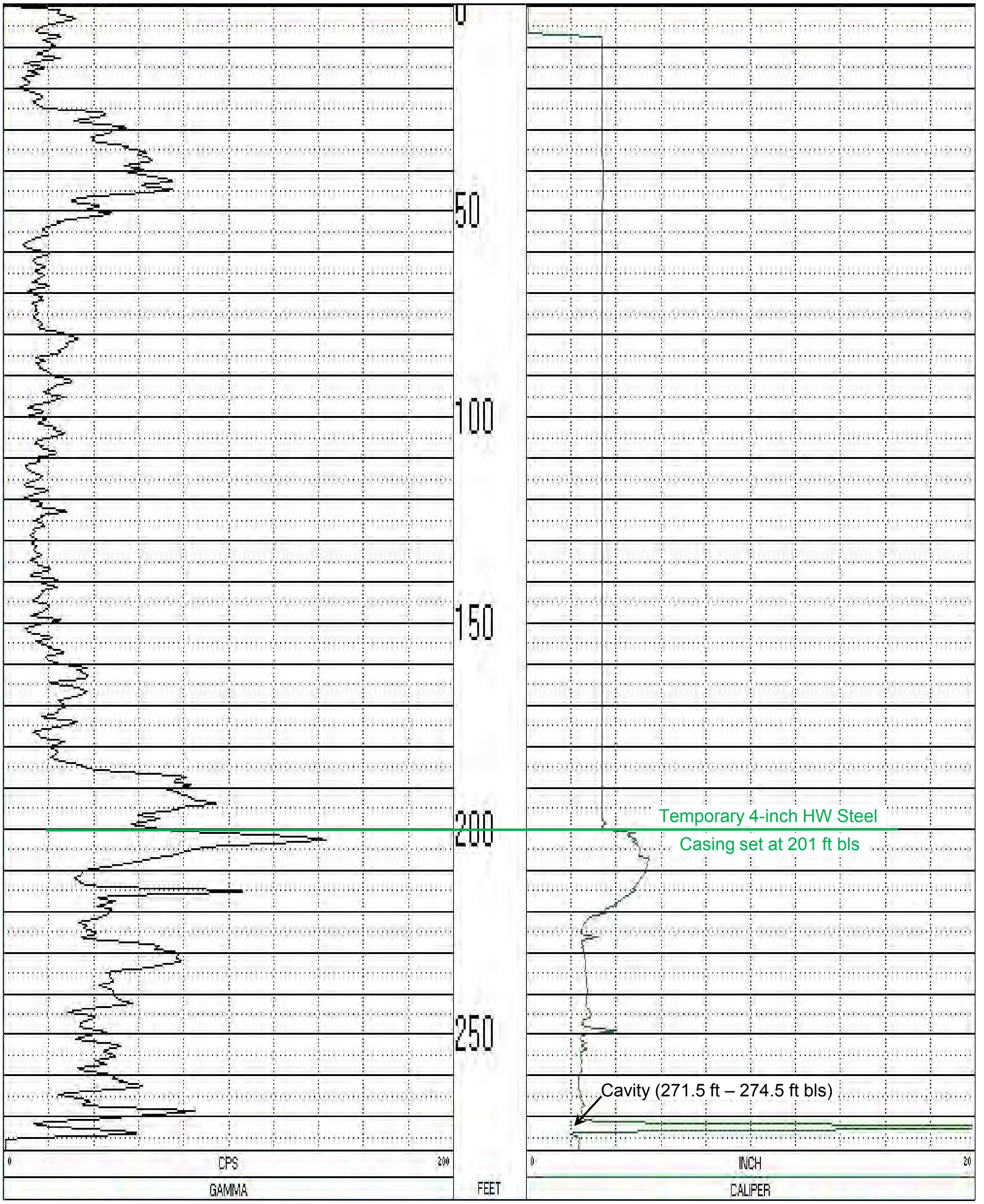


Figure C2. Gamma/caliper log run from land surface to 278 ft bls in COREHOLE 1 at the ROMP 117 well site in Northeast Sumter County, Florida. Log run at a core hole depth of 740 feet below land surface but the core hole was obstructed at 278 feet below land surface, probably by rock debris from the cavity.

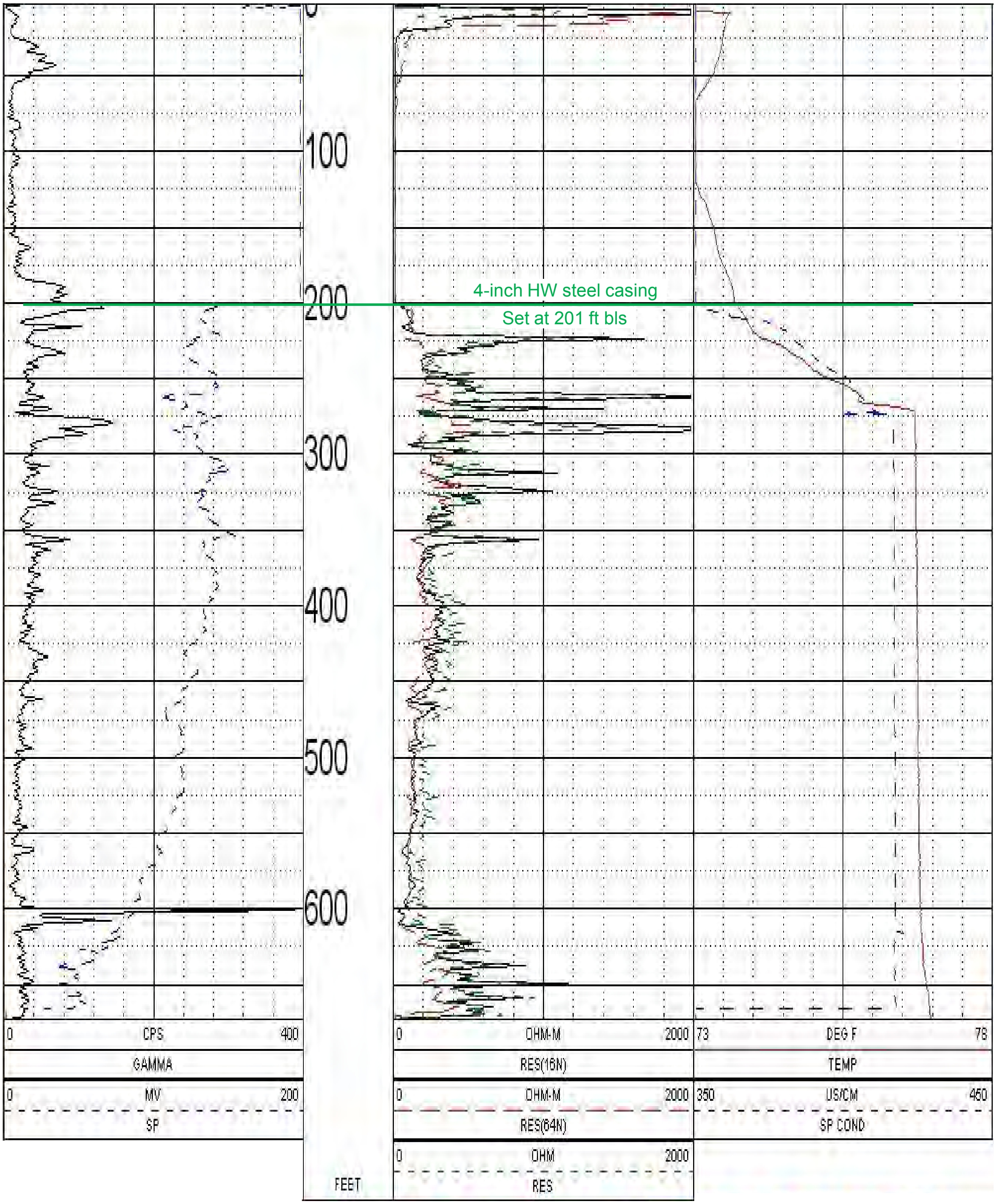


Figure C3. Multifunction log of COREHOLE 1 from land surface to 673 feet below land surface at the ROMP 117 well site in Northeast Sumter County, Florida. Log run prior to setting HQ temporary steel casing at 601 feet below land surface.

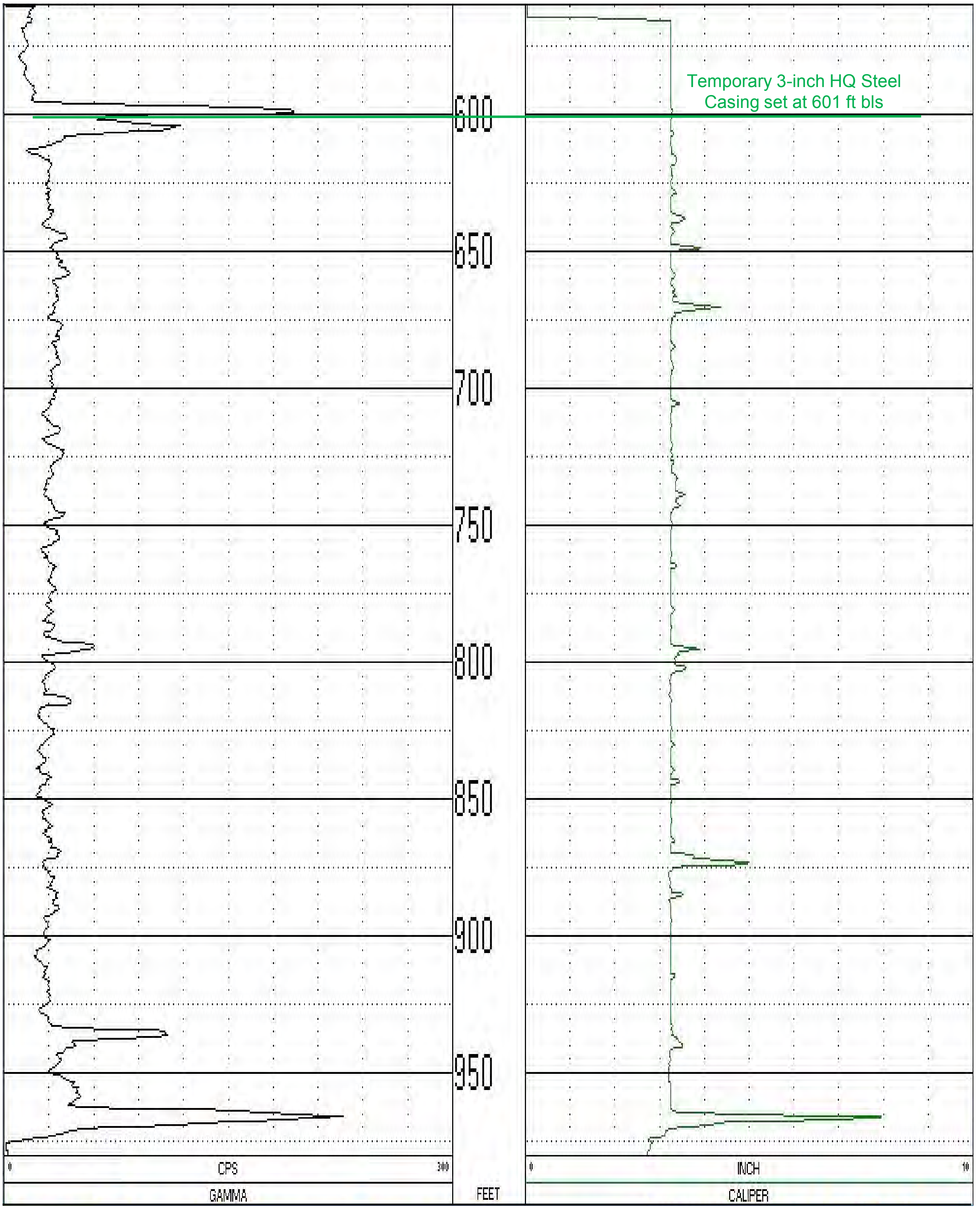


Figure C4. Gamma/caliper log run from 560 to 979 feet below land surface in COREHOLE 1 at the ROMP 117 well site in Northeast Sumter County, Florida.

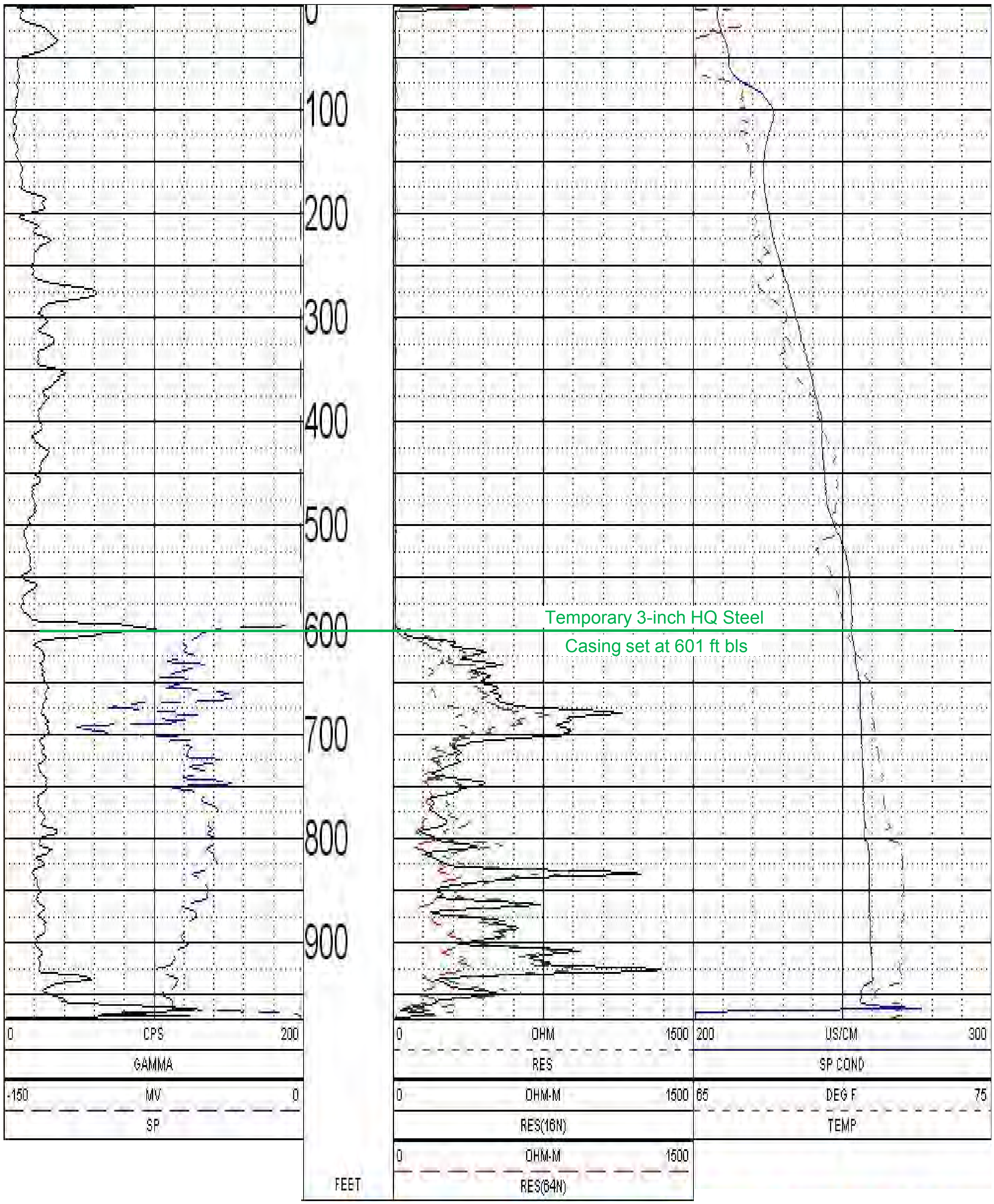


Figure C5. Multifunction log run from land surface to 974 feet below land surface in COREHOLE 1 at the ROMP 117 well site in Northeast Sumter County, Florida.

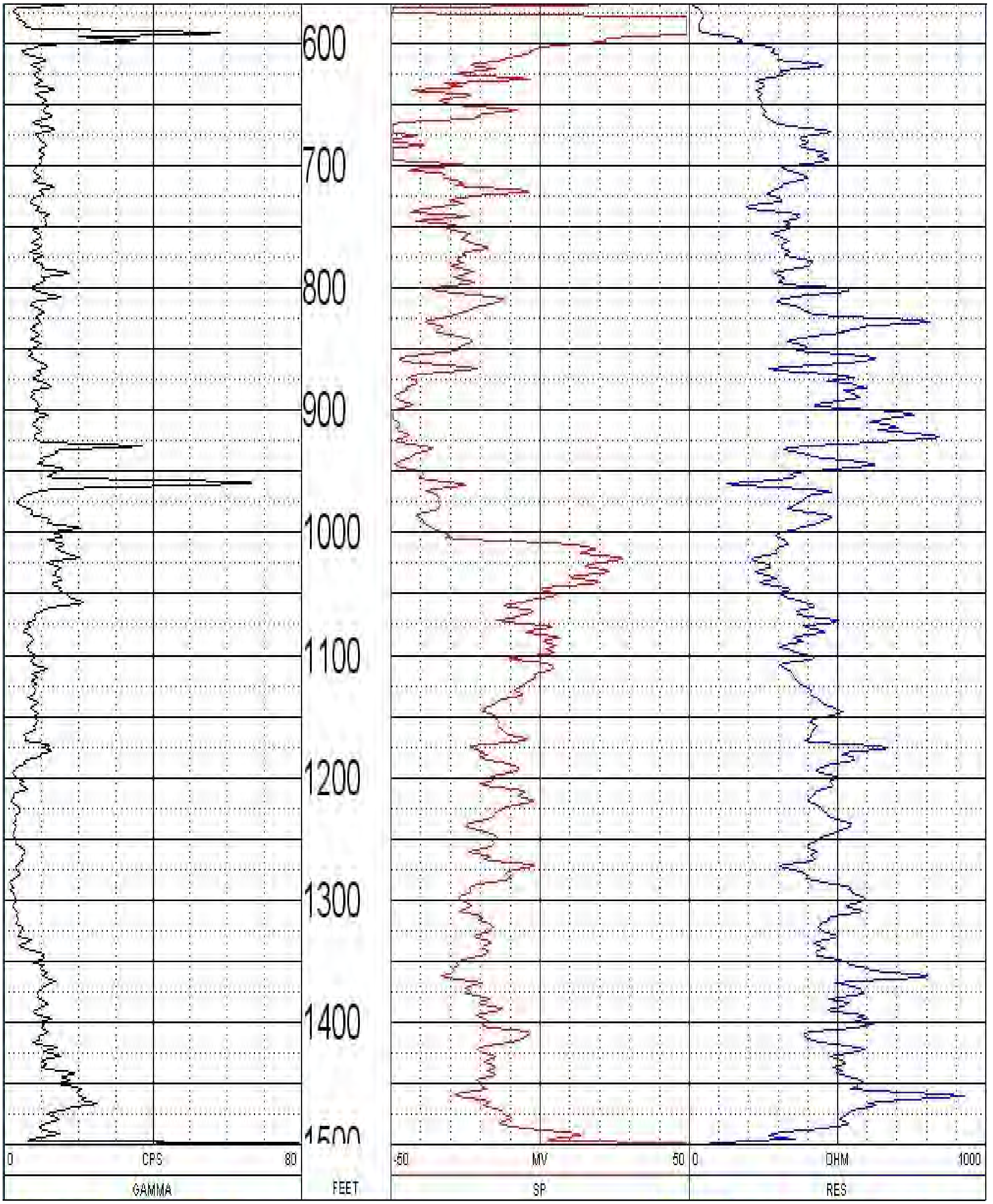


Figure C6. Slim-line electric log of COREHOLE 1 run from 570 to 1500 feet below land surface (total depth) at the ROMP 117 well site in Northeast Sumter County, Florida.

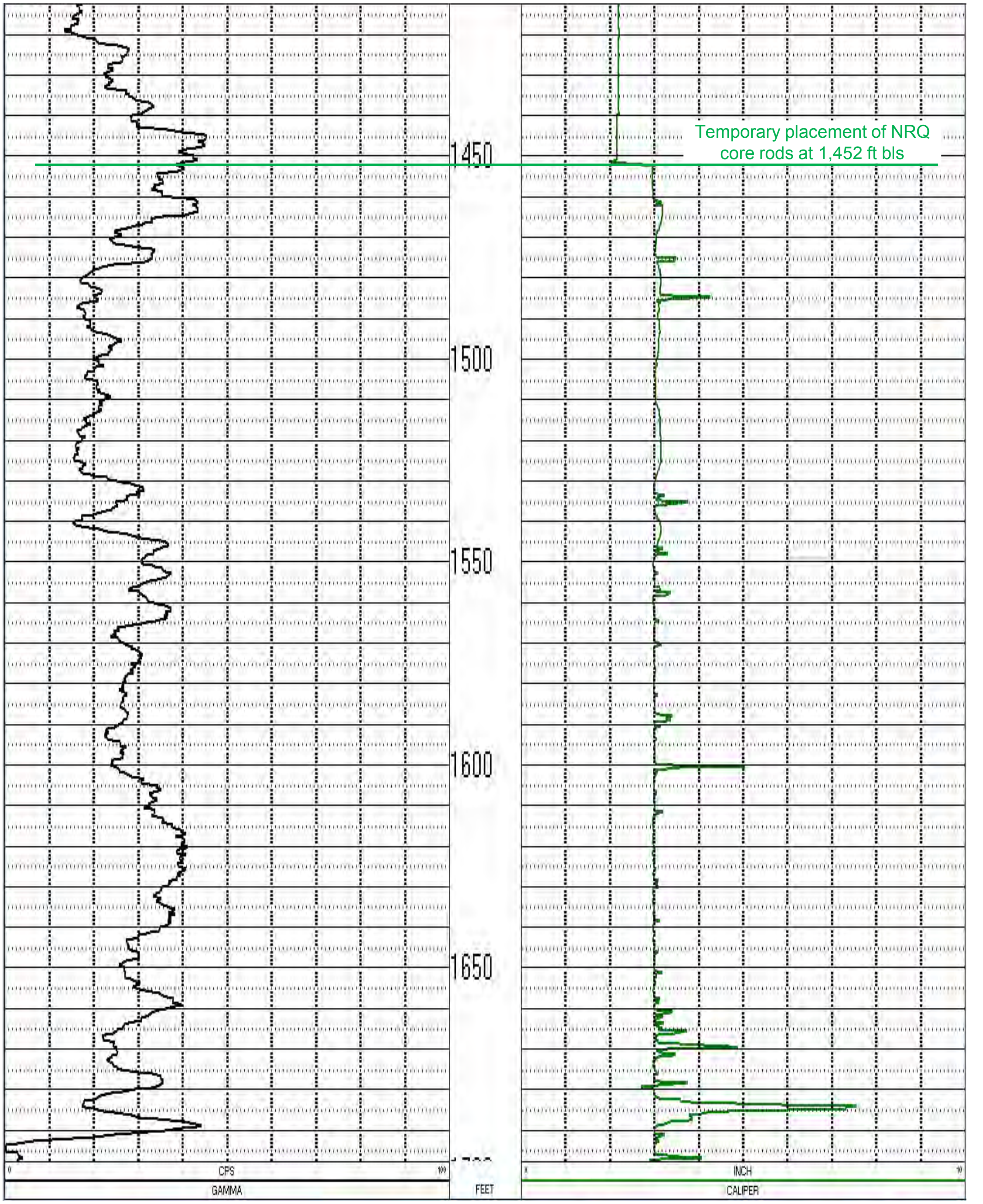


Figure C7. Gamma/caliper log run from 1,412 to 1,698 feet below land surface in COREHOLE 2 at the ROMP 117 well site in Northeast Sumter County, Florida. NRQ core drilling rods were used to guide the geophysical probe to and from the top of COREHOLE 2 in the bottom of the Avon Park production/monitor well.

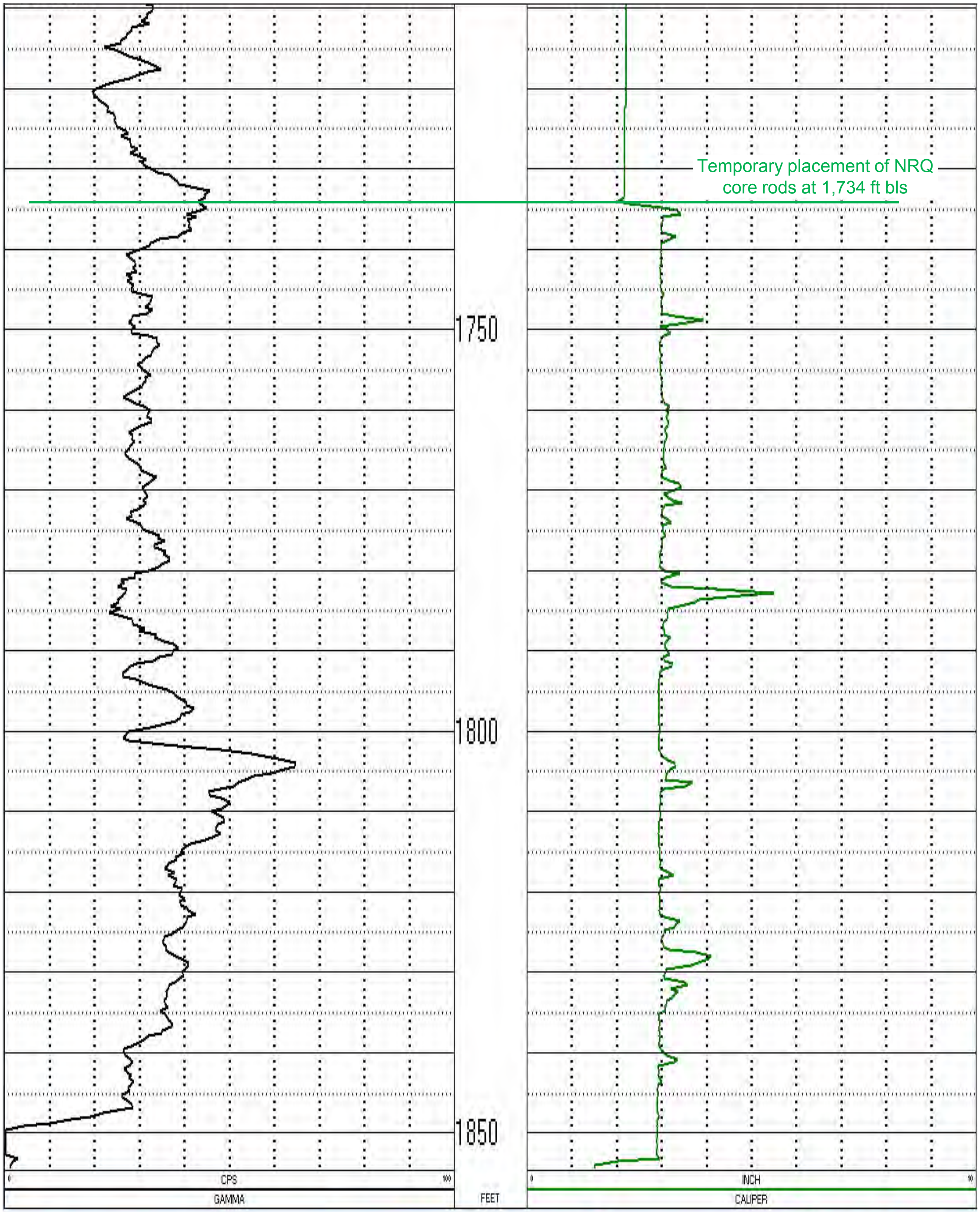


Figure C8. Gamma/caliper Log run from 1,710 to 1,854 feet below land surface in COREHOLE 2 at the ROMP 117 well site in Northeast Sumter County, Florida. NRQ core drilling rods were used to protect geophysical probe from treacherous core hole.

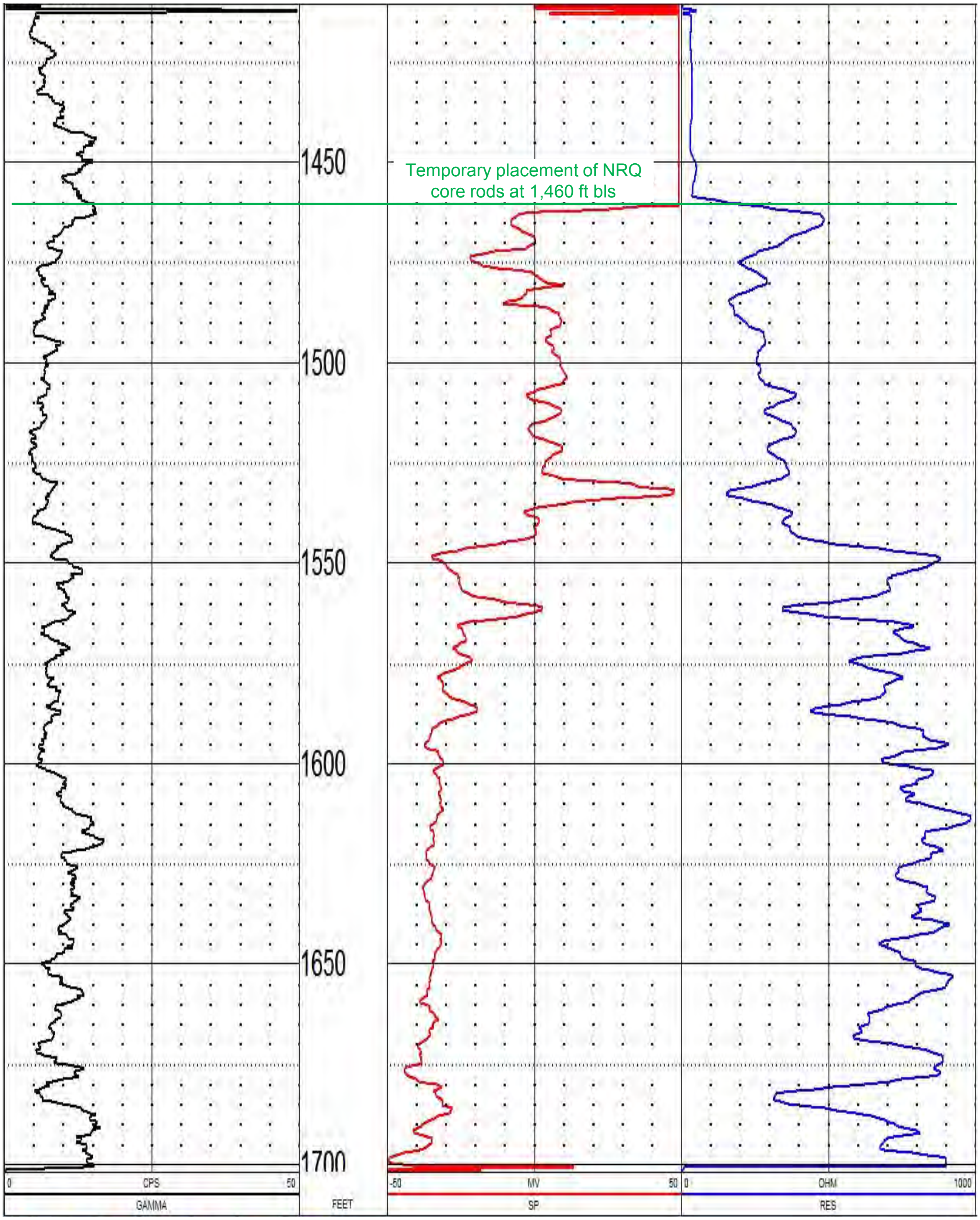


Figure C9. Electric log with gamma run from 1,460 to1,703 feet below land surface in COREHOLE 2 at the ROMP 117 well site in Northeast Sumter County, Florida. This log was run out the bottom of the core rods which guided the probe to and from the top of the core hole.

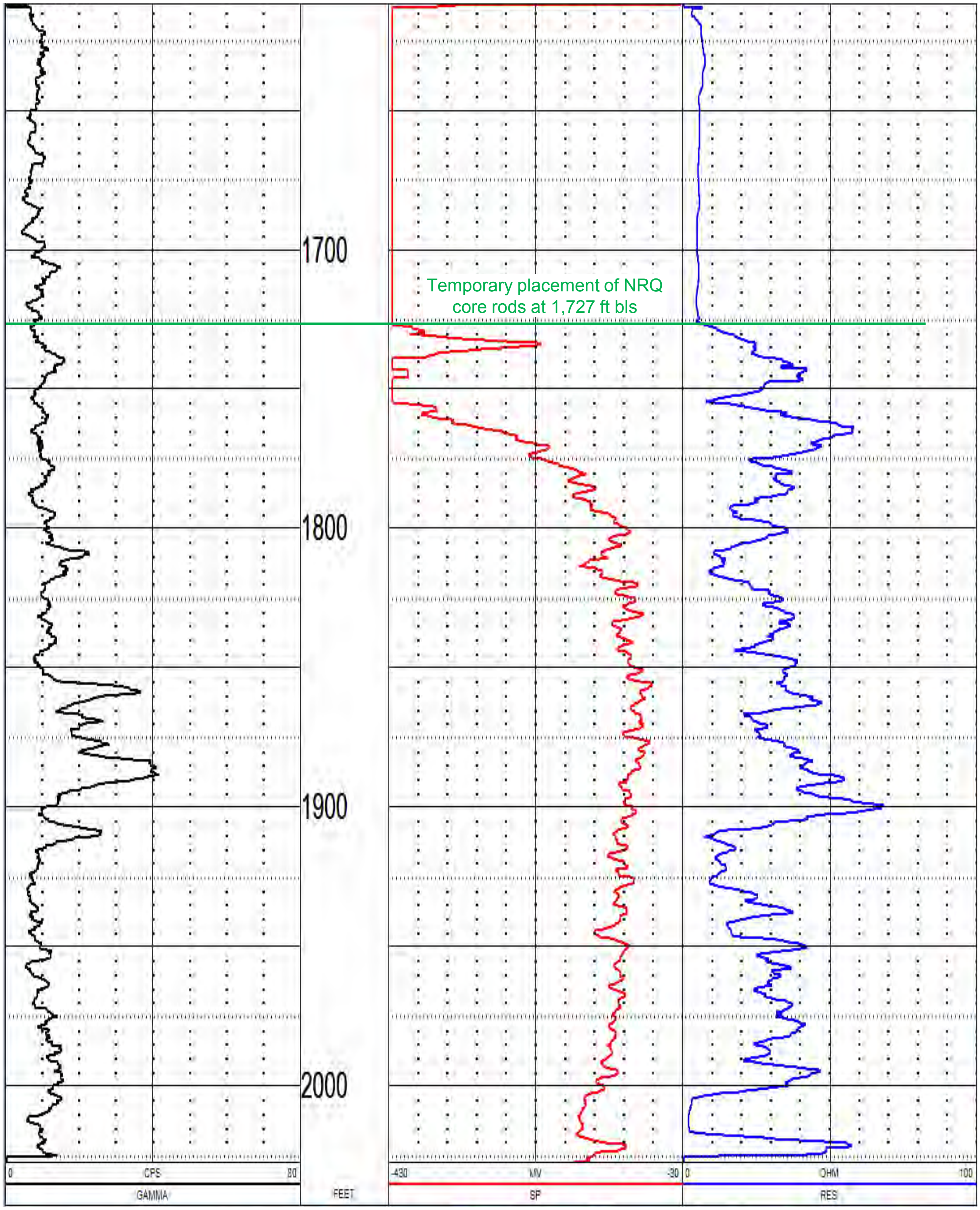


Figure C10. Electric log with gamma run from 1,611 to 2,027 feet below land surface in COREHOLE 2 at the ROMP 117 well site in Northeast Sumter County, Florida. This log was run out the bottom of the core rods which shielded the probe from treacherous borehole.

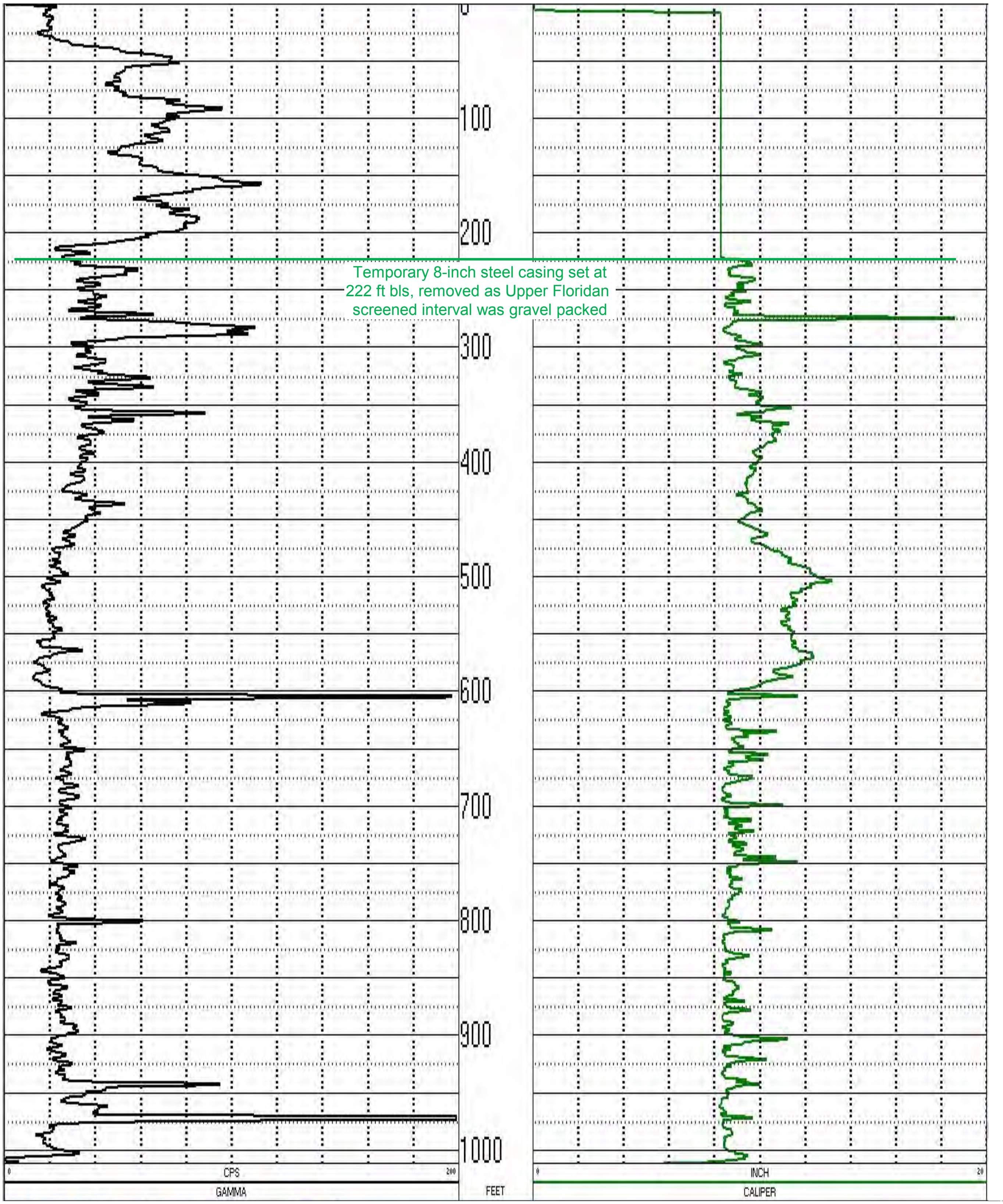


Figure C11. Gamma/caliper log of the temporary dual zone observation well at total depth prior to installing the 1.5-inch PVC Upper Floridan aquifer tube and the 2-inch PVC Lower Floridan aquifer tube at the ROMP 117 well site in Northeast Sumter County, Florida.

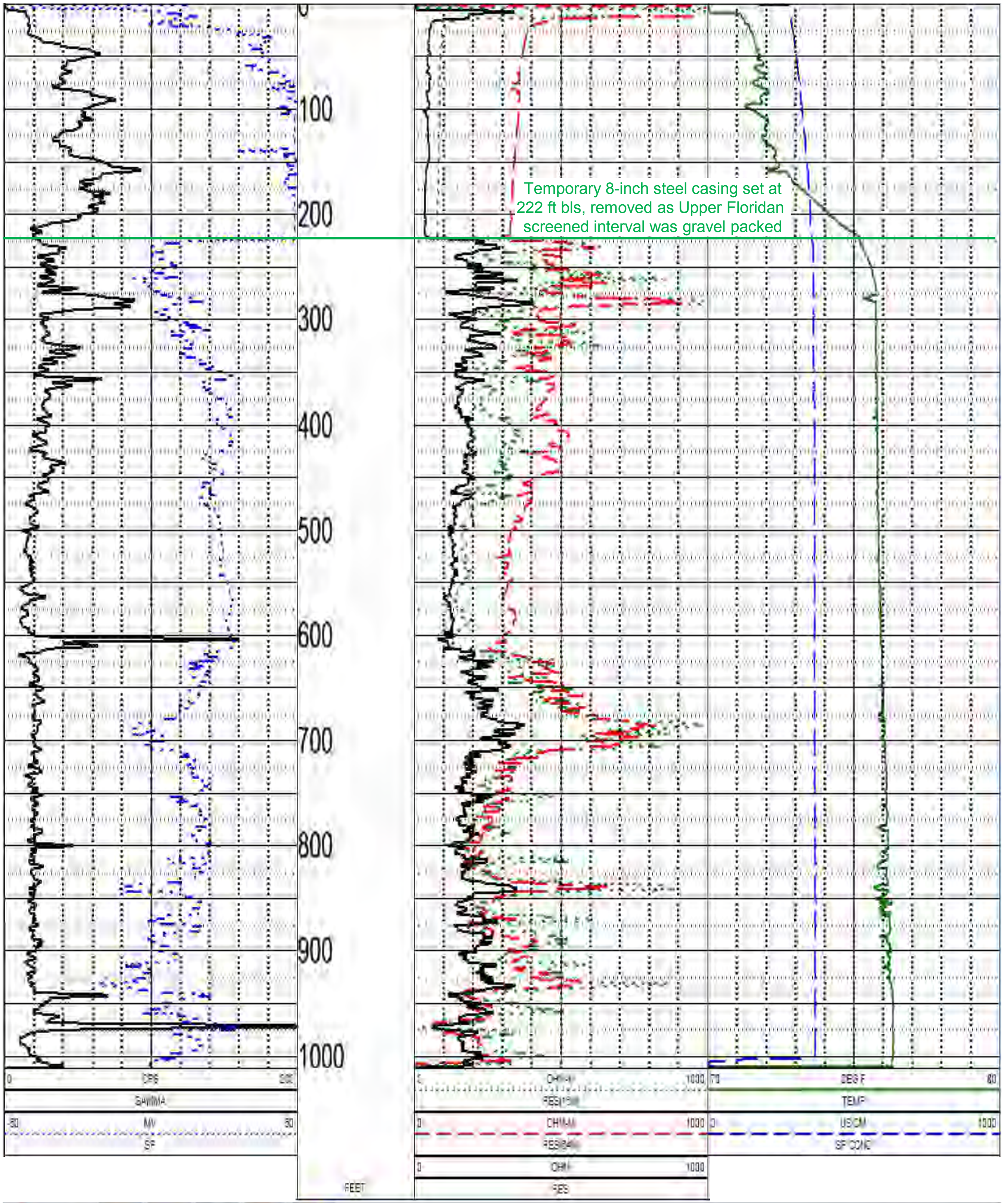


Figure C12. Multifunction log run in the temporary dual zone observation well at total depth prior to installing the 1.5-inch PVC Upper Floridan aquifer tube and the 2-inch PVC Lower Floridan aquifer tube at the ROMP 117 well site in Northeast Sumter County, Florida.

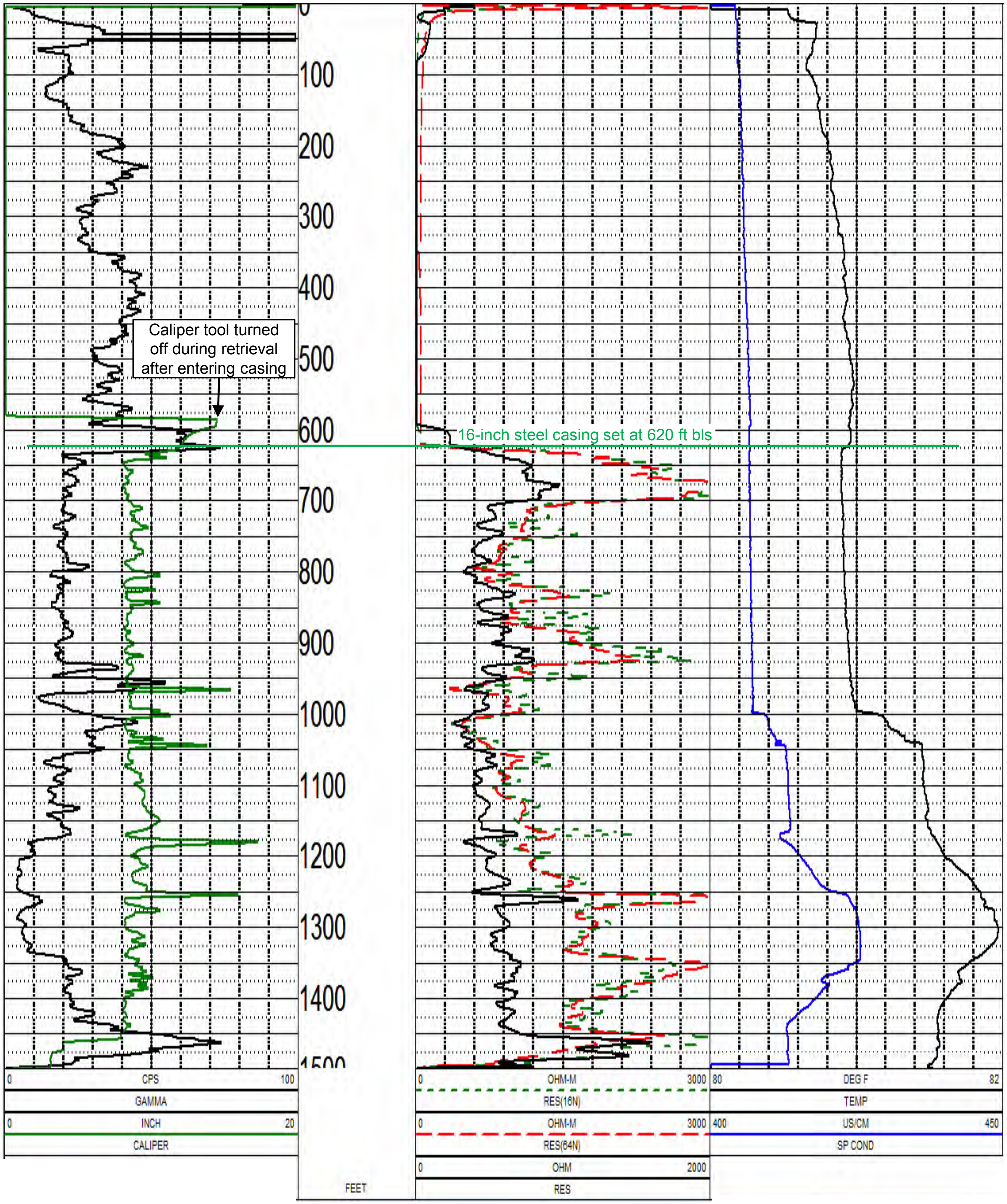


Figure C13. Multifunction log with caliper run at 1,500 feet below land surface in the L FLDN AQ PRODUCTION/MONITOR well after plugging COREHOLE 2, removing the 4-inch HW temporary steel casing (set at 1,471 feet below land surface) and exposing the 8-inch borehole at the ROMP 117 well site in Northeast Sumter County, Florida.

Appendix D. Lithologic Logs for the Exploratory Core Drilling Phase at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

Appendix D1. Lithologic Log for COREHOLE 1 at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-18988 COUNTY - SUMTER
TOTAL DEPTH: 1500 FT. LOCATION: T.19S R.23E S.15 CC
126 SAMPLES FROM 0 TO 1500 FT. LAT = 28D 49M 51S
LON = 82D 00M 06S
COMPLETION DATE: NA ELEVATION: 62.17 FT

OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER: ROMP 117 CH1 OKAHUMPKA

WORKED BY: JOSUE GALLEGOS: MAY 2010 TO AUGUST 12, 2010.
FORMATION PICKS MADE WITH ASSISTANCE FROM CLINT KROMHOUT.

00.0 - 55.0 090UDSC UNDIFFERENTIATED SAND AND CLAY
55.0 - 192.5 124OCAL OCALA GROUP
192.5 - 1203.0 124AVPK AVON PARK FM.
1203.0 - 1500.0 124OLDM OLDSMAR LIMESTONE

0 - 5 SAND; MODERATE LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
1 TO 2% BLACK ORGANICS.

5 - 10 SAND; GRAYISH ORANGE
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ONLY 13" RECOVERED.

10 - 15 SAND; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
PINKISH CLAY COATS QUARTZ GRAINS AND FILLS IN INTERGRANULAR
POROSITY. TRACE AMOUNTS OF YELLOW MINERAL WITH CELL LIKE STRUCTURES.

15 - 18 SAND; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-80%, CLAY-20%
WHITISH CLAY IN MATRIX. DESPITE POROSITY, PERMEABILITY IS LOW.

18 - 20 SAND; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-70%, CLAY-30%
WHITISH CLAY IN MATRIX. DESPITE POROSITY, PERMEABILITY IS LOW.

20 - 25 SAND; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-70%, CLAY-30%
CLAY CONTENT RANGES BETWEEN 30-40%. CLAY IS WHITE
DESCRIBED ABOVE.

25 - 28 SAND; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-80%, CLAY-20%
WHITE CLAY IN MATRIX. WHITE (LESS THAN 1 MM) NODULES APPEAR
AT THE TOP OF THE CORE SECTION.

28 - 28.6 SAND; YELLOWISH GRAY TO GREENISH GRAY
30% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
CLAY CONTENT VARIES BETWEEN 30-50%. SECTION IS A CLAYEY
SAND AT TOP, AND BECOMES SANDY CLAY WITH DEPTH. WHITE AND
LIGHT GREEN CLAY PRESENT.

28.6- 30 SAND; YELLOWISH GRAY TO LIGHT YELLOWISH ORANGE
30% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY

UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN-15%
SAND AND CLAY CONTENT VARIES. CLAY VARIES BETWEEN 30-50%.
SECTION VARIES BETWEEN CLAYEY SAND TO SANDY CLAY.

30 - 33.7 CLAY; LIGHT GREENISH GRAY TO YELLOWISH GRAY
42% POROSITY: INTERGRANULAR, LOW PERMEABILITY
UNCONSOLIDATED SANDY CLAY, PRIMARILY GREEN IN COLOR, WITH SOME WHITE AND ORANGE CLAY. NOTE: POROSITY FOR CLAY IS TAKEN FROM AN AVERAGE VALUE FOR CLAY POROSITY LISTED IN A GEOLOGY TEXTBOOK. DESPITE HIGH POROSITY, PERMEABILITY IS LOW.

33.7- 35 CLAY; WHITE
42% POROSITY: INTERGRANULAR, LOW PERMEABILITY
UNCONSOLIDATED
SANDY CLAY, PRIMARILY WHITE, WITH SOME GREEN CLAY FRAGMENTS.

35 - 38 CLAY; VERY LIGHT GRAY TO YELLOWISH GRAY
42% POROSITY: INTERGRANULAR, LOW PERMEABILITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-40%, CLAY-60%
HEAVY MINERALS-01%
SANDY CLAY, WITH SOME QUARTZ SAND SEAMS. CLAY APPEARS IN THE MATRIX OR AS FINE TO VERY FINE ROUNDED GRAINS.

38 - 38.6 CLAY; GRAYISH OLIVE TO MODERATE REDDISH BROWN
42% POROSITY: INTERGRANULAR, LOW PERMEABILITY
UNCONSOLIDATED
GRAYISH OLIVE GREEN CLAY. SOME WHITE CLAY FRAGMENTS. TRACE SAND.

38.6- 40 SAND; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-70%, CLAY-30%
HEAVY MINERALS-01%
CLAY SEAM AT THE BASE OF SECTION.

40 - 45 SAND; YELLOWISH GRAY TO GRAYISH OLIVE
30% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-50%, CLAY-30%, GYPSUM-20%
CLAYEY SAND; QUARTZ SAND IS DOMINANT WITH GYPSUM SAND ALSO PRESENT. QUARTZ AND GYPSUM ARE VERY FINE IN SIZE. GYPSUM

AND QUARTZ SAND PERCENTAGE VARIES. THIN BEDS OF QUARTZ SAND OCCUR. CLAY PRESENT AS GREEN THICK SEAMS OR AS WHITE INTERGRANULAR MATRIX.

45 - 50 AS ABOVE

50 - 55 SAND; GRAYISH OLIVE
20% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-02%, CHERT-10%
ONLY 5" RECOVERED. CHERT PRESENT AT BASE OF RECOVERED SECTION.

55 - 60 LIMESTONE; WHITE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
SECTION IS A TRANSITION ZONE. AT TOP, SECTION IS A MUDSTONE TEXTURE LIMESTONE WITH QUARTZ SAND. THE SECTION THEN TRANSITIONS TO A WACKESTONE TEXTURE LIMESTONE, THEN TO A PACKSTONE AT THE BASE. AT THE BASE, FORAM CONTENT IS HIGH. LEPIDOCYCLINA OCALANA AND NUMMULITES SP. ARE PRESENT IN ABUNDANCE. VERY POORLY CONSOLIDATED. BEGINNING OF OCALA FORMATION.

60 - 65 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
VERY POORLY CONSOLIDATED. LEPIDOCYCLINA OCALANA AND NUMMULITES SP. ARE PRESENT

65 - 70 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
VERY POORLY CONSOLIDATED. LEPIDOCYCLINA OCALANA AND NUMMULITES SP. ARE PRESENT.

70 - 75 LIMESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL
GRAIN SIZE: VERY COARSE; RANGE: COARSE TO GRAVEL
UNCONSOLIDATED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
ONLY 8 INCHES RECOVERED. UNCONSOLIDATED TO VERY POORLY CONSOLIDATED. RICH IN NUMMULITES SP. ALLOCHEM VARIES BETWEEN 15-50%.

75 - 80 PACKSTONE; WHITE
30% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE; UNCONSOLIDATED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
ONLY A SMALL BAG OF CUTTINGS WAS RECOVERED. SAMPLE RICH IN FORAMS, ESPECIALLY NUMMULITES SP.

80 - 85 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
NUMMULITES SP. AND LEPIDOCYCLINA OCALANA PRESENT. AT VERY BASE OF SECTION IS A CUTTINGS BAG FULL OF VERY COARSE SIZED FORAMS AND FOSSIL FRAGMENTS. 80% OF BAG IS COMPOSED OF NUMMULITES SP. I DO NOT KNOW IF THIS CUTTINGS BAG WAS TAKEN FROM THE BASE OF THIS SECTION, OR JUST PLACED THERE.

85 - 90 GRAINSTONE; LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
GOOD INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
THE GRAINSTONE HAS BEEN CEMENTED WITH SILICA. AT THE BASE OF THE SECTION IS A CUTTING BAG OF VERY FINE TO FINE GRAINED CALCAREOUS QUARTZ SAND.

90 - 95 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

NUMMULITES SP. PRESENT.

95 - 99 MUDSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS
FOSSIL CONTENT INCREASES TO 15% AT BASE OF SECTION.

99 - 100 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
LEPIDOCYCLINA OCALANA PRESENT.

100 - 105 LIMESTONE; WHITE
30% POROSITY: INTERGRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
CUTTINGS BAG IS ONLY RECOVERED SAMPLE. 100% OF SAMPLE IS COMPOSED OF FOSSIL FRAGMENTS. MOST FOSSIL FRAGMENTS ARE VERY COARSE TO GRANULE IN SIZE. MOST FRAGMENTS ARE NUMMULITES SP. OR LEPIDOCYCLINA OCALANA.

105 - 110 LIMESTONE; WHITE
30% POROSITY: INTERGRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
CUTTINGS BAG IS ONLY RECOVERED SAMPLE. 100% OF SAMPLE IS COMPOSED OF FOSSIL FRAGMENTS. MOST FOSSIL FRAGMENTS ARE VERY COARSE TO GRAVEL IN SIZE. MOST FRAGMENTS ARE NUMMULITES SP. OR LEPIDOCYCLINA OCALANA.

110 - 115 MUDSTONE; WHITE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 09% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
LEPIDOCYCLINA OCALANA PRESENT.

115 - 119.5 MUDSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL

POOR INDURATION
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL CONTENT VARIES BETWEEN 1 - 10 %. LEPIDOCYCLINA
SPECIES PRESENT.

119.5- 120 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS

120 - 120.5 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: GRANULE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
HIGHLY FRAGMENTED LIMESTONE, PROBABLY CAUSED BY DRILLING.
ABUNDANT LEPIDOCYCLINA OCALANA FORAMS.

120.5- 121.7 GRAINSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY COARSE TO GRAVEL
POOR INDURATION
OTHER FEATURES: GRANULAR

121.7- 124.3 LIMESTONE; YELLOWISH GRAY
40% POROSITY: INTERGRANULAR
UNCONSOLIDATED
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
IMPORTANT: SAMPLE IS ACTUALLY UNCONSOLIDATED LIMESTONE SAND
COMPOSED OF FOSSIL FRAGMENTS AND CALCITE CRYSTALS.
NUMMULITES SP. PRESENT.

124.3- 125 GRAINSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY COARSE TO GRAVEL
POOR INDURATION
OTHER FEATURES: GRANULAR
MARKER 125 WAS PLACED INCORRECTLY. I PLACED THE MARKER IN
THE CORRECT PLACE. SEE BOX.

125 - 130 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: GRANULAR, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
FORAM PACKSTONE.

130 - 135 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: GRANULAR, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
FORAM PACKSTONE.

135 - 140 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
FORAM PACKSTONE.

140 - 145 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
FORAM PACKSTONE. BASE OF SECTION HAS A CUTTINGS BAG
OF FINE SAND COMPOSED OF LIMESTONE FRAGMENTS AND FOSSIL
FRAGMENTS.

145 - 146.7 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION

OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
FORAM PACKSTONE. BASE OF SECTION HAS A CUTTINGS BAG OF SAND COMPOSED OF LIMESTONE FRAGMENTS AND FOSSILS.

146.7- 150 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

150 - 155 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
TOP OF SECTION: CUTTING BAG OF LIMESTONE SAND (FINE TO VERY FINE) COMPOSED OF FOSSIL FRAGMENTS, LIMESTONE LITHICS, AND CALCITE CRYSTALS. FOSSILS ARE PRIMARILY FORAMS. MANY MILIOLIDS.

155 - 160 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
POOR INDURATION
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
HIGHLY RECRYSTALLIZED AND WEATHERED.

160 - 162.5 WACKESTONE; LIGHT GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
TRANSITION TO GRAY COLOR.

162.5- 165 LIMESTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
TRANSITION TO TAN COLOR. ALLOCHEM CONTENT VARIES BETWEEN 40-60%. OVERALL, SECTION IS BORDERLINE WACKESTONE TO PACKSTONE.

165 - 166.2 PACKSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

166.2- 167.5 PACKSTONE; LIGHT GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
CHANGE TO GREY COLOR. FORAM OR PELLET PACKSTONE.

167.5- 170 PACKSTONE; LIGHT GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
LARGE (10 MM) MOLDS MAKE UP 10% OF SECTION. FORAM OR PELLET PACKSTONE.

170 - 175 PACKSTONE; LIGHT GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
FORAM PACKSTONE. REDUCTION IN MOLDIC POROSITY TO 2% OF SECTION.

175 - 180 PACKSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
FORAM PACKSTONE.

180 - 185 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS

185 - 190 NO SAMPLES
NO RECOVERY.

190 - 195 LIMESTONE; YELLOWISH GRAY TO DARK YELLOWISH BROWN
25% POROSITY: INTERGRANULAR, MOLDIC
GOOD INDURATION
FOSSILS: ECHINOID
WELL INDURATED LIMESTONE WITH SEAMS OF SANDY DARK BROWN CLAY NEAR TOP OF SECTION. AT BASE OF SECTION, MOLDIC POROSITY IS MODERATE. LARGE FRAGMENTS OF ECHINOIDS AT THE TOP OF THE SECTION. PROBABLY EUPTAGUS SP.

195 - 197.6 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
SOME RECRYSTALLIZATION OF CALCITE.

197.6- 200 SAND; GRAYISH BROWN
39% POROSITY: INTERGRANULAR
GRAIN SIZE: COARSE; RANGE: FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ-80%, LIMESTONE-15%, CLAY-05%
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
QUARTZ SAND WITH LIMESTONE LITHICS AND FRAGMENTS OF ECHINOIDS.

200 - 201.7 WACKESTONE; GRAYISH BROWN
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
POOR INDURATION
FOSSILS: FOSSIL FRAGMENTS

201.7- 205 WACKESTONE; GRAYISH BROWN
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
ACCESSORY MINERALS: PLANT REMAINS-03%
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
MILIOLIDS AND PLANT FRAGMENTS. MANY SHELLS STILL HAVE SHINY NACRE.

205 - 210 WACKESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

210 - 214 WACKESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO VERY COARSE
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
POOR TO MODERATE INDURATION.

214 - 216.3 WACKESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
MODERATE INDURATION

216.3- 217.5 PEAT; BLACK
90% POROSITY: INTERGRANULAR, LOW PERMEABILITY
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-90%
FOSSILS: ORGANICS
COMPACTED YET FRIABLE, BLACK, ORGANICS.

217.5- 220 MUDSTONE; BLACK
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO COARSE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-10%
FOSSILS: ORGANICS
BLACK LAMINATIONS OF ORGANICS.

220 - 225 DOLOSTONE; DARK YELLOWISH ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: VERY FINE TO MICROCRYSTALLINE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
MEDIUM TO COARSE SIZE MOLDS.

225 - 226.5 DOLOSTONE; DARK YELLOWISH ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
MEDIUM SIZE MOLDS.

226.5- 230 DOLOSTONE; GRAYISH BROWN
30% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
MOLDS ARE MEDIUM TO COARSE SIZE.

230 - 234 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
MOLD SIZE IS ON AVERAGE VERY FINE, BUT THERE ARE ALSO
GRAVEL SIZE MOLDS

234 - 235 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC
PARTIALLY DOLOMITIZED.

235 - 237 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
OTHER FEATURES: DOLOMITIC
PARTIALLY DOLOMITIZED.

237 - 240 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC

240 - 241.3 LIMESTONE; DARK YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC, DOLOMITIC
DOLOMITIC LIMESTONE.

241.3- 245 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
MODERATE INDURATION
OTHER FEATURES: SUCROSIC, MEDIUM RECRYSTALLIZATION
DOLOMITIC
SLIGHTLY DOLOMITIC LIMESTONE. DOLOMITIZATION DECREASES WITH DEPTH. INDURATION INCREASES WITH DEPTH TO VERY GOOD INDURATION. RECRYSTALLIZATION OF CALCITE.

245 - 246 DOLOSTONE; MODERATE YELLOWISH BROWN
46% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
OTHER FEATURES: SUCROSIC

246 - 250 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC

250 - 250.5 LIMESTONE; WHITE
15% POROSITY: INTERGRANULAR
POOR INDURATION
POSSIBLE CRYSTALS OF VERY FINE DOLOMITE RHOMBS.

250.5- 251 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC, CALCAREOUS

251 - 255 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CALCAREOUS
POROSITY VARIES BETWEEN 10-20%. CONTAINS ZONES OF HIGH CALCAREOUS CONTENT. CONTAINS A LAYER OF DOLOMITIC & RECRYSTALLIZED LIMESTONE THAT MAY BE SLIGHTLY PERMEABLE. ORGANIC FLECKS PRESENT.

255 - 257.7 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BEDDED
OTHER FEATURES: CALCAREOUS
POROSITY RANGES BETWEEN 15-20%. TOWARDS BASE OF SECTION
CORE BECOMES BEDDED, ALTERNATING BETWEEN GRANULAR/
CRYSTALLINE/MOLDIC BEDS AND FINE GRAINED/NONMOLDIC/
NONCRYSTALLINE BEDS.

257.7- 260 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: SUCROSIC

260 - 264 DOLOSTONE; GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION

264 - 267 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
LARGE MOLDS. HIGHLY MOLDIC.

267 - 270 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
HIGHLY MOLDIC. MOLD SIZE IS SMALL (MEDIUM TO COARSE).

270 - 271.5 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
LARGE MOLDS. POSSIBLY PERMEABLE DUE TO THE LARGE MOLDS.

271.5- 274.5 NO SAMPLES
ACCORDING TO FIELD LOGS, ~3FT CAVITY WAS ENCOUNTERED.
274.5- 275 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC

275 - 278 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
FOSSILS: ECHINOID, MOLLUSKS, FOSSIL MOLDS
ECHINOID MOLDS - POSSIBLY NEOLAGANUM DALLI.

278 - 280 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC
FOSSILS: MOLLUSKS, ECHINOID, FOSSIL MOLDS
MOLD SIZE INCREASES FROM MEDIUM TO GRAVEL SIZE WITH DEPTH.
NEOLAGANUM DALLI MOLDS PRESENT.

280 - 285 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
FOSSILS: FOSSIL MOLDS, MOLLUSKS

285 - 287 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION

287 - 290 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC

FRACTURE ZONE AT ~288 FEET. ZONES OF MODERATE INDURATION
PRESENT.

290 - 293 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC

293 - 295.5 DOLOSTONE; MODERATE YELLOWISH BROWN
17% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC
POROSITY RANGE 15-20%. DRILL LOG REPORTS FRACTURES. I
OBSERVE NO FRACTURES. HOWEVER, SECTION IS HIGHLY
FRAGMENTED. POSSIBLY CAUSED BY DRILLING.

295.5- 297 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC

297 - 299.7 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC, POOR SAMPLE
ECHINOID MOLDS.

299.7- 300.5 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: MOLDIC, FRACTURE, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC
FRACTURE ZONE.

300.5- 305 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC

305 - 308.5 DOLOSTONE; GRAYISH ORANGE
17% POROSITY: MOLDIC, INTERCRYSTALLINE, ; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC
POROSITY RANGES BETWEEN 15-20%.

308.5- 313.8 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC
POSSIBLY PERMEABLE WHERE FRACTURES PRESENT. ZONES OF 15-20%
POROSITY SPREAD OUT THROUGH SECTION.

313.8- 314.5 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC, WEATHERED
FOSSILS: FOSSIL FRAGMENTS

314.5- 318 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC
POSSIBLY PERMEABLE WHERE FRACTURES ARE PRESENT. ZONES OF
30% POROSITY SPREAD OUT THROUGH SECTION.

318 - 320 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION

320 - 325 DOLOSTONE; LIGHT OLIVE GRAY
POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: PYRITE-03%
OTHER FEATURES: SUCROSIC
POROSITY HIGHLY VARIABLE, RANGING BETWEEN 0-25%. POSSIBLY PERMEABLE WHERE FRACTURES ARE PRESENT. PYRITE PRESENT AS BLACK TO DARK BROWN SPOTS.

325 - 330 DOLOSTONE; GRAYISH BROWN
25% POROSITY: MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
POSSIBLY PERMEABLE WHERE LARGE MOLLUSK MOLDS AND FRACTURES ARE PRESENT. FRACTURES ARE PRESENT THROUGHOUT SECTION.

330 - 331.2 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: FRACTURE, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
POSSIBLY PERMEABLE WHERE FRACTURES PRESENT.

331.2- 335 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: FRACTURE, MOLDIC, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
POSSIBLY PERMEABLE WHERE FRACTURES AND MOLDS PRESENT.

335 - 337 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC
FOSSILS: MOLLUSKS
HIGHLY MOLDIC, WITH MANY CASTS.

337 - 339.1 DOLOSTONE; MODERATE YELLOWISH BROWN
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
FOSSILS: MOLLUSKS
HIGHLY MOLDIC WITH MANY CASTS.

339.1- 340 DOLOSTONE; MODERATE YELLOWISH BROWN
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: SUCROSIC

340 - 342.5 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
ACCESSORY MINERALS: PYRITE-05%
OTHER FEATURES: SUCROSIC
TOP OF SECTION IS WELL INDURATED (TOP 0.5 FEET). BELOW 343
FEET, CORE IS VERY POORLY INDURATED.

342.5- 345 DOLOSTONE; LIGHT YELLOWISH ORANGE
25% POROSITY: MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC

345 - 348 DOLOSTONE; GRAYISH BROWN
25% POROSITY: MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
FOSSILS: ECHINOID
NEOLAGANUM DALLI ECHINOID MOLDS.

348 - 349.5 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
OTHER FEATURES: SUCROSIC

349.5- 350 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: PYRITE-05%
OTHER FEATURES: SUCROSIC, CRYSTALLINE

350 - 355.5 DOLOSTONE; GRAYISH BROWN
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE

355.5- 360 DOLOSTONE; GRAYISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: SUCROSIC, CRYSTALLINE
FOSSILS: MOLLUSKS, FOSSIL MOLDS
CONTAINS BEDS OF 10-15% POROSITY; LOW PERMEABILITY IN THESE LAYERS.

360 - 365 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH ORANGE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC

365 - 367.5 DOLOSTONE; GRAYISH ORANGE
17% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC, CRYSTALLINE

367.5- 370.5 AS ABOVE

370.5- 375 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC
MODERATELY INDURATED DOLOSTONE. 4% OF POROSITY IS MOLDIC
1% OF POROSITY IS FRACTURE, 15% OF POROSITY IS
INTERGRANULAR.

375 - 376.5 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: SUCROSIC, CRYSTALLINE

376.5- 378 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED;
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CRYSTALLINE

378 - 379.5 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: WEATHERED

379.5- 383.3 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CALCAREOUS, SUCROSIC, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, ECHINOID
MOLLUSKS
ECHINOID FRAGMENTS AND MOLDS. SOME LARGE MOLDS AND VUGS.

383.3- 384.5 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, MOLDIC

POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
FORAM DOLOSTONE.

384.5- 386 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: SUCROSIC, CRYSTALLINE

386 - 387.5 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CALCAREOUS

387.5- 390 DOLOSTONE; WHITE
15% POROSITY: MOLDIC, INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

390 - 390.3 DOLOSTONE; WHITE
20% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CALCAREOUS, SUCROSIC
POORLY CEMENTED.

390.3- 395 DOLOSTONE; GRAYISH BROWN
25% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SMALL, PURPLE VIVIANITE CRYSTALS PRESENT, RIMMED BY RUST
ORANGE DUST.

395 - 398.5 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS, SUCROSIC

398.5- 400.5 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
FORAM DOLOSTONE.

400.5- 401.5 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: SUCROSIC

401.5- 405 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE
FOSSILS: MOLLUSKS

405 - 410.2 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE, SUCROSIC
POROSITY RANGE OF 10-20%. MODERATE TO POOR INDURATION.

410.2- 415 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE, SUCROSIC
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
BEDS OF LOW PERMEABILITY DISPERSED THROUGHOUT SECTION.

415 - 419.5 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
25% POROSITY: MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE, SUCROSIC
MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
BEDS OF LOW PERMEABILITY DISPERSED THROUGHOUT SECTION.

419.5- 426 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, FRACTURE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE, SUCROSIC
MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
80% OF SECTION POSSIBLY PERMEABLE. OTHER 20% OF SECTION
COMPOSED OF LOW PERMEABILITY BEDS OF DOLOSTONE.

426 - 435 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE, SUCROSIC
SECTIONED HIGHLY FRAGMENTED.

435 - 436 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE, CALCAREOUS
HIGHLY MOLDIC AND POSSIBLY PERMEABLE.

436 - 437 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO COARSE; GOOD INDURATION
OTHER FEATURES: SUCROSIC, CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS

437 - 440 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CRYSTALLINE, SUCROSIC
INTRACLASTS PRESENT.

440 - 445 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE, CALCAREOUS
POROSITY RANGES BETWEEN 20-30%.

445 - 450 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO COARSE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE, SUCROSIC
POROSITY RANGES BETWEEN 15-30%.

450 - 455 DOLOSTONE; WHITE TO LIGHT OLIVE GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE

455 - 460 LIMESTONE; YELLOWISH GRAY TO LIGHT GRAY
25% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS

460 - 462.9 MUDSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
OTHER FEATURES: DOLOMITIC

462.9- 465 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: CALCAREOUS
DOLOMITE INTERBEDDED WITH SOME DOLOMITIC LIMESTONE.

465 - 470.5 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

470.5- 475 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

475 - 480 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

480 - 485 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

485 - 490 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
ONLY 4 INCHES RECOVERED.

490 - 495 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
ONLY 3 INCHES RECOVERED.

495 - 500 LIMESTONE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
RECRYSTALLIZED LIMESTONE; DOLOMITIC.

500 - 501 DOLOSTONE; WHITE
20% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

501 - 502 LIMESTONE; WHITE TO VERY LIGHT GRAY
25% POROSITY: MOLDIC
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC
LARGE MOLDS. PYRITE OR RED TINTED BRASS COLORED IRON OXIDE
(SILT SIZE CRYSTALS) IN MOLDIC PORES.

502 - 505 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CALCAREOUS

505 - 510 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

510 - 515 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CRYSTALLINE

515 - 518 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
SOME PORTIONS ARE SLIGHTLY CALCAREOUS.

518 - 520 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

520 - 525 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY COARSE; POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
POROSITY RANGES BETWEEN 15-30%. INDURATION POOR TO
MODERATE.

525 - 530 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ONLY 1 INCH RECOVERED.

530 - 535 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
MODERATE TO POOR INDURATION.

535 - 536.6 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
MOLDIC POROSITY IS HIGH.

536.6- 538 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
BED OF POORLY INDURATED DOLOSILT. SMALL MOLDS BEGIN TO
APPEAR TOWARDS BOTTOM OF SECTION.

538 - 540 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
HIGHLY MOLDIC, WITH VERY LARGE MOLDS.

540 - 544 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
MOLDIC DOLOSTONE.

544 - 545 DOLOSTONE; YELLOWISH GRAY
30% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
NO MOLDIC POROSITY. LESS PERMEABLE THAN PREVIOUS (ABOVE)
SECTION.

545 - 550 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ONLY 2" RECOVERED.

550 - 550.8 DOLOSTONE; WHITE
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: PYRITE-05%
BLACK SILT SIZE CRYSTALS OF PYRITE.

550.8- 552.8 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
FOSSILS: MOLLUSKS, FOSSIL MOLDS

552.8- 555 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-01%
ALTERNATING LAYERS OF MOLDIC POROSITY AND INTERCRYSTALLINE
POROSITY LAYERS. BLACK ORGANIC FRAGMENTS.

555 - 560.5 DOLOSTONE; YELLOWISH GRAY TO WHITE
10% POROSITY: INTERCRYSTALLINE, FRACTURE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: HEAVY MINERALS-01%
SOME CLAY PRESENT. BLACK HEAVY MINERAL FRAGMENTS PRESENT.
TRACE QUARTZ GRAINS.

560.5- 562.3 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: HEAVY MINERALS-01%

562.3- 565 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED

SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: HEAVY MINERALS-01%
MAINLY INTERCRYSTALLINE POROSITY WITH SOME MOLDIC POROSITY.

565 - 566 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-01%
ORGANIC LAMINATIONS. BLACK HEAVY MINERAL FLECKS.

566 - 570 DOLOSTONE; WHITE
25% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
VERY GOOD INDURATION AT TOP. INDURATION DECREASES WITH
DEPTH TO VERY POOR AND CRUMBLY.

570 - 574 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
COLOR CHANGE AT 572 FEET.

574 - 576 DOLOSTONE; WHITE
30% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
FOSSILS: FOSSIL MOLDS
WELL PRESERVED MOLDS.

576 - 580 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SMALL LAYER OF GRANULE TO GRAVEL SIZE, SUBHEDRAL QUARTZ
CRYSTALS PRESENT.

580 - 585 DOLOSTONE; WHITE
20% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
FOSSILS: FOSSIL MOLDS, ALGAE, ECHINOID, MOLLUSKS
MOLLUSCS, CORALLINE ALGAE, AND ECHINOID MOLDS PRESENT.

585 - 590.5 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
POOR TO MODERATE INDURATION.

590.5- 595 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
ORGANIC LAMINATIONS. BLACK HEAVY MINERAL FLECKS - POSSIBLY
PYRITE.

595 - 595.5 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
VERY POOR CONSOLIDATION TO UNCONSOLIDATED. A LAYER OF
GRAVEL SIZE QUARTZ CRYSTALS PRESENT AT 595 FT. TRACE
ORGANICS.

595.5- 600 DOLOSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: HEAVY MINERALS-01%
2 INCH LAYER AT 599.5 FEET OF GRAVEL SIZE, CLEAR, QUARTZ
CRYSTALS.

600 - 603 DOLOSTONE; GRAYISH BROWN TO LIGHT OLIVE GRAY
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-15%
OTHER FEATURES: CRYSTALLINE
2 INCH LAYER AT 600 FEET OF PURE BLACK ORGANICS. SECTION IS RICH IN BLACK ORGANIC FLECKS AND ORGANIC LAMINATIONS.

603 - 607 DOLOSTONE; LIGHT OLIVE GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-25%
OTHER FEATURES: CRYSTALLINE
INCREDIBLY RICH IN BLACK ORGANIC FRAGMENTS AND ORGANIC LAMINATIONS. ORGANIC FRAGMENTS CAN GET AS LARGE AS GRAVEL IN SIZE. SOME MOLDS PRESENT, AND SOME MOLDS ARE INFILLED OR COATED WITH QUARTZ. MOLDS INCREASE WITH DEPTH.

607 - 610 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
AT 608.3 FEET THERE IS A CLAY LAYER, 2 INCHES THICK. THERE IS A FRACTURE ZONE FROM 609.5 TO 610 FEET. INTERCRYSTALLINE POROSITY IS DOMINANT.

610 - 612 DOLOSTONE; GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
MOLDIC POROSITY IS DOMINANT. FRACTURE ZONE FROM 610-611 FEET.

612 - 614 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

614 - 616.6 DOLOSTONE; GRAYISH BROWN
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
2 INCH LAYER OF POORLY CONSOLIDATED DOLOSTONE AT 615 FEET.

616.6- 617.1 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

617.1- 619 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

619 - 624 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: QUARTZ-02%
WHITE QUARTZ CRYSTALS IN MOLDS. VERY MOLDIC.

624 - 625 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ORGANIC LAMINATIONS.

625 - 627.7 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
VERY LARGE, GRAVEL SIZE MOLDS.

627.7- 628.5 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-07%
BLACK ORGANICS.

628.5- 629.5 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-05%

629.5- 630.4 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: QUARTZ-01%

630.4- 634.4 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-01%
DOLOSTONE, MOLDIC. SOME LAYERS OF NONMOLDIC, LAMINATED
DOLOMITE. BLACK ORGANICS PRESENT.

634.4- 636 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
SOME MOLDS COATED WITH BLACK ORGANICS.

636 - 640 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

FOSSILS: FOSSIL MOLDS, ALGAE, ECHINOID, MOLLUSKS
SOME MOLDS COATED WITH BLACK ORGANICS. VERY LARGE GRAVEL
SIZE MOLDS. SOME VUGS. CORALLINE ALGAE AND ECHINOID MOLDS
WELL PRESERVED.

640 - 646 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, GYPSUM-01%
FOSSILS: FOSSIL MOLDS
GYPSUM CRYSTALS GROWING IN MOLDS.

646 - 646.5 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED

646.5- 650 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

650 - 655.5 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SMALL GYPSUM OR ANHYDRITE CRYSTALS AT 650.1 FEET. BLACK
ORGANICS COAT MOLDS.

655.5- 660 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, QUARTZ-01%
BLACK ORGANICS AND QUARTZ CRYSTALS IN MOLDS. LAYER OF
NONMOLDIC, LAMINATED DOLOMITE AT BASE OF SECTION, 659.5-660
FEET.

660 - 665 DOLOSTONE; MODERATE YELLOWISH BROWN TO VERY LIGHT ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE

POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
POROSITY RANGES BETWEEN 15-25%. VERY MOLDIC.

665 - 668 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

668 - 676.5 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
MODERATELY FRACTURED.

676.5- 681.8 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-01%
OTHER FEATURES: CRYSTALLINE
POROSITY RANGES BETWEEN 10-20%, MAINLY MOLDIC. EUHEDRAL
QUARTZ CRYSTALS IN VUGS AT BASE OF SECTION (681.3 FEET).
BASE OF SECTION ALSO LAMINATED.

681.8- 685 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

685 - 690 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-01%, ORGANICS-01%
EUHEDRAL QUARTZ CRYSTALS IN VUGS AND MOLDS. SOME BLACK
ORGANICS AND ORGANIC LAMINATIONS.

690 - 691.5 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

691.5- 695 DOLOSTONE; GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

695 - 700 DOLOSTONE; GRAYISH BROWN
10% POROSITY: MOLDIC, INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

700 - 702 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
EUHEDRAL QUARTZ CRYSTALS IN VUGS.

702 - 705 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
SOME ORGANIC LAMINATIONS.

705 - 710 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
QUARTZ CRYSTALS IN SOME VUGS.

710 - 712.5 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
INDURATION DECREASES TO MODERATE WITH DEPTH.

712.5- 715 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

715 - 716 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
HIGHLY LAMINATED.

716 - 718 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%

718 - 722 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
FOSSILS: FOSSIL MOLDS, CORAL, ALGAE, ECHINOID, MOLLUSKS
ECHINOID, MOLLUSK, ALGAE, AND CORAL MOLDS. LARGE EXTERNAL
MOLDS OF ECHINOIDS.

722 - 723.5 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%, QUARTZ-01%
BLACK ORGANICS COAT MOLDS. QUARTZ IN MOLDS. DARK BROWN
POSSIBLY ORGANIC LAMINATIONS.

723.5- 725 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
725 - 730 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
POROSITY RANGES FROM 10-20%. SOME ZONES ARE POSSIBLY
PERMEABLE WITHIN IN THIS SECTION.

730 - 732.5 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL MOLDS

732.5- 735 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
FOSSILS: FOSSIL MOLDS
WITHIN THIS SECTION, SOME ZONES OF POSSIBLE PERMEABILITY.

735 - 740 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL MOLDS
POROSITY RANGE OF 20-25%. SOME VUGS.

740 - 741.5 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

741.5- 742 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
FOSSILS: FOSSIL MOLDS

742 - 745 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
FOSSILS: FOSSIL MOLDS

745 - 750 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
FOSSILS: FOSSIL MOLDS
SOME ZONES OF POSSIBLE PERMEABILITY. MODERATE TO GOOD
INDURATION. HIGHLY MOLDIC. SOME AREAS ARE SUCROSIC.
POROSITY ON AVERAGE 25% BUT CAN RANGE FROM 15-25%.

750 - 753.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
POROSITY VARIES BETWEEN 10-20%.

753.6- 755.3 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
FOSSILS: FOSSIL MOLDS
POROSITY RANGES BETWEEN 15-20%.

755.3- 756 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
BLACK ORGANICS. BLACK LAYER OF ORGANICS ALSO LOCATED AT TOP
OF SECTION, AT 755.3 FEET.

756 - 760 DOLOSTONE; MODERATE YELLOWISH BROWN TO YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL MOLDS
HIGHLY MOLDIC. COLOR CHANGES AT 759.4 TO YELLOWISH GRAY.

760 - 761.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
LESS MOLDIC.

761.6- 763.6 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-01%
MINOR MOLDS.

763.6- 765 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION

765 - 766 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

766 - 770 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE

RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
HIGHLY MOLDIC. NONMOLDIC, LOW POROSITY DOLOSTONE BED (AT 768.5 - 769).

770 - 772 DOLOSTONE; MODERATE YELLOWISH BROWN
30% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

772 - 774 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
WHERE MOLDS PRESENT, POROSITY INCREASES TO 15%. HOWEVER INTERCRYSTALLINE POROSITY IS DOMINANT.

774 - 776 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

776 - 778 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
PRESERVED DOLOMITIZED FORAMS. HIGH MOLDIC POROSITY.

778 - 780 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-01%

INTERVAL FROM 778.0-778.5 FEET COMPOSED OF WEATHERED
FRIABLE, MOLDIC DOLOMITE. THE LAST 0.5 FEET OF THE SECTION
(779.5 - 780.0 FEET) BECOMES MOLDIC. HOWEVER, OVERALL THE
SECTION IS NONMOLDIC. IN MOLDIC AREAS THE POROSITY
INCREASES TO 15%.

780 - 781.7 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-02%
THIN (1 INCH) LAYER OF BLACK ORGANICS AT 780.3 FEET.

781.7- 784 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
VERY LARGE MOLDS.

784 - 787.5 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED, INTERBEDDED
ACCESSORY MINERALS: ORGANICS-05%, HEAVY MINERALS-01%
SECTION ALTERNATES BETWEEN NONMOLDIC, LAMINATED, LOW
POROSITY (~5%) BEDS, AND MOLDIC, HIGHER POROSITY (~15-20%)
BEDS. LAMINATIONS ARE SOMETIMES ORGANIC. BLACK HEAVY
MINERALS COULD BE PYRITE.

787.5- 793.3 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
BLACK ORGANIC LAYER AT ~792.3 FEET (ABOUT 1 INCH THICK).

793.3- 794.3 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SECTION HAS VERTICAL ZONES OF SECONDARY POROSITY THAT ARE
FILLED WITH COARSE GRAIN DOLOMITE CRYSTALS.

794.3- 795 PEAT; BLACK
SEDIMENTARY STRUCTURES: NODULAR
BLACK ORGANIC BED. BLACK CHERT NODULES PRESENT.

795 - 802 DOLOSTONE; DARK YELLOWISH BROWN TO BLACK
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: ORGANICS-05%, CHERT-15%
BLACK CHERT NODULES PRESENT. BLACK ORGANIC FLECKS AND
FRAGMENTS PRESENT.

802 - 805 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
SOME BLACK CHERT NODULES PRESENT. BLACK ORGANIC FRAGMENTS
AND ORGANIC LAMINATIONS PRESENT.

805 - 806 DOLOSTONE; MODERATE YELLOWISH BROWN
30% POROSITY: INTERCRYSTALLINE, FRACTURE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
FOSSILS: FOSSIL MOLDS
POSSIBLY PERMEABLE.

806 - 807 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
FOSSILS: FOSSIL MOLDS
INTRACLASTS OF WEATHERED CALCITE, GRAVEL SIZE. BLACK

FRAGMENTS AND LAMINAE OF ORGANICS.

807 - 809 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
FOSSILS: FOSSIL MOLDS
POROSITY CAN RANGE FROM 10-15%.

809 - 810 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-03%

810 - 811.4 DOLOSTONE; GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL MOLDS
POSSIBLE WORM BURROWS. BLACK ORGANICS COAT MOLDS.

811.4- 813 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

813 - 814.7 DOLOSTONE; GRAYISH BROWN
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-05%
THIN LAYER OF BLACK ORGANICS AT ~813 FT.

814.7- 820 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-03%
FOSSILS: FOSSIL MOLDS, ECHINOID
BLACK ORGANIC FRAGMENTS. ECHINOID MOLDS.

820 - 825 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
FOSSILS: FOSSIL MOLDS
WAVY ORGANIC LAMINATIONS.

825 - 830 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CRYSTALLINE
FOSSILS: FOSSIL MOLDS
POROSITY RANGES FROM 15-20%.

830 - 834 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: HEAVY MINERALS-01%, QUARTZ-05%
VUGS FILLED WITH EUHEDRAL QUARTZ CRYSTALS. POROSITY
INCREASES TO 15% WITH DEPTH.

834 - 839.5 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-03%
FOSSILS: FOSSIL MOLDS
VUGS FILLED WITH WHITE QUARTZ CRYSTALS. POROSITY CAN GO AS
HIGH AS 25%.

839.5- 840.1 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

840.1- 843 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
WHITE QUARTZ CRYSTALS IN MOLDS.

843 - 845 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
POSSIBLE RELICT MOLDS.

845 - 850 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
FOSSILS: FOSSIL MOLDS, ECHINOID, MOLLUSKS
POROSITY RANGE OF 5-15%. SOME MINOR QUARTZ IN MOLDS. COLOR
CHANGES AT 847 FT FROM YELLOWISH GRAY TO GRAYISH ORANGE.

850 - 854.7 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

854.7- 856 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

856 - 857.7 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, FRACTURE, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-03%
FRACTURE ZONE. THIN, LAMINATED ORGANIC LAYERS AT TOP AND

BOTTOM OF SECTION.

857.7- 860 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
VERY LAMINATED. BLACK ORGANIC FRAGMENTS.

860 - 864 DOLOSTONE; MODERATE YELLOWISH BROWN TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-05%
WHITE QUARTZ CRYSTALS GROWING IN VUGS. POROSITY RANGE OF
10-20%.

864 - 867.7 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-05%
QUARTZ GROWING IN VUGS. CONTAINS ZONES THAT ARE POSSIBLY
PERMEABLE.

867.7- 870 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-01%
POROSITY VARIES BETWEEN 15-20%. THIN LAYER OF ORGANIC
LAMINATIONS. 868.3 - 868.6 BED OF NON MOLDIC, LOW POROSITY
(5%).

870 - 875 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CHERT NODULE PRESENT.

875 - 879 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
MOLDIC AND VUG POROSITY MAKE UP ONLY 1% OF POROSITY. CHERT
LAYER AT 878.2 FT, ~ 1 INCH THICK. LAMINATIONS OCCUR THE
LAST FOOT OF THE SECTION, AT BASE.

879 - 884.5 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%, GYPSUM-01%
POROSITY STARTS AT 20% AT TOP AND GRADUALLY DECREASES TO 5%
WITH DEPTH. GYPSUM AND QUARTZ CRYSTALS PRESENT IN VUGS.

884.5- 886 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
ONE VUG PRESENT. QUARTZ CRYSTALS ARE GROWING IN THAT VUG.

886 - 890.5 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
POROSITY RANGES BETWEEN 15-20%.

890.5- 895 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
20% POROSITY: MOLDIC, VUGULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: QUARTZ-05%, GYPSUM-01%, ORGANICS-01%
VERY VUGGY. LARGE EUHEDRAL, WHITE, QUARTZ CRYSTALS GROWING
IN VUGS AND MOLDS. GYPSUM ALSO GROWING IN VUGS.

895 - 896 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-02%, QUARTZ-02%
BLACK ORGANIC FLECKS AND LAMINATIONS. WHITE QUARTZ NODULES AND CRYSTALS PRESENT.

896 - 900 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-02%
FOSSILS: FOSSIL MOLDS
QUARTZ GROWING IN MOLDS. POROSITY CAN GO AS HIGH AS 20%.

900 - 905 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-03%
FOSSILS: FOSSIL MOLDS
LAST FOOT OF SECTION, THE POROSITY DECREASES TO 5-10%. IN THE LAST FOOT OF CORE, BLACK ORGANIC LAMINATIONS AND BLACK ORGANIC FRAGMENTS APPEAR.

905 - 908 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
FOSSILS: FOSSIL MOLDS

908 - 910.4 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-02%

910.4- 914.8 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-02%
QUARTZ GROWING IN MOLDS. SECTION IS FRACTURED.

914.8- 917 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
ORGANIC LAMINATIONS.

917 - 919 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
POROSITY RANGE OF 15-25%.

919 - 921.4 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION

921.4- 923.3 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
VERY VUGGY AND MOLDIC. POSSIBLY PERMEABLE.

923.3- 927.7 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
25% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED

ACCESSORY MINERALS: QUARTZ-10%
LARGE MOLDS. EUHEDRAL WHITE QUARTZ CRYSTALS GROWING IN
LARGE MOLDS. LAMINATIONS AT TOP OF SECTION.

927.7- 929 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED, MOTTLED

929 - 933.7 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
07% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
ACCESSORY MINERALS: GYPSUM-01%

933.7- 934.2 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

934.2- 934.9 PEAT; BLACK
POOR INDURATION
NOTE: THIS IS NOT PEAT, BUT ACTUALLY LIGNITE. I PUT THIS
DOWN AS PEAT THOUGH BECAUSE THAT IS THE ONLY OPTION WITHIN
THIS PROGRAM.

934.9- 939.6 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
10% POROSITY: FRACTURE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
PRESERVED BURROWS FILLED WITH FINE GRAIN DOLOMITE CRYSTALS.
POSSIBLY PERMEABLE THROUGH FRACTURES, BURROWS , AND VUGS.

939.6- 945 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: INTERCRYSTALLINE, FRACTURE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: SUCROSIC

945 - 946.3 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: FRACTURE, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: SUCROSIC
POROSITY CAN GO UP TO 20%.

946.3- 948.5 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: MOLDIC, FRACTURE, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

948.5- 949.1 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-07%
OTHER FEATURES: SUCROSIC

949.1- 950 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: SUCROSIC

950 - 950.5 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: SUCROSIC

950.5- 952.6 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-05%
THIN LAYER OF LIGNITE AT 950.7 FT.

952.6- 959.5 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%

OTHER FEATURES: DOLOMITIC
FOSSILS: BENTHIC FORAMINIFERA
RECRYSTALLIZED TO WEATHERED LIMESTONE, WITH HIGH DOLOMITIZATION (50-90%). DOLOMITE CRYSTALS ARE MICROCRYSTALLINE TO VERY FINE IN SIZE, AND RHOMBIC. MUCH OF THE WEATHERED LIMESTONE ARE PRESERVED FORAMS. DICTYOCONUS AMERICANUS AND FABIANA CUBENSIS FORAMS BOTH PRESENT. SOME VUGS. MODERATE INDURATION.

959.5- 963 DOLOSTONE; GRAYISH BROWN
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA
CALCAREOUS DOLOSTONE (70-80% DOLOMITE). WEATHERED DICTYOCONUS AMERICANUS AND FABIANA CUBENSIS FORAMS PRESENT. ORGANICS INCREASE WITH DEPTH FROM 5-15%. AT BASE OF SECTION, LIGNITE SEAMS BEGIN TO APPEAR.

963 - 965.5 PEAT; BLACK
POOR INDURATION
NOTE: THIS IS NOT PEAT BUT LIGNITE. THE PROGRAM DOES NOT HAVE AN INPUT OPTION FOR LIGNITE.

965.5- 967.3 CLAY; LIGHT OLIVE GRAY
40% POROSITY: INTERGRANULAR, FRACTURE, LOW PERMEABILITY
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC, CALCAREOUS
HIGHLY FRACTURED WITH ORGANIC COATED SLICKENSIDES. HIGH POROSITY BUT LOW PERMEABILITY.

967.3- 968.8 DOLOSTONE; GRAYISH BROWN TO WHITE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
MODERATE TO POOR INDURATION. SECTION COMPOSED OF DOLOMITE CRYSTALS WITH WEATHERED WHITE LIMESTONE FOSSILS AND MATRIX SURROUNDING DOLOMITE CRYSTALS.

968.8- 970.2 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL

GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
PRIMARILY COMPOSED OF BROWN RHOMBIC DOLOMITE CRYSTALS. ~15% OF SECTION IS WHITE, WEATHERED FOSSIL FRAGMENTS, USUALLY MILIOLIDS.

970.2- 975 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
POROSITY RANGE OF 15-20%.

975 - SAND; NO COLOR GIVEN TO NO COLOR GIVEN
TL% POROSITY: POSSIBLY HIGH PERMEABILITY,
GRAIN SIZE: ; RANGE: VERY COARSE TO COARSE
ROUNDNESS: ANGULAR TO ROUNDED;

980 - DOLOSTONE; MODERATE YELLOWISH BROWN TO VERY LIGHT ORANGE
20% POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
WEATHERED FOSSIL FRAGMENTS PRESENT.

980 - 985.7 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
10% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
POOR INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
WEATHERED FOSSIL FRAGMENTS PRESENT. DOLOMITE DECREASES WITH DEPTH/WEATHERED CALCITE INCREASES WITH DEPTH. AT THE TOP OF THE SECTION, CORE IS 90% DOLOMITE. AT THE BOTTOM OF THE SECTION THE CORE IS 50% DOLOMITE.

985.7- 988.6 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS

FOSSILS: FOSSIL FRAGMENTS
WEATHERED FOSSIL FRAGMENTS.

988.6- 990 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
15% POROSITY: POSSIBLY HIGH PERMEABILITY, FRACTURE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
POROSITY RANGE OF 5-20%. POSSIBLY PERMEABLE IN HIGHLY
MOLDIC AND FRACTURED AREAS OF THE SECTION. NOT ALL OF THE
SECTION IS HIGHLY MOLDIC OR FRACTURED HOWEVER.

990 - 995 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH ORANGE
07% POROSITY: MOLDIC, FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
FOSSILS: FOSSIL MOLDS
SOME THIN BEDS OF POORLY CONSOLIDATED DOLOSTONE PRESENT.

995 - 1000.8 DOLOSTONE; VERY LIGHT ORANGE
07% POROSITY: MOLDIC, FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS

1000.8- 1005 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: MOLDIC, VUGULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%, PLANT REMAINS-05%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
VERY LARGE VUGS. POSSIBLE WORM BURROWS, MARKED BY MOTTLING.

1005 - 1010 DOLOSTONE; VERY LIGHT ORANGE TO BLACK
05% POROSITY: MOLDIC, FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-15%
FOSSILS: FOSSIL MOLDS
BLACK, LARGE, ORGANIC FRAGMENTS.

1010 - 1011.2 DOLOSTONE; VERY LIGHT ORANGE TO BLACK
05% POROSITY: FRACTURE, VUGULAR, MOLDIC; 90-100% ALTERED

SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-10%
FOSSILS: FOSSIL MOLDS

1011.2- 1013.2 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-10%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
PLANT FRAGMENTS ACCOUNT FOR 9% OF ORGANIC CONTENT.

1013.2- 1015 DOLOSTONE; VERY LIGHT ORANGE TO BLACK
07% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-20%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
PLANT FRAGMENTS AND OTHER ORGANIC FRAGMENTS PRESENT.

1015 - 1020 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-15%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
MODERATED TO POOR INDURATION. SLICKENSIDES. POROSITY RANGE
OF 5-15%.

1020 - 1021.8 DOLOSTONE; VERY LIGHT ORANGE
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%
FOSSILS: FOSSIL MOLDS
POROSITY RANGE OF 5-10%.

1021.8- 1025 DOLOSTONE; VERY LIGHT ORANGE
03% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR

90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: PLANT REMAINS-10%, QUARTZ-01%
FOSSILS: PLANT REMAINS
WHITE QUARTZ CRYSTALS GROWING IN MOLDS.

1025 - 1032.2 DOLOSTONE; VERY LIGHT ORANGE
03% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: PLANT REMAINS-05%, QUARTZ-01%
FOSSILS: PLANT REMAINS
WHITE QUARTZ CRYSTALS GROWING IN MOLDS. SLIGHT INCREASE IN POROSITY IN THE LAST 1 FOOT OF THE CORE, UP TO 5-10%. LAST 2 INCHES OF THE SECTION BECOME DARK BROWN DOLOSTONE.

1032.2- 1034 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-05%

1034 - 1035 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
OTHER FEATURES: CRYSTALLINE

1035 - 1040 NO SAMPLES
NO RECOVERY ACCORDING TO DRILL LOG NOTES.

1040 - 1042.5 NO SAMPLES
NO RECOVERY.

1042.5- 1045 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-05%

1045 - 1047.2 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-05%

1047.2- 1049.3 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-03%, QUARTZ-01%
OTHER FEATURES: CRYSTALLINE

1049.3- 1051.8 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CRYSTALLINE

1051.8- 1055 DOLOSTONE; GRAYISH BROWN
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; GOOD INDURATION

1055 - 1064.2 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CRYSTALLINE
POROSITY RANGE OF 15-25%.

1064.2- 1067.4 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: PLANT REMAINS-05%
FOSSILS: ORGANICS, PLANT REMAINS
PLANT FRAGMENTS AND OTHER ORGANIC FRAGMENTS INCREASE WITH
DEPTH.

1067.4- 1071.3 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE

1071.3- 1074.7 DOLOSTONE; MODERATE YELLOWISH BROWN
25% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CRYSTALLINE
SOME AREAS OF POOR INDURATION.

1074.7- 1077.4 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-02%
FOSSILS: ORGANICS
POROSITY RANGE OF 5-10%. ORGANICS INCREASE WITH DEPTH TO 5%.

1077.4- 1080 DOLOSTONE; DARK YELLOWISH ORANGE
15% POROSITY: INTERCRYSTALLINE, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-03%

1080 - 1082.3 DOLOSTONE; GRAYISH ORANGE
12% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-05%
POROSITY RANGE OF 5-20%

1082.3- 1087 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, FRACTURE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-07%, QUARTZ-01%

QUARTZ PRESENT AS WHITE SUBHEDRAL CRYSTALS. FRACTURES
PRESENT, ESPECIALLY FROM 1085-1086 FT.

1087 - 1091.8 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
POROSITY ABOVE IS ROUGH AVERAGE. RANGE OF 5-25% POROSITY.
POROSITY IS HIGH (25%) WHERE MOLDS ARE PRESENT.

1091.8- 1094.7 DOLOSTONE; GRAYISH ORANGE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
POROSITY RANGE OF 10-20%. 2-4 INCH BEDS OF POORLY
CONSOLIDATED DOLOSTONE PRESENT.

1094.7- 1096.2 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

1096.2- 1097.9 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CRYSTALLINE, CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
WHITE, WEATHERED FOSSILS BEGIN TO APPEAR AND INCREASE WITH
DEPTH.

1097.9- 1099.7 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
DOLOSTONE WITH HIGH CONTENT OF WEATHERED CALCITE FOSSIL
FRAGMENTS. POSSIBLE DICTYOCONUS AMERICANUS AND FABIANA

CUBENSIS. WITH DEPTH, WEATHERED CALCITE FRAGMENTS INCREASE IN CONTENT TO MAXIMUM OF 50%.

1099.7- 1101.8 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS, WEATHERED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
15% OF THE SECTION IS COMPOSED OF BROWN DOLOMITE CRYSTALS. THE REST OF THE SECTION IS COMPOSED OF FOSSIL FRAGMENTS AND CALCITE MATRIX.

1101.8- 1105 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS, WEATHERED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
APPROXIMATELY 20-30% OF THE SECTION IS DOLOMITE. THE REST OF THE SECTION IS COMPOSED OF WEATHERED FOSSIL FRAGMENTS (PRIMARILY MILIOLIDS) AND CALCITE MATRIX.

1105 - 1110 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS, WEATHERED
MEDIUM RECRYSTALLIZATION, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
SLIGHTLY DOLOMITIC, RECRYSTALLIZED LIMESTONE, WITH VARIABLE AMOUNTS OF WEATHERED, FOSSIL FRAGMENTS. POORLY CONSOLIDATED BED AT 1108 FT WITH HIGH CONTENT OF ORGANICS.

1110 - 1111.9 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GOOD INDURATION
OTHER FEATURES: FOSSILIFEROUS, HIGH RECRYSTALLIZATION
WEATHERED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
HIGHLY RECRYSTALLIZED LIMESTONE WITH SOME SMALL CONTENT OF WEATHERED FOSSIL FRAGMENTS (~20%). POSSIBLE MOLDS OF FABULARIA VAUGHANI.

1111.9- 1115 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%

OTHER FEATURES: HIGH RECRYSTALLIZATION, WEATHERED
FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ALGAE
FABULARIA VAUGHANI AND MILLIOLID FORAMS PRESENT. CORALLINE
ALGAE PRESENT.

1115 - 1120 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, WEATHERED
FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ALGAE
CORALLINE ALGAE, FABULARIA VAUGHANI, AND MILIOLIDS.

1120 - 1121.1 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, WEATHERED
FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
FORAM RICH RECRYSTALLIZED LIMESTONE. ORGANIC LAMINATIONS.
PRIOR TO RECRYSTALLIZATION, CORE WAS PROBABLY A PACKSTONE
OR GRAINSTONE.

1121.1- 1125 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: WEATHERED, FOSSILIFEROUS, DOLOMITIC
MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FORAM RICH RECRYSTALLIZED LIMESTONE. PRIOR TO
RECRYSTALLIZATION, CORE WAS PROBABLY A PACKSTONE OR
GRAINSTONE. BROWN DOLOMITE CRYSTALS PRESENT.

1125 - 1130.4 GRAINSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS
LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

1130.4- 1135 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE

MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
PRIOR TO RECRYSTALLIZATION, SECTION WAS A FORAM GRAINSTONE.
FABULARIA VAUGHANI PRESENT.

1135 - 1139.2 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
PRIOR TO RECRYSTALLIZATION, SECTION WAS A FORAM GRAINSTONE.

1139.2- 1145 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

1145 - 1148.6 AS ABOVE

1148.6- 1155 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

1155 - 1155.5 AS ABOVE

1155.5- 1160 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS

1160 - 1166 AS ABOVE
ORGANIC FRAGMENTS AND ORGANIC LAMINATIONS APPEAR 2 INCHES
ABOVE THE BASE OF THE SECTION.

1166 - 1167.3 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-20%
OTHER FEATURES: FOSSILIFEROUS, HIGH RECRYSTALLIZATION
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, ORGANICS

ORGANIC FRAGMENTS AND ORGANIC LAMINATIONS BEGIN TO INCREASE
WITH DEPTH. MAXIMUM OF 20% ORGANIC CONTENT. BROWN DOLOMITE
CRYSTALS BEGIN TO APPEAR AND INCREASE WITH DEPTH.

1167.3- 1170 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
POROSITY RANGE OF 5-20%. WEATHERED CALCITE FOSSIL FRAGMENTS
AT TOP. FOSSIL FRAGMENTS DISAPPEAR WITH DEPTH.

1170 - 1175 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: MOTTLED
OTHER FEATURES: CRYSTALLINE
POROSITY IS HIGHLY VARIABLE, RANGING FROM 5-20%. RELICT
BURROWS PRESENT, MARKED BY MOTTLING AND COARSER GRAIN
SIZE. SOME VUGS. AREAS WITH MOTTLES AND VUGS ARE POSSIBLY
PERMEABLE. SOME FRACTURES ARE PRESENT.

1175 - 1176.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
POROSITY RANGE OF 5-15%.

1176.6- 1179.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
LAST 0.5 FT OF SECTION, DOLOMITE BEGINS TO TRANSITION INTO
LIMESTONE. WHITE WEATHERED FOSSIL FRAGMENTS BEGIN TO APPEAR
AND INCREASE WITH DEPTH. DOLOMITE IS STILL DOMINANT
OVERALL. AT 1179.6 FT, THERE IS A SHARP CONTACT BETWEEN THE
OVERLYING DOLOMITE AND THE UNDERLYING LIMESTONE.

1179.6- 1185 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, BENTHIC FORAMINIFERA
FORAM RICH.

1185 - 1186.2 AS ABOVE

1186.2- 1190 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA

1190 - 1195 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
RECRYSTALLIZED LIMESTONE. WITH DEPTH, BROWN DOLOMITE
CRYSTALS BEGIN TO APPEAR AND INCREASE WITH DEPTH, COMING TO
A MAXIMUM OF 45%.

1195 - 1196 LIMESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
BORDERLINE DOLOMITE. 49% OF SECTION IS COMPOSED OF DOLOMITE
CRYSTALS.

1196 - 1200 DOLOSTONE; DARK YELLOWISH ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE; GOOD INDURATION
OTHER FEATURES: CALCAREOUS
DOLOMITE CONTENT INCREASES WITH DEPTH.

1200 - 1203 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH ORANGE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

GOOD INDURATION
SHARP LITHOLOGY CHANGE AT 1203 FT FROM OVERLYING DOLOMITE
TO UNDERLYING DOLOMITIC LIMESTONE.

1203 - 1206 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
HIGH CONTENT OF BROWN RHOMBIC DOLOMITE CRYSTALS.

1206 - 1210 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
MOLLUSKS
ACCORDING TO FIELD DRILLING LOG, THE OLDSMAR FORMATION
FOSSIL, HELICOSTEGINA GYRALIS IS SEEN AT ~1208 FT. I WAS
NOT ABLE TO VERIFY THIS.

1210 - 1215 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA

1215 - 1220 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS

1220 - 1225 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BRYOZOA

1225 - 1230 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA, MOLLUSKS
INCREASING MOLDIC POROSITY WITH DEPTH.

1230 - 1235 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
GREEN CLAY LAMINATIONS AT ~1232 FT - POSSIBLY GLAUCONITE.
VERY LARGE, GRAVEL SIZE, MOLDS. MOLDIC POROSITY INCREASES WITH DEPTH.

1235 - 1240 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA BRYOZOA

1240 - 1245 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
MOLDS AND OVERALL POROSITY DECREASE WITH DEPTH.
RECRYSTALLIZATION INCREASES WITH DEPTH.

1245 - 1249.4 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: FINE; RANGE: FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS

1249.4- 1252.7 DOLOSTONE; DARK YELLOWISH ORANGE
15% POROSITY: INTERCRYSTALLINE, FRACTURE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
POROSITY RANGE OF 5-15%.

1252.7- 1255 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, FRACTURE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
OTHER FEATURES: CRYSTALLINE
POSSIBLY PERMEABLE IN FRACTURES.

1255 - 1259.1 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
OTHER FEATURES: CRYSTALLINE

1259.1- 1260 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO COARSE
GOOD INDURATION
POSSIBLY PERMEABLE. ALSO, SOME VUGS.

1260 - 1265 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
FRACTURES ALSO PRESENT.

1265 - 1270 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, VUGULAR, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION

1270 - 1275 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION

1275 - 1280 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS
FRACTURES ALSO PRESENT.

1280 - 1281.8 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
15% POROSITY: VUGULAR, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS
TRANSITIONS TO LIMESTONE TOWARDS THE BOTTOM OF THE SECTION

1281.8- 1282.6 PACKSTONE; WHITE
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS
MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS

1282.6- 1285 PACKSTONE; WHITE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
45% OF THE SAMPLE IS DOLOMITIZED.

1285 - 1290 PACKSTONE; WHITE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
ACCESSORY MINERALS: GLAUCONITE-03%, PYRITE-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS

DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
GREEN CLAY LAMINATIONS. RED RUST TO GOLD TINTED MINERAL
SPECKS PRESENT - POSSIBLY PYRITE.

1290 - 1292.3 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS

1292.3- 1295 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
OTHER FEATURES: FOSSILIFEROUS, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
BROWN DOLOMITE CRYSTALS. HELICOSTEGINA GYRALIS FORAMS.

1295 - 1301.3 DOLOSTONE; GRAYISH BROWN TO WHITE
10% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
CALCAREOUS DOLOMITE (60% DOLOMITE, 40% CALCITE) WITH
WEATHERED FOSSIL FRAGMENTS AND MICRITE MATRIX.

1301.3- 1305 DOLOSTONE; GRAYISH BROWN
20% POROSITY: INTERCRYSTALLINE, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
VUGS ALSO PRESENT. WEATHERED FOSSIL FRAGMENTS AT TOP
FRAGMENT CONTENT DECREASES WITH DEPTH.

1305 - 1310 DOLOSTONE; GRAYISH BROWN
25% POROSITY: INTERCRYSTALLINE, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION

FOSSILS: FOSSIL FRAGMENTS
VUGS PRESENT. DOLOMITIZED FOSSIL FRAGMENTS.

1310 - 1312 DOLOSTONE; GRAYISH BROWN
25% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS
DOLOMITIZED FOSSIL FRAGMENTS.

1312 - 1315 DOLOSTONE; GRAYISH BROWN
30% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
VERY PERMEABLE.

1315 - 1320 DOLOSTONE; GRAYISH BROWN
30% POROSITY: VUGULAR, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
VERY PERMEABLE

1320 - 1325 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: FRACTURE, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION

1325 - 1328 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: INTERCRYSTALLINE, FRACTURE,
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION

1328 - 1335 DOLOSTONE; GRAYISH BROWN TO GRAYISH GREEN
15% POROSITY: INTERCRYSTALLINE, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
ACCESSORY MINERALS: CLAY-07%
FOSSILS: FOSSIL FRAGMENTS
VUGS ALSO PRESENT. GREEN CLAY PRESENT - POSSIBLY
GLAUCONITE. FOSSIL FRAGMENTS ARE DOLOMITIZED.

1335 - 1339.5 DOLOSTONE; GRAYISH BROWN TO GRAYISH GREEN
10% POROSITY: INTERCRYSTALLINE, FRACTURE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
ACCESSORY MINERALS: CLAY-05%
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
DOLOMITIZED ECHINOID FRAGMENTS. GREEN CLAY PRESENT.

1339.5- 1345 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION

1345 - 1350 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
MINOR VUG CONTENT. SOME VUGS HAVE QUARTZ CRYSTAL GROWING INSIDE.

1350 - 1355 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
ACCESSORY MINERALS: QUARTZ-01%
SOME MOLDS. VERY VUGGY. QUARTZ GROWING IN MOLDS.

1355 - 1360 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, VUGULAR, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
QUARTZ GROWING IN VUGS.

1360 - 1365 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: INTERCRYSTALLINE, VUGULAR, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
OTHER FEATURES: CALCAREOUS

1365 - 1370 DOLOSTONE; GRAYISH BROWN
05% POROSITY: VUGULAR, FRACTURE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
INTERCRYSTALLINE POROSITY ALSO PRESENT.

1370 - 1375 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
FRACTURES ALSO PRESENT.

1375 - 1380 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, VUGULAR, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION

1380 - 1385 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION

1385 - 1390 DOLOSTONE; GRAYISH BROWN
10% POROSITY: FRACTURE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
INTERCRYSTALLINE AND MOLDIC POROSITY ALSO PRESENT. QUARTZ
CRYSTALS ARE GROWING IN THE VUGS.

1390 - 1395 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH ORANGE
10% POROSITY: FRACTURE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
INTERCRYSTALLINE AND MOLDIC POROSITY ALSO PRESENT. QUARTZ
CRYSTALS ARE GROWING IN THE VUGS.

1395 - 1399.1 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE, MOLDIC
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
QUARTZ GROWING IN MOLDS. BECOMES CALCAREOUS WITH DEPTH
CHANGING TO A YELLOWISH GRAY COLOR.

1399.1- 1400 LIMESTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, VUGULAR
GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-02%
OTHER FEATURES: DOLOMITIC
DOLOMITIC, RECRYSTALLIZED LIMESTONE, WITH VERY FINE QUARTZ
CRYSTALS FILLING SOME VUGS.

1400 - 1405 MUDSTONE; YELLOWISH GRAY
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: COARSE TO COARSE
GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-01%
OTHER FEATURES: DOLOMITIC
QUARTZ IN VUGS.

1405 - 1410 LIMESTONE; WHITE
05% POROSITY: INTERGRANULAR, MOLDIC
GOOD INDURATION
FOSSILS: FOSSIL MOLDS
RECRYSTALLIZED LIMESTONE. ORIGINAL TEXTURE WAS PROBABLY A
MUDSTONE OR A WACKESTONE. THERE IS A THIN LAYER OF DOLOMITE
AT THE VERY TOP (1405.1 FT).

1410 - 1410.6 LIMESTONE; WHITE
10% POROSITY: INTERGRANULAR, MOLDIC
GOOD INDURATION
FOSSILS: FOSSIL MOLDS
RECRYSTALLIZED LIMESTONE. ORIGINAL TEXTURE WAS PROBABLY A
MUDSTONE OR A WACKESTONE.

1410.6- 1415 LIMESTONE; WHITE TO LIGHT OLIVE GRAY
05% POROSITY: INTERGRANULAR, MOLDIC
GOOD INDURATION
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, ORGANICS

1415 - 1420 LIMESTONE; WHITE TO LIGHT OLIVE GRAY
05% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, ORGANICS

1420 - 1425 WACKESTONE; WHITE TO YELLOWISH GRAY
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: COARSE TO GRAVEL
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC, MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
ORGANIC LAMINATIONS AND ORGANIC FRAGMENTS.

1425 - 1430 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO VERY FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-03%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
BORDERLINE LIMESTONE. MATRIX IS DOLOMITE. FRAMEWORK IS COMPOSED OF CALCITE SHELL FRAGMENTS. ORGANIC LAMINATIONS AND ORGANIC FRAGMENTS ARE PRESENT. VERY LARGE NODULES OF WHITE QUARTZ PRESENT. SECTION BECOMES RECRYSTALLIZED LIMESTONE THE LAST 0.5 FEET (1429.5 - 1430 FT).

1430 - 1435 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
CALCAREOUS DOLOSTONE. CALCITE DECREASES WITH DEPTH BECOMING PURE DOLOSTONE AT THE BASE. SOME FRACTURES. WHITE QUARTZ GROWING IN VUGS AND PINPOINT VUGS. ORGANIC FRAGMENTS AND ORGANIC LAMINATIONS PRESENT.

1435 - 1440 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-15%
OTHER FEATURES: SUCROSIC
WHITE QUARTZ GROWING IN VUGS AND PINPOINT VUGS AND MOLDS.
POROSITY RANGE OF 5-20%. POROSITY INCREASES WITH DEPTH, AS
DOES PERMEABILITY.

1440 - 1442 DOLOSTONE; MODERATE YELLOWISH BROWN TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
ACCESSORY MINERALS: QUARTZ-15%
TRANSITION ZONE. BEGINS AS PURE DOLOSTONE AT TOP, THEN
CALCITE INCREASE WITH DEPTH UNTIL SECTION IS ABOUT 50%
CALCITE AT THE BASE. WHITE QUARTZ CRYSTALS GROWING IN MOLDS
AND VUGS. BALLS OF EUHEDRAL QUARTZ CRYSTALS AT 1441 FT.

1442 - 1445 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, FRACTURE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
FOSSILS: FOSSIL FRAGMENTS, ORGANICS, BENTHIC FORAMINIFERA
MODERATELY DOLOMITIZED (20-40%). FOSSIL FRAGMENTS PRESENT.
SORITES FORAMS, ORGANIC FRAGMENTS, AND ORGANIC LAMINATIONS
PRESENT.

1445 - 1450.7 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ORGANICS
ORGANIC LAMINATIONS. CALCITE SORITES FORAM FRAGMENTS
PRESENT.

1450.7- 1451.2 MUDSTONE; WHITE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY COARSE TO VERY COARSE

MODERATE INDURATION
ACCESSORY MINERALS: HEAVY MINERALS-05%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
10% DOLOMITE. SORITES FORAM FRAGMENTS PRESENT.

1451.2- 1455 DOLOSTONE; GRAYISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
WHITE SORITES CALCITE FRAGMENTS APPEAR AT THE TOP, THEN
DISAPPEAR WITH DEPTH. LAMINATIONS AT THE TOP.

1455 - 1458.4 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION

1458.4- 1460 GRAINSTONE; WHITE
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FORAM GRAINSTONE. ORGANIC LAMINATIONS.

1460 - 1465 LIMESTONE; WHITE
15% POROSITY: INTERCRYSTALLINE, MOLDIC
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC, MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
BRYOZOA
MODERATELY RECRYSTALLIZED LIMESTONE. ORIGINAL TEXTURE
PROBABLY A WACKESTONE OR PACKSTONE. ORGANIC LAMINATIONS.

1465 - 1470 GRAINSTONE; WHITE
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED

OTHER FEATURES: DOLOMITIC, MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FORAM GRAINSTONE.

1470 - 1475 GRAINSTONE; WHITE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS

1475 - 1484.5 LIMESTONE; WHITE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GOOD INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
NOTE: BOX WAS DROPPED BY OTHERS. THUS A MORE DETAILED
DESCRIPTION IS IMPOSSIBLE. ABOVE IS A GENERAL DESCRIPTION.

1484.5- 1485 LIMESTONE; MODERATE LIGHT GRAY
05% POROSITY: INTERCRYSTALLINE
GOOD INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
HIGHLY RECRYSTALLIZED LIMESTONE. DRILL LOG NOTES VUGS AND
HIGH POROSITY, BUT I DON'T SEE THAT IN THE CORE. THIS MAY
BE DUE TO THE CORE BEING CHEWED UP.

1485 - 1488 LIMESTONE; LIGHT OLIVE GRAY TO MODERATE LIGHT GRAY
15% POROSITY: INTERGRANULAR, VUGULAR
GOOD INDURATION
ACCESSORY MINERALS: CLAY-30%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
HIGHLY VARIABLE SECTION. OVERALL, A HIGHLY RECRYSTALLIZED
LIMESTONE, LOW TO MODERATELY DOLOMITIZED, INTERBEDDED WITH
LIGHT OLIVE GRAY, THIN, CLAY BEDS. CLAY IS ALSO PRESENT IN
THE MATRIX.

1488 - 1490 GRAINSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

1490 - 1492.5 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA

1492.5- 1495 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
FORAM GRAINSTONE.

1495 - 1500 LIMESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
MODERATE INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS
HIGHLY RECRYSTALLIZED LIMESTONE. FOSSIL FRAGMENTS PRESENT.
OLIVE GRAY CLAY BED AT 1495.8-1496 FT. END OF CORE: TOTAL
DEPTH = 1500.0 FT.

1500 TOTAL DEPTH

Appendix D2. Lithologic Log for COREHOLE 2 at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-19243 COUNTY - SM19243
TOTAL DEPTH: 2037 FT. LOCATION: T.19S R.23E S.15
SAMPLES - NONE LAT = 28D 49M 47S
LON = 82D 00M 05S

COMPLETION DATE: N/A ELEVATION: 62 FT
OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER: SWFWMD / ROMP 117 UDR DEEP

WORKED BY: FARMAN ULLAH, JULY 2011
NOTE: CORE STARTS AT 1466 FEET BLS

1466. - 1737.5 124 OLDM OLDSMAR LIMESTONE
1737.5 - 2037 125 CDRK CEDAR KEYS LIMESTONE

1466 - 1472 GRAINSTONE; WHITE TO YELLOWISH GRAY
35% POROSITY: PIN POINT VUGS, VUGULAR, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL
90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: SPAR-01%, ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, CORAL, BRYOZOA, ECHINOID

1472 - 1477 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: INTRACLASTS, SKELETAL, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA
HARD WITH LESS POROSITY AND FEWER FOSSIL FRAGMENTS, ORGANIC LAMINATIONS. THE CORE BREAKS EASILY ALONG LAMINATIONS.

1477 - 1478.3 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: DOLOMITE-01%, QUARTZ-01%

FOSSILS: FOSSIL FRAGMENTS, BRYOZOA
AN INCH LONG DOLOMITE GRAIN. ORE SANDY IN APPEARANCE.

1478.3- 1479 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: PIN POINT VUGS, VUGULAR
GRAIN TYPE: SKELETAL, CRYSTALS, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
POOR INDURATION
ACCESSORY MINERALS: CLAY-01%
THE CORE INTERVAL IS A MIXTURE OF CRYSTALLINE LIMESTONE
WITH SMALL GRAINS OF PACKSTONE TO GRAINSTONE.

1479 - 1481.8 GRAINSTONE; WHITE TO YELLOWISH GRAY
35% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID

1481.8- 1482.8 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: PIN POINT VUGS, VUGULAR
GRAIN TYPE: CRYSTALS, SKELETAL, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
POOR INDURATION
ACCESSORY MINERALS: CLAY-02%
FOSSILS: FOSSIL FRAGMENTS
MIXTURE OF CRYSTALLINE TO PACKSTONE-WACKESTONE, LIMESTONE
WITH MORE CLAY CONTENT. THE CORE IS MORE PACKSTONE TOWARDS
THE BOTTOM WITH LESS CLAY AND MORE GRAIN SUPPORTED.

1482.8- 1483.2 LIMESTONE; WHITE
15% POROSITY: VUGULAR
GRAIN TYPE: CRYSTALS
GOOD INDURATION

1483.2- 1484.2 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS
POOR INDURATION
ACCESSORY MINERALS: CLAY-02%
MIXTURE OF CLAY AND LIMESTONE. GRAINS OF LIMESTONE ARE HELD
BY CALCAREOUS CLAY.

1484.2- 1485 PACKSTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: PIN POINT VUGS, INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS

GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CLAY-01%
FOSSILS: FOSSIL FRAGMENTS
CORE BREAKS EASILY WHERE THE CLAY CONTENT IS HIGH.

1485 - 1487 GRAINSTONE; WHITE TO YELLOWISH GRAY
35% POROSITY: PIN POINT VUGS, INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID

1487 - 1488.8 GRAINSTONE; WHITE TO YELLOWISH GRAY
30% POROSITY: VUGULAR, PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL
91% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: CHERT-01%, CLAY-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
CORE IS MORE VUGULAR THAN THE INTERVAL ABOVE. IT HAS AN
INCH OF DARK BROWN COLOR; MOSTLY CLAY AT TOP WITH CLASTS OF
CHERT.

1488.8- 1491 GRAINSTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
25% POROSITY: PIN POINT VUGS, INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, SKELETAL
90% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
ECHINOID
CORE HAS INTERGRANULAR TO PINPOINT POROSITY BUT THE MIDDLE
HAS MORE VUGULAR POROSITY WITH DIFFERENT FORAMS. CLASTS OF
CRYSTALLINE LIMESTONE OBSERVED THROUGHOUT THE CORE.

1491 - 1493 GRAINSTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
25% POROSITY: PIN POINT VUGS, INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
91% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-02%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
ECHINOID
LIMESTONE CLASTS ARE IN HIGHER NUMBER WITH LITTLE REACTION
TO DILUTED HCL.

1493 - 1493.5 CLAY; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: LIMESTONE-01%, CALCITE-02%
OTHER FEATURES: CALCAREOUS
DARK TO LIGHT COLOR CALCAREOUS CLAY WITH NO FOSSILS. DARK COLOR AT THE TOP WHILE LIGHT COLOR IS ABUNDANT TOWARDS THE BOTTOM AND MORE CALCAREOUS.

1493.5- 1494.2 PACKSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
75% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1494.2- 1494.9 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA, ECHINOID, MOLLUSKS

1494.9- 1497 PACKSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, INTRACLASTS, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: CLAY-01%, LIMESTONE-O1%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA

1497 - 1497.4 GRAVELS OF LIMESTONE WITH SOME CLAY

1497.4- 1499.1 PACKSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
20% POROSITY: PIN POINT VUGS, INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%, CLAY-01%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA, FOSSIL MOLDS
GRAINS OF LIMESTONE ARE IN HIGHER NUMBER AT THE LAST 5 INCHES OF THE CORE INTERVAL AND MORE VUGULAR.

1499.1- 1503 GRAINSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL

90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
FOSSILS: BRYOZOA, FOSSIL FRAGMENTS, ECHINOID, MOLLUSKS
CORE INTERVAL IS IN BROKEN PIECES AT THE TOP AND BOTTOM OF
THE SECTION.

1503 - 1506 GRAINSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS, VUGULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
92% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA, MOLLUSKS
THE CORE HAS LESS VUGULAR POROSITY AT 1504-1504.9 FEET.

1506 - 1506.4 PACKSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
THE CORE INTERVAL IS A MIXTURE OF LIGHT AND DARK COLOR
CRYSTALLINE LIMESTONE.

1506.4- 1507.5 WACKESTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS
35% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
ORGANIC LAMINATIONS ARE PRESENT THROUGHOUT THE INTERVAL.

1507.5- 1509.7 PACKSTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS, VUGULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%, ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS

1509.7- 1510 WACKESTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS
45% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%

1510 - 1513.5 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: FOSSIL FRAGMENTS
THE CORE IS CRYSTALLINE AT THE END OF THE INTERVAL.

1513.5- 1517 GRAINSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA
GRAINS MOSTLY PRESENT TOWARDS THE BOTTOM OF THE SECTION

1517 - 1520.9 PACKSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, CRYSTALS
65% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, BRYOZOA
ORGANIC LAMINATIONS ARE COMMON AND MOSTLY TOWARDS BOTTOM OF THE CORE INTERVAL.

1520.9- 1525.9 GRAINSTONE; WHITE TO LIGHT YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: BRYOZOA, MOLLUSKS
LIMESTONE GRAINS ARE MOSTLY TOWARDS THE BOTTOM OF SECTION.

1525.9- 1526 LIMESTONE; GREENISH GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS
GOOD INDURATION
GREY COLOR 3 INCH LONG LIMESTONE, MOST PORES ARE FILLED BY GRAINSTONE FACIES WITH MILLIOIDS.

1526 - 1527 GRAINSTONE; WHITE TO LIGHT YELLOWISH ORANGE
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL

90% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
A 2 INCH CRYSTALLINE LIMESTONE AT THE VERY END OF CORE.

1527 - 1527.9 PACKSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
25% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%, SPAR-01%
IRON STAIN-01%
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
VERY FEW IRON STAINED CALCITE SPARS. THE CORE HAS MORE
CRYSTALLINE TEXTURE WHEN IT BREAKS ALONG CALCITE SPARS.

1527.9- 1528.6 PACKSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS, BIOGENIC
70% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

1528.6- 1530.6 GRAINSTONE; WHITE TO LIGHT YELLOWISH ORANGE
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
91% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-01%
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
THE GRAINS ARE OF CRYSTALLINE LIMESTONE WHICH ARE MORE IN
NUMBER TOWARDS THE BOTTOM OF THE SECTION.

1530.6- 1530.8 LIMESTONE; GREENISH GRAY TO GREENISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS
GOOD INDURATION
NO FOSSILS AND PORES ARE FILLED WITH GRAINSTONE FACIES.

1530.8- 1533 GRAINSTONE; WHITE TO LIGHT YELLOWISH ORANGE
25% POROSITY: VUGULAR, INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL
90% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: SPAR-01%
MORE VUGULAR WITH CALCITE SPARS TOWARDS TOP OF THE SECTION

1533 - 1533.6 PACKSTONE; WHITE TO LIGHT YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: ORGANICS-01%, CLAY-02%

1533.6- 1535 PACKSTONE; WHITE TO LIGHT YELLOWISH ORANGE
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS

1535 - 1539.5 PACKSTONE; WHITE TO LIGHT YELLOWISH ORANGE
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, CRYSTALS
70% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-01%, ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
CORE CHANGES FROM MORE CLAY SUPPORTED TO GRAIN SUPPORTED.
ORGANIC LAMINATIONS ARE ALSO NOTICED IN THE MIDDLE OF THE
CORE WITH HIGH ABUNDANCE. IT IS MORE FINE GRAIN PACKSTONE
IN THE LAST 5 INCHES WITH FEWER FOSSILS.

1539.5- 1542 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: SPAR-01%
POOR TO WELL DEVELOPED DOLOMITE CRYSTALS IN PLACES; NO
FOSSILS PRESENT

1542 - 1543.5 DOLOSTONE; YELLOWISH GRAY
POROSITY: NOT OBSERVED; 10-50% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
OPAQUE LIGHT COLOR WITH ORGANIC LAMINATIONS, SLIGHTLY
CALCAREOUS.

1543.5- 1544.9 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
20% POROSITY: VUGULAR; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: SPAR-01%

OTHER FEATURES: SUCROSIC

1544.9- 1545.3 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS; 40% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-02%

1545.3- 1547.8 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: SPAR-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
VERY HARD, FRACTURED AT PLACES, SOME HIGHLY CALCAREOUS CLAY

1547.8- 1550 MUDSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-02%, DOLOMITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
HIGHLY CALCAREOUS WHITE DOLOMITE WITH DOLOMITE GRAINS OF
ABOUT 3-4 INCHES IN THE UPPER PART WITH SOME ORGANIC
LAMINATIONS IN THE MIDDLE. PURE MUDSTONE TOWARDS THE BOTTOM
OF THE CORE INTERVAL.

1550 - 1550.6 WACKESTONE; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 25% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-02%
OTHER FEATURES: CALCAREOUS

1550.6- 1554.1 PACKSTONE; YELLOWISH GRAY TO LIGHT YELLOWISH ORANGE
20% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1554.1- 1555 WACKESTONE; YELLOWISH GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR

GRAIN TYPE: CRYSTALS; 25% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
ORGANIC LAMINATIONS ARE PRESENT THROUGHOUT, THE CORE BREAKS EASILY ALONG SUCH LAMINATIONS.

1555 - 1556.5 PACKSTONE; YELLOWISH GRAY TO LIGHT YELLOWISH ORANGE
20% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS
75% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: DOLOMITE-01%
FOSSILS: FOSSIL FRAGMENTS
DOLOSTONE GRAINS IN FIRST 5 INCHES OF THE CORE INTERVAL.

1556.5- 1567 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC; 50-90% ALTERED; EUHEDRAL
GOOD INDURATION
OTHER FEATURES: SUCROSIC
WELL DEVELOPED DOLOMITE CRYSTALS IN THE MOLDIC PORES.
SUCROSIC IN THE UPPER HALF WITH LESS SUCROSIC IN THE LATTER HALF.

1567 - 1569.3 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, DOLOMITE-01%
OTHER FEATURES: SUCROSIC
HARD AND COMPACT WITH ORGANIC LAMINATIONS AND VERY PORCELANEOUS. VERY FEW DOLOMITE CRYSTALS PRESENT.

1569.3- 1570.6 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
CALCITE PRESENT IN HAIRLINE FRACTURES, MORE DARK BROWN IN COLOR. SOME LIGHT COLOR GRAINS ARE OBSERVED AS INCLUSIONS.
THE CORE IS ALSO DOLOMITIC.

1570.6- 1572 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
15% POROSITY: PIN POINT VUGS; 50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%

OTHER FEATURES: CALCAREOUS, SUCROSIC
A MIXTURE OF DARK BROWN TO LIGHT BROWN COLOR; CRYSTALS OF DOLOMITE ARE WELL DEVELOPED IN THE DARK COLOR WHILE LIGHT COLOR ROCK IS MORE OPAQUE. A VERY SHINY DARK BLACK COLOR LAYER PRESENT, POSSIBLY ORGANICS.

1572 - 1574.8 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: PIN POINT VUGS; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
LIGHT COLOR IS SLIGHTLY CALCAREOUS WITH ORGANIC LAMINATIONS IN THE MIDDLE OF THE INTERVAL.

1574.8- 1575.2 SILT; WHITE
20% POROSITY: PIN POINT VUGS, INTERGRANULAR
POOR INDURATION
OTHER FEATURES: CALCAREOUS
LIGHT COLOR CALCAREOUS SILTSTONE.

1575.2- 1577 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1577 - 1577.5 MIXTURE OF LIGHT TO WHITE COLOR LIMESTONE AND DARK COLOR DOLOMITIC LIMESTONE BOTH HAVING IRON STAINING.

1577.5- 1578.9 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
ANHEDRAL TO SUBHEDRAL DOLOSTONE WITH SLIGHTLY LESS CALCITE PRESENT IN FORM OF VEINS. LESS DOLOMITE CRYSTALS IN VUGS.

1578.9- 1579 DARK COLOR ORGANIC MATERIAL IN MORE SILTY MATRIX.

1579 - 1579.8 GRAVELS SIZE GRAINS OF DARK DOLOR DOLOMITE WITH MORE CLAY TOWARDS THE BOTTOM.

1579.8- 1582 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL

GOOD INDURATION
ACCESSORY MINERALS: SILT-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL LIGHT BROWN COLOR DOLOSTONE WITH INCLUSIONS OF CALCAREOUS SILTSTONE.

1582 - 1583.2 DOLOSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
10-50% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-02%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
PORCELANEOUS LIGHT COLOR WITH VERY FEW DOLOMITE CRYSTALS IN MOLDS AND VUGS.

1583.2- 1583.5 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: SILT-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS

1583.5- 1583.9 SILT; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%, CALCITE-02%
OTHER FEATURES: CALCAREOUS
CALCAREOUS SILTSTONE WITH ORGANIC LAMINATIONS MORE COMMON TOWARDS THE BOTTOM OF THE SECTION. THE LAMINATIONS ARE BROWN TO DARK BROWN IN COLOR.

1583.9- 1585.9 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
SLIGHTLY CALCAREOUS DOLOSTONE WITH CALCITE LAYERS AND DOLOMITIC FOSSIL FRAGMENTS.

1585.9- 1587 SILT; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS SILTSTONE WITH DOLOMITE CRYSTALS IN THE UPPER PART. ORGANIC LAMINATIONS ARE PRESENT IN THE MIDDLE PART.

THE VERY LAST COUPLE OF INCHES ARE DARK BROWN IN COLOR WITH
RELATIVELY LESS POROSITY.

1587 - 1589.6 DOLOSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
THE CORE HAS FOSSIL FRAGMENTS AND MOLDS PRESERVED IN THE
FIRST HALF OF THE INTERVAL.

1589.6- 1590 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
THE CORE IS SLIGHTLY DARK IN COLOR AND MORE OPAQUE. THE
DOLOMITE CRYSTALS ARE WELL DEVELOPED IN MOLDS AND VUGS OF
THE CORE.

1590 - 1591.9 DOLOSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1591.9- 1592 SILT; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
ORGANIC LAMINATIONS ARE PRESENT AT THE END OF THE INTERVAL

1592 - 1594.5 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
MORE OPAQUE LIGHT COLOR DOLOSTONE.

1594.5- 1596.9 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION

ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
BROWN TO DARK BROWN CRYSTALLINE, HARD AND COMPACT.

1596.9- 1597 SILT; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1597 - 1597.6 MIXTURE OF CLAY AND DOLOMITIC LIGHT AND DARK SILT.

1597.6- 1598 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1598 - 1598.1 SILT; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
SILTSTONE WITH SOME DOLOMITE CRYSTALS AND LESS CALCITIC.

1598.1- 1598.8 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1598.8- 1599 SILT; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS

1599 - 1602 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS

1602 - 1603 SILT; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%

OTHER FEATURES: CALCAREOUS
ORGANIC LAMINATIONS ARE PRESENT TOWARDS THE BOTTOM OF THE
CORE INTERVAL.

1603 - 1612 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
THE INTERVAL HAS AN UNIFORM LITHOLOGY OF DARK TO LIGHT
COLOR WITH LOW POROSITY AND OCCASIONAL THIN INTERVALS OF
DOLOMITIC SILT.

1612 - 1612.8 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: PIN POINT VUGS, VUGULAR, INTERCRYSTALLINE
50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
HIGH POROSITY AND WELL DEVELOPED DOLOMITIC CRYSTALS IN
MOLDS AND VUGS.

1612.8- 1614 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
SLIGHTLY CALCAREOUS WITH SUBHEDRAL TO EUHEDRAL CRYSTALS OF
DOLOMITE. GRAINS OF OTHER DOLOSTONE ROCK NOTICED TOWARDS
THE TOP OF SUCH CORE INTERVAL.

1614 - 1615.1 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
15% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS, THE CORE GRADES TO FINE SILT SIZE MATERIAL WITH
DEPTH WHERE IT'S VERY LOOSE AND GIVES A HONEY COMB
WEATHERING APPEARANCE TO THE SECTION.

1615.1- 1616.9 SILT; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%

OTHER FEATURES: CALCAREOUS
SILT SIZE GRAINS HOLDING THE DOLOMITE CRYSTALS. THE SILT HAS LITTLE CALCITE AND VERY LOOSE PART OF THE CORE.

1616.9- 1617 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1617 - 1617.5 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; EUHEDRAL
MODERATE INDURATION
GAVEL SIZE GRAINS OF DOLOSTONE.

1617.5- 1619.6 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1619.6- 1620.5 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1620.5- 1621 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
THE CORE GRADES TO DOLOMITIC SILT WITH DEPTH.

1621 - 1622 SILT; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR; MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
SILT WITH DOLOMITE CRYSTALS.

1622 - 1627 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE

50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
THE WHOLE 5 FEET SECTION HAS SOME DOLOMITIC SILT WITH HIGH
POROSITY. THE DOLOMITE CRYSTALS SHOW EUHEDRAL FORMS WHERE
AND ARE MAINLY ASSOCIATED WITH SILT SIZE GRAINS.

1627 - 1630 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
DARK COLOR DOLOSTONE WITH LESS POROSITY. THE DOLOMITE
CRYSTAL RANGES FROM EUHEDRAL TO SUBHEDRAL IN FORM.

1630 - 1630.6 SILT; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: CALCITE-02%, ORGANICS-01%
DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS SILT WITH SOME ORGANIC LAMINATIONS AND DOLOMITE

1630.6- 1635 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
VERY HARD AND OPAQUE WITH LOW POROSITY. THE CRYSTAL RANGE
FROM SUBHEDRAL IN COMMON TO EUHEDRAL. THE CORE IS HIGHLY
FRACTURED.

1635 - 1635.9 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
ORGANIC LAMINATIONS NOTICED THROUGHOUT THE CORE SECTION
WITH FINER SILT SIZE GRAINS AT THE VERY TOP OF THE CORE
INTERVAL.

1635.9- 1639.8 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
SUBHEDRAL TO EUHEDRAL AND SLIGHTLY FRACTURED.

1639.8- 1641.6 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION

ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1641.6- 1645.8 DOLOSTONE; GRAYISH ORANGE TO DARK GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; EUHEDRAL
GOOD INDURATION
A LITTLE SILTY MATERIAL AT THE BOTTOM OF THE CORE. VERY
HARD AND BRITTLE. MOSTLY PRESERVED IN GRAVEL SIZE GRAINS.

1645.8- 1646.8 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-02%
OTHER FEATURES: CALCAREOUS
SILT SIZE GRAINS ARE LOOSE FOUND AT THE TOP AND BOTTOM OF
THE CORE INTERVAL.

1646.8- 1647.9 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1647.9- 1648.2 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
15% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; EUHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL TO EUHEDRAL DOLOMITIC CRYSTALS WITH CALCAREOUS
SILT GRAINS. MOST OF THE CORE IS PRESERVED IN GRAVEL SIZE
GRAINS.

1648.2- 1651.3 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
OTHER DOLOSTONE ROCK FRAGMENTS PRESENT AROUND 1651 FEET IN
BOX GRAINS ARE OF VARIOUS SIZES AND SHAPES BUT LIGHT IN
COLOR.

1651.3- 1652.3 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; EUHEDRAL
GOOD INDURATION

ACCESSORY MINERALS: CALCITE-01%, SILT-01%
OTHER FEATURES: CALCAREOUS
VERY LOOSE AND LIGHT COLOR SILT AND DOLOMITE CRYSTALS ARE
PRESENT AT THE START OF CORE INTERVAL.

1652.3- 1654 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION

1654 - 1655 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
20% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; EUHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-01%
OTHER FEATURES: CALCAREOUS

1655 - 1655.9 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION

1655.9- 1656.5 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
INTERCRYSTALLINE; 50-90% ALTERED; EUHEDRAL
POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-03%
OTHER FEATURES: CALCAREOUS

1656.5- 1657.5 DOLOSTONE; GRAYISH ORANGE TO DARK GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; EUHEDRAL
GOOD INDURATION
MOSTLY PRESERVED AS GRAVEL SIZE GRAINS.

1657.5- 1658.6 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; EUHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-01%
OTHER FEATURES: CALCAREOUS
CALCITE AND SILT CONTENT ARE MOSTLY ABUNDANT TOWARDS THE
BOTTOM OF THE CORE.

1658.6- 1661 DOLOSTONE; GRAYISH ORANGE TO DARK GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

VERY HARD AND BRITTLE, THE LATER HALF OF THE CORE IS
PRESENT IN GRAVEL SIZE GRAINS. THE CRYSTAL FORM IS FROM
SUBHEDRAL TO EUHEDRAL. THE FRACTURES IN THE CORE SAMPLES
ARE ALL FILLED.

1661 - 1662 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
PIN POINT VUGS; 50-90% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-01%
OTHER FEATURES: CALCAREOUS

1662 - 1667 DOLOSTONE; GRAYISH ORANGE TO DARK GREENISH GRAY
15% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
OTHER FEATURES: SUCROSIC
THE CORE IS MOSTLY SUCROSIC WITH DOLOMITE CRYSTALS RANGING
FROM SUBHEDRAL TO EUHEDRAL.

1667 - 1670 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
SUBHEDRAL TO ANHEDRAL CRYSTAL FORM. VERY LOW ALMOST NO
CALCITE. NO FOSSIL REMAINS. MOSTLY PRESERVED IN GRAVELS
SIZE GRAINS.

1670 - 1671 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL
GOOD INDURATION
THE WHOLE CORE INTERVAL IS MOSTLY OPAQUE WITH NO CRYSTAL
FORM. THE ONLY DOLOMITE CRYSTALS PRESENT ARE ON MOLDS AND
VUGS IF ANY.

1671 - 1677 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
SUCROSIC IN THE UPPER PART WITH DOLOMITE CRYSTAL DEVELOPED
IN.

1677 - 1682 DOLOSTONE; GREENISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS

GRAVEL SIZE GRAINS TO CHUNKS OF DOLOMITIC ROCK WITH CRYSTAL FROM RANGING FROM SUBHEDRAL TO EUHEDRAL AND ANHEDRAL. AT AROUND 1681-1682 FEET PEBBLE SIZE GRAINS OF DOLOMITE ARE PRESENT. OVERALL THE DOLOSTONE IS CLEAR AND CLEAN WITH OCCASIONAL DARK COLOR MATERIAL PRESENT MORE LIKELY ORGANIC LAMINATIONS.

1682 - 1686 DOLOSTONE; LIGHT GREENISH YELLOW TO YELLOWISH GRAY
15% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
90-100% ALTERED; EUHEDRAL
MODERATE INDURATION
EUHEDRAL TO SUBHEDRAL LIGHT IN COLOR.

1686 - 1686.5 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
FRACTURES CONTAIN SUBHEDRAL TO EUHEDRAL DOLOMITE CRYSTALS.

1686.5- 1687 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; EUHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
ORGANIC LAMINATIONS WITH RELATIVELY HIGH POROSITY.

1687 - 1688 DOLOSTONE; GREENISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
SUBHEDRAL TO EUHEDRAL MOSTLY CRYSTALLINE IN APPEARANCE.

1688 - 1691.6 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL
GOOD INDURATION
GRAVEL SIZE GRAINS. ANHEDRAL BUT OCCASIONALLY EUHEDRAL CRYSTAL ALSO PRESENT.

1691.6- 1693.2 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
SLIGHTLY FRACTURED WITH SOME ORGANIC LAMINATIONS TOWARDS THE BOTTOM OF THE CORE INTERVAL. CRYSTAL FORM RANGES FROM SUBHEDRAL TO EUHEDRAL. MODERATELY SUCROSIC TOWARDS THE BOTTOM.

1693.2- 1697 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; EUHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: IRON STAIN-01%
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
EUHEDRAL TO SUBHEDRAL WITH SOME FOSSIL FRAGMENTS AROUND
1695. IRON STAINED ROCK GRAINS PRESENT AT THE BOTTOM OF
CORE IN BOX.

1697 - 1700.2 DOLOSTONE; GRAYISH BROWN TO LIGHT YELLOWISH ORANGE
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
ANHEDRAL
GOOD INDURATION
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS
CREAMISH COLOR WITH DIFFERENT FOSSIL FRAGMENTS. ANHEDRAL TO
EUHEDRAL CRYSTAL FORM IN FOSSIL MOLDS AND CASTS.

1700.2- 1707 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL
GOOD INDURATION
VERY DENSE AND HARD.

1707 - 1717 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
POOR INDURATION
ACCESSORY MINERALS: IRON STAIN-01%
AIR LIFTED CUTTINGS, VERY FINE. DOLOSTONE GRAINS ARE
ANHEDRAL TO SUBHEDRAL WITH IRON STAINED SPOTS.

1717 - 1717.3 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

1717.3- 1727 DOLOSTONE; LIGHT GRAY TO MODERATE LIGHT GRAY
15% POROSITY: MOLDIC, VUGULAR, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: DOLOMITE-01%, IRON STAIN-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
EUHEDRAL CRYSTALS ARE FORMED IN THE FOSSIL MOLDS AND VUGS.
FOSSILS STUDIED AT INTERVAL FROM 1723 ONWARDS. CLASTS OF
OTHER ROCK FRAGMENTS ALSO PRESENT AT THE BOTTOM OF THE CORE
IN BOX 25 AT 1725 FEET. INTERNAL FRACTURES ALSO OBSERVED IN
THE CORE MOST COMMONLY WITH DEPTH. IRON STAINED SPOTS

PRESENT AROUND 1726 FT.

1727 - 1737.6 DOLOSTONE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
15% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
FOSSILIFEROUS ZONE PRESENT AT 1729-1730 FEET. CRYSTALS ARE ANHEDRAL TO SUBHEDRAL AND OCCASIONALLY EUHEDRAL IN FEW OF THE FOSSIL MOLDS AND CASTS. A POSSIBLE PELLIOD MARKED AT 1727-1727.2. SUCROSIC AT 1733 FEET.

1737.6- 1743 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%, DOLOMITE-01%
CALCITE-01%
OTHER FEATURES: CALCAREOUS
FIRST HALF OF THE CORE IS WELL PRESERVED WITH WELL DEVELOPED FRACTURES. DOLOSTONE IN THE LATER HALF IS PRESENT AS GRAVEL SIZE GRAINS WITH LESS CALCITE CONTENT OVERALL. ORGANIC LAMINATIONS ARE PRESENT AT VARIOUS DEPTHS THROUGHOUT THE CORE.

1743 - 1744 DOLOSTONE; GREENISH GRAY TO DARK GREENISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1744 - 1744.6 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
POSSIBLY A DOLOMITIC MICRITE.

1744.6- 1747 DOLOSTONE; GREENISH GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-02%, CLAY-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
RELATIVELY MORE CALCAREOUS, WITH CLAY SIZE GRAINS FILLING THE FOSSIL MOLDS AND VUGS. THE CORE IS MOSTLY PRESENT AS

DIFFERENT GRAVEL SIZE GRAINS.

1747 - 1749 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: PIN POINT VUGS; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
THE ROCK GRAINS HAS SOME FRACTURE SHOWS. ORGANIC LAMINATIONS AND A COUPLE OF CLASTS ARE PRESENT TOWARDS THE BOTTOM OF CORE.

1749 - 1749.6 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1749.6- 1753 DOLOSTONE; YELLOWISH GRAY TO GREENISH GRAY
15% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1753 - 1755 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
25% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: DOLOMITE-01%
DOLOSTONE GRAINS AT THE TOP OF THE CORE INTERVAL. REMAINING CORE IS WITH UNIFORM LITHOLOGY AND HIGH POROSITY.

1755 - 1756.2 DOLOSTONE; YELLOWISH GRAY TO DARK YELLOWISH GREEN
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
GRAVEL SIZE GRAINS OF VARIOUS SIZES WITH LOW CALCITE CONTENT.

1756.2- 1757 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1757 - 1758.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: PIN POINT VUGS; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS

1758.2- 1760 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: PIN POINT VUGS, VUGULAR; 50-90% ALTERED
SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
THE FOSSIL MOLDS ARE FILLED WITH SUBHEDRAL TO EUHEDRAL
DOLOMITIC CRYSTALS. SUCROSIC AT PLACES.

1760 - 1763.5 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-02%, CALCITE-01%
DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
LIGHT COLOR MEDIUM HARD ANHEDRAL DOLOSTONE. ORGANIC
LAMINATIONS AND ORGANIC GRAINS ARE PRESENT THROUGHOUT THE
CORE INTERVAL. RELATIVELY GOOD POROSITY WITH LESS CALCITE
CONTENT. OTHER ROCK CLASTS ARE PRESENT TOWARDS THE BOTTOM
OF THE CORE INTERVAL.

1763.5- 1764 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
ROCK RECORDED IS PRESERVED IN GRAVEL SIZE GRAINS.

1764 - 1766.2 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
VERY LIGHT AND FINE GRAINS CONSTITUTE THE ROCK.
BIOTURBATION AND ORGANIC LAMINATIONS ARE ALSO PRESENT.

1766.2- 1767 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1767 - 1767.7 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED
ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
LITTLE MORE DENSE THAN THE EARLIER AND MORE CALCAREOUS.

1767.7- 1772.3 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-02%
OTHER FEATURES: CALCAREOUS
MORE BIOTURBATION AND MORE ORGANIC CONTENT. VERY FINE
GRAINED.

1772.3- 1773 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1773 - 1774 DOLOSTONE; DARK YELLOWISH BROWN
15% POROSITY: PIN POINT VUGS; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
DOLOSTONE GAINS OF VARIOUS SIZES AND SHAPES WITH FOSSIL
LIFE.

1774 - 1774.8 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS

1774.8- 1776 DOLOSTONE; DARK YELLOWISH BROWN
15% POROSITY: PIN POINT VUGS; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1776 - 1778.6 DOLOSTONE; LIGHT YELLOWISH ORANGE TO VERY LIGHT ORANGE
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION

ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
ORGANIC LAMINATIONS TOWARDS THE TOP OF THE CORE INTERVAL.
THE CORE IS VERY LOOSE AND MORE FINE GRAINED TOWARDS BOTTOM
OF THE CORE.

1778.6- 1779.5 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: DOLOMITE-02%, CALCITE-01%
ORGANICS-01%
OTHER FEATURES: CALCAREOUS
DOLOSTONE ALSO PRESENT AS LAYERS IN THE CORE. ORGANIC
LAMINATIONS ARE PRESENT TOWARDS THE BOTTOM OF THE CORE.

1779.5- 1787 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
15% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, CHERT-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
GRAVEL SIZE GRAINS TO 3 INCHES LONG CORE, CONSTITUTE OF
CHERT GRAINS WITH ORGANIC LAMINATIONS. THE CORE IS MORE
LIGHT IN COLOR TOWARDS THE BOTTOM OF THE INTERVAL. THE
DOLOMITE CRYSTALS RANGES FROM SUBHEDRAL TO ANHEDRAL IN
PLACES.

1787 - 1789.6 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS
THE DOLOSTONE IS PRESENT AS LAYERS IN THE UPPER HALF AND AS
GRAVEL SIZE GRAINS IN THE LOWER HALF OF THE CORE.

1789.6- 1792.6 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, CHERT-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
THE CORE IS COMPOSED OF FINE GRAINED MATERIAL WITH VUGS AND
MOLDS HAVING WHITE COLOR POWDER WHICH IS MORE CALCITIC. THE
CRYSTAL FORM MOSTLY IS SUBHEDRAL. SMALL ROUNDED TO OVAL
SIZE GRAINS OF CHERT ARE PRESENT AND MORE ABUNDANT TOWARDS
THE BOTTOM.

1792.6- 1794 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, CHERT-01%, DOLOMITE-02%
ORGANICS-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
THE CHERT IS STILL PRESENT AS SMALL ROUNDED TO OVAL GRAINS.
DOLOSTONE VARIES IN SIZE THROUGHOUT THE INTERVAL FROM FINE
LAYERS TO GRAVEL SIZE. ORGANIC LAMINATIONS ARE COMMON
TOWARDS THE BOTTOM OF THE INTERVAL.

1794 - 1798 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
CLAY AND SILT SIZE DOLOMITE WITH ORGANIC LAMINATIONS AND
DOLOMITIC ROCK GRAVEL SIZE GRAINS TOWARDS THE BOTTOM OF
CORE.

1798 - 1800 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
CRYSTALS RANGE FROM SUBHEDRAL TO EUHEDRAL; MORE INTERNALLY
FRACTURED AND FOSSILIFEROUS; DOLOSTONE CLASTS ARE
RESTRICTED TO UPPER HALF OF CORE SECTION.

1800 - 1807 DOLOSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
SUBHEDRAL TO EUHEDRAL IN FOSSIL MOLDS. MORE FOSSILIFEROUS
THEN THE EARLIER INTERVAL.

1807 - 1809.5 DOLOSTONE; MODERATE GRAY TO MODERATE DARK GRAY
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS

FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
GREY COLOR DENSE AND HARD WITH FOSSIL REMAINS. CRYSTAL FORM IS MAINLY ANHEDRAL BUT EUHEDRAL CRYSTALS ARE ALSO PRESENT IN FOSSIL MOLDS. ORGANIC LAMINATIONS ARE PRESENT AT THE TOP.

1809.5- 1811.2 DOLOSTONE; YELLOWISH GRAY TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
GRAVEL SIZE GRAINS ARE VERY CRUMBLY. CRYSTALS ARE MOSTLY ANHEDRAL, BUT SOME SUBHEDRAL TO EUHEDRAL CRYSTALS ARE ALSO PRESENT TOWARDS THE BOTTOM OF THE INTERVAL.

1811.2- 1812.2 DOLOSTONE; MODERATE GRAY TO MODERATE DARK GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
CRUMBLY GRAVEL A FEW INCHES in THE INTERVAL. WHICH IS FRACTURED MOSTLY SUBHEDRAL, BUT EUHEDRAL CRYSTALS ALSO PRESENT OCCASIONALLY.

1812.2- 1812.5 CLAY; LIGHT OLIVE GRAY TO GREENISH BLACK
% POROSITY:
MOSTLY COMPOSED OF ORGANIC MATERIAL.

1812.5- 1820.5 DOLOSTONE; BROWNISH GRAY TO DARK GREENISH GRAY
20% POROSITY: FRACTURE, VUGULAR, MOLDIC; 50-90% ALTERED
SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL TO EUHEDRAL IN VUGS AND MOLDS. FRACTURED AND CRUMBLY IN THE UPPER HALF TO WELL PRESERVED CORE INTERVAL IN LOWER HALF LESS SUCROSIC IN LOWER HALF . THE POROSITY INCREASES WITH MORE DEPTH ASSOCIATED FRACTURES.

1820.5- 1829.5 DOLOSTONE; BROWNISH GRAY TO DARK GREENISH GRAY
25% POROSITY: VUGULAR, FRACTURE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

DENSE AND HARD WITH MOSTLY SUBHEDRAL CRYSTALS. EUHEDRAL CRYSTAL ALSO WELL DEVELOPED IN FOSSIL MOLDS IN BROWN COLOR.

1829.5- 1839 DOLOSTONE; BROWNISH GRAY TO DARK GREENISH GRAY
15% POROSITY: PIN POINT VUGS, VUGULAR, FRACTURE
90-100% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
MOSTLY LIGHT IN COLOR WITH LITTLE DARK COLOR. MOSTLY THE CORE CONTAINS GRAVEL SIZE GRAINS. CRYSTALS ARE MOSTLY SUBHEDRAL WITH EUHEDRAL CRYSTALS IN VUGS AND MOLDS; HARD AND COMPACT CORE.

1839 - 1849 DOLOSTONE; MODERATE GRAY TO LIGHT OLIVE GRAY
20% POROSITY: FRACTURE, VUGULAR; 90-100% ALTERED
SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, GYPSUM-01%
OTHER FEATURES: SUCROSIC, CALCAREOUS
WHITE CALCITIC POWDER PRESENT IN FRACTURES. GYPSUM CRYSTALS ALSO PRESENT IN SOME OF VUGS AROUND 1846 FEET

1849 - 1850.2 DOLOSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED
ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
LIGHT COLOR MOSTLY OPAQUE WITH FEW VUGS.

1850.2- 1853.6 DOLOSTONE; YELLOWISH GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, VUGULAR, FRACTURE
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, SHELL- %
OTHER FEATURES: CALCAREOUS
SILT SIZE DOLOMITIC MOSTLY SUBHEDRAL TO EUHEDRAL WITH LOOSE DOLOMITE CRYSTALS OF SAND SIZE IN VUGS. PYRITE OF VARIOUS SIZES AT VARIOUS DEPTHS IN THE CORE INTERVAL.

1853.6- 1854 CLAY; MODERATE GRAYISH GREEN TO GRAYISH OLIVE GREEN
25% POROSITY: INTERGRANULAR
CLAY IS PRESENT AS THIN LAYERS, LAMINATIONS WITH DOLOMITE IN THE UPPER HALF TO ONLY DARK COLOR CLAY AT THE LOWER HALF.

1854 - 1857 DOLOSTONE; YELLOWISH GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR, VUGULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
CLAY LAMINATIONS IN THE MIDDLE OF THE CORE. ALSO PRESENT AS LOOSE MATERIAL IN MOST OF THE VUGS AND MOLDS ALONG WITH OTHER SILT SIZE DOLOMITIC CRYSTALS.

1857 - 1859 DOLOSTONE; GREENISH GRAY TO GREENISH GRAY
10% POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED
ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
DARK COLOR CLAY FLAKES WITH DOLOMITE CRYSTALS IN VUGS. MOSTLY OPAQUE WITH SOME DARK COLOR FEW ORGANIC LAMINATIONS ALSO PRESENT.

1859 - 1860 DOLOSTONE; YELLOWISH GRAY TO DARK GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
THIN TO THICK DARK COLOR CLAY LAMINATIONS WITH LIGHT COLOR DOLOSTONE. THE DOLOSTONE CONTENT IS HIGHER IN THE UPPER 6 INCHES WITH MORE CLAY DOMINATED CORE IN THE LATER HALF.

1860 - 1860.6 CLAY; GREENISH BLACK TO BLACK
20% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%
FOSSILS: PLANT REMAINS
DARK COLOR, FLAKEY ORGANIC RICH WITH A FEW SHOWS OF PLANT REMAINS. HIGH POROSITY AND SLIGHTLY CALCAREOUS

1860.6- 1863 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, PYRITE-01%
OTHER FEATURES: CALCAREOUS
FINE AND SILTY WITH SUBHEDRAL TO ANHEDRAL CRYSTALS.

1863 - 1863.6 DOLOSTONE; YELLOWISH GRAY TO DARK GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION

ACCESSORY MINERALS: CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
DOLOSTONE WITH CLAY LAMINATIONS OF DARK COLOR.

1863.6- 1864 DOLOSTONE; YELLOWISH GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
FINE AND SILTY WITH FEW VUGS IN WHICH EUHEDRAL DOLOMITE IS PRESENT. ORGANIC LAMINATIONS ARE COMMON TOWARDS THE BOTTOM OF THE CORE INTERVAL.

1864 - 1865 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: PYRITE-01%, CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
MOSTLY BIOTURBATED WITH IN DARK COLOR LAMINATIONS OF CLAY AT THE TOP OF INTERVAL. PYRITE CUBES OF VARIEGATED COLOR ARE ACCUMULATED IN THE MOLDS OR VUGS IN VARIOUS SIZES.

1865 - 1866.9 DOLOSTONE; YELLOWISH GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, PYRITE-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL TO ANHEDRAL REST SAME AS ABOVE.

1866.9- 1870.6 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-02%, DOLOMITE-01%, PYRITE-01%
CLAY-01%
OTHER FEATURES: CALCAREOUS
BRECCIATED GRAVEL SIZE GRAINS OF DOLOSTONE IN THE UPPER HALF OF THE CORE. SLIGHTLY MORE CALCAREOUS THEN THE EARLIER INTERVAL. VERY FEW AND TINY PYRITE CUBES. WHITE CLAY MORE CALCAREOUS IS PRESENT AT THE VERY END OF THE CORE.

1870.6- 1871 DOLOSTONE; MODERATE DARK GRAY TO GREENISH BLACK
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
CLAY THINLY TO THICKLY LAMINATED WITH DARK COLOR DOLOSTONE. CLAY IS CALCAREOUS AND FLAKY. OVERALL CORE INTERVAL SEEMS

TO BE BIOTURBATED.

1871 - 1878.4 DOLOSTONE; MODERATE GRAY TO MODERATE DARK GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
MEDIUM TO DARK GREY, ANHEDRAL TO SUBHEDRAL IN PARTS, SILTY
TO FINE GRAINED DOLOSTONE. THE UPPER FOOT IS BIOTURBATED
WITH THIN LAMINATIONS TO LAYERS OF CLAY. FRACTURES ARE
PRESENT AT THE LOWER HALF OF THE CORE.

1878.4- 1879.1 WACKESTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS
30% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
ACCESSORY MINERALS: SILT-02%
SILTY AND CALCAREOUS WITH FEW INTERCLASTS OF OTHER CALCITIC
ROCK OF VARIOUS SIZES AND SHAPES.

1879.1- 1879.7 CLAY; DARK GREENISH GRAY TO GREENISH BLACK
25% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: CALCITE-02%
OTHER FEATURES: CALCAREOUS, PLATY
ORGANIC RICH CALCITIC CLAY.

1879.7- 1880.6 WACKESTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, INTRACLASTS
30% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: SILT-02%, ORGANICS-01%, CLAY-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
COUPLE OF FOSSILS AT THE START OF CORE INTERVAL. CLAY IS
ALSO PRESENT ALONG WITH ORGANIC LAMINATIONS AND A FEW
CLASTS.

1880.6- 1881 CLAY; GREENISH GRAY TO DARK GREENISH GRAY
25% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: CALCITE-02%, SILT-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS CLAY WITH MINOR PERCENTAGE OF SILT.

1881 - 1885 CALCILUTITE; DARK GREENISH GRAY TO GREENISH GRAY
20% POROSITY: INTERGRANULAR

MODERATE INDURATION
ACCESSORY MINERALS: SILT-02%, CLAY-02%, CALCITE-02%
ORGANICS-01%
OTHER FEATURES: CALCAREOUS
SILT AND CLAY SIZE GRAINS MOSTLY PRESENT AS CHUNKS OR GRAVEL SIZE GRAINS WITH ORGANIC LAMINATIONS COMMON TOWARDS THE TOP AND ORGANIC MATERIALS TOWARDS THE BOTTOM OF THE CORE INTERVAL.

1885 - 1887 WACKESTONE; GREENISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS
35% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: SILT-01%, CLAY-01%, ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1887 - 1890 MUDSTONE; GREENISH GRAY TO DARK GREENISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 05% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: SILT-02%, CLAY-02%, ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS
MUDSTONE MAINLY CLAY AND SILT SIZE PARTICLES WITH ORGANIC LAMINATIONS. VERY FEW FOSSIL FRAGMENTS PRESERVED.

1890 - 1894 CALCILUTITE; DARK GREENISH GRAY TO GREENISH GRAY
25% POROSITY: INTERGRANULAR
MODERATE INDURATION
ACCESSORY MINERALS: SILT-02%, CLAY-02%, ORGANICS-01%
CALCITE-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS SILT AND CLAY, CRUMBLY, MOSTLY PRESENT AS GRAVEL SIZE GRAINS.

1894 - 1897 WACKESTONE; YELLOWISH GRAY TO WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL
40% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
MOST OF THE CORE IS CRUMBLY AND PRESENT IN DIFFERENT GRAVEL SIZE GRAINS. THE COLOR IS MORE BRIGHT TOWARDS THE LAST 6 INCHES OF THE INTERVAL.

1897 - 1901 WACKESTONE; MODERATE LIGHT GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL
40% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
FEW VERY LARGE TUBE LIKE FOSSILS MAKES UP THE CORE. SOME RHOMBIC CALCITE CRYSTALS OF SAND GRAIN SIZE ARE PRESENT IN SOME OF THE MOLDS IN THE LOWER HALF OF THE CORE.

1901 - 1902 MUDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: INTRACLASTS, BIOGENIC
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-02%, PYRITE-01%
FOSSILS: FOSSIL FRAGMENTS
GRAVEL SIZE GRAINS OF MUDSTONE WITH CALCITE RHOMBS AND PYRITE AS ACCESSORY MINERALS.

1902 - 1903.4 WACKESTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS; 35% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-02%, ORGANICS-01%
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS

1903.4- 1904 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CRYSTALS
80% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-02%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS

1904 - 1907 WACKESTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS; 30% ALLOCHEMICAL CONSTITUENTS
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CHALKY

FOSSILS: FOSSIL FRAGMENTS

1907 - 1910 DOLOSTONE; GRAYISH BROWN TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
MOSTLY SUBHEDRAL BUT OCCASIONAL EUHEDRAL CRYSTALS ARE PRESENT.

1910 - 1910.6 CALCILUTITE; LIGHT OLIVE GRAY TO GRAYISH BROWN
25% POROSITY: INTERGRANULAR
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-02%, CLAY-01%, DOLOMITE-01%
OTHER FEATURES: CHALKY
SILT SIZE CALCITE WITH A FEW DOLOMITE CRYSTALS WITH WHITE MORE CALCITIC CLAY IN PORES.

1910.6- 1911.4 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GOOD INDURATION

1911.4- 1912.6 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION

1912.6- 1914.6 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
MOSTLY SUBHEDRAL BUT EUHEDRAL CRYSTALS ARE ALSO PRESENT IN FOSSIL MOLDS. DOLOMITIC FOSSIL FRAGMENTS ALSO PRESENT WITH ORGANIC LAMINATIONS.

1914.6- 1915 DOLOSTONE; MODERATE LIGHT GRAY TO MODERATE GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%

1915 - 1916 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%

1916 - 1917.4 DOLOSTONE; MODERATE LIGHT GRAY TO MODERATE GRAY
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
SOME BRECCIATED ROCK GRAINS ARE PRESENT AT THE VERY END OF
CORE INTERVAL MOSTLY DOLOSTONE.

1917.4- 1919.6 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH ORANGE
25% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: SILT-02%, CLAY-01%, ORGANICS-01%
SILT SIZE DOLOSTONE WITH ANHEDRAL TO OCCASIONAL EUHEDRAL
CRYSTAL FORMS.

1919.6- 1925 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%
MOSTLY SUBHEDRAL TO OCCASIONAL EUHEDRAL DOLOMITE CRYSTALS.
INTERNALLY HIGH POROSITY. A VERY THIN ORGANIC AND CALCITE
RICH CLAY LAYER AT AROUND 1924-1925 FEET.

1925 - 1928 DOLOSTONE; DARK YELLOWISH ORANGE TO GRAYISH BROWN
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
LESS ORGANICS THEN THE EARLIER INTERVAL, SILT SIZE
DOLOSTONE CRUMBLY AT PLACES.

1928 - 1930 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
LESS ORGANICS.

1930 - 1931.6 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS

LIGHT COLOR FINE GRAINED DOLOSTONE. THE CORE IS INTO BROKEN GRAVEL SIZE PIECES IN THE LAST HALF OF INTERVAL.

1931.6- 1932 DOLOSTONE; MODERATE DARK GRAY TO DARK GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
DARK COLOR DOLOSTONE WITH LAYERS OF LIGHT COLOR RELATIVELY MORE CALCAREOUS DOLOSTONE, NOT A COMPLETE CORE INTERVAL. THE CORE IS VERY CRUMBLY.

1932 - 1933 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
CLAY AND SILT SIZE DOLOSTONE. CRYSTAL FORM IS MAINLY ANHEDRAL WITH OCCASIONAL SUBHEDRAL TO EUHEDRAL CRYSTALS ALSO PRESENT. THE INTERVAL HAS SOME CLAY IN THE MIDDLE OF THE CORE WITH ORGANIC LAMINATIONS. THE DOLOSTONE IS PRESENT AS SMALL GRAVEL SIZES GRAINS.

1933 - 1935 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS

1935 - 1936 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL TO OCCASIONALLY EUHEDRAL SILT SIZE DOLOSTONE WITH ORGANICS.

1936 - 1937 DOLOSTONE; YELLOWISH GRAY TO MODERATE GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
GRAVEL SIZE GRAINS OF MIX DARK GREY TO LIGHT GREY DOLOSTONE. THE DARK GREY HAS LAYERS TO LAMINATIONS OF LIGHT BRIGHT COLOR DOLOSTONE. THE WHOLE INTERVAL IS PRESENT AS

GRAVEL SIZE GRAINS.

1937 - 1938.9 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
SILT SIZE DOLOSTONE WITH FEW ORGANICS. MAINLY SUBHEDRAL
BUT ANHEDRAL CRYSTALS ARE ALSO PRESENT.

1938.9- 1940.4 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
SUBHEDRAL TO ANHEDRAL SILT SIZE DOLOSTONE.

1940.4- 1942.2 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, IRON STAIN-01%
OTHER FEATURES: CALCAREOUS
VERY FINE LIGHT BRIGHT COLOR DOLOSTONE.

1942.2- 1943.8 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, IRON STAIN-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
SAME AS ABOVE BUT WITH MORE CLAY CONTENT AND LESS IRON
STAINING MORE CRUMBLY.

1943.8- 1946 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
SILT AND CLAY SIZE DOLOSTONE.

1946 - 1947.2 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION

ACCESSORY MINERALS: CALCITE-01%
OTHER FEATURES: CALCAREOUS
MORE INTERNAL POROSITY AND SILTY DOLOSTONE.

1947.2- 1948 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: MOLDIC, VUGULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%
ORGANIC LAMINATIONS TOWARDS THE TOP OF INTERVAL.

1948 - 1953 DOLOSTONE; LIGHT GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
LIGHT GREY WITH THIN LAYERS OF MORE YELLOWISH GREY MORE CALCITIC AND CLAYEY DOLOSTONE. TRACE AMOUNTS OF ORGANICS ARE PRESENT. THE LIGHT COLOR LAYERS HAS MORE POROSITY THEN THE DARKER COLOR. MAINLY ANHEDRAL BUT SUBHEDRAL CRYSTALS DOMINATE THE LIGHT COLORED THIN LAYERS.

1953 - 1953.7 DOLOSTONE; LIGHT GRAY TO MODERATE LIGHT GRAY
20% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
SILT SIZE DOLOSTONE, WELL COMPACTED AND FEW THIN ORGANIC LAMINATIONS WITH SCATTERED ORGANIC MATERIALS.

1953.7- 1955.5 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-02%
OTHER FEATURES: CALCAREOUS
THE AMOUNT OF TOTAL ORGANICS INCREASES WITH DEPTH.

1955.5- 1956 DOLOSTONE; MODERATE GRAY TO MODERATE DARK GRAY
25% POROSITY: VUGULAR, INTERGRANULAR; 50-90% ALTERED
ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-05%, CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
HIGHLY ORGANIC SILT SIZE DOLOSTONE WITH HIGH POROSITY.

1956 - 1957 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
20% POROSITY: MOLDIC, VUGULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1957 - 1961 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
15% POROSITY: MOLDIC, VUGULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
CRUMBLY AND ANHEDRAL TO OCCASIONALLY SUBHEDRAL AND EUHEDRAL CRYSTAL FORMS IN MOLDS. ORGANIC LAMINATIONS AT THE TOP AND MIDDLE OF THE CORE ARE COMMON. THE LATER HALF CONTAINS GRAVEL SIZE GRAINS.

1961 - 1966 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
ACCESSORY MINERALS: CLAY-02%, CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
CRUMBLY AND PRESERVED IN GRAVEL SIZE GRAINS. CLAY IS PRESENT IN HIGH AMOUNT. ORGANICS ARE ALSO PRESENT TOWARDS THE TOP OF THE CORE INTERVAL.

1966 - 1967 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED
ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
VERY FINE SILT AND CLAY SIZE DOLOSTONE. MORE COMPACT AND COMPLETE THEN THE EARLIER. FOSSIL MOLDS AND ORGANICS ARE PRESENT THROUGHOUT THE INTERVAL.

1967 - 1968 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS

1968 - 1969.4 DOLOSTONE; YELLOWISH GRAY TO WHITE
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION

ACCESSORY MINERALS: CALCITE-02%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS

1969.4- 1977 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, CLAY-02%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
VERY FINE SIZE DOLOSTONE, LIGHT GREY COLOR IS MORE ANHEDRAL WITH LOWER POROSITY THEN THE YELLOWISH GREY WITH MORE CLAY CONTENT.

1977 - 1979 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, SILT-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
SILTY AND LESS COMPACTED DOLOSTONE. FRACTURES ARE PRESENT MOST OF WHICH SEEM TO BE DRILLING INDUCED.

1979 - 1980.9 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
SILT-01%
SILT AND CLAY SIZE FINE DOLOSTONE.

1980.9- 1987 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
YELLOWISH GREY WITH HIGHER PERCENTAGE OF CLAY AND POROSITY THAN THE LIGHT GREY COLOR DOLOSTONE.

1987 - 1988.5 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
POOR INDURATION
ACCESSORY MINERALS: ORGANICS-01%, CALCITE-01%, CLAY-01%
SILT-01%
OTHER FEATURES: CALCAREOUS
MIXTURE OF GRAVEL SIZED GRAINS OF DOLOSTONE WITH VARIED PERCENTAGE OF POROSITY. THE PERCENTAGE OF LIGHT OLIVE GREY DOLOSTONE GRAINS INCREASES WITH DEPTH.

1988.5- 1989 DOLOSTONE; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL

MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
OTHER FEATURES: CALCAREOUS
LITTLE CRUMBLY UPON BREAKING

1989 - 1990.2 DOLOSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
SLIGHTLY HIGHER PERCENTAGE OF CLAY AND CALCITE THAN THE EARLIER INTERVAL.

1990.2- 1997 DOLOSTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: ORGANICS-03%, CALCITE-01%
OTHER FEATURES: CALCAREOUS
MORE BIOTURBATED.

1997 - 2005.3 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CLAY-02%, CALCITE-01%, ORGANICS-02%
OTHER FEATURES: CALCAREOUS
DIFFERENT SIZE GRAVELS WITH MORE CLAY AND ORGANICS ARE PRESENT IN VARIOUS AMOUNTS. AT AROUND 2004-2005 FEET MEDIUM GREY DOLOSTONE IS PRESENT WITH LAMINATIONS OF LIGHT GREY DOLOSTONE.

2005.3- 2008.6 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS

2008.6- 2009.9 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR, FRACTURE; 50-90% ALTERED ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-02%, CLAY-01%
OTHER FEATURES: CALCAREOUS
DOLOSTONE WITH BRECCIATED GRAINS OF OTHER DOLOMITIC ROCKS. CLAY IS ALSO PRESENT IN THE INTERVAL.

2009.9- 2017 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL

MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
MOST OF THE CORE IS PRESERVED AS DIFFERENT GRAVEL SIZE GRAINS OF DOLOSTONE WITH CLAY AND ORGANIC LAMINATIONS. THE LAST FOOT IS MORE GREY WITH ORGANIC LAMINATIONS.

2017 - 2027 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GOOD INDURATION
ACCESSORY MINERALS: CALCITE-01%, DOLOMITE-02%
OTHER FEATURES: CALCAREOUS
MORE ROUNDED GREY DOLOSTONE GRAINS AT THE TOP TO LESS ROUNDED AND MORE ANGULAR GREY DOLOSTONE PARTICLES OF GRAVEL SIZES ARE PRESENT IN THE YELLOWISH GREY CORE INTERVAL. THE AMOUNT OF GREY DOLOSTONE GRAINS INCREASES WITH DEPTH.

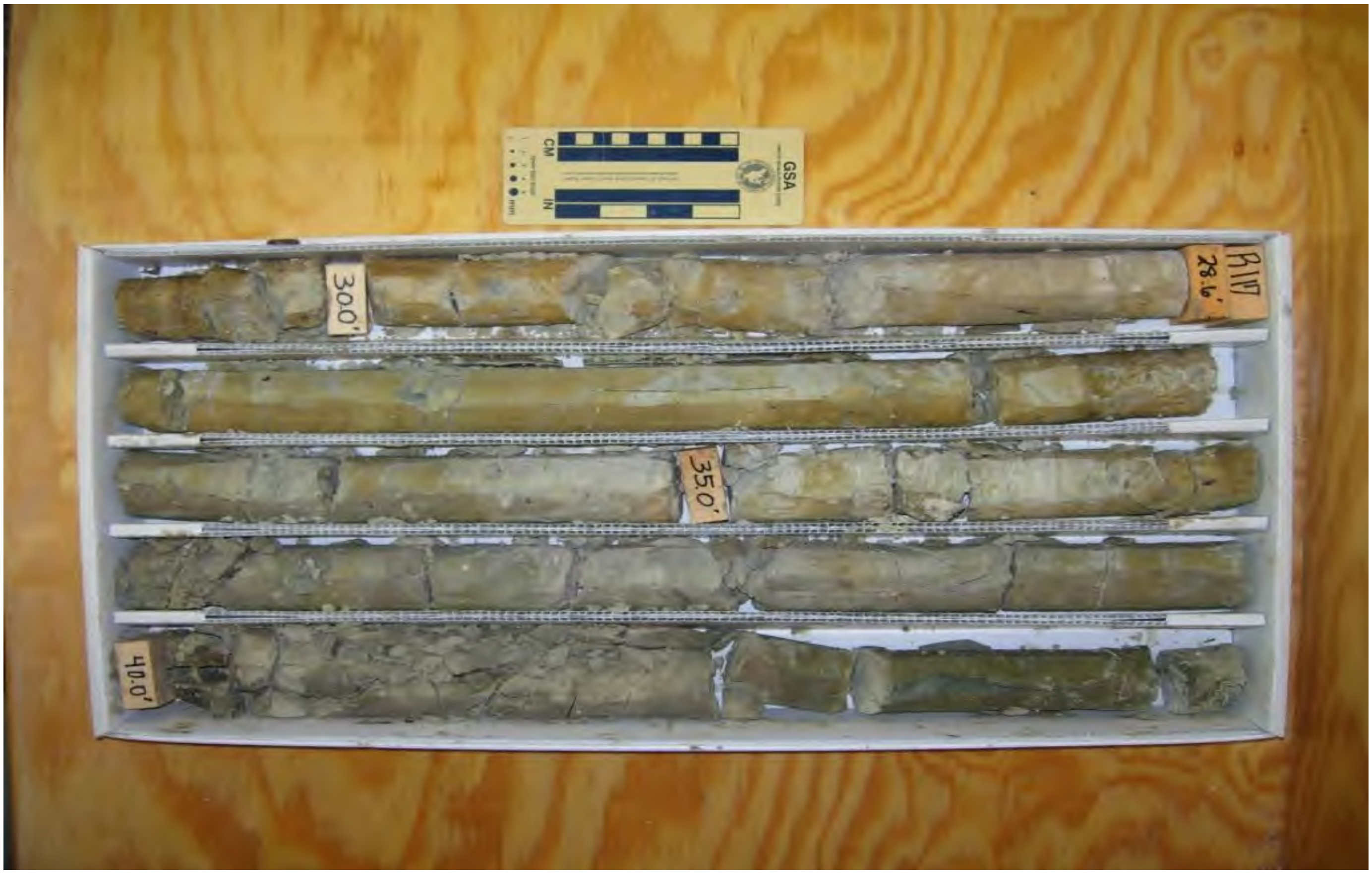
2027 - 2037 DOLOSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, FRACTURE
50-90% ALTERED; ANHEDRAL
MODERATE INDURATION
ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%, CLAY-01%
OTHER FEATURES: CALCAREOUS
VERY FINE DOLOSTONE

2037 - TOTAL DEPTH

Page intentionally blank

Appendix E. Digital Photographs of Core Samples Retrieved from the Exploratory Core Drilling Phase at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

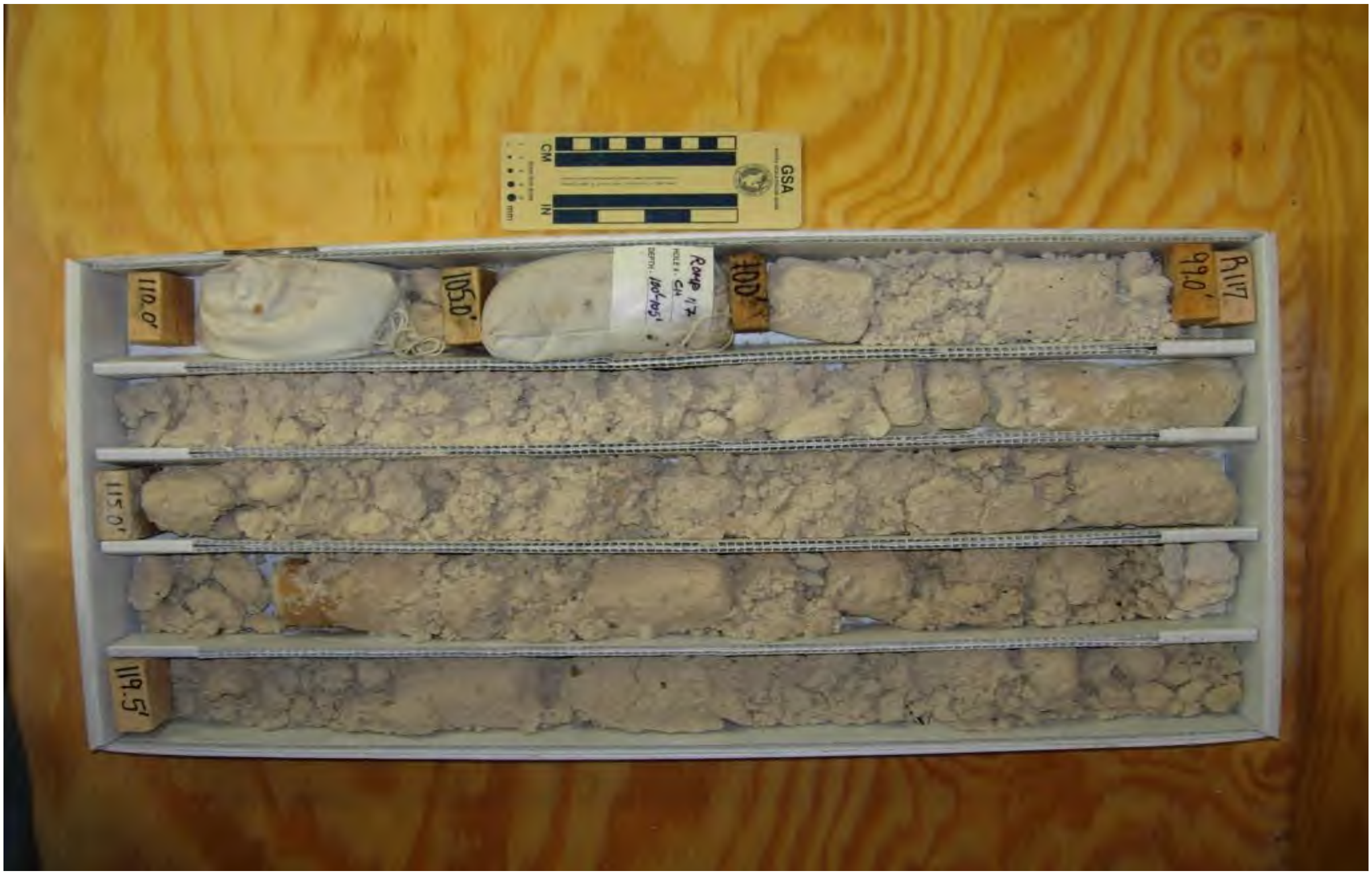
Appendix E1. Digital Photographs of Core Samples Retrieved from the COREHOLE 1 at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida


R117
28.6'
30.0'
35.0'
40.0'


R117
40.0'
45.0'
50.0'
55.0'


R117
55.0'
60.0'
65.0'
70.0'
75.0'

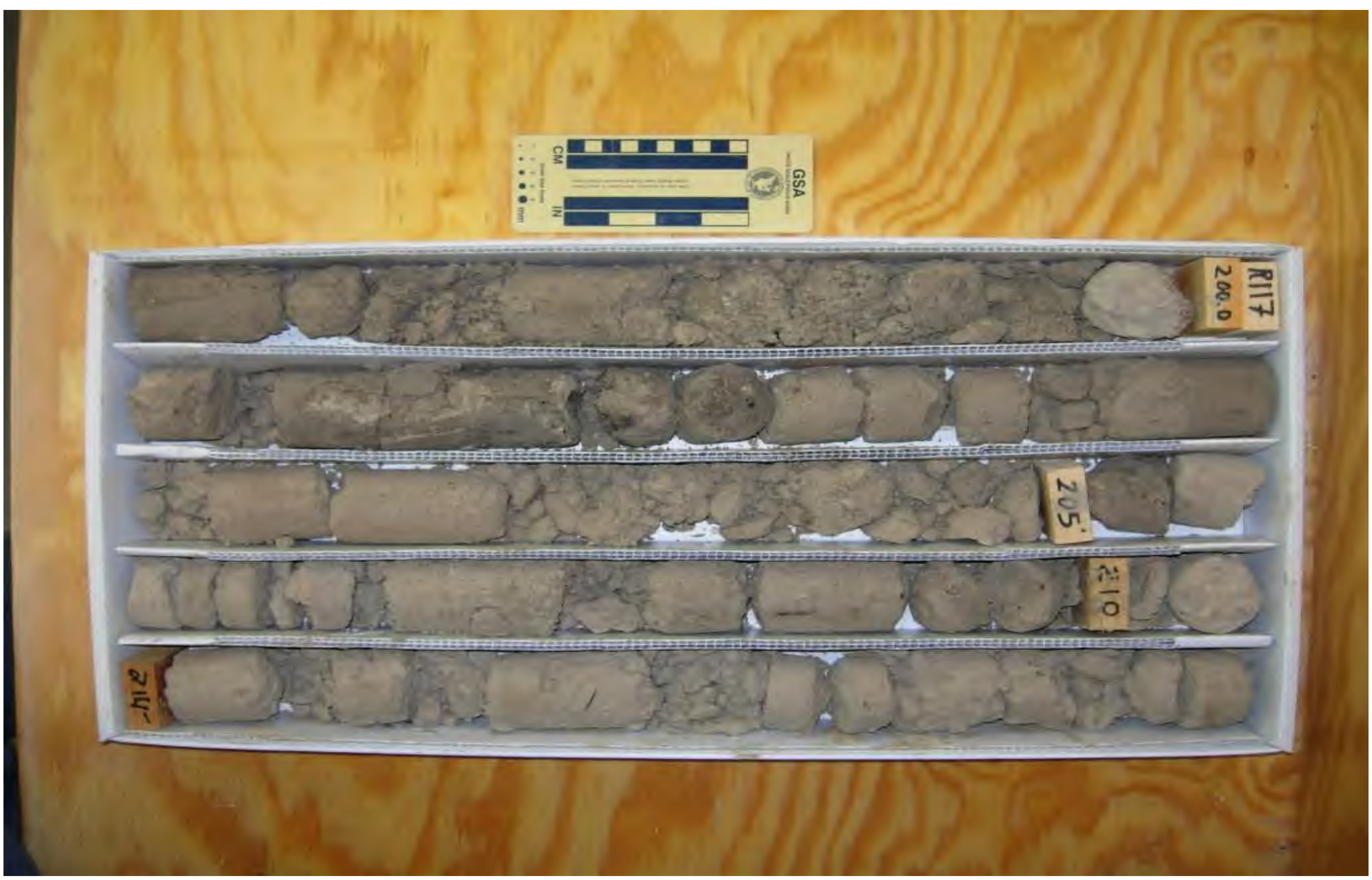

75.0'
80.0'
85.0'
90.0'
99.0'




GSA
CM
IN
R117
129.0
130.0'
135.0'
140.0'
145.0
150.0
155.0'


GSA
CM
IN
R117
155.0
160.0
165.0'
167.5


GSA
CM
IN
R117
167.5
170.0
175.0
180.0
185.0
190.0
195.0
200.0


GSA
CM
IN
R117
200.0
205'
210
214'


GSA
CM
IN
R117
214
215
220
225


GSA
CM
IN
R117
226.5
230
235
237


GSA
R117
237
240
245
250
251


GSA
R117
251
255
260
263.5


R117
263.5
265
270
271.5
~ 3ft cavity -bit drop-
274.5
275'
278'


278
280'
285
286.5


GSA
CM
IN
R117
286.5
290
297
295


GSA
CM
IN
R117
297
300'
305
308.5


GSA
CM
IN
R 117
308.5
310
315
318


GSA
CM
IN
R117
318
320
325
330
331.2


GSA
CM
IN
R117
331.2
335
340
342.5


GSA
CM
IN
R117
342.5
345
350
355
355.5


GSA
CM
IN
R117
355.5
360
365
367.5

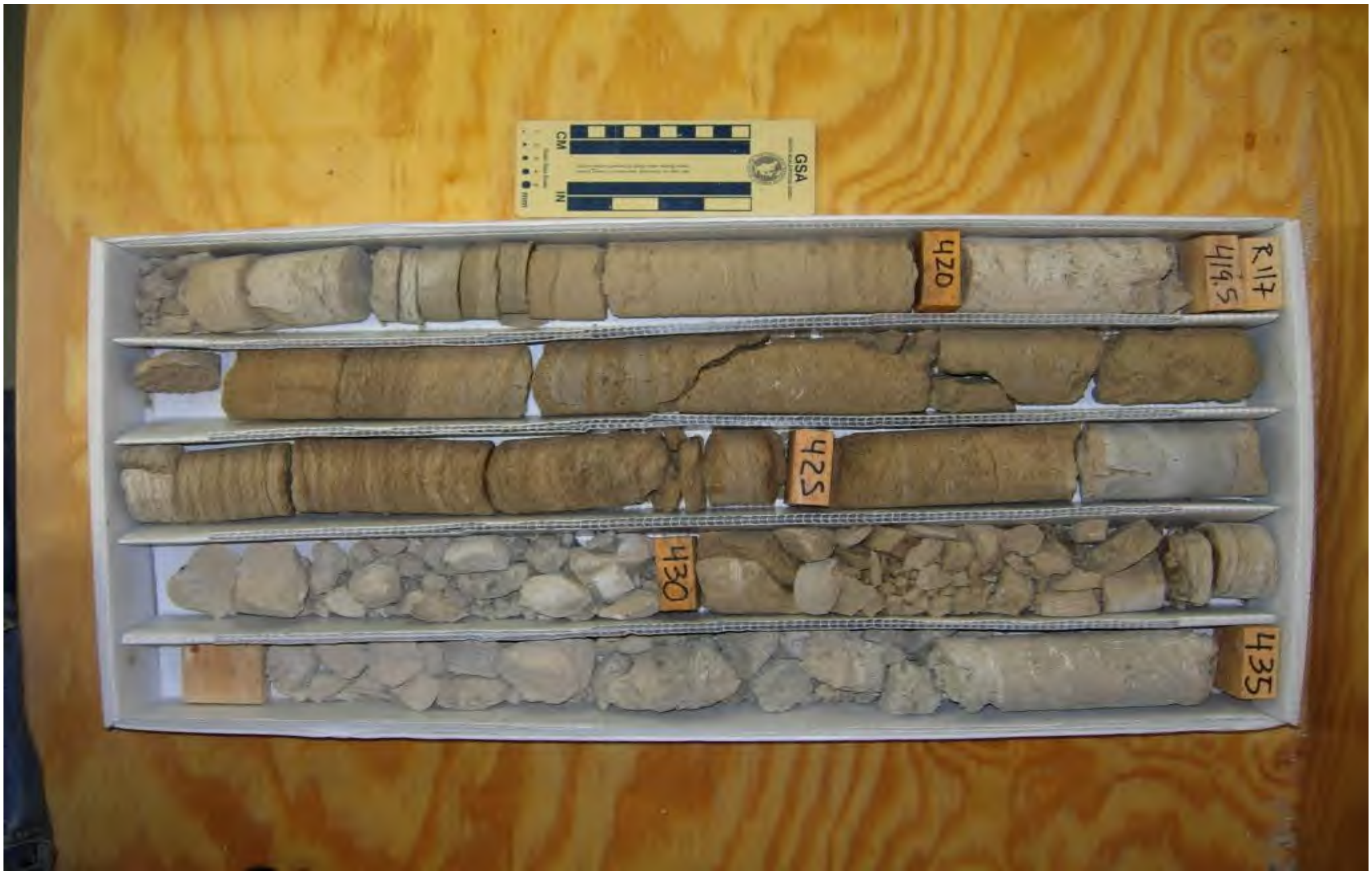

GSA
CM
IN
R117
367.5
370
375
378


380
378
387.6


R117
387.6
395
390
401
400


GSA
CM
IN
R117
401
405
410
410.2


GSA
CM
IN
R117
410.2
415
4195

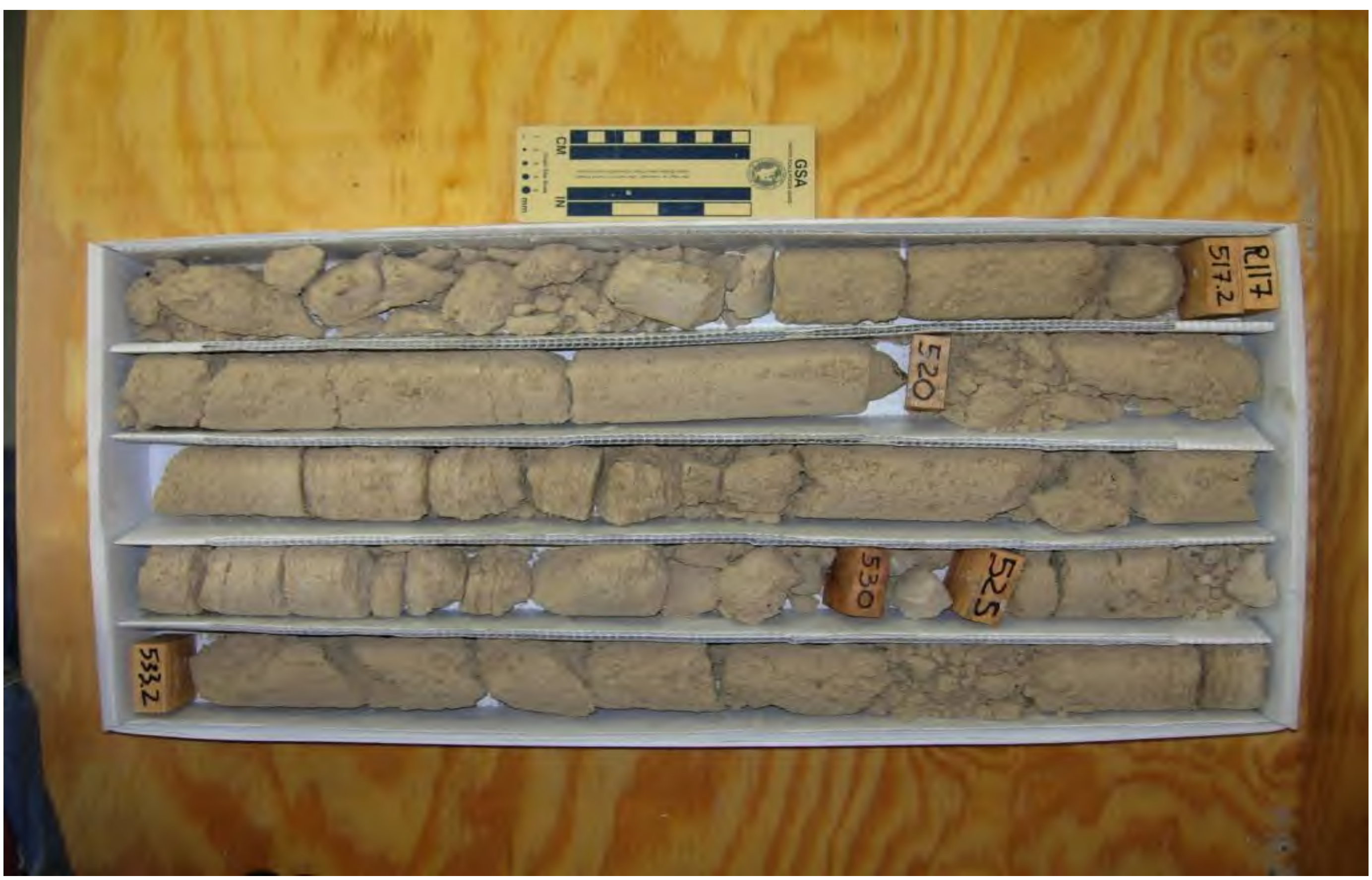

R117
419.5
420
425
430
435


437
440
445
450
455


GSA
CM
IN
R117
455
460
465
470
470.5


GSA
CM
IN
R117
470.5
475
480
485
490
495
500
501.4


GSA
CM
IN
R117
501.4
505
510
515
517.2


GSA
CM
IN
R117
517.2
520
525
530
533.2


R117
533.2
535
540
550
545
550.8


R117
550.8
555
560
560.5


GSA
CM
IN
R117
560.5
570
574


GSA
CM
IN
R117
574
575
580
585
590
590.5


R117
614
615
620
625


R117
625
630
634.4


R117
634.4
635
640
644.3
645


R117
646.5
650
655
656


GSA
CM
IN
R117
656
660
665


GSA
CM
IN
R117
668
670
675
681.8


GSA
CM
IN
R117
702
705
710
712.5


GSA
CM
IN
R117
712.5
715
720
722


GSA
CM
IN
R117
722
725
730
732.5


GSA
CM
IN
R117
732.5
735
740
742


GSA
CM
IN
R117
742
745
750
753.6


GSA
CM
IN
R117
753.6
755
760


R117
763.6
765
774


R117
774
775
780
783.5


GSA
CM
IN
R117
793.5
795
790
793.3


GSA
CM
IN
R117
793.3
795
800
805
806


GSA
CM
IN
R117
810
814.7


GSA
CM
IN
R117
814.7
815
820
825'


R117
825
830
834'
GSA
CM
IN


R117
835'
840'
845'
GSA
CM
IN


GSA
R117


GSA
R117


GSA
CM
IN
R117
890
895
900


GSA
CM
IN
R117
900
905

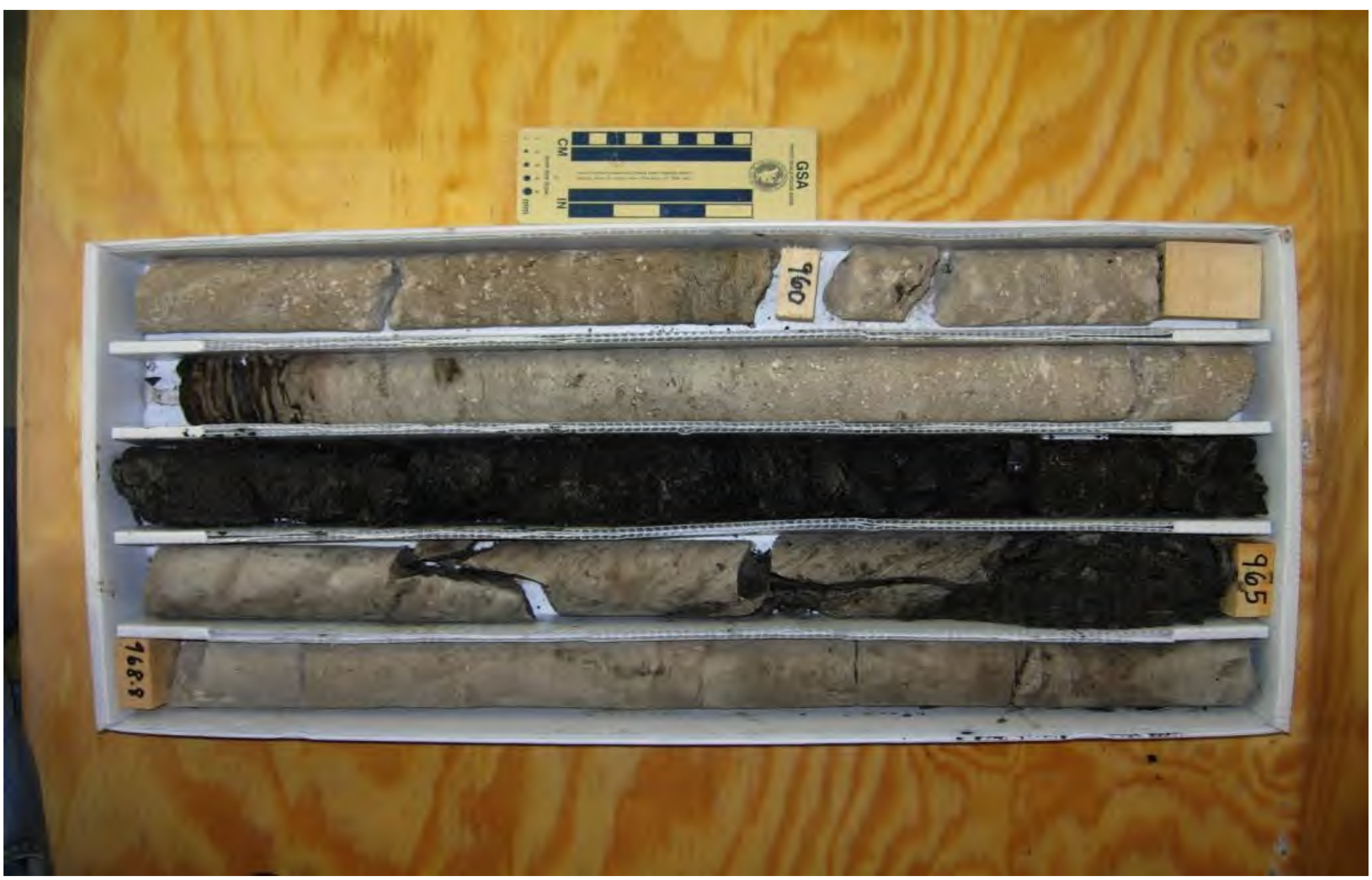

GSA
CM
IN
R117
910
915
919


GSA
CM
IN
R117
919
920
925
928.8


R117
930
935'


R117
940'
945'
950'
950.5


GSA
CM
IN
R 117
955
959.5


GSA
CM
IN
960
965
968.8


GSA
CM
IN
R117
970'
975
978.8


GSA
CM
IN
R117
980
985


GSA
CM
IN
R117
990
995'
1000'
1001.8


GSA
CM
IN
R117
1001.8
1005
1010
1011.2


GSA
CM
IN
R117
1032.2
1035
1040
1042.5
1045
1049.3


GSA
CM
IN
R117
1049.3
1050
1055
1060
1061.7


R117
1061.7
1065
1070
1071.3
GSA
CM
IN


R117
1071.3
1075
1080
1082.3
GSA
CM
IN


GSA
CM
IN
R117
1085
1090
1091.8


GSA
CM
IN
R117
1091.8
1095
1100
1101.8


GSA
CM
IN
R117
1101.8
1105
1111.9


GSA
CM
IN
R117
1111.9
1115
1121.1


GSA
CM
IN
R117
1121.1
1125
1130.4
1130


GSA
CM
IN
R117
1130.4
1135
1139.2


R 117
1139.2
1140
1145
1148.6


R117
1148.6
1150
1155
1158.5


GSA
CM
IN
R117
1158.5
1160
1165
1167.3


GSA
CM
IN
R117
1167.3
1170
1175


GSA
CM
IN
R117
1180


GSA
CM
IN
R117
1190
1195


CM
IN
GSA
R117
1196
1200
1206
1205


CM
IN
GSA
R117
1206
1210
1215


R 117
1215
1220
1224.2


1225
1224.2
R 117
1230
1233.2


R 117
1233.2
1235
1240
1242.6


R117
1242.6
1245
1250
1252.7


R117
1252.7
1255
1260
1262.9
GSA
CM
IN


R117
1262.9
1265
1270
1275
1280
1282.6
GSA
CM
IN


R117
1280.6
1285
1290
1292.3


R117
1292.3
1295
1300
1301.3


CM
IN
GSA
R117
1301.3
1305
1310
1312


CM
IN
GSA
R117
1312
1315
1320
1325
1328


GSA
CM
IN
R117
1328
1330
1335
1338.2


GSA
CM
IN
R117
1338.2
1340
1345
1350
1352.7


GSA
CM
IN
R117
1352.7
1355
1360
1365


GSA
CM
IN
R117
1365
1370
1375
1380
1380.2


GSA
CM
IN
R117
1380.2
1385
1390
1395


GSA
CM
IN
R117
1395
1400
1405
1410
1410.6


CM
IN
GSA
R117
1410.6
1415


CM
IN
GSA
R117
1419.1
1425
1429


R117
1429
1430
1435
1438.5


R117
1438.5
1440
1445
1448


GSA
CM
IN
R117
1484.5
1485
1490
1493.8

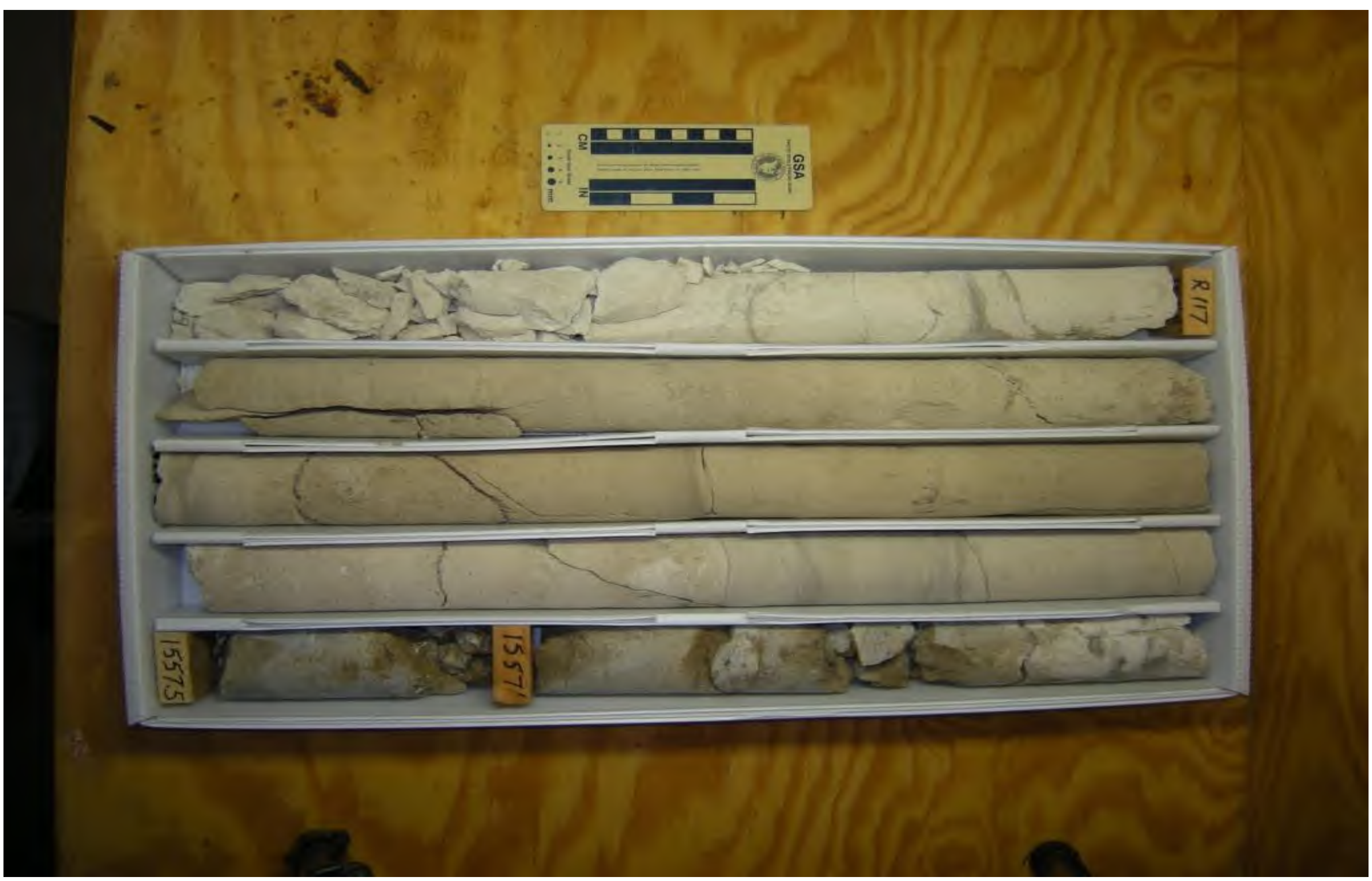

GSA
CM
IN
R 117
1493.8
1495
1500
TD

Appendix E2. Digital Photographs of Core Samples Retrieved from the COREHOLE 2 at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida


GSA
CM
IN
mm
R.117
1507'
1511.5'
BTM


GSA
CM
IN
mm
R.117
1517
1521'
ND BTM


R 117
1547


R 117
1557


GSA
CM
IN
1577
R117


GSA
CM
IN
1587
1594.5
1592.5


R117
1597


R117
1607
1612'


CM
IN
GSA
R117
1637
1641


CM
IN
GSA
R117
BTM
1647
1649


R117
1657
1658'

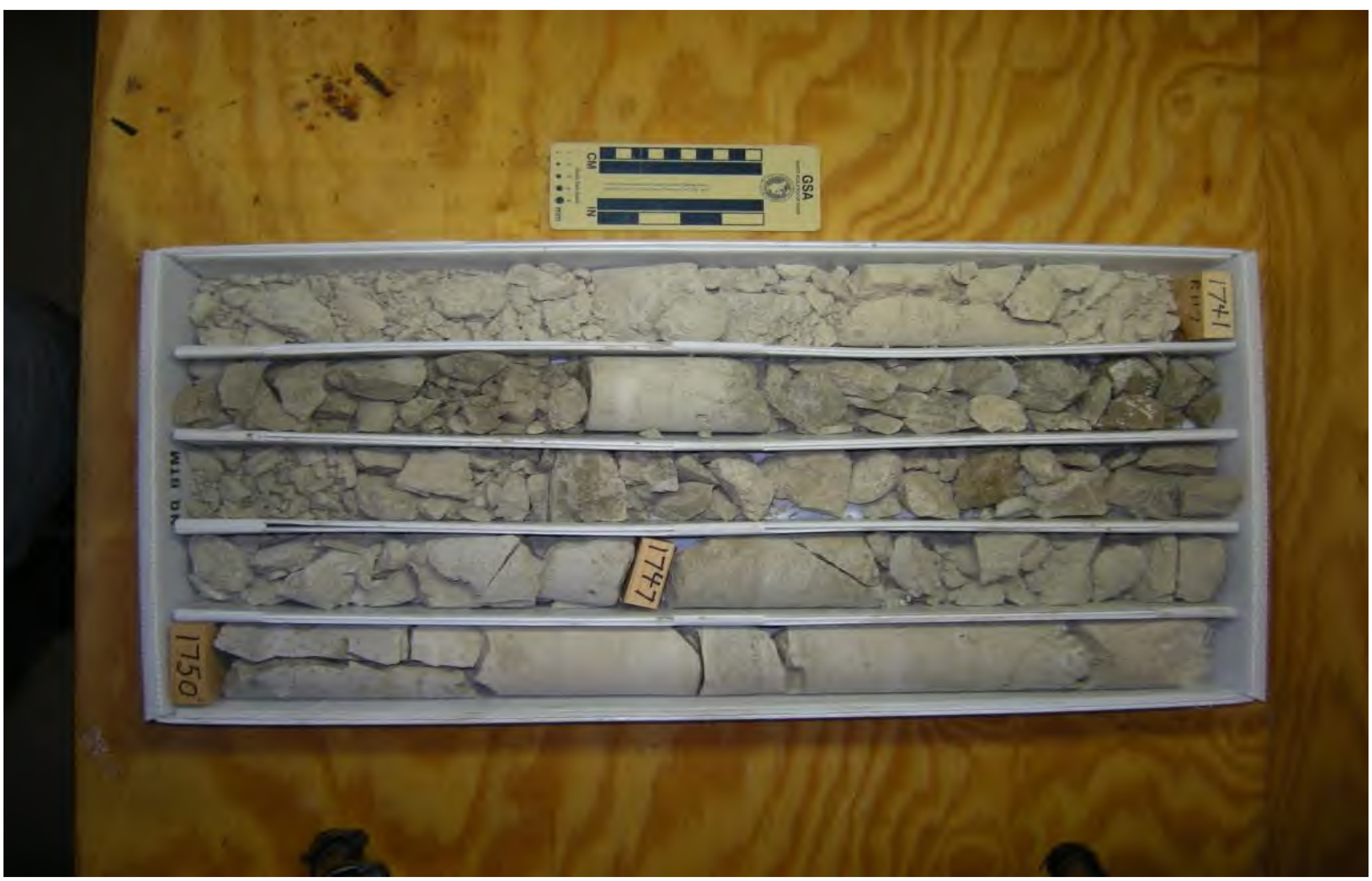

R117
1658'
1666.5

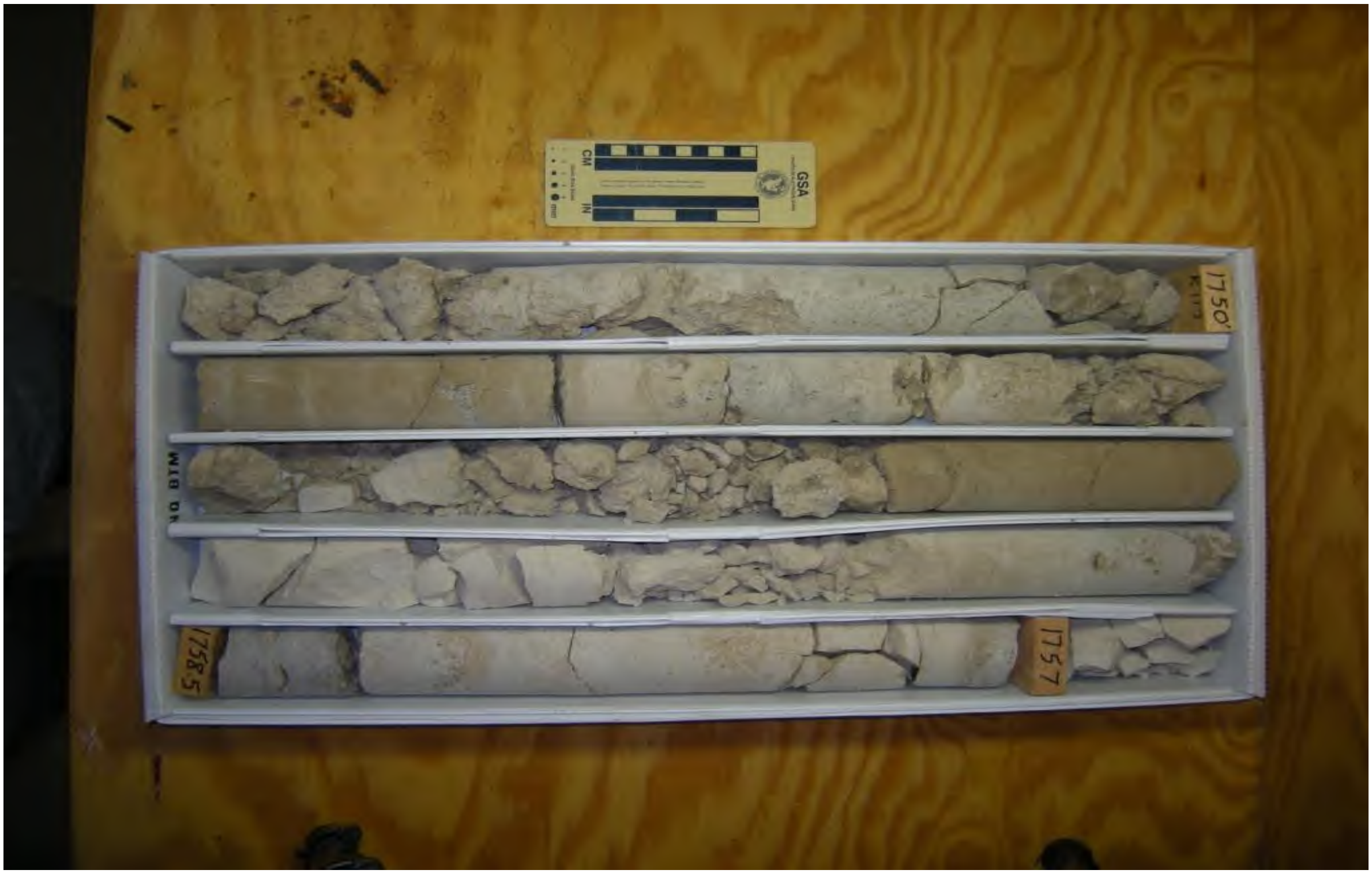

GSA
CM
IN
1667'
1666.5'
NQ BTM
1676

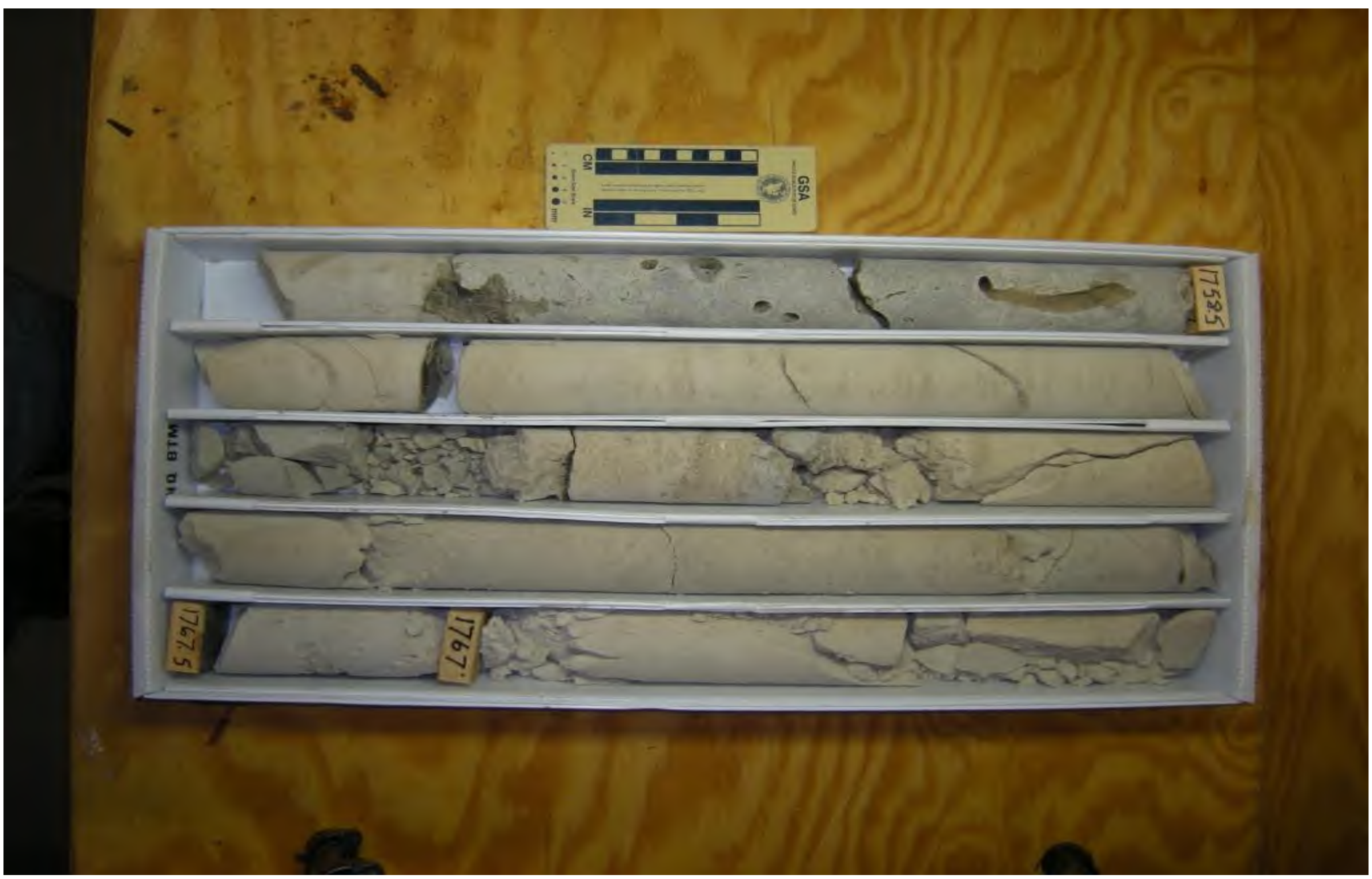

GSA
CM
IN
1677
R117
1686'

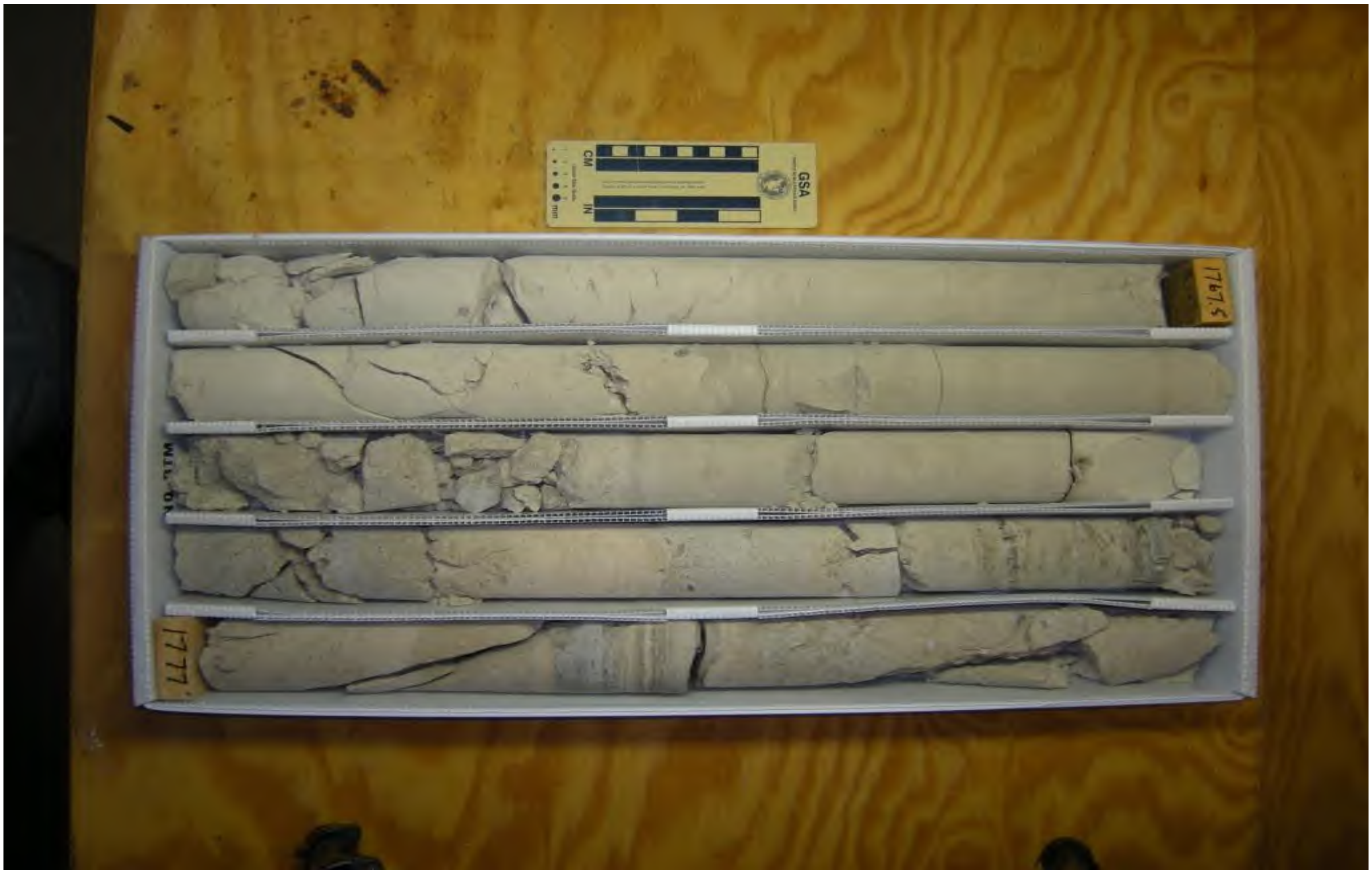

GSA
CM
IN
R117
1707'
1717'
1725


GSA
CM
IN
1725
1727
1732.5

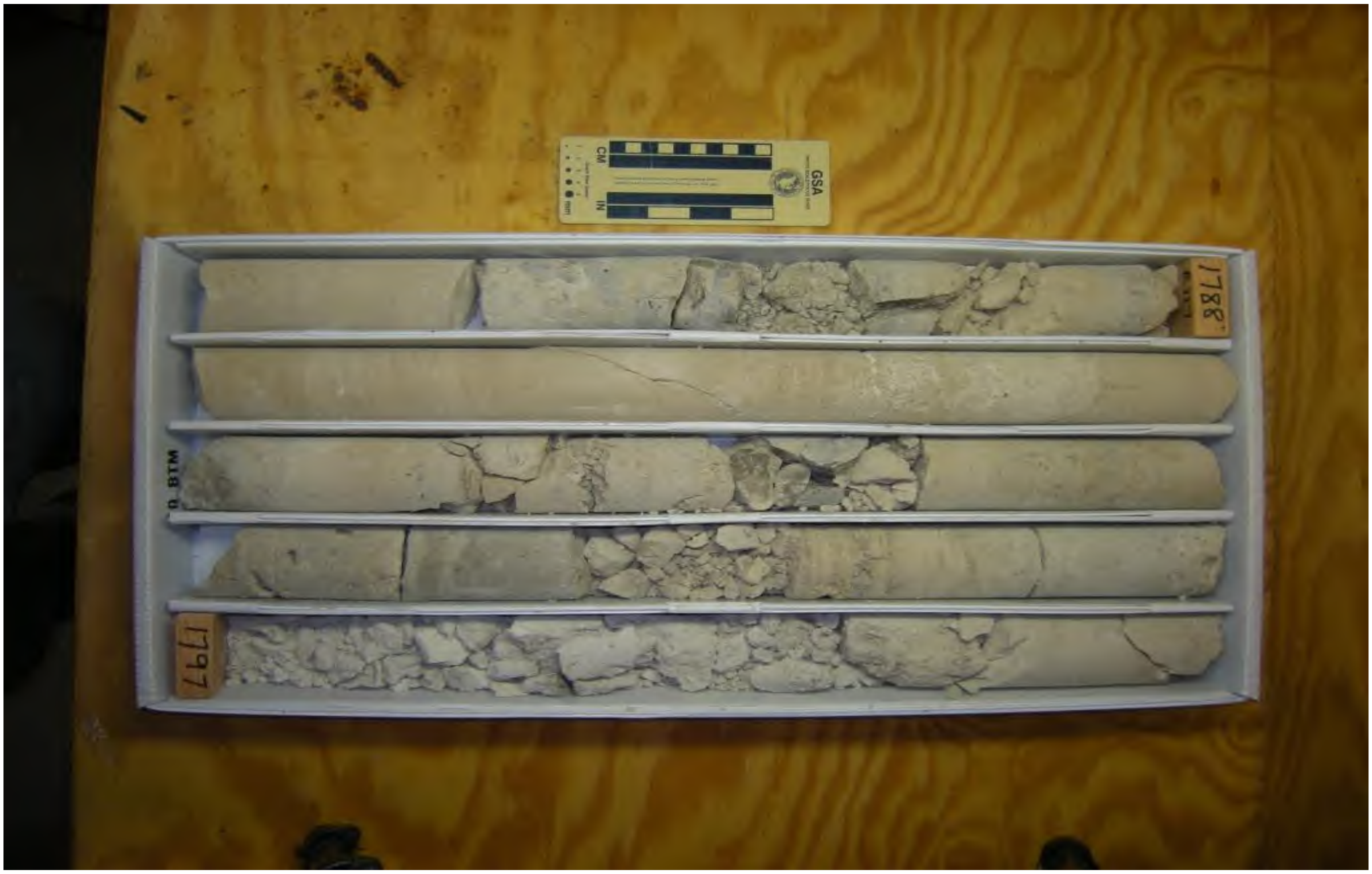



GSA
CM
IN
1750'
1757
1758.5


GSA
CM
IN
1758.5
1767'
1767.5


GSA
CM
IN
1767.5
1777


GSA
CM
IN
1777'
1787
1788'


1788
1797


1797
1805.5


GSA
CM
IN
1805.5
1807'
1813'


GSA
CM
IN
1813'
1817
1820.5


GSA
CM
IN
1820.5
1829.5

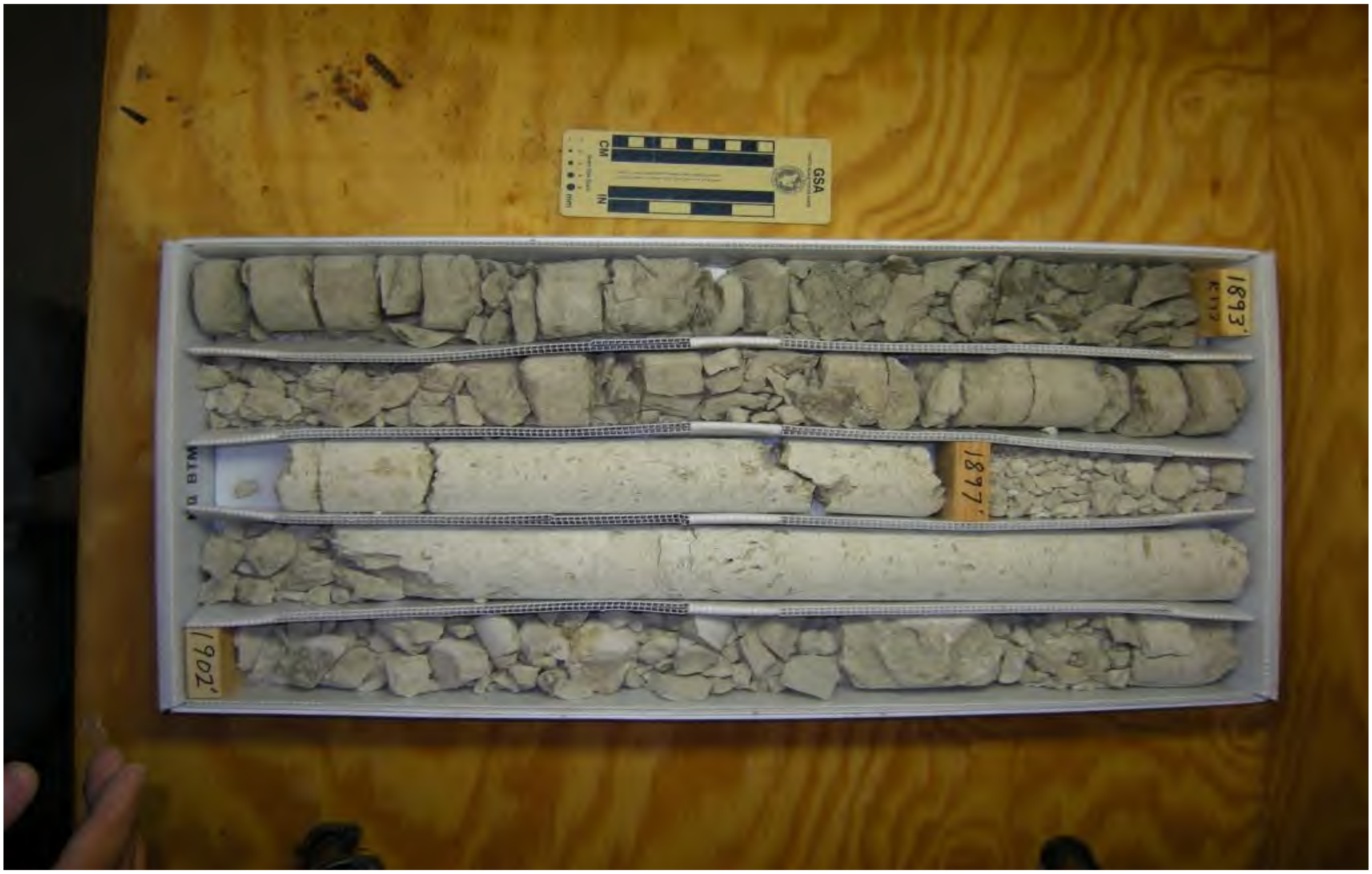

GSA
CM
IN
1827.5
1837
1839'


CM
IN
GSA
1857'
BTM
1866.2

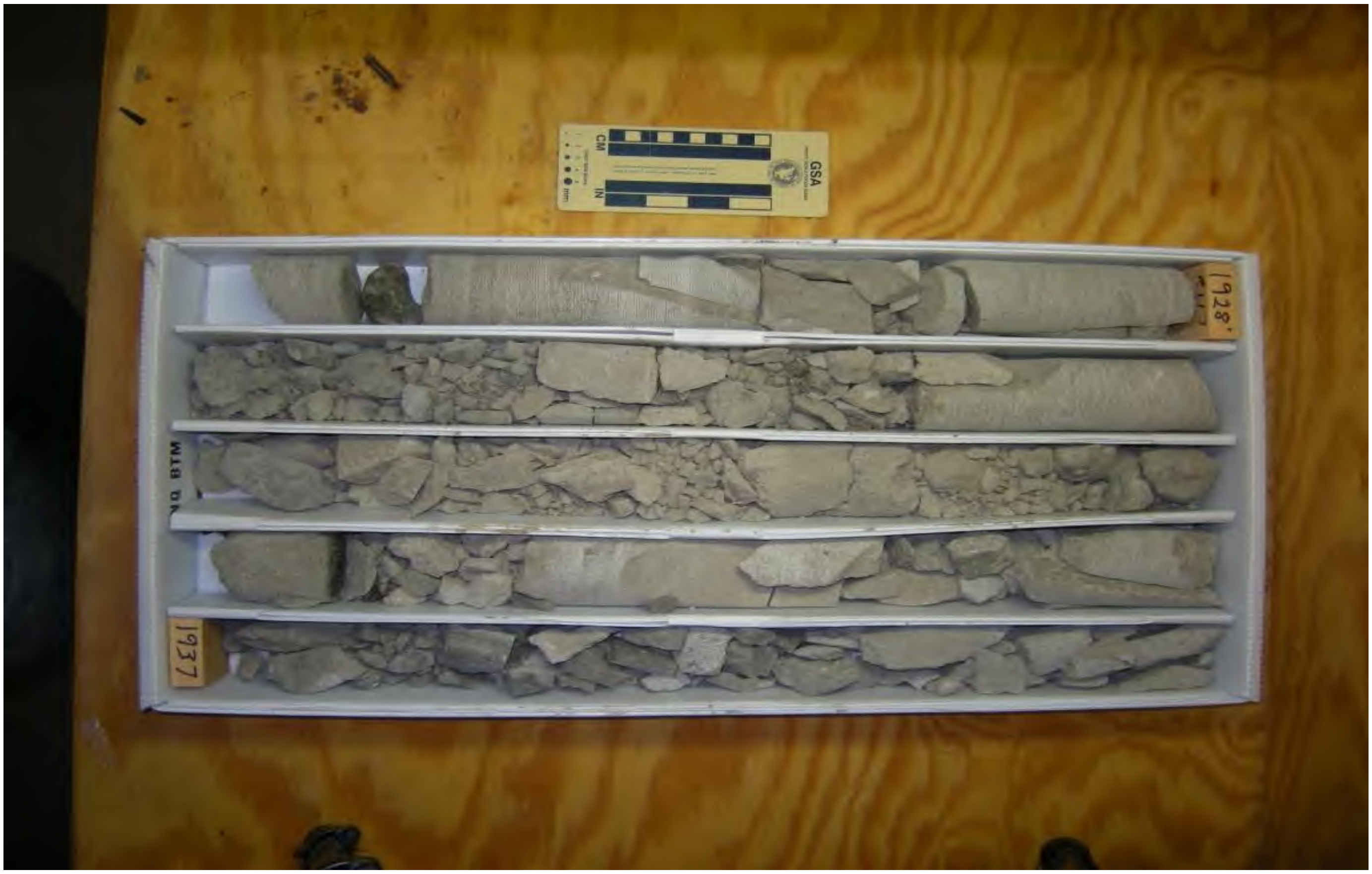

CM
IN
GSA
1867'
1866.2
BTM
1875

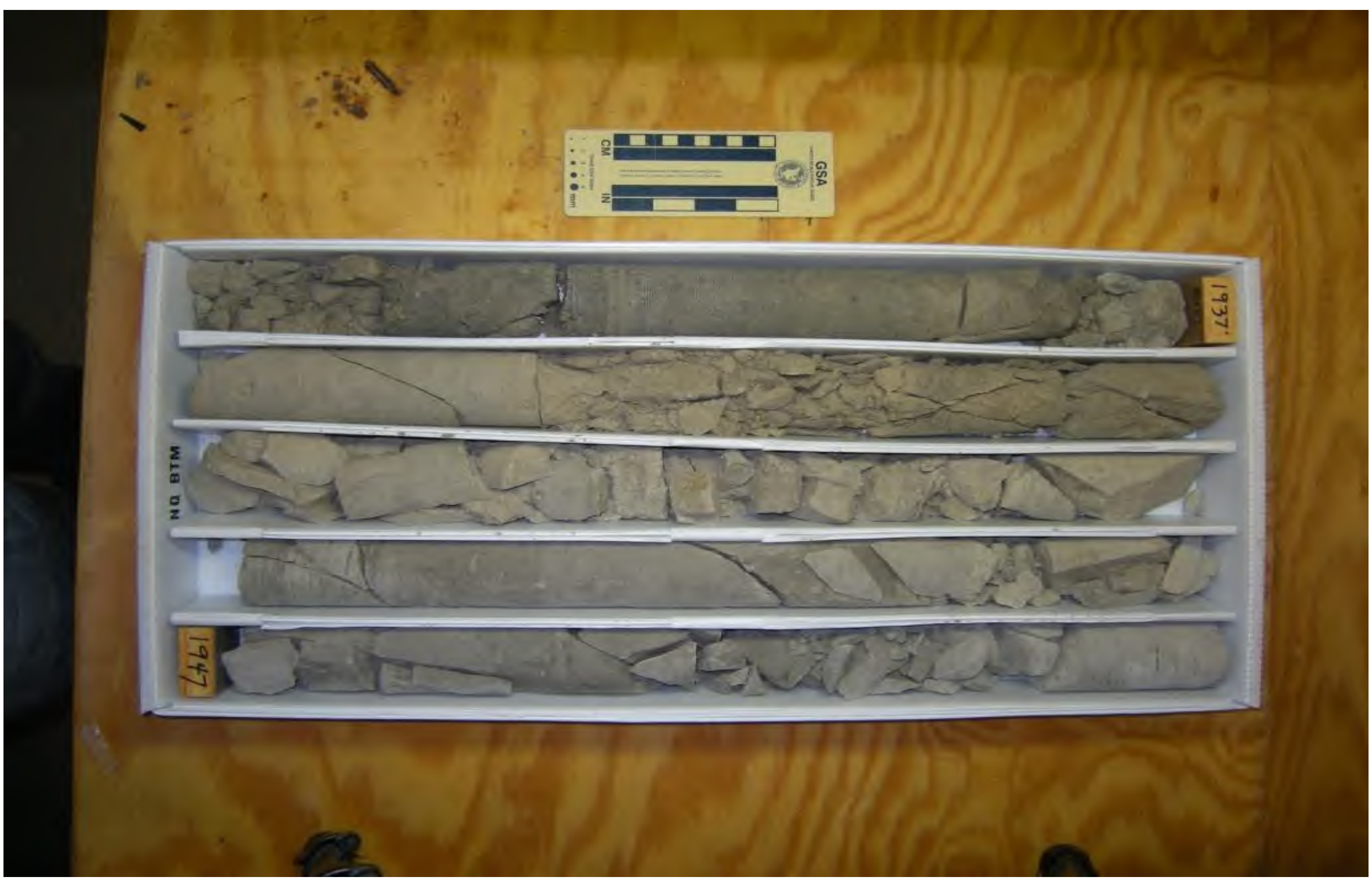

GSA
CM
IN
1875'
1877'
1884.5

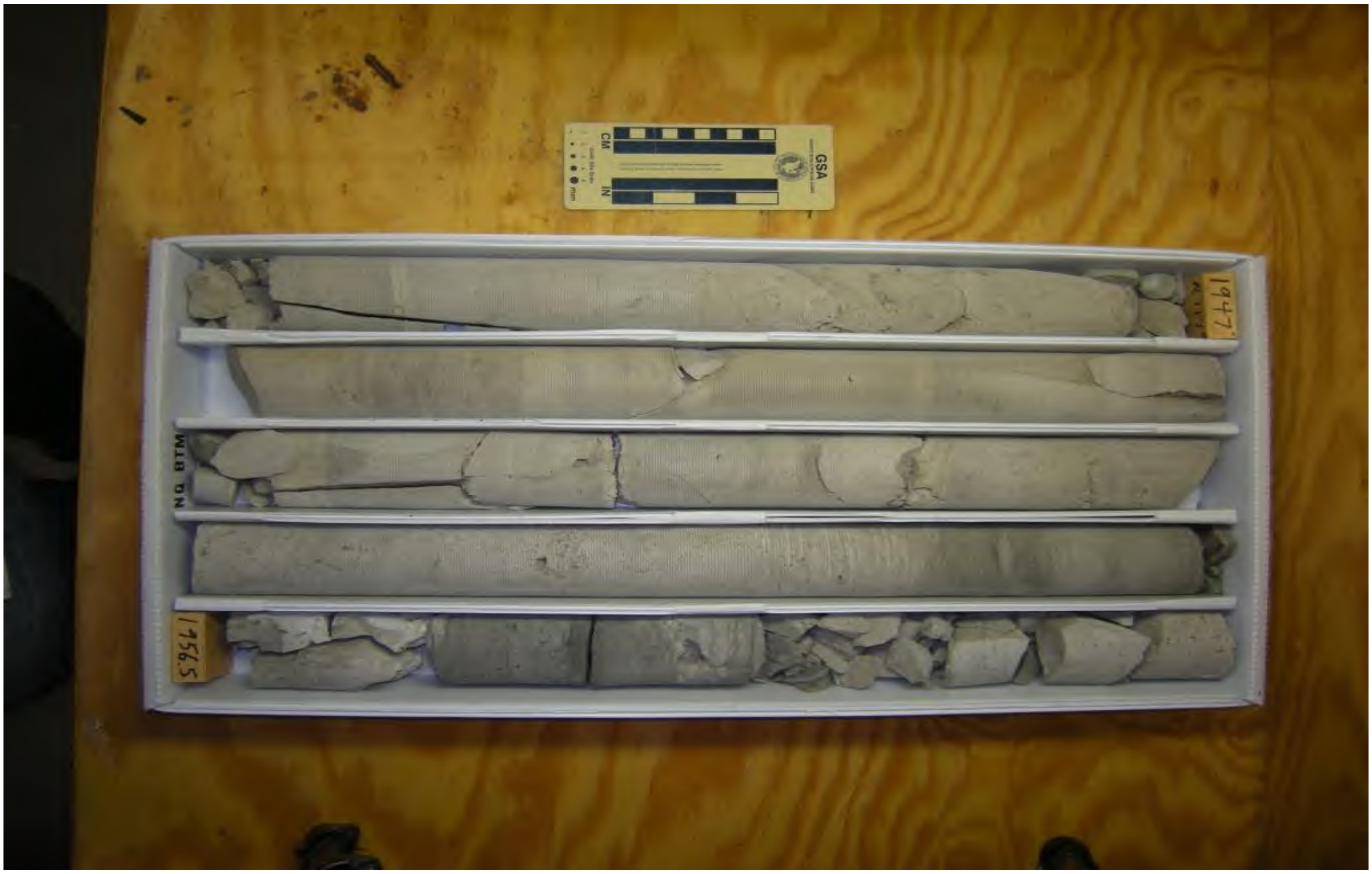

GSA
CM
IN
1884.5
1887'
1893'

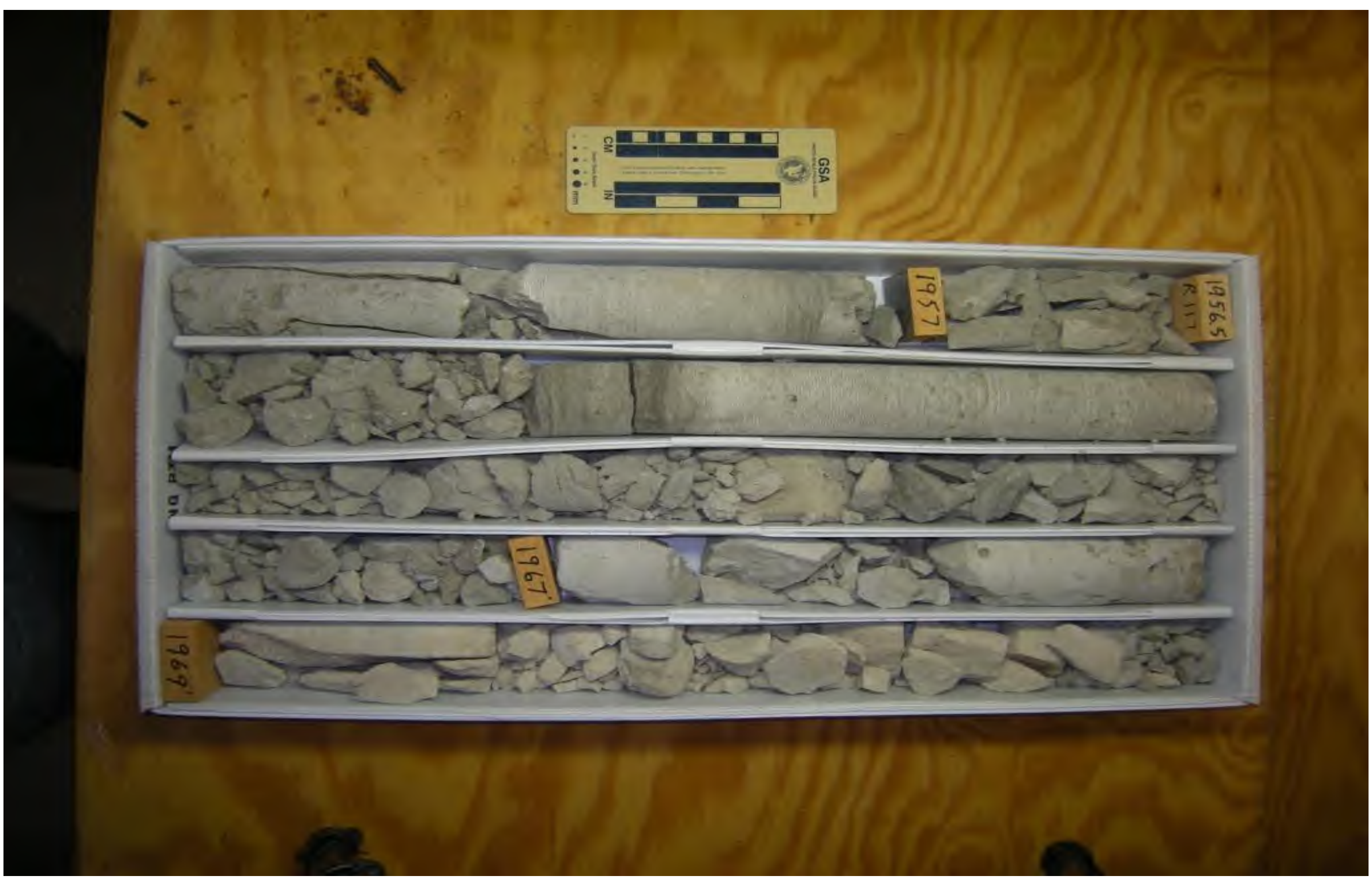

1893'
1897'
1902'


1902'
1907'
1911'

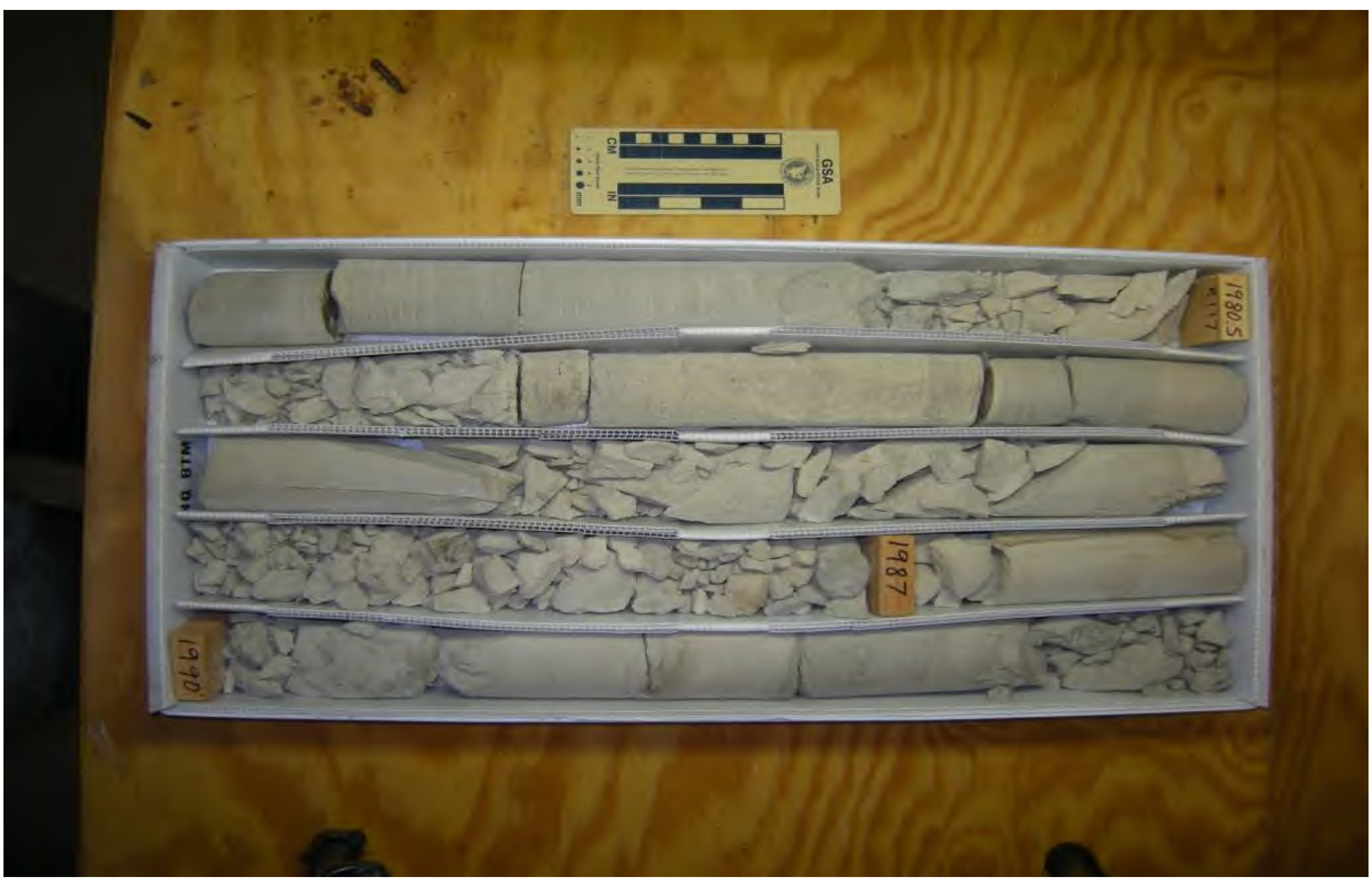

CM
IN
GSA
1928'
NQ BTM
1937

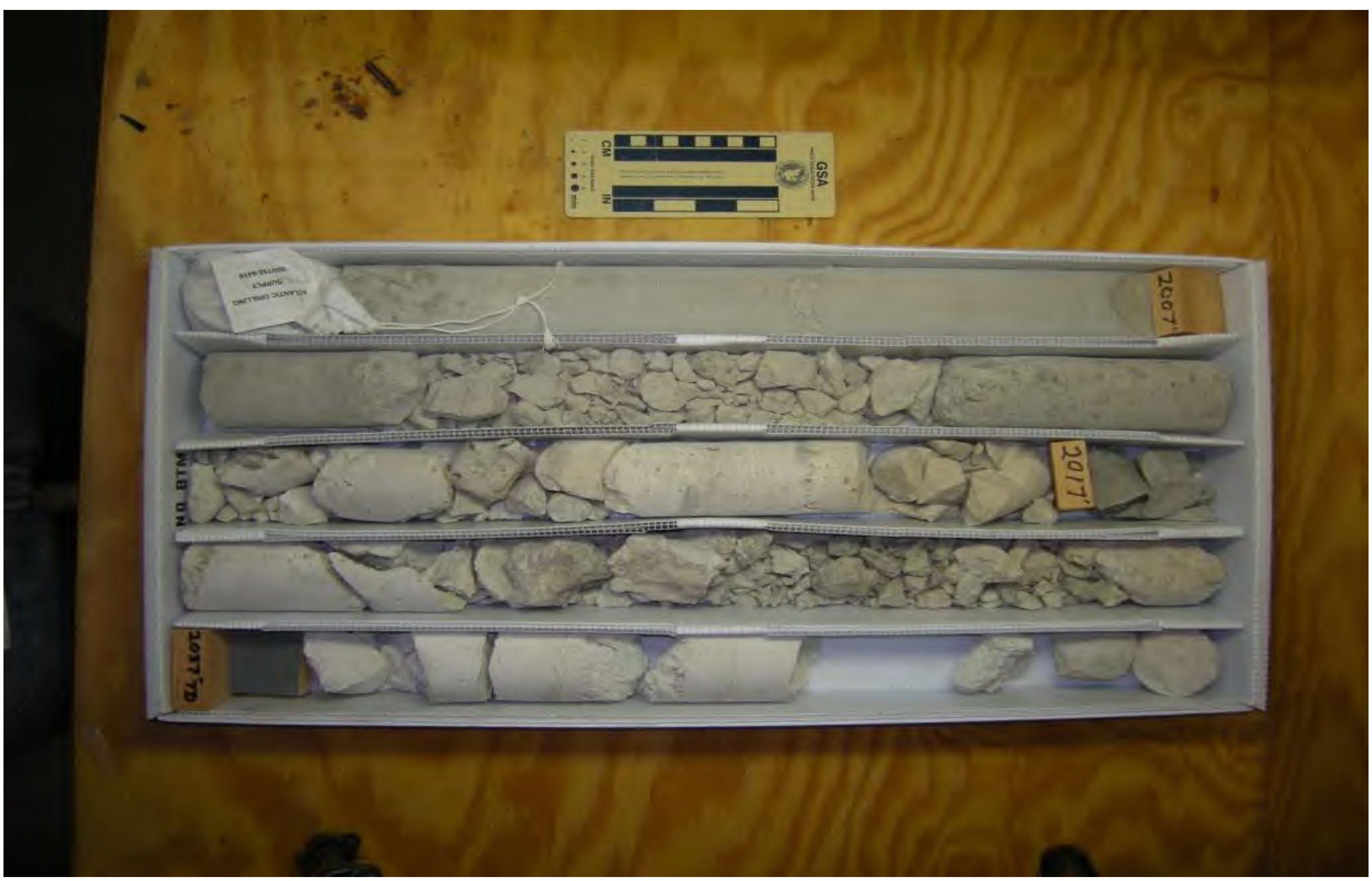

CM
IN
GSA
1937'
NQ BTM
1947


1947'
NQ BTM
1956.5


1957
1956.5
1967'
1969'


GSA
CM
IN
1969
1977
1980.5


GSA
CM
IN
1980.5
1987
1990



Page intentionally blank

Appendix F. Daily Water Levels Recorded During Exploratory Core Drilling and Testing at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

Table F1. Daily water levels recorded during exploratory coring and testing in Corehole 1 at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HW/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 1 Static Water Levels				Comments
				NQ Rods (ft bls)	NQ Rods (ft NAVD)	HW/HQ Casing (ft bls)	HW/HQ Casing (ft NAVD)	
09/07/06	7:30	85.5	94	4.82	57.35	4.85	57.32	Only 8.5 ft of open hole, water level may not be representative
09/12/06	7:00	85.5	115	5.99	56.18	6.04	56.13	ST 1 (85.5-105 ft bls)
09/13/06	7:00	85.5	140	5.88	56.29	5.77	56.40	ST 2 (85.5-140 ft bls)
09/14/06	7:30	85.5	180	5.95	56.22	5.85	56.32	ST 3 (134-180 ft bls)
09/15/06	7:00	85.5	180	5.79	56.38	5.80	56.37	
09/18/06	9:30	85.5	200	---	---	5.85	56.32	NQ plugged with cuttings
10/02/06	9:30	200	200	---	---	---	---	HW advanced to 200 ft
10/03/06	7:45	200	200	5.65	56.52	5.71	56.46	ST 4 (218-240 ft bls)
10/04/06	7:15	201	240	5.61	56.56	5.60	56.57	HW advanced to 201 ft
10/05/06	7:15	201	280	5.62	56.55	5.64	56.53	ST 5 (243-280 ft bls)
10/06/06	7:20	201	300	6.16	56.01	5.70	56.47	
10/09/06	13:00	201	325	6.04	56.13	5.89	56.28	ST 6 (299-325 ft bls)
10/10/06	7:20	201	325	--	--	5.83	56.34	NQ out of hole
10/11/06	7:20	201	340	5.96	56.21	5.79	56.38	
10/12/06	7:20	201	380	6.07	56.10	5.84	56.33	ST 7 (329-380 ft bls)
10/13/06	7:20	201	420	5.98	56.19	5.75	56.42	ST 8 (382-420 ft bls)
10/16/06	11:00	201	440	6.20	55.97	6.04	56.13	
10/17/06	8:00	201	465	6.02	56.15	5.95	56.22	ST 9 (422-465 ft bls)
10/18/06	7:15	201	480	5.92	56.25	5.96	56.21	
10/19/06	7:30	201	520	5.65	56.52	5.98	56.19	ST 10 (505-540 ft bls)
10/20/06	7:15	201	540	5.24	56.93	6.00	56.17	
10/23/06	11:00	201	550	5.73	56.44	6.16	56.01	
10/24/06	7:45	201	590	5.51	56.66	6.03	56.14	ST 11 (562-590 ft bls)
10/25/06	7:15	201	590	4.76	57.41	6.17	56.00	
10/26/06	8:00	201	600	4.89	57.28	6.25	55.92	
10/27/06	8:00	201	640	1.67	60.50	6.25	55.92	ST 12 (614-640 ft bls)
10/30/06	10:00	201	640	1.65	60.52	5.94	56.23	
10/31/06	7:30	201	680	1.51	60.66	6.07	56.10	
11/01/06	7:30	201	690	1.53	60.64	6.06	56.11	ST 13 (652-690 ft bls)
11/02/06	7:00	201	700	2.25	59.92	5.95	56.22	Questionable WLs
11/03/06	7:00	201	740	1.55	60.62	6.10	56.07	ST 14 (702-740 ft bls)
11/06/06	11:45	201	740	1.52	60.65	6.08	56.09	
01/29/07	10:30	601	745	1.92	60.25	8.18	53.99	HQ set at 601
01/30/07	9:30	601	780	1.70	60.47	7.01	55.16	ST 15 (747-780 ft bls)
01/31/07	7:00	601	780	1.78	60.39	8.28	53.89	
02/01/07	7:30	601	800	1.39	60.78	5.13	57.04	

Table F1. Daily water levels recorded during exploratory coring and testing in Corehole 1 at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HW/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 1 Static Water Levels				Comments
				NQ Rods (ft bls)	NQ Rods (ft NAVD)	HW/HQ Casing (ft bls)	HW/HQ Casing (ft NAVD)	
02/05/07	9:45	601	801	1.32	60.85	2.27	59.90	
02/06/07	7:30	601	804.75	--	--	1.55	60.62	NQ out of hole
02/07/07	8:00	601	820	0.83	61.34	1.78	60.39	ST 16 (793-830 ft bls) & ST 17 (817-830 ft bls)
02/08/07	8:15	601	830	0.77	61.40	1.63	60.54	
02/14/07	10:00	601	830	0.58	61.59	1.44	60.73	
02/15/07	7:30	601	850	0.82	61.35	2.06	60.11	ST 18 (836-870 ft bls)
02/16/07	8:30	601	870	1.14	61.03	1.61	60.56	
02/19/07	10:00	601	870	1.12	61.05	1.83	60.34	
02/20/07	8:00	601	890	0.83	61.34	1.79	60.38	
02/21/07	7:45	601	910	0.76	61.41	1.81	60.36	ST 19 (878-910 ft bls)
02/22/07	10:00	601	930	0.70	61.47	1.76	60.41	
02/26/07	9:30	601	950	0.24	61.93	1.55	60.62	ST 20 (912-950 ft bls)
02/28/07	11:35	601	970	0.50	61.67	1.77	60.40	
03/01/07	9:00	601	970	0.36	61.81	1.62	60.55	ST 21 (969-990 ft bls)
03/02/07	8:00	601	990	0.23	61.94	1.57	60.60	
03/06/07	9:30	601	990	0.62	61.55	1.83	60.34	
03/07/07	10:45	601	1000	0.10	62.07	1.79	60.38	
03/08/07	12:45	601	1015	0.10	62.07	1.79	60.38	
03/09/07	8:00	601	1030	0.17	62.00	1.86	60.31	ST 22 (988-1,030 ft bls)
03/12/07	9:45	601	1030	0.30	61.87	1.89	60.28	
03/14/07	9:30	601	1043	0.27	61.90	--	--	Hydrailic oil in HW
03/15/07	11:30	601	1070	0.08	62.09	2.02	60.15	ST 23 (1,031-1,070 ft bls)
03/20/07	10:00	601	1070	0.46	61.71	2.14	60.03	
03/21/07	8:00	601	1090	0.43	61.74	2.17	60.00	ST 24 (1,072-1,110 ft bls)
03/22/07	7:30	601	1110	0.48	61.69	2.06	60.11	
03/26/07	9:30	601	1140	0.56	61.61	2.23	59.94	ST 25 (1,101-1,140 ft bls)
03/27/07	8:00	601	1140	0.51	61.66	2.19	59.98	
03/28/07	8:00	601	1180	0.56	61.61	2.20	59.97	
03/29/07	8:00	601	1210	0.67	61.50	2.27	59.90	ST 26 (1,168-1,210 ft bls)
04/02/07	8:30	601	1230	0.82	61.35	2.43	59.74	
04/03/07	9:30	601	1250	0.88	61.29	2.44	59.73	ST 27 (1,211-1,250 ft bls)
04/04/07	7:30	601	1250	0.84	61.33	2.42	59.75	
04/05/07	8:15	601	1270	0.80	61.37	2.41	59.76	ST 28 (1,251-1,285 ft bls)
04/10/07	9:45	601	1285	1.06	61.11	2.57	59.60	
04/11/07	7:00	601	1305	0.87	61.30	2.53	59.64	ST 29 (1,286-1,325 ft bls)
04/12/07	8:00	601	1325	0.99	61.18	2.50	59.67	

Table F1. Daily water levels recorded during exploratory coring and testing in Corehole 1 at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HW/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 1 Static Water Levels				Comments
				NQ Rods (ft bls)	NQ Rods (ft NAVD)	HW/HQ Casing (ft bls)	HW/HQ Casing (ft NAVD)	
04/16/07	9:30	601	1345	1.17	61.00	2.74	59.43	
04/23/07	10:30	601	1365	1.40	60.77	2.92	59.25	ST 30 (1,335.5-1,365 ft bls) run on 4/18/07
04/26/07	7:00	601	1385	1.22	60.95	2.84	59.33	
04/30/07	9:00	601	1395	1.47	60.70	2.96	59.21	
05/01/07	7:00	601	1405	1.39	60.78	3.08	59.09	ST 31 (1,356-1,405 ft bls)
05/02/07	7:00	601	1415	1.45	60.72	2.99	59.18	
05/03/07	7:00	601	1430	1.83	60.34	2.39	59.78	
05/08/07	9:30	601	1445	1.62	60.55	3.09	59.08	ST 32 (1,395-1,445 ft bls)
05/09/07	8:00	601	1500	1.95	60.22	3.19	58.98	
05/10/07	9:30	601	1500	1.81	60.36	3.20	58.97	ST 33 (1,454-1,500 ft bls)
05/14/07	13:40	601	1500	2.24	59.93	3.56	58.61	

Table F2. Daily water levels recorded during exploratory coring and testing in Corehole 2 at the ROMP 117 - Lake Okahumpka site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HWT/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 2 Static Water Levels					Upper Floridan Aquifer Monitor Water Levels		Comments
				NRQ Rods (ft bls)	NRQ Rods (ft +/- ls)	NRQ Rods (ft NAVD)	HWT/HQ Casing (ft +/- ls)	HWT/HQ Casing (ft NAVD)	(ft bls)	(ft NAVD)	
10/29/08	7:15	1,466	1,537	-3.00	3.00	63.60	-4.08	56.52	1.31	61.91	HWT/HQ probably plugged, using MP1
10/31/08	7:00	1,467	1,577	---	---	---	---	---	1.99	62.59	---
11/03/08	7:15	1,467	1,577	---	---	---	0.26	60.86	1.47	62.07	---
11/04/08	7:00	1,467	1,577	-1.02	1.02	61.62	---	---	1.50	62.10	Packer set @ 1,537 ft bls
11/04/08	15:15	1,467	1,577	-1.98	1.98	62.58	---	---	---	---	Now using MP2
11/05/08	7:00	1,467	1,577	---	---	---	---	---	1.56	62.16	CH2 sealed, HWT flowing slightly
11/06/08	7:00	1,467	1,617	-3.15	3.15	63.75	1.18	61.78	1.49	62.09	---
11/10/08	7:00	1,467	1,677	-3.56	3.56	64.16	2.99	63.59	1.80	62.40	---
11/12/08	7:30	1,467	1,697	-3.39	3.39	63.99	---	---	---	---	---
11/12/08	10:30	1,467	1,697	---	---	---	---	---	1.88	62.48	---
11/13/08	7:30	1,467	1,697	---	---	---	3.64	64.24	1.83	62.43	---
11/17/08	7:30	1,467	1,702	-2.69	2.69	63.29	3.27	63.87	2.11	62.71	---
11/18/08	7:00	1,467	1,702	---	---	---	3.28	63.88	2.12	62.72	NRQ plugged off
11/20/08	7:30	1,467	1,707	-3.33	3.33	63.93	3.26	63.86	2.15	62.75	Coring hiatus (11/20-12/3),Thanksgiving and drilling problems
12/01/08	8:00	1,467	1,717	-3.84	3.84	64.44	2.76	63.36	2.34	62.94	---
12/02/08	7:00	1,467	1,717	-2.28	2.28	62.88	2.54	63.14	2.52	63.12	---
12/04/08	7:30	1,467	1,727	-3.47	3.47	64.07	2.73	63.33	2.48	63.08	---
12/08/08	7:00	1,467	1,747	-2.88	2.88	63.48	3.25	63.85	2.62	63.22	---
12/09/08	7:00	1,467	1,777	-2.43	2.43	63.03	2.73	63.33	2.50	63.10	---
12/10/08	7:00	1,467	1,797	-2.32	2.32	62.92	---	---	2.55	63.15	---
12/12/08	7:00	1,467	1,797	-3.24	3.24	63.84	3.04	63.64	2.42	63.02	---
12/15/08	7:30	1,467	1,797	-2.94	2.94	63.54	2.89	63.49	2.63	63.23	---
12/16/08	7:00	1,467	1,797	---	---	---	2.96	63.56	2.52	63.12	Packer set, no NRQ water level
12/17/08	7:00	1,467	1,797	-2.39	2.39	62.99	2.91	63.51	2.64	63.24	---
12/18/08	7:00	1,467	1,807	-1.60	1.60	62.20	2.52	63.12	2.75	63.35	Holidays, coring hiatus (12/18/08-1/5/09)

Table F2. Daily water levels recorded during exploratory coring and testing in Corehole 2 at the ROMP 117 - Lake Okahumpka site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HWT/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 2 Static Water Levels					Upper Floridan Aquifer Monitor Water Levels		Comments
				NRQ Rods (ft bls)	NRQ Rods (ft +/- ls)	NRQ Rods (ft NAVD)	HWT/HQ Casing (ft +/- ls)	HWT/HQ Casing (ft NAVD)	(ft bls)	(ft NAVD)	
01/05/09	8:00	1,467	1,817	---	---	---	0.52	61.12	3.02	63.62	Coring problems, NRQ out of hole, HQ reset to 1,471 ft bls
01/27/09	7:00	1,471	1,817	-1.50	1.50	62.10	-1.13	59.47	3.49	64.09	---
01/28/09	7:00	1,471	1,817	-0.90	0.90	61.50	-0.18	60.42	3.40	64.00	---
01/29/09	7:00	1,471	1,817	-0.86	0.86	61.46	0.23	60.83	3.32	63.92	---
02/02/09	7:00	1,471	1,837	-0.71	0.71	61.31	1.23	61.83	3.31	63.91	---
02/03/09	7:00	1,471	1,837	-0.74	0.74	61.34	0.92	61.52	3.31	63.91	---
02/04/09	7:15	1,471	1,857	-0.55	0.55	61.15	-0.27	60.33	3.39	63.99	---
02/09/09	7:00	1,471	1,877	---	---	---	1.62	62.22	3.45	64.05	Trip in hole with NRQ, No NRQ water level, HWT/HQ open to corehole
02/10/09	7:00	1,471	1,887	1.45	-1.45	59.15	1.39	61.99	3.58	64.18	---
02/11/09	7:30	1,471	1,907	1.65	-1.65	58.95	1.51	62.11	3.61	64.21	---
02/16/09	7:00	1,471	1,927	1.89	-1.89	58.71	1.81	62.41	3.61	64.21	---
02/17/09	7:00	1,471	1,947	2.40	-2.40	58.20	1.28	61.88	3.78	64.38	---
02/18/09	7:00	1,471	1,967	1.30	-1.30	59.30	1.18	61.78	3.75	64.35	---
02/19/09	7:15	1,471	1,987	2.33	-2.33	58.27	1.64	62.24	3.63	64.23	---
02/23/09	7:00	1,471	2,007	4.55	-4.55	56.05	0.92	61.52	3.89	64.49	NRQ WL supressed, water quite cloudy
02/24/09	7:00	1,471	2,017	4.34	-4.34	56.26	1.10	61.70	3.79	64.39	---
02/25/09	7:30	1,471	2,017	2.89	-2.89	57.71	1.16	61.76	3.88	64.48	---
02/26/09	7:30	1,471	2,017	3.28	-3.28	57.32	0.93	61.53	3.84	64.44	---
03/02/09	7:00	1,471	2,017	0.14	-0.14	60.46	0.88	61.48	3.90	64.50	NRQ possibly plugged with rocks
03/03/09	7:00	1,471	2,017	2.95	-2.95	57.65	1.28	61.88	4.07	64.67	---
03/04/09	7:00	1,471	2,017	3.21	-3.21	57.39	0.91	61.51	4.07	64.67	In situ gravel was encountered and
03/05/09	7:15	1,471	2,017	3.08	-3.08	57.52	0.59	61.19	4.16	64.76	corehole could not be advanced
03/09/09	7:00	1,471	2,017	3.26	-3.26	57.34	0.80	61.40	4.26	64.86	beyond 2,017 ft bls. Tricone reverse-air
03/10/09	7:00	1,471	2,017	3.06	-3.06	57.54	0.63	61.23	4.28	64.88	drilling was used to advance corehole.
03/11/09	7:15	1,471	2,017	2.99	-2.99	57.61	0.81	61.41	4.28	64.88	---

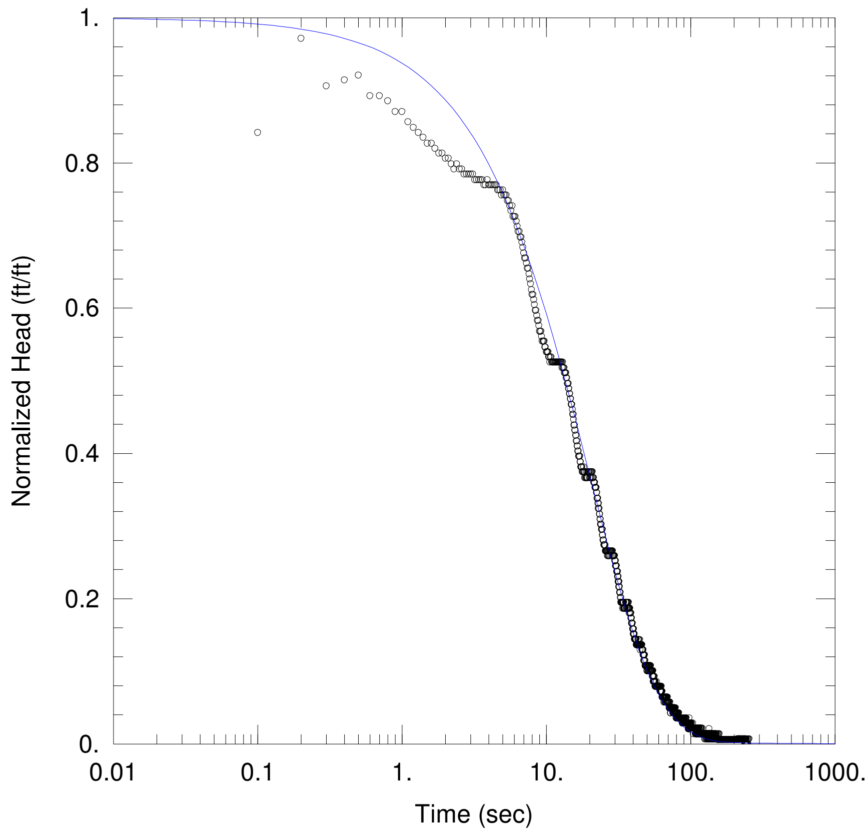
Table F2. Daily water levels recorded during exploratory coring and testing in Corehole 2 at the ROMP 117 - Lake Okahumpka site in Northeast Sumter County, Florida

[als, above land surface; bls, below land surface; ft, feet; HQ, 3-inch temporary steel casing; HW, 4-inch temporary steel casing; LFA, Lower Floridan aquifer; mcu I, middle confining unit I; NAVD, North American Vertical Datum of 1988; NQ, 3-inch core rods; ST, slug test; UFA, Upper Floridan aquifer; WLs, water levels; ---, no measurement or comment]

Date (MM/DD/YY)	Time (HH:MM)	HWT/HQ Casing Depth (ft bls)	Core Hole Depth (ft bls)	COREHOLE 2 Static Water Levels					Upper Floridan Aquifer Monitor Water Levels		Comments
				NRQ Rods (ft bls)	NRQ Rods (ft +/- ls)	NRQ Rods (ft NAVD)	HWT/HQ Casing (ft +/- ls)	HWT/HQ Casing (ft NAVD)	(ft bls)	(ft NAVD)	
03/12/09	7:00	1,471	2,017	2.93	-2.93	57.67	0.44	61.04	4.30	64.90	---
03/16/09	7:30	1,471	2,017	3.77	-3.77	56.83	0.49	61.09	4.51	65.11	---
03/18/09	7:00	1,471	2,017	3.51	-3.51	57.09	0.30	60.90	4.49	65.09	---
03/23/09	8:00	1,471	2,017	3.40	-3.40	57.20	-0.09	60.51	4.66	65.26	---
03/24/09	7:00	1,471	2,017	3.47	-3.47	57.13	-0.58	60.02	4.49	65.09	---
03/25/09	7:00	1,471	2,017	3.46	-3.46	57.14	-0.90	59.70	4.57	65.17	---
03/26/09	7:00	1,471	2,017	3.29	-3.29	57.31	-0.51	60.09	4.62	65.22	---
03/30/09	7:30	1,471	2,017	3.72	-3.72	56.88	-0.17	60.43	4.55	65.15	---
03/31/09	7:00	1,471	2,017	3.23	-3.23	57.37	0.01	60.61	4.49	65.09	---
04/01/09	7:00	1,471	2,017	4.13	-4.13	56.47	-1.84	58.76	4.46	65.06	Eventual Tricone TD was 2,037 ft bls.

Page intentionally blank

Appendix G. Curve-Match Analyses of Slug Tests Performed at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida



SLUG TEST 1C (85.5' - 105')

Data Set: D:\...\ST1c.aqt
Date: 05/13/14 Time: 17:28:17

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft

WELL DATA (PT1)

Initial Displacement: -1.012 ft
Total Well Penetration Depth: 50. ft
Casing Radius: 0.1523 ft

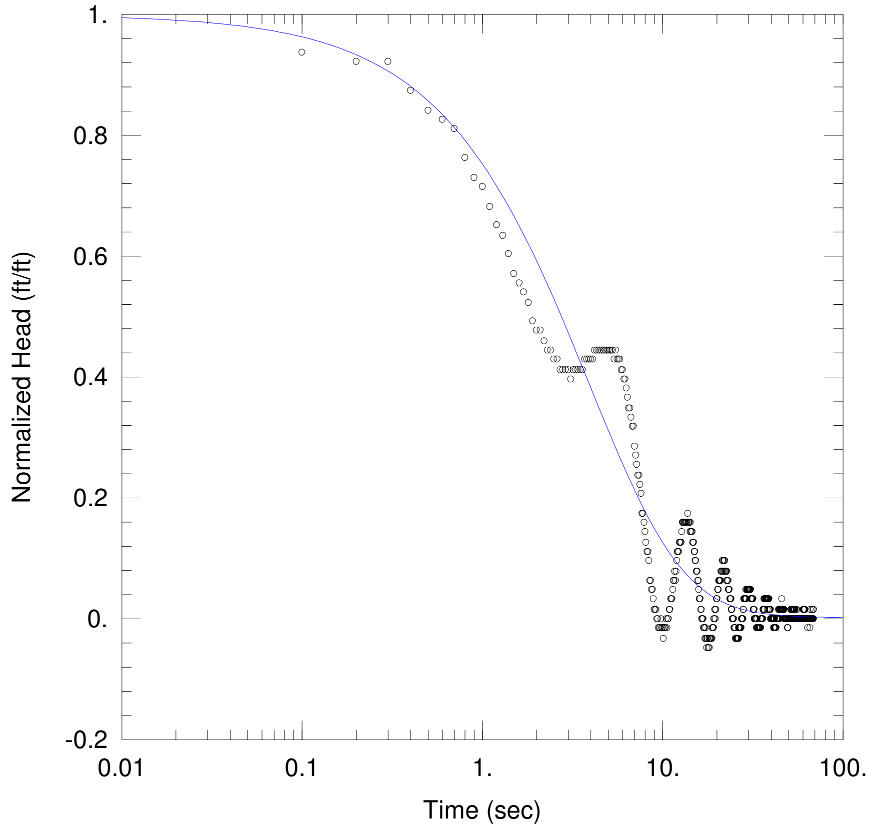
Static Water Column Height: 99.07 ft
Screen Length: 19.5 ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 13.84 ft/day
Kz/Kr = 0.1
Ss = 1.591E-6 ft^{-1}

Figure G1. Curve-match analysis for slug test 1C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 2C (85.5' - 140')

Data Set: D:\...\ST2c.aqt
Date: 05/13/14 Time: 17:30:41

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft

WELL DATA (PT2)

Initial Displacement: -0.459 ft
Total Well Penetration Depth: 85. ft
Casing Radius: 0.1523 ft

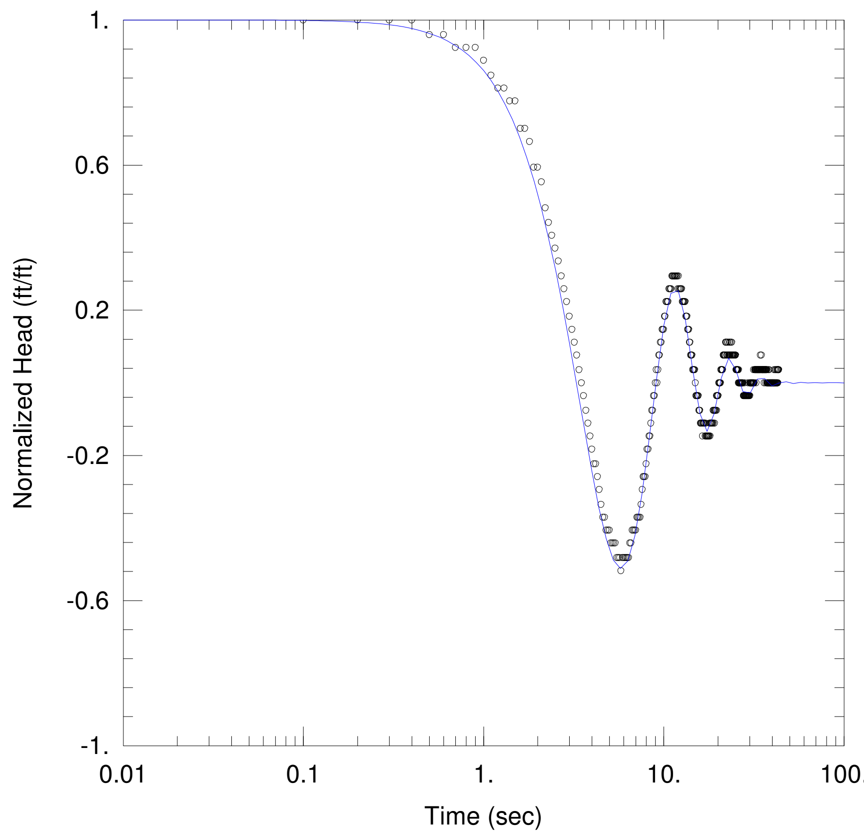
Static Water Column Height: 134.1 ft
Screen Length: 54.5 ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 24.03 ft/day
Kz/Kr = 0.1
Ss = 1.591E-6 ft^{-1}

Figure G2. Curve-match analysis for slug test 2C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 3B (134' - 180')

Data Set: D:\...\ST3b_secondpeak.aqt
Date: 05/13/14 Time: 17:31:49

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PT3)

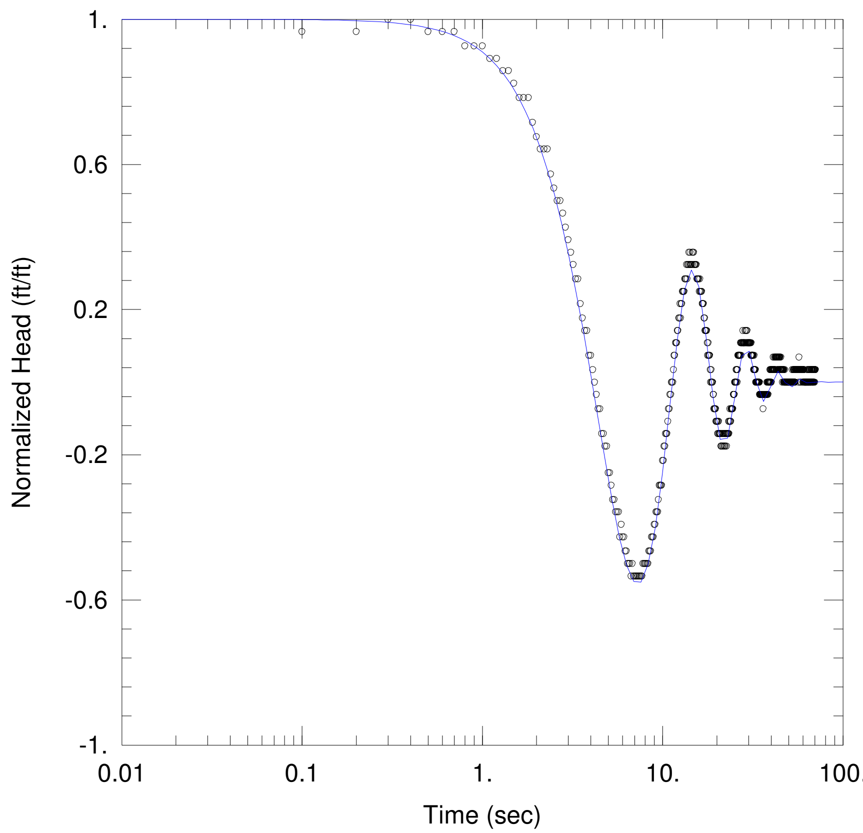
Initial Displacement: -0.197 ft Static Water Column Height: 174.1 ft
Total Well Penetration Depth: 125. ft Screen Length: 46. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

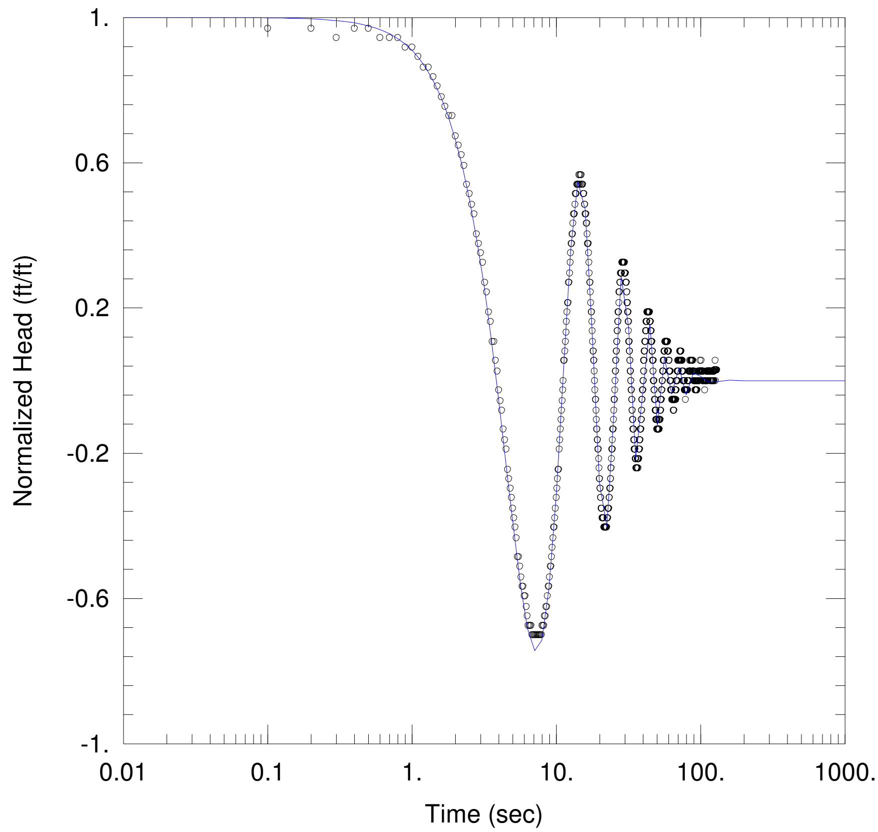
K = 44.45 ft/day Le = 104.3 ft

Figure G3. Curve-match analysis for slug test 3B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 4B (218' - 240')	
Data Set: D:\...\ST4b_secondpeak.aqt	
Date: 05/13/14	Time: 17:32:21
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 117	
Location: Lake Okahumpka	
Test Well: CH	
Test Date: 9/7/2006	
AQUIFER DATA	
Saturated Thickness: 302. ft	Anisotropy Ratio (Kz/Kr): 0.1
WELL DATA (PT4)	
Initial Displacement: -0.204 ft	Static Water Column Height: 234.4 ft
Total Well Penetration Depth: 185. ft	Screen Length: 22. ft
Casing Radius: 0.06751 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Butler
K = 78.81 ft/day	Le = 166.6 ft

Figure G4. Curve-match analysis for slug test 4B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 5C (243' - 280')

Data Set: D:\...\ST5c_secondpeak.aqt
Date: 05/13/14 Time: 17:33:25

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

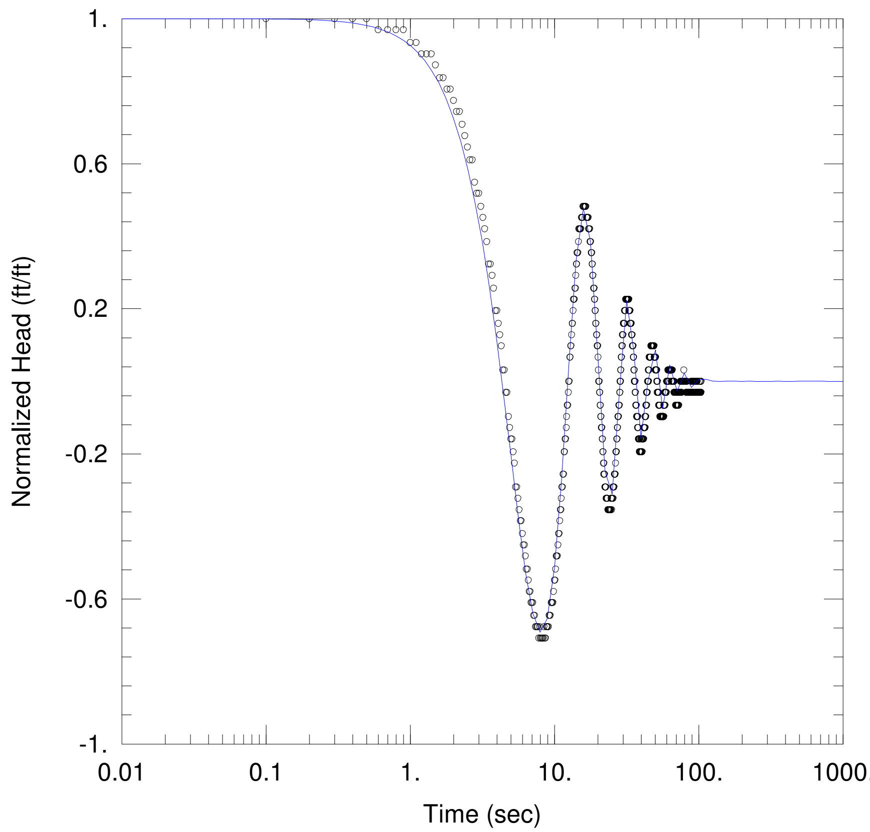
Initial Displacement: -0.27 ft Static Water Column Height: 274. ft
Total Well Penetration Depth: 225. ft Screen Length: 37. ft
Casing Radius: 0.06751 ft Well Radius: 0.125 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 123.1 ft/day Le = 170.6 ft

Figure G5. Curve-match analysis for slug test 5C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 6E (299' - 325')

Data Set: D:\...\ST6e_secondpeak.aqt
Date: 05/13/14 Time: 17:34:52

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

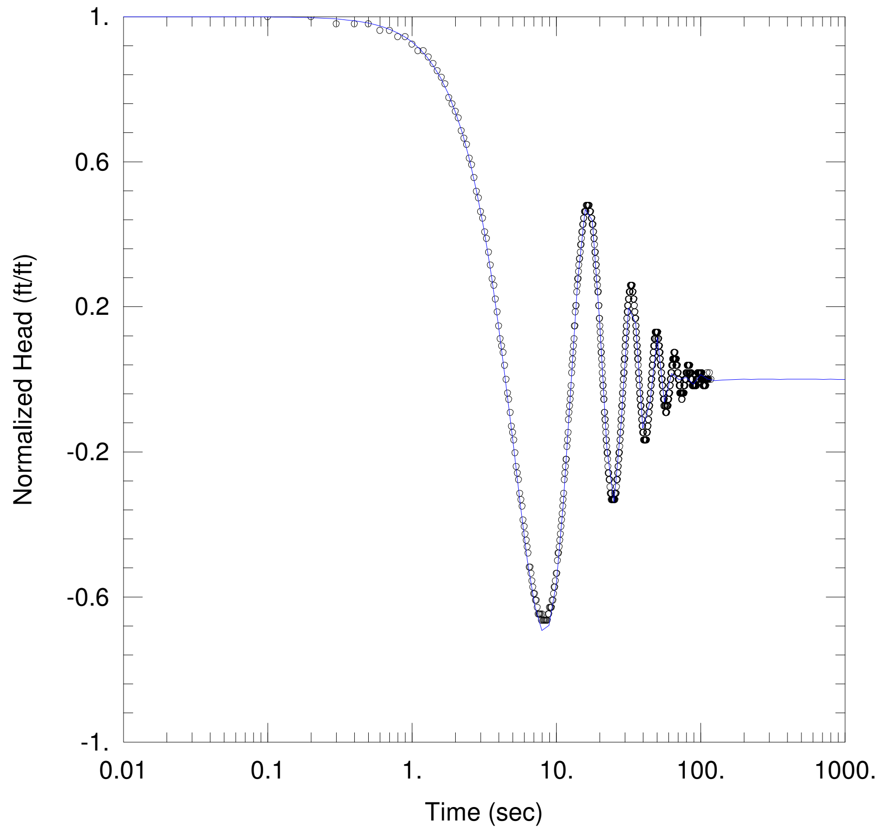
Initial Displacement: -0.226 ft Static Water Column Height: 319. ft
Total Well Penetration Depth: 270. ft Screen Length: 26. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 113.3 ft/day Le = 209. ft

Figure G6. Curve-match analysis for slug test 6E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 7E (329' - 380')

Data Set: D:\...\ST7e_secondpeak.aqt
Date: 05/13/14 Time: 17:35:15

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 302. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

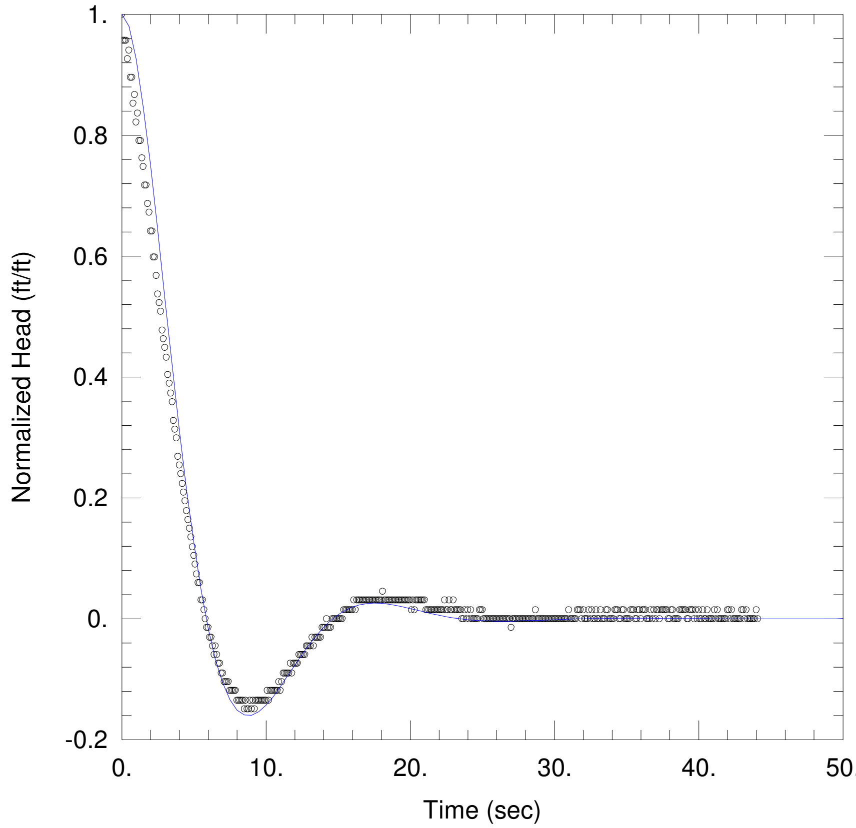
Initial Displacement: -0.394 ft Static Water Column Height: 374. ft
Total Well Penetration Depth: 325. ft Screen Length: 51. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 73. ft/day Le = 220.9 ft

Figure G7. Curve-match analysis for slug test 7E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 8C (382' - 420')

Data Set: D:\...\ST8c.aqt
Date: 05/13/14 Time: 17:36:26

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 257. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

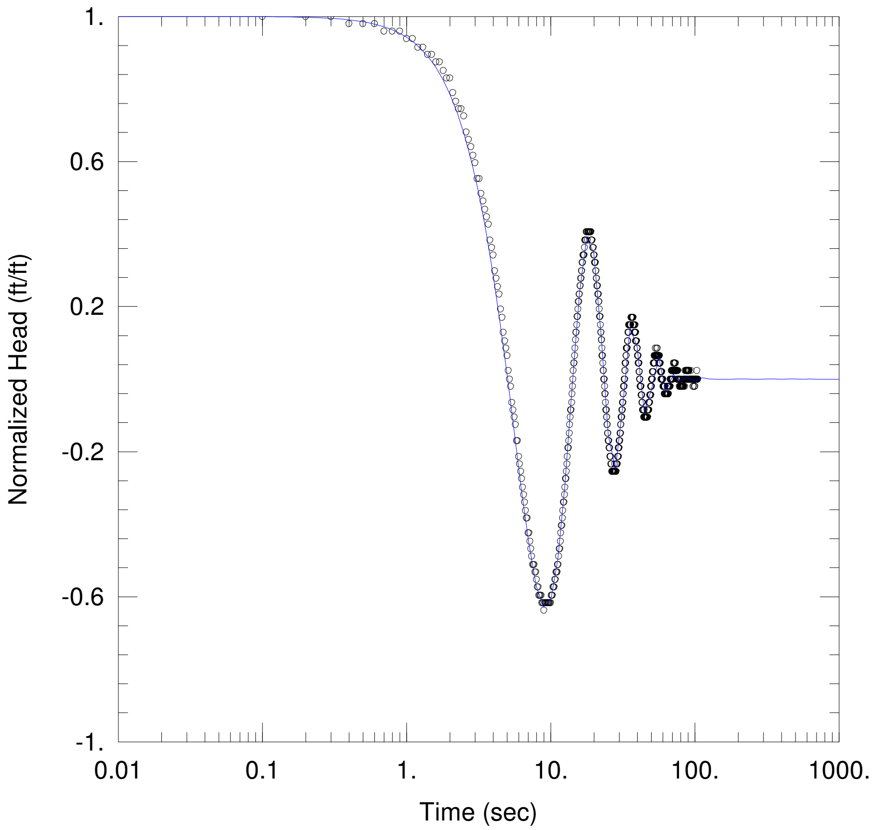
Initial Displacement: -0.488 ft Static Water Column Height: 414. ft
Total Well Penetration Depth: 63. ft Screen Length: 38. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 15.97 ft/day Le = 187.4 ft

Figure G8. Curve-match analysis for slug test 8C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 9B (422' - 465')

Data Set: D:\...\ST9b_secondpeak.aqt
Date: 05/13/14 Time: 17:37:06

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 257. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

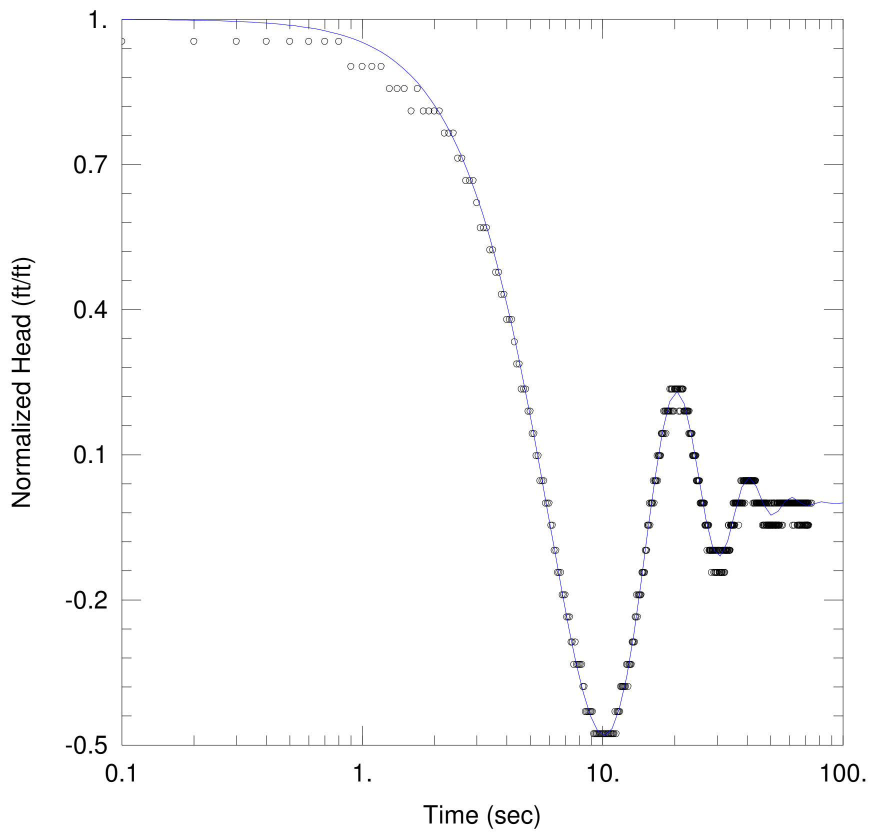
Initial Displacement: -0.342 ft Static Water Column Height: 458.9 ft
Total Well Penetration Depth: 108. ft Screen Length: 43. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 52.21 ft/day Le = 270.9 ft

Figure G9. Curve-match analysis for slug test 9B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 10E (505' - 540')

Data Set: D:\...\ST10e_secondpeak.aqt
Date: 05/13/14 Time: 17:39:08

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 257. ft Anisotropy Ratio (Kz/Kr): 0.1

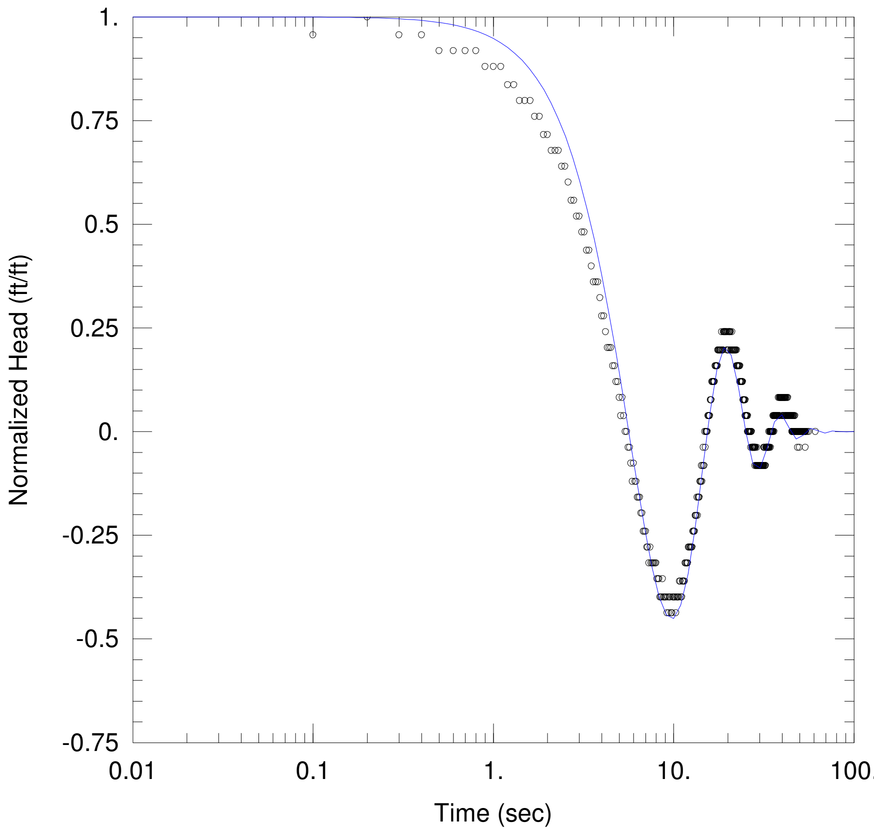
WELL DATA (CH)

Initial Displacement: -0.153 ft Static Water Column Height: 534.5 ft
Total Well Penetration Depth: 183. ft Screen Length: 35. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler
K = 32.79 ft/day Le = 319.7 ft

Figure G10. Curve-match analysis for slug test 10E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 11E (562' - 590')

Data Set: D:\...\ST11e_secondpeak.aqt
Date: 05/13/14 Time: 17:42:00

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 257. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

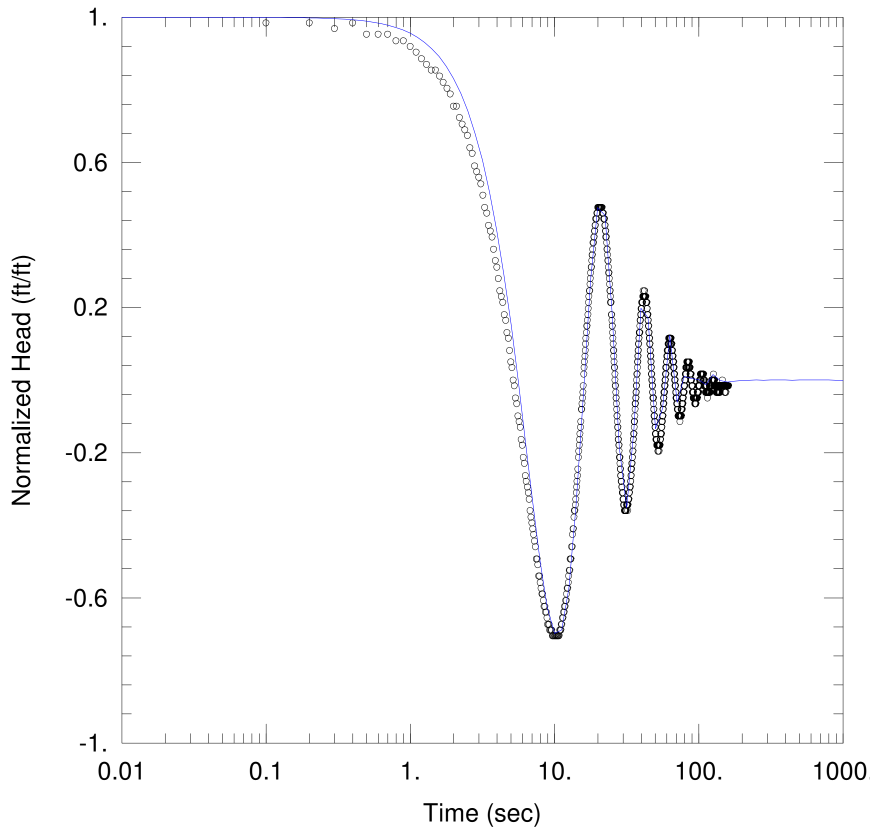
Initial Displacement: -0.183 ft Static Water Column Height: 585.2 ft
Total Well Penetration Depth: 233. ft Screen Length: 28. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 39.59 ft/day Le = 291.1 ft

Figure G11. Curve-match analysis for slug test 11E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 12B (614' - 640')

Data Set: D:\...\ST12b_secondpeak.aqt
Date: 05/13/14 Time: 17:42:33

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

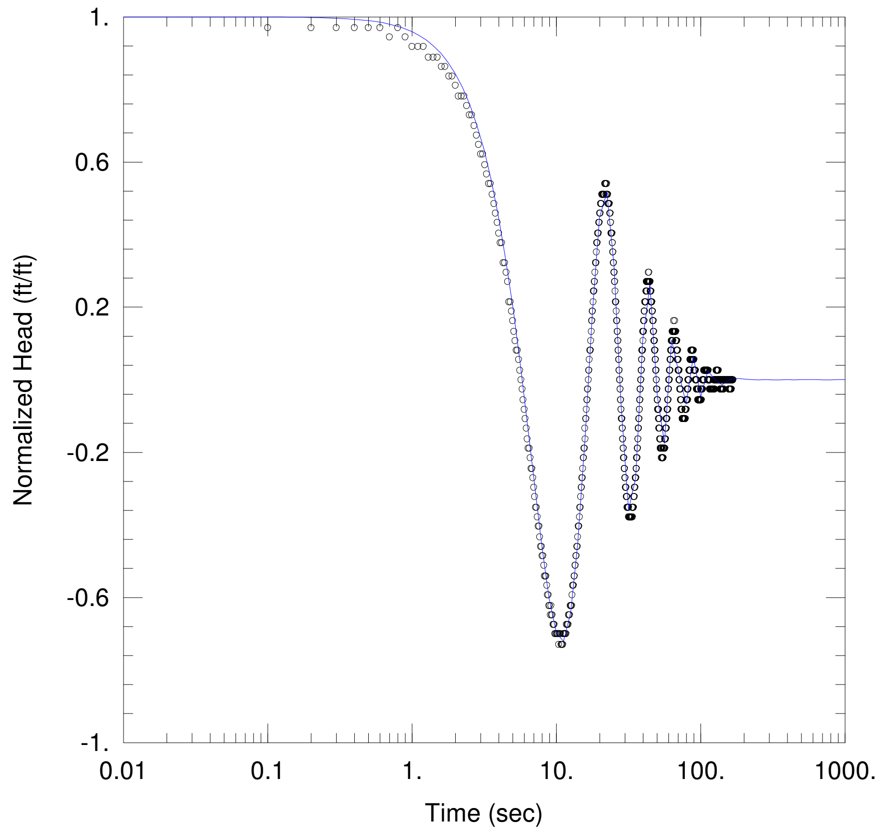
Initial Displacement: -0.444 ft Static Water Column Height: 638.4 ft
Total Well Penetration Depth: 26. ft Screen Length: 26. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 136.6 ft/day Le = 353.5 ft

Figure G12. Curve-match analysis for slug test 12B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 13B (652' - 690')

Data Set: D:\...\ST13b_thirdpeak.aqt
Date: 05/13/14 Time: 17:43:01

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

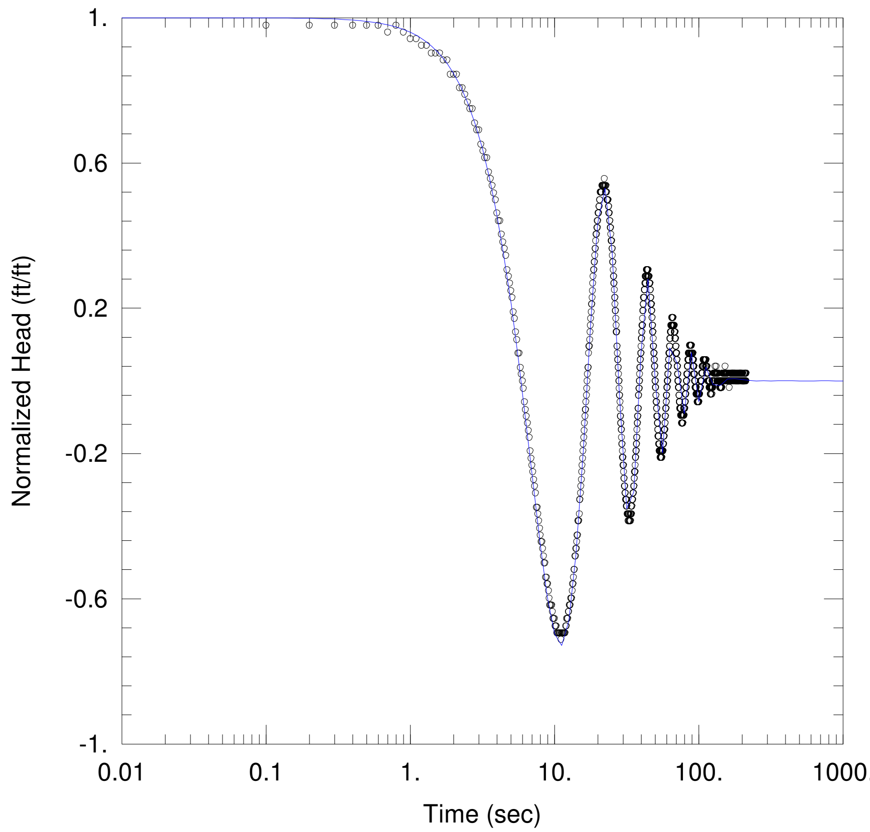
Initial Displacement: -0.27 ft Static Water Column Height: 688.5 ft
Total Well Penetration Depth: 76. ft Screen Length: 38. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

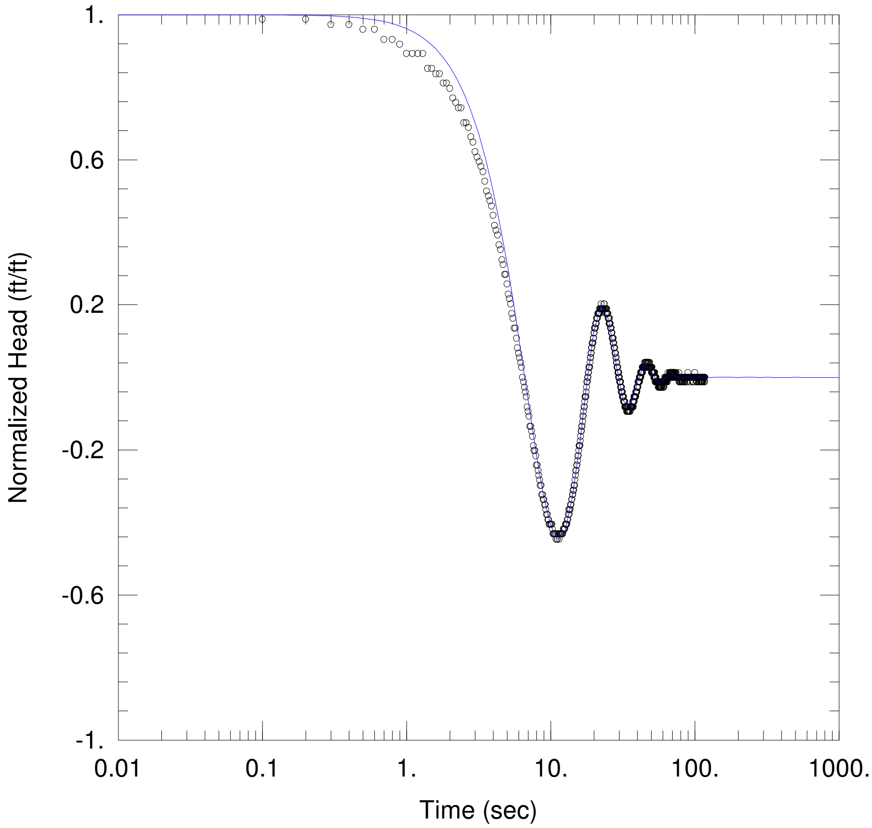
K = 98.04 ft/day Le = 383.7 ft

Figure G13. Curve-match analysis for slug test 13B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 14D (702' - 740')	
Data Set: D:\...\ST14d_thirdpeak.aqt	
Date: 05/13/14	Time: 17:43:31
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 117	
Location: Lake Okahumpka	
Test Well: CH	
Test Date: 9/7/2006	
AQUIFER DATA	
Saturated Thickness: 886. ft	Anisotropy Ratio (Kz/Kr): 0.1
WELL DATA (CH)	
Initial Displacement: -0.379 ft	Static Water Column Height: 738.5 ft
Total Well Penetration Depth: 126. ft	Screen Length: 38. ft
Casing Radius: 0.06751 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Butler
K = 111.7 ft/day	Le = 393.2 ft

Figure G14. Curve-match analysis for slug test 14D at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 15E (747' - 780')

Data Set: D:\...\ST15e.aqt
Date: 05/13/14 Time: 17:43:58

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

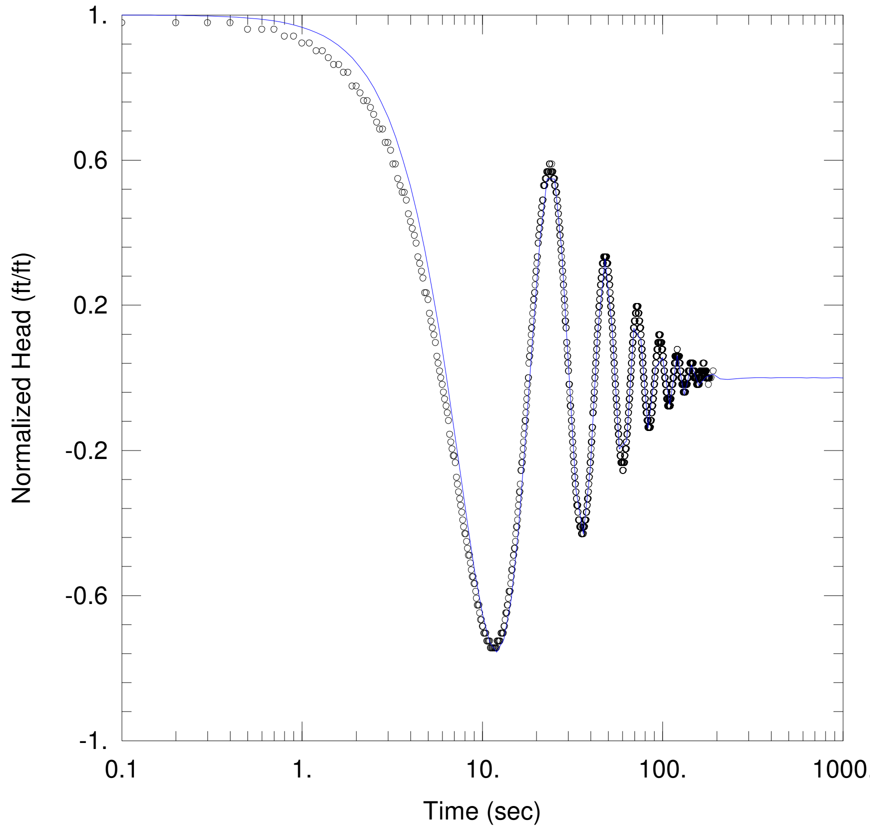
Initial Displacement: -0.54 ft
Total Well Penetration Depth: 166. ft
Casing Radius: 0.06751 ft
Static Water Column Height: 778.3 ft
Screen Length: 33. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 30.26 ft/day Le = 397.6 ft

Figure G15. Curve-match analysis for slug test 15E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 16C (793' - 830')

Data Set: D:\...\ST16c_secondpeak.aqt
Date: 05/13/14 Time: 17:44:27

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

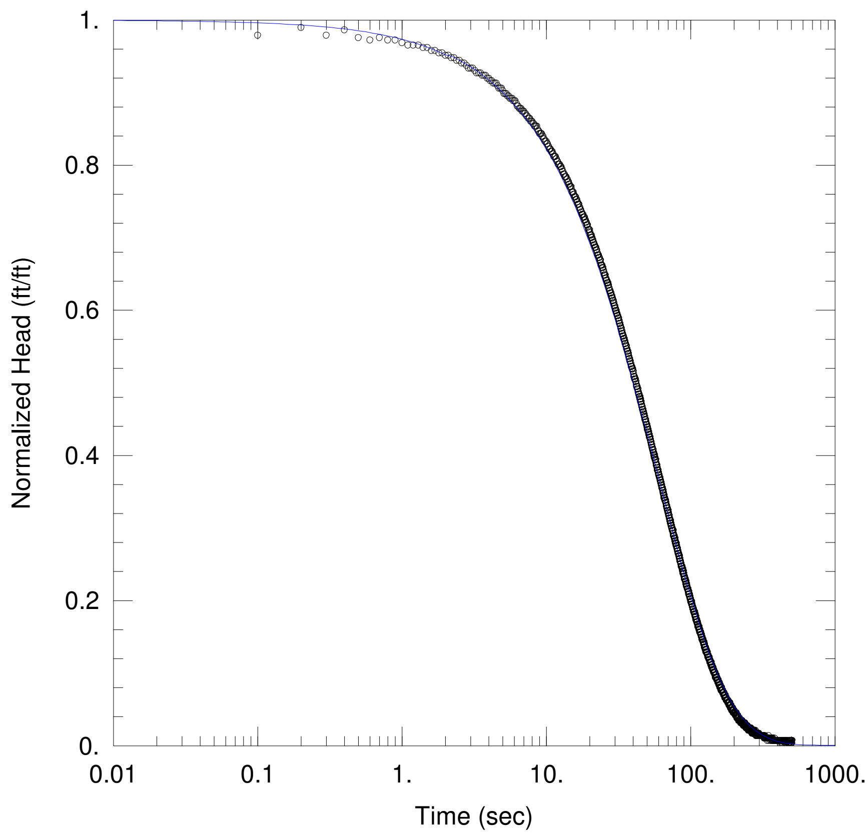
Initial Displacement: -0.372 ft Static Water Column Height: 829.2 ft
Total Well Penetration Depth: 216. ft Screen Length: 37. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 155. ft/day Le = 465.6 ft

Figure G16. Curve-match analysis for slug test 16C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 17A (817' - 830')

Data Set: D:\...\ST17a.aqt
Date: 05/13/14 Time: 17:44:54

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft

WELL DATA (CH)

Initial Displacement: -2.092 ft
Total Well Penetration Depth: 216. ft
Casing Radius: 0.06751 ft

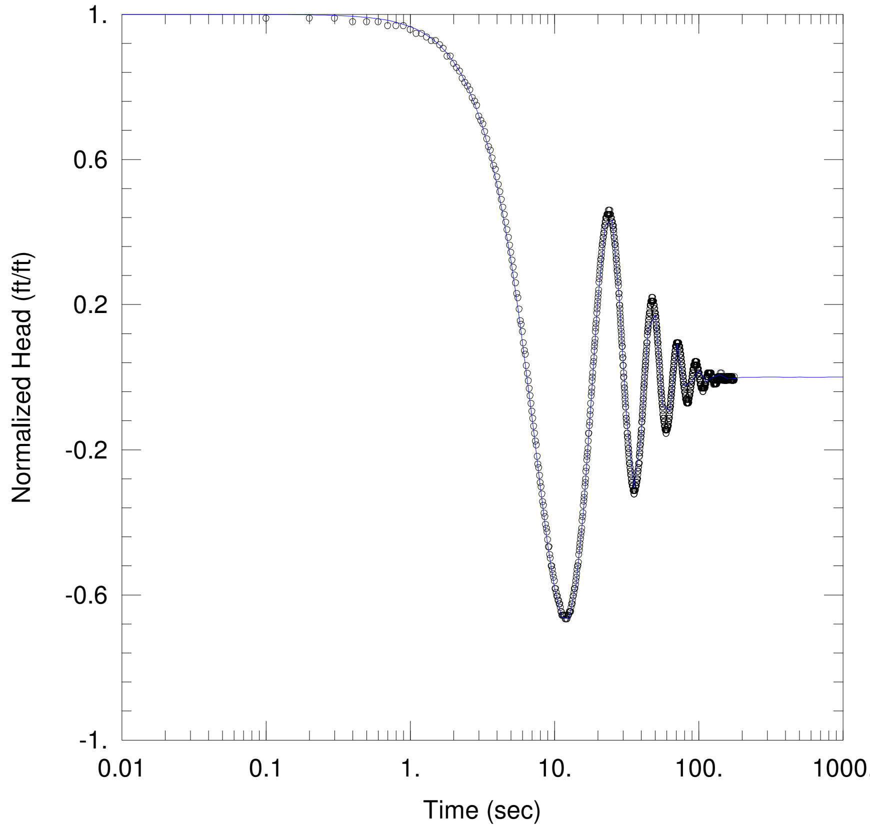
Static Water Column Height: 829.1 ft
Screen Length: 13. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 1.246 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}

Figure G17. Curve-match analysis for slug test 17A at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 18A (836' - 870')

Data Set: D:\...\ST18a_secondpeak.aqt
Date: 05/13/14 Time: 17:45:16

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

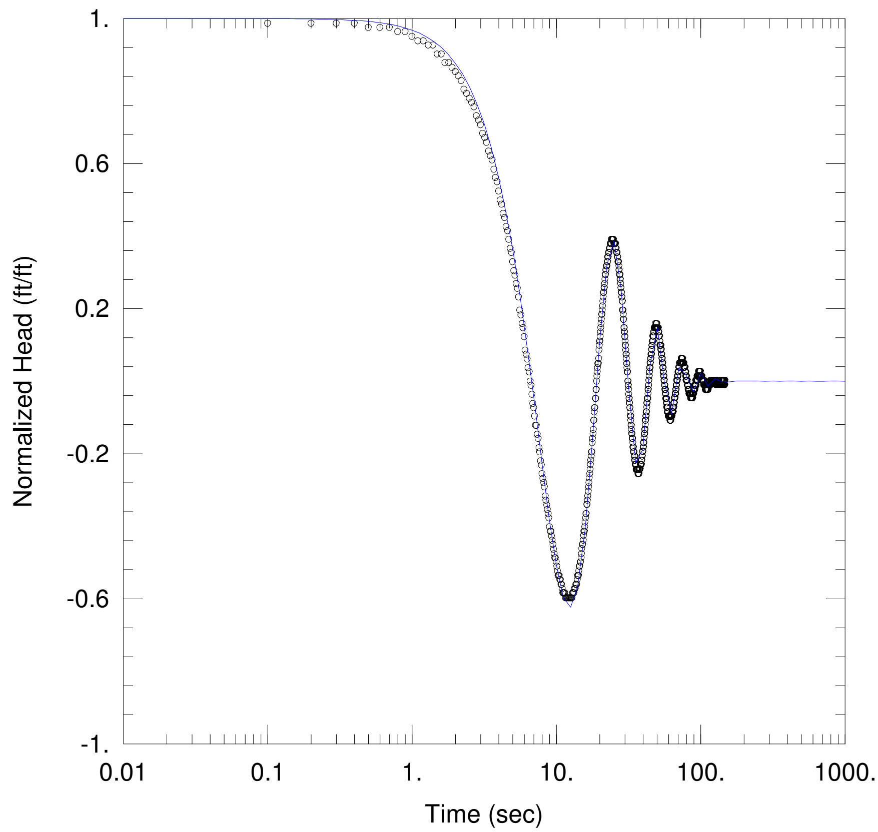
WELL DATA (CH)

Initial Displacement: -0.701 ft Static Water Column Height: 868.9 ft
Total Well Penetration Depth: 256. ft Screen Length: 34. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler
K = 82.04 ft/day Le = 459.2 ft

Figure G18. Curve-match analysis for slug test 18A at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 19A (878' - 910')

Data Set: D:\...\ST19a_secondpeak.aqt
Date: 05/13/14 Time: 17:45:39

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

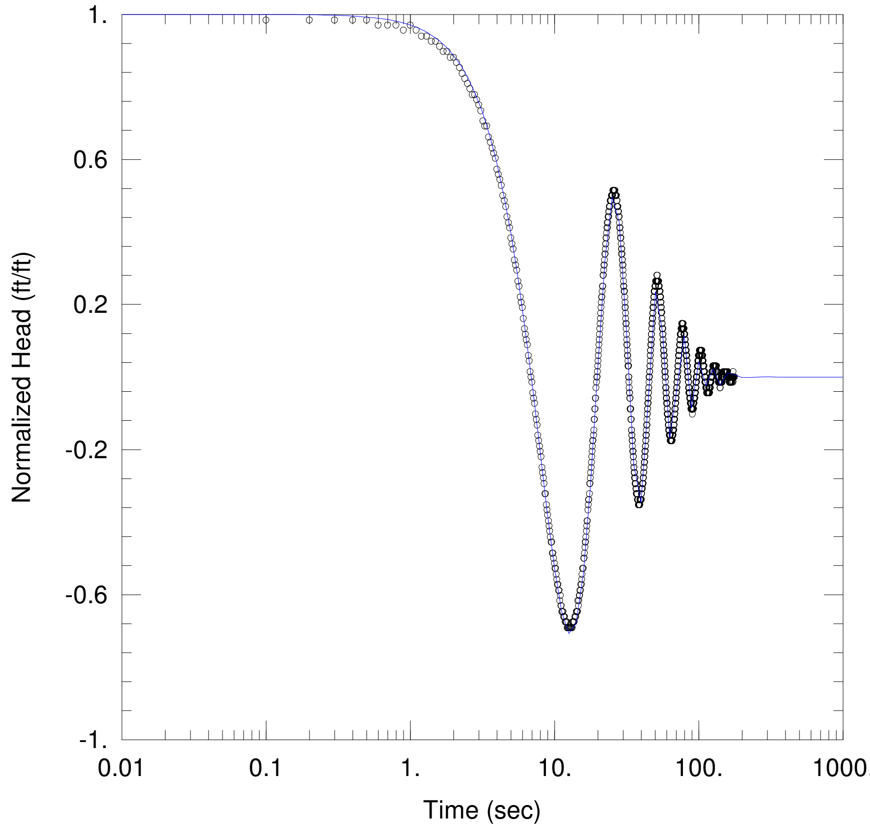
WELL DATA (CH)

Initial Displacement: -0.599 ft Static Water Column Height: 909.1 ft
Total Well Penetration Depth: 296. ft Screen Length: 32. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler
K = 60.92 ft/day Le = 485.6 ft

Figure G19. Curve-match analysis for slug test 19A at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 20B (912' - 950')

Data Set: D:\...\ST20b_secondpeak.aqt
Date: 05/13/14 Time: 17:45:59

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

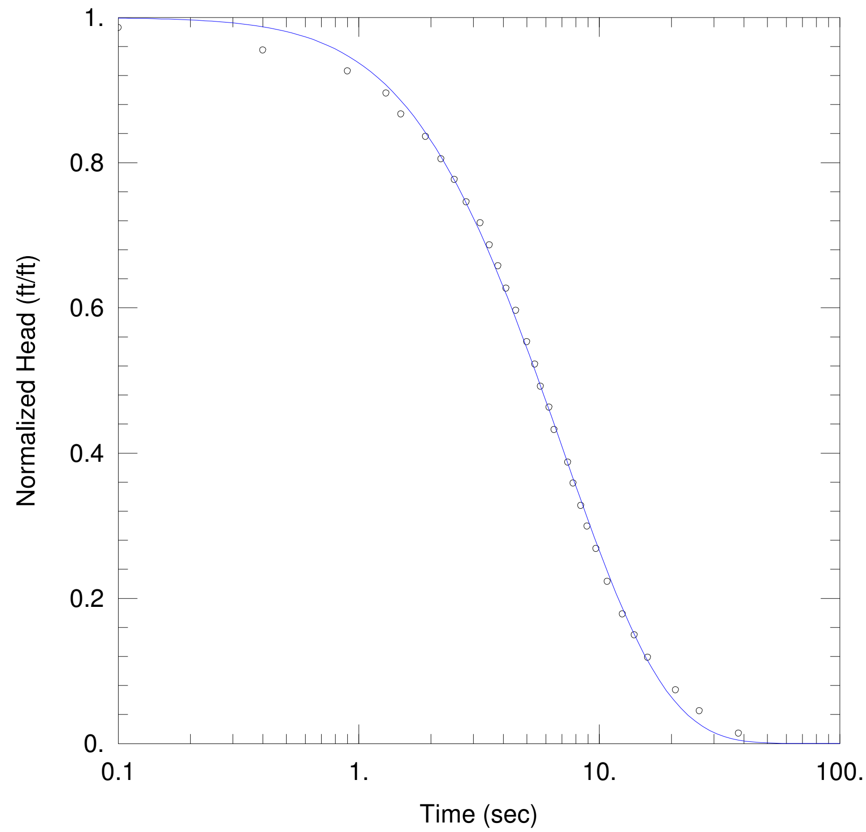
Initial Displacement: -0.496 ft Static Water Column Height: 949.8 ft
Total Well Penetration Depth: 336. ft Screen Length: 38. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

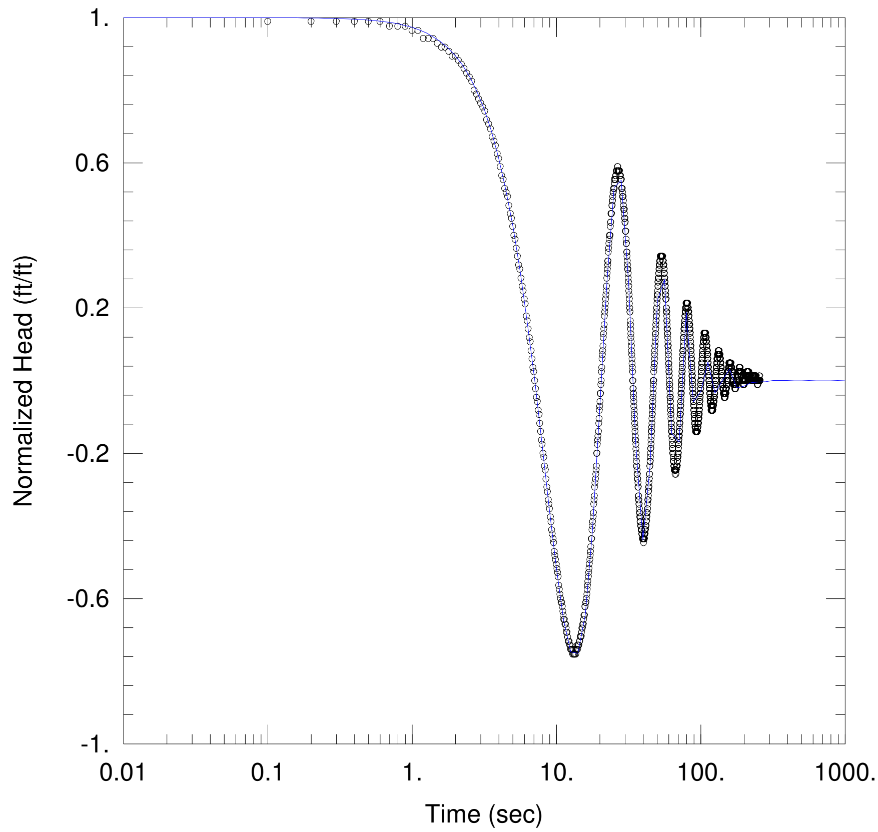
K = 90.61 ft/day Le = 537.8 ft

Figure G20. Curve-match analysis for slug test 20B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 21C (969' - 990')	
Data Set: D:\...\ST21c.aqt	
Date: 05/13/14	Time: 17:46:33
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 117	
Location: Lake Okahumpka	
Test Well: CH	
Test Date: 9/7/2006	
AQUIFER DATA	
Saturated Thickness: 886. ft	Anisotropy Ratio (Kz/Kr): 0.1
WELL DATA (CH)	
Initial Displacement: -0.488 ft	Static Water Column Height: 990.1 ft
Total Well Penetration Depth: 376. ft	Screen Length: 21. ft
Casing Radius: 0.06751 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Butler
K = 8.169 ft/day	Le = 161.8 ft

Figure G21. Curve-match analysis for slug test 21C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 22B (988' - 1,030')

Data Set: D:\...\ST22b_secondpeak.aqt
Date: 05/13/14 Time: 17:46:52

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

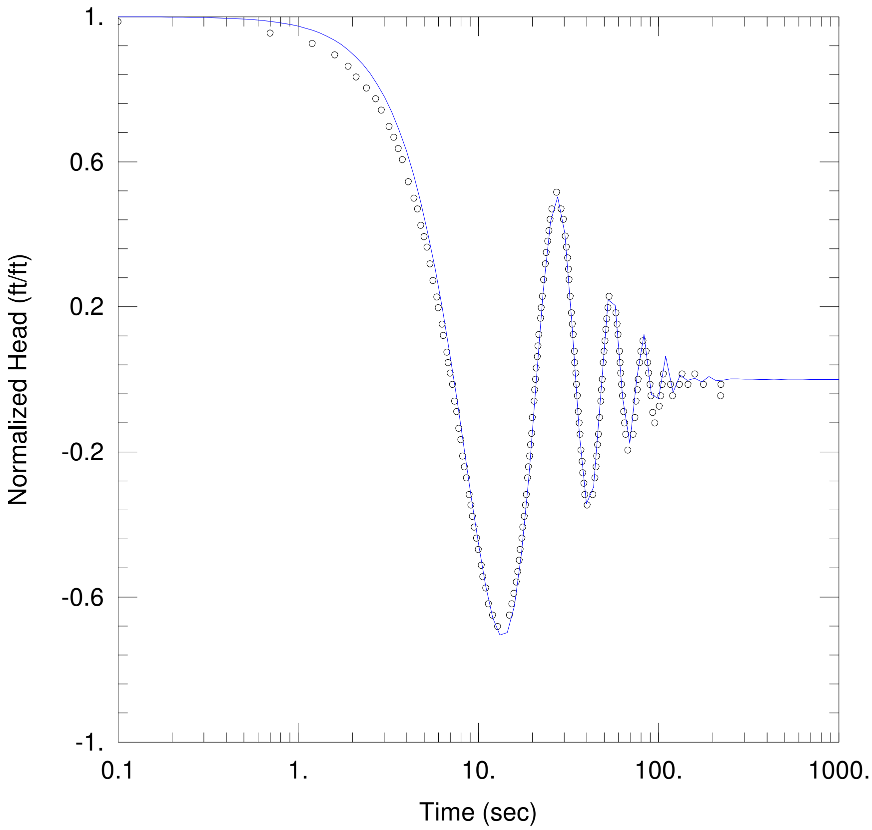
Initial Displacement: -0.62 ft
Total Well Penetration Depth: 416. ft
Casing Radius: 0.06751 ft
Static Water Column Height: 1029.8 ft
Screen Length: 42. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 154.9 ft/day Le = 582.4 ft

Figure G22. Curve-match analysis for slug test 22B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 23B (1,031' - 1,070')

Data Set: D:\...\ST23b_secondpeak.aqt
Date: 05/13/14 Time: 17:47:15

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

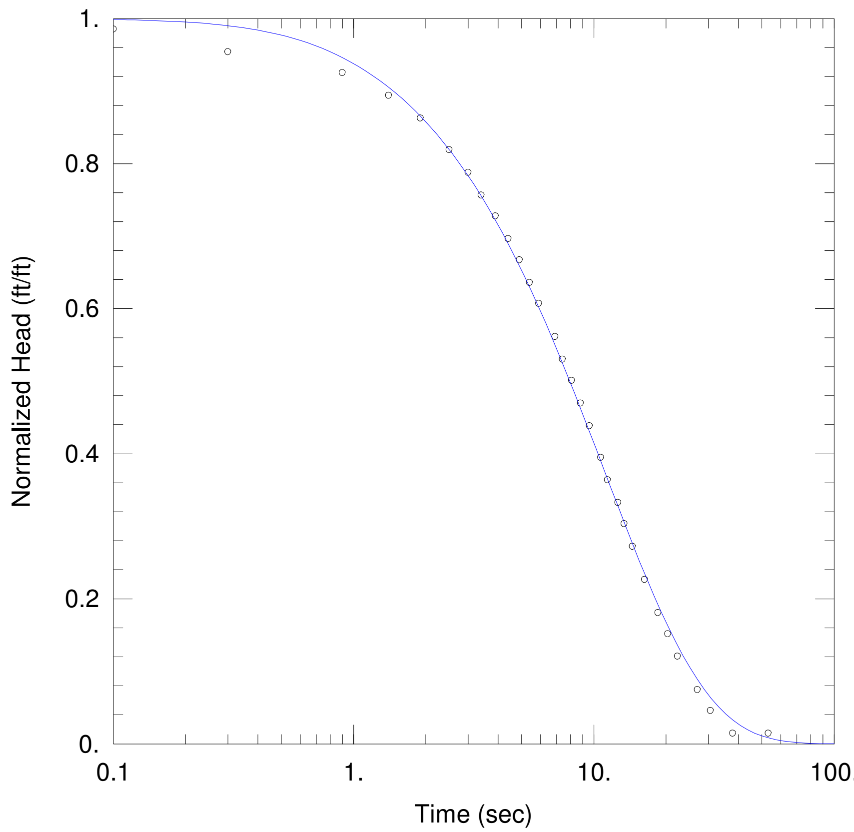
Initial Displacement: -0.481 ft Static Water Column Height: 1069.9 ft
Total Well Penetration Depth: 456. ft Screen Length: 39. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 88.51 ft/day Le = 602.6 ft

Figure G23. Curve-match analysis for slug test 23B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 24C (1,072' - 1,110')

Data Set: D:\...\ST24c_butler.aqt
Date: 05/13/14 Time: 17:47:35

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

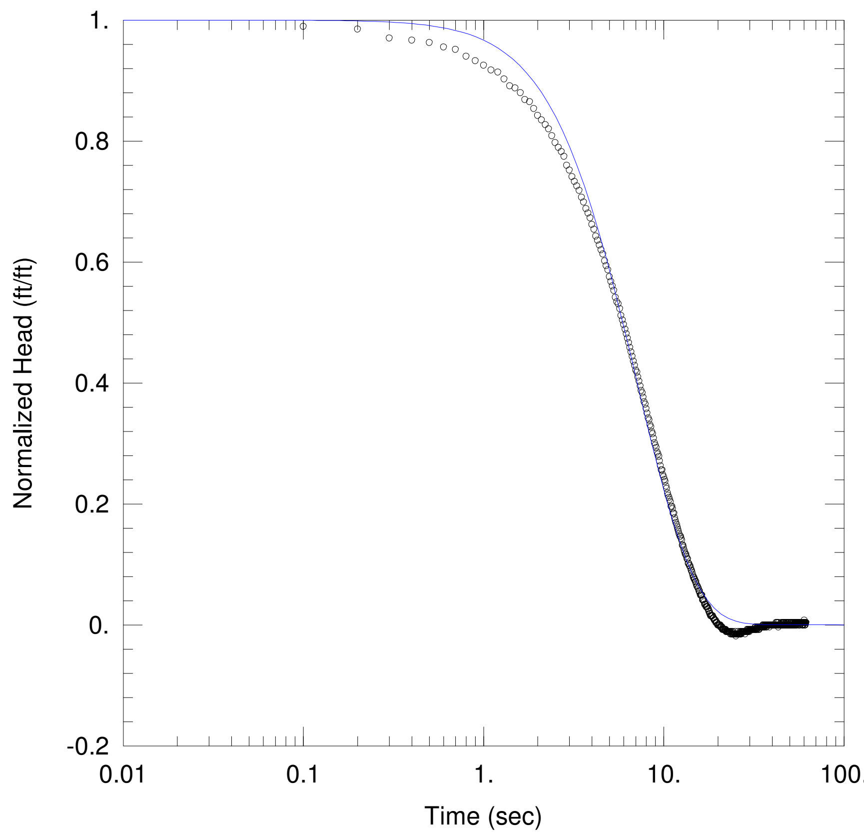
Initial Displacement: -0.481 ft Static Water Column Height: 1109.4 ft
Total Well Penetration Depth: 496. ft Screen Length: 38. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 3.304 ft/day Le = 107.1 ft

Figure G24. Curve-match analysis for slug test 24C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 25D (1,101' - 1,140')

Data Set: D:\...\ST25d.aqt
Date: 05/13/14 Time: 17:49:13

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

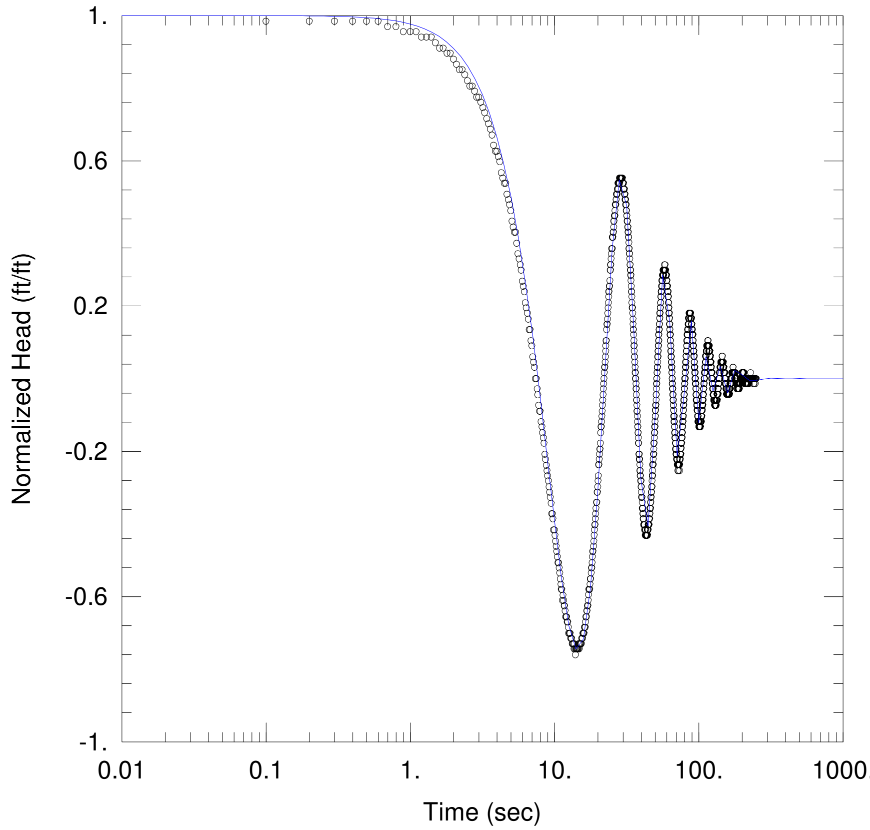
Initial Displacement: -1.938 ft Static Water Column Height: 1139.3 ft
Total Well Penetration Depth: 526. ft Screen Length: 39. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 5.377 ft/day Le = 402.9 ft

Figure G25. Curve-match analysis for slug test 25D at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 26D (1,168' - 1,210')

Data Set: D:\...\ST26d_thirdpeak.aqt
Date: 05/13/14 Time: 17:49:40

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

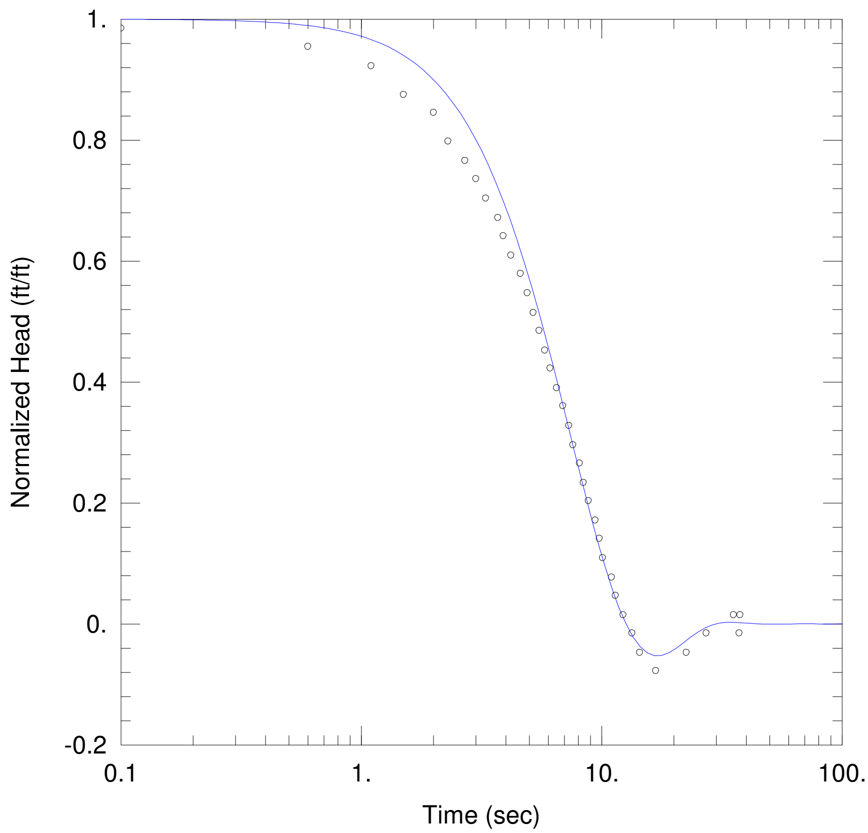
Initial Displacement: -0.489 ft Static Water Column Height: 1209.3 ft
Total Well Penetration Depth: 596. ft Screen Length: 42. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 132.6 ft/day Le = 682.2 ft

Figure G26. Curve-match analysis for slug test 26D at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 27C (1,211' - 1,250')

Data Set: D:\...\ST27c.aqt
Date: 05/13/14 Time: 17:50:31

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

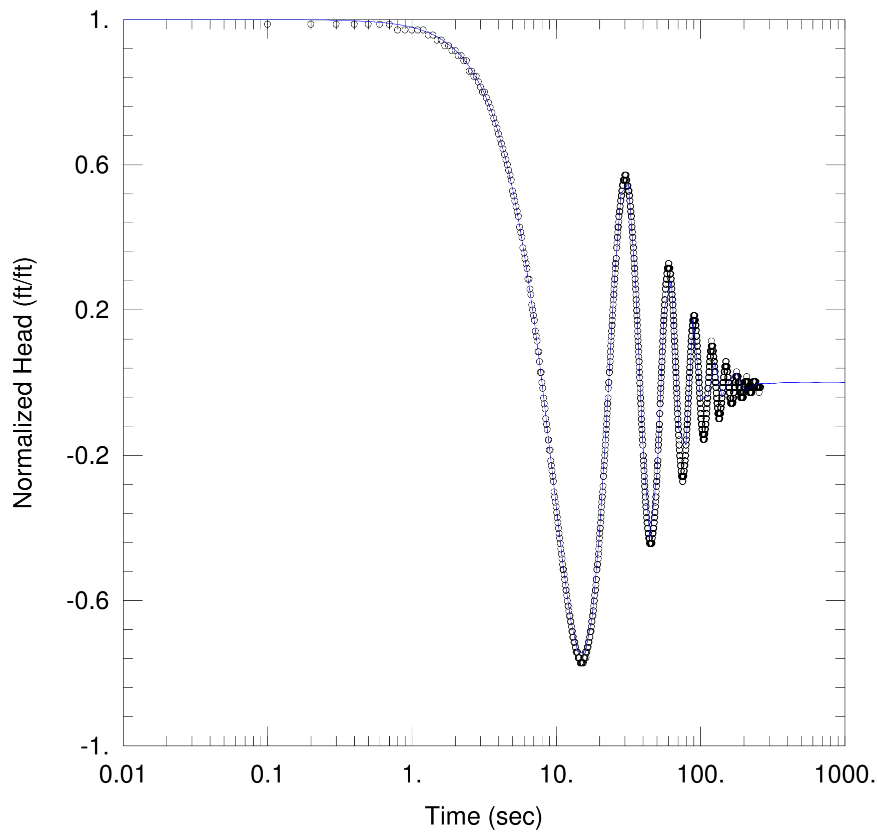
Initial Displacement: -0.466 ft Static Water Column Height: 1249.1 ft
Total Well Penetration Depth: 636. ft Screen Length: 39. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

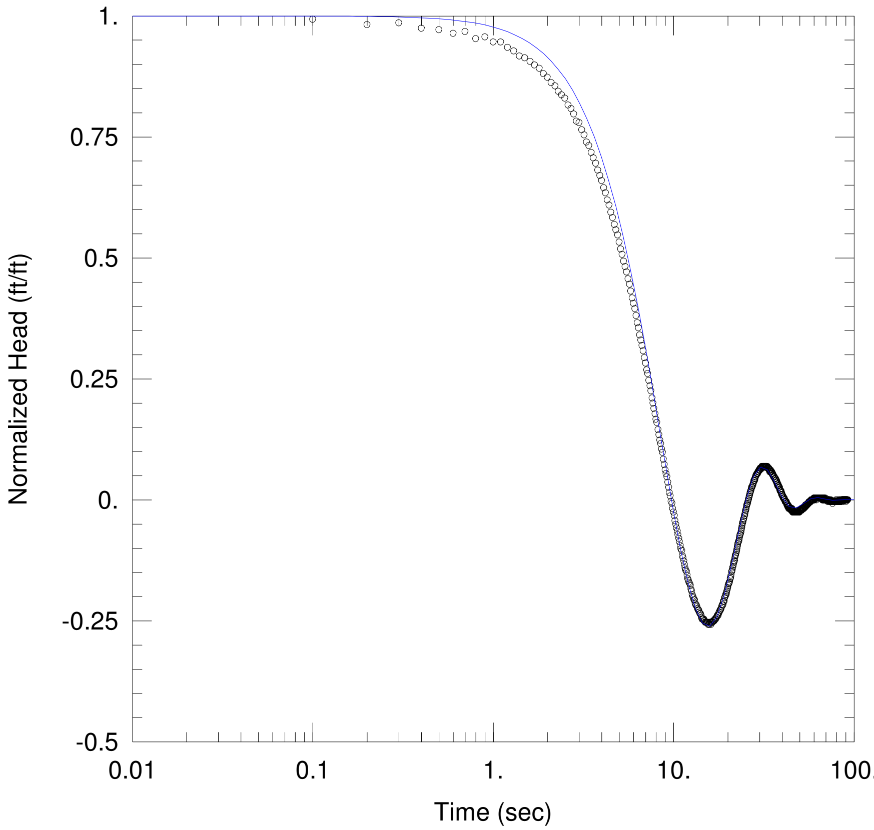
K = 7.27 ft/day Le = 506.3 ft

Figure G27. Curve-match analysis for slug test 27C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 28A (1,251' - 1,285')	
Data Set: D:\...\ST28a_thirdpeak.aqt	
Date: 05/13/14	Time: 17:50:58
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 117	
Location: Lake Okahumpka	
Test Well: CH	
Test Date: 9/7/2006	
AQUIFER DATA	
Saturated Thickness: 886. ft	Anisotropy Ratio (Kz/Kr): 0.1
WELL DATA (CH)	
Initial Displacement: -0.51 ft	Static Water Column Height: 1284.2 ft
Total Well Penetration Depth: 671. ft	Screen Length: 34. ft
Casing Radius: 0.06751 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Butler
K = 212.4 ft/day	Le = 737.5 ft

Figure G28. Curve-match analysis for slug test 28A at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 29A (1,286' - 1,325')

Data Set: D:\...\ST29a.aqt
Date: 05/13/14
Time: 17:52:13

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

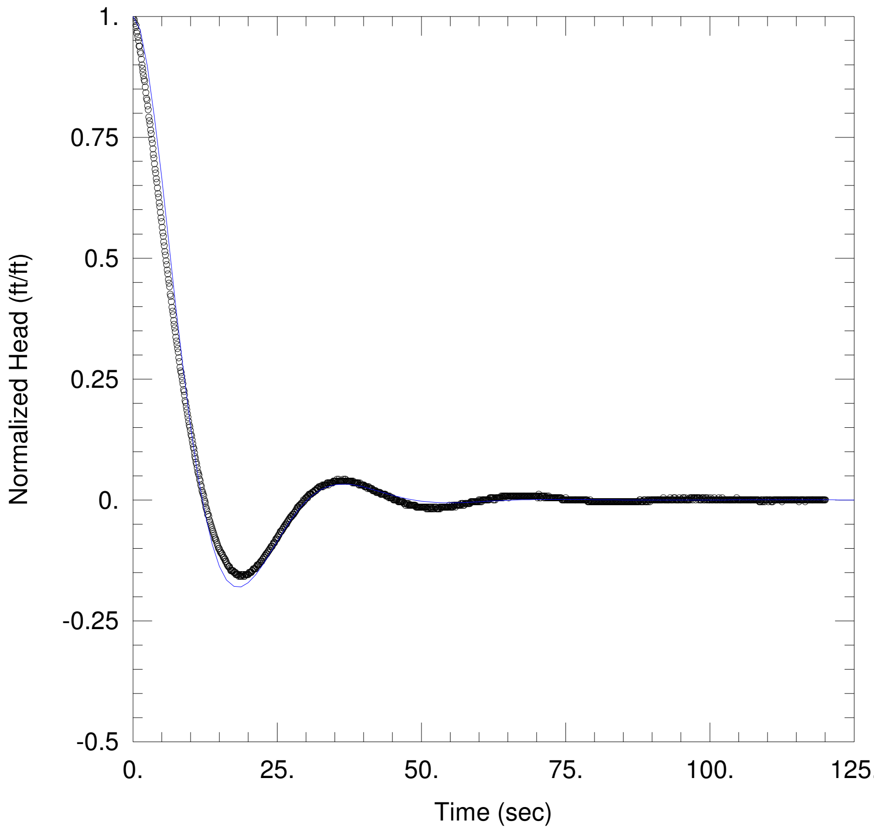
Initial Displacement: -2.011 ft
Static Water Column Height: 1324.1 ft
Total Well Penetration Depth: 711. ft
Screen Length: 39. ft
Casing Radius: 0.06751 ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 12.08 ft/day
Le = 662. ft

Figure G29. Curve-match analysis for slug test 29A at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 30E (1,335.5' - 1,365')

Data Set: D:\...\ST30e.aqt
Date: 05/13/14 Time: 17:53:23

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH
Test Date: 9/7/2006

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

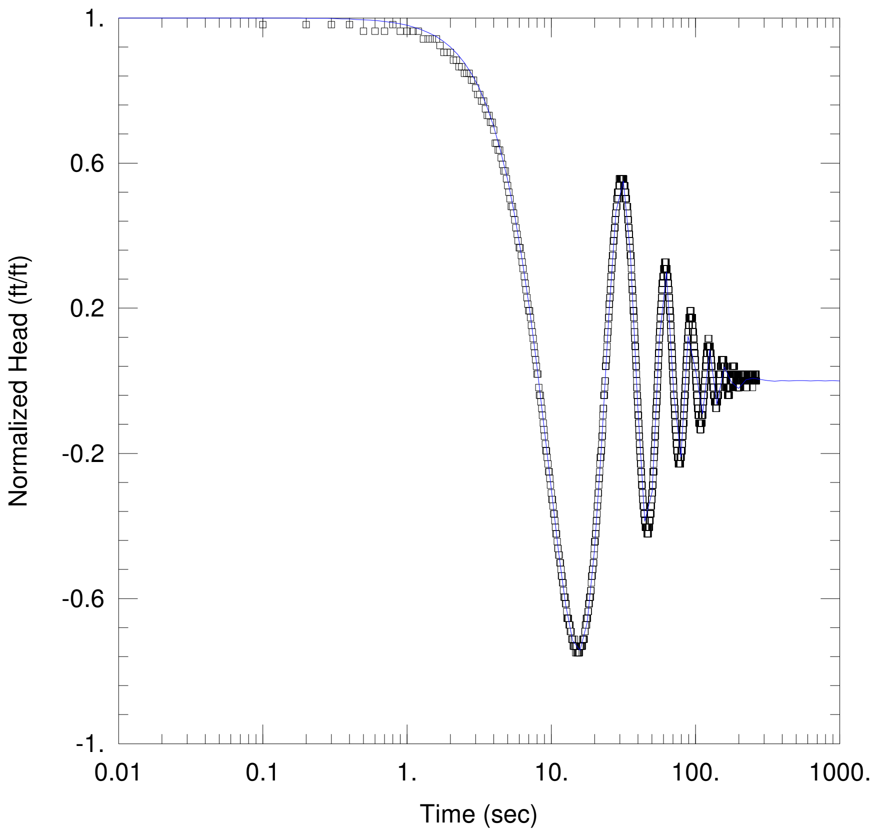
Initial Displacement: -1.888 ft
Total Well Penetration Depth: 751. ft
Casing Radius: 0.0675 ft
Static Water Column Height: 1364.1 ft
Screen Length: 29.5 ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 10.57 ft/day Le = 837. ft

Figure G30. Curve-match analysis for slug test 30E at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 31C (1,356' - 1,405')

Data Set: D:\...\ST31c_secondpeak.aqt
Date: 05/13/14 Time: 17:53:51

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: Core Hole

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

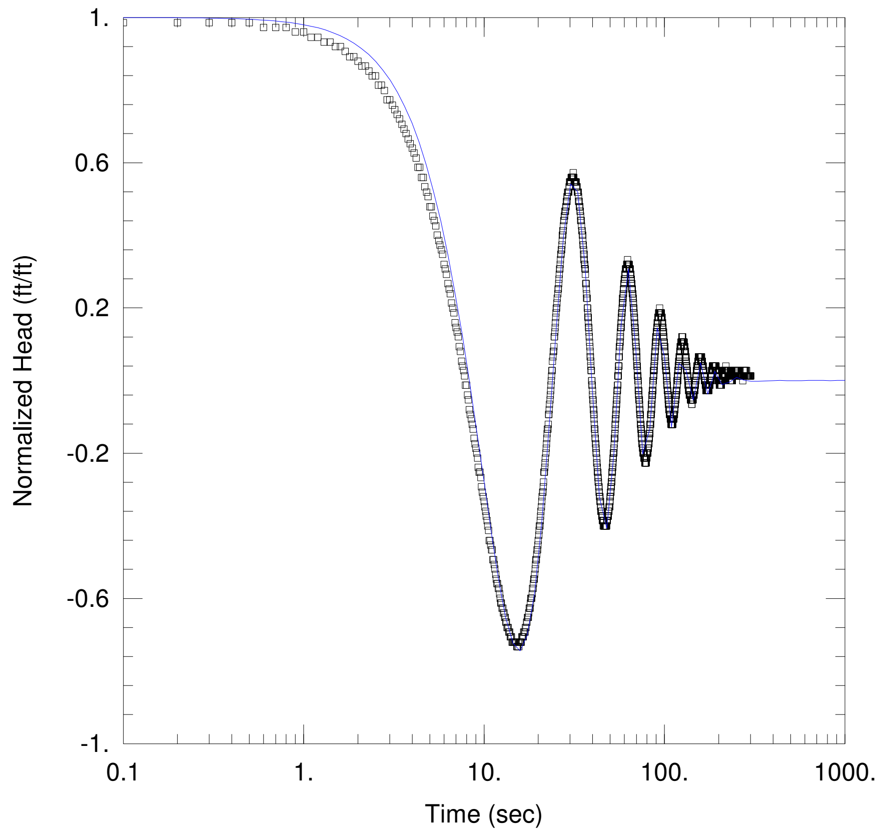
WELL DATA (Core Hole)

Initial Displacement: -0.379 ft Static Water Column Height: 1403.5 ft
Total Well Penetration Depth: 791. ft Screen Length: 49. ft
Casing Radius: 0.0675 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler
K = 135. ft/day Le = 773.4 ft

Figure G31. Curve-match analysis for slug test 31C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 32B (1,395' - 1,445')

Data Set: D:\...\ST32b_secondpeak.aqt
Date: 05/13/14 Time: 17:54:35

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

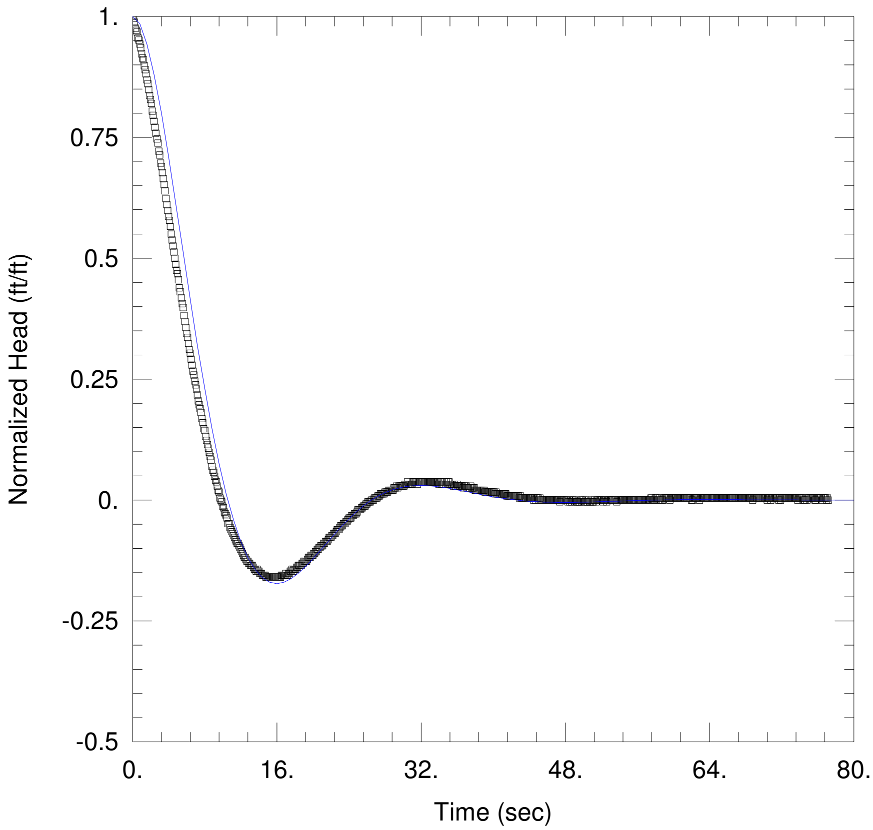
Initial Displacement: -0.547 ft Static Water Column Height: 1443.5 ft
Total Well Penetration Depth: 831. ft Screen Length: 50. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 139.1 ft/day Le = 792.2 ft

Figure G32. Curve-match analysis for slug test 32B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 33D (1,454' - 1,500')

Data Set: D:\...\ST33d.aqt
Date: 05/13/14 Time: 17:56:05

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 117
Location: Lake Okahumpka
Test Well: CH

AQUIFER DATA

Saturated Thickness: 886. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH)

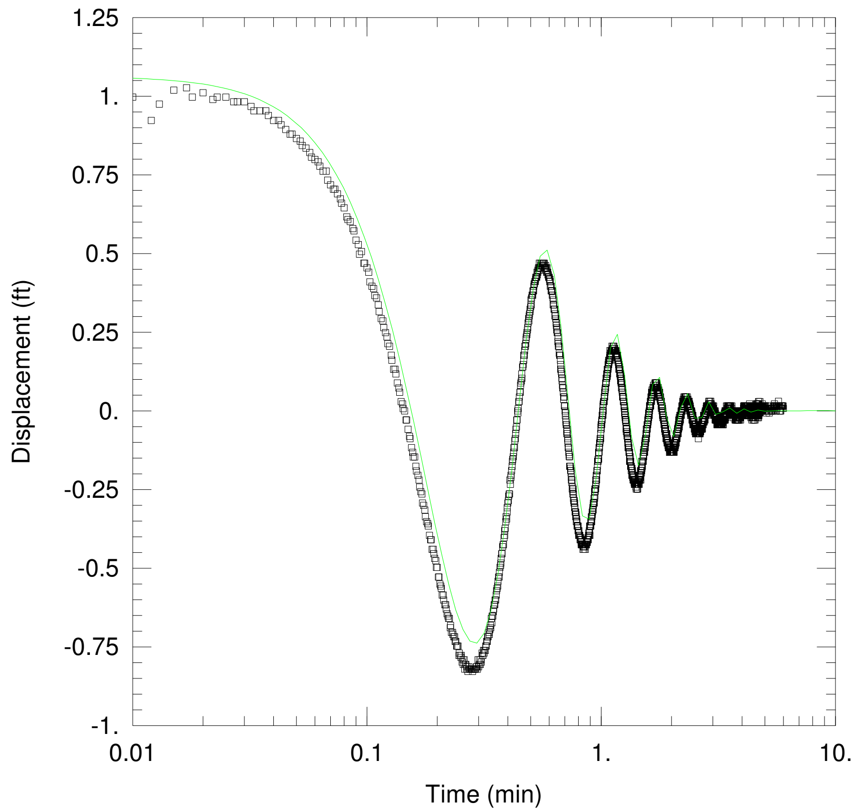
Initial Displacement: -1.778 ft Static Water Column Height: 1497.3 ft
Total Well Penetration Depth: 886. ft Screen Length: 46. ft
Casing Radius: 0.06751 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 9.278 ft/day Le = 632.4 ft

Figure G33. Curve-match analysis for slug test 33D at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 34B (1537'-1577')

Data Set: D:\...\R117PT34b.aqt
Date: 05/13/14
Time: 17:56:52

PROJECT INFORMATION

Company: SWFWMD
Client: Jim Clayton
Project: ROMP 117
Location: Lake Okahumpka
Test Well: Corehole 2
Test Date: 11/4/2008

AQUIFER DATA

Saturated Thickness: 1423. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH 2)

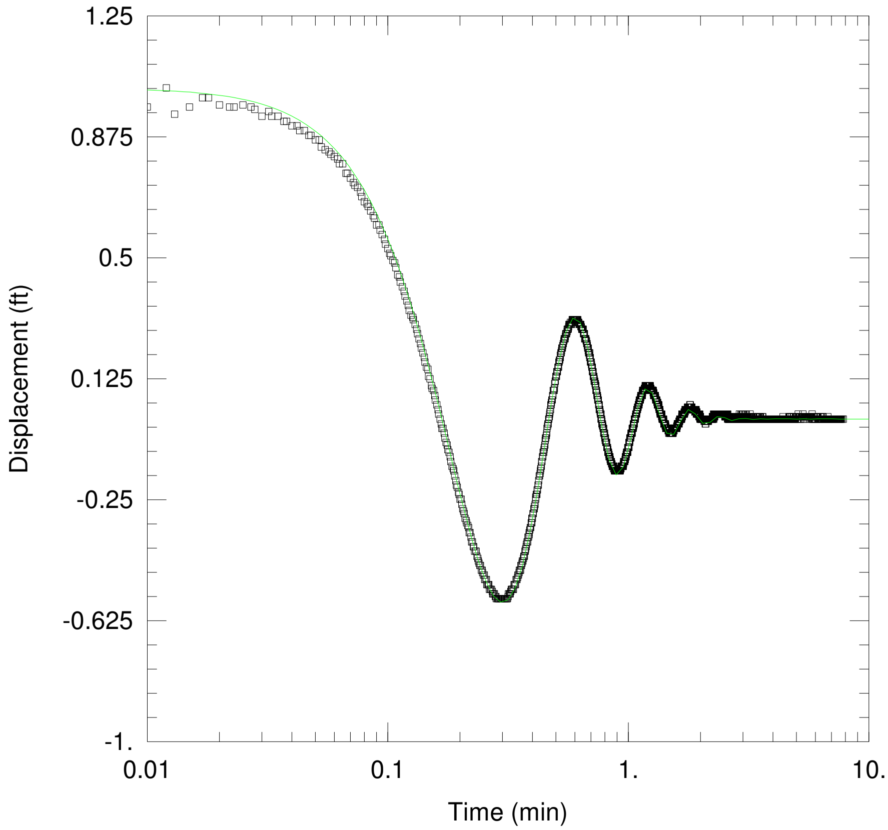
Initial Displacement: 1.063 ft
Total Well Penetration Depth: 963. ft
Casing Radius: 0.09896 ft
Static Water Column Height: 1578.5 ft
Screen Length: 40. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 97.83 ft/day
Le = 963.9 ft

Figure G34. Curve-match analysis for slug test 34B at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 35C (1761'-1797')

Data Set: D:\...\R117PT35c.aqt
Date: 05/13/14 Time: 17:57:31

PROJECT INFORMATION

Company: SWFWMD
Client: Jim Clayton
Project: ROMP 117
Location: Lake Okahumpka
Test Well: Corehole 2
Test Date: 12/15/2008

AQUIFER DATA

Saturated Thickness: 1423. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH 2)

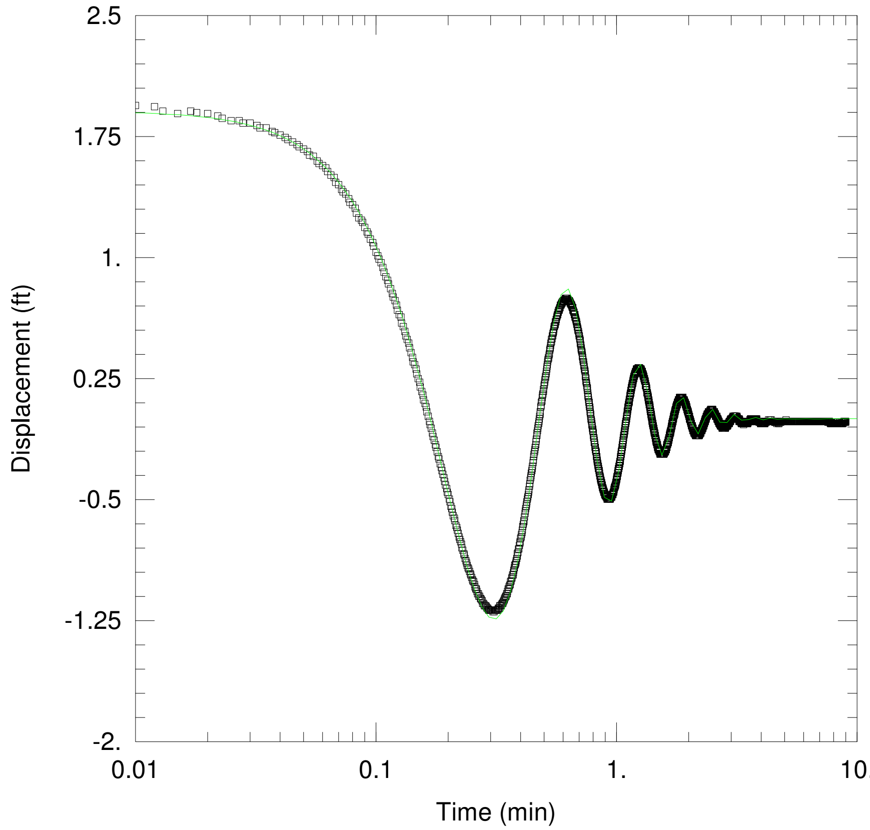
Initial Displacement: 1.026 ft Static Water Column Height: 1798.7 ft
Total Well Penetration Depth: 1183. ft Screen Length: 36. ft
Casing Radius: 0.09896 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 53.29 ft/day Le = 1022. ft

Figure G35. Curve-match analysis for slug test 35C at the ROMP 117 well site in Northeast Sumter County, Florida.



SLUG TEST 36A (1898'-1947')

Data Set: D:\...\R117PT36a.aqt
Date: 05/13/14 Time: 17:58:03

PROJECT INFORMATION

Company: SWFWMD
Client: Jim Clayton
Project: ROMP 117
Location: Lake Okahumpka
Test Well: Corehole 2
Test Date: 2/16/2009

AQUIFER DATA

Saturated Thickness: 1423. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (CH 2)

Initial Displacement: 1.906 ft
Total Well Penetration Depth: 1333. ft
Casing Radius: 0.09896 ft

Static Water Column Height: 1944.6 ft
Screen Length: 49. ft
Well Radius: 0.1263 ft

SOLUTION

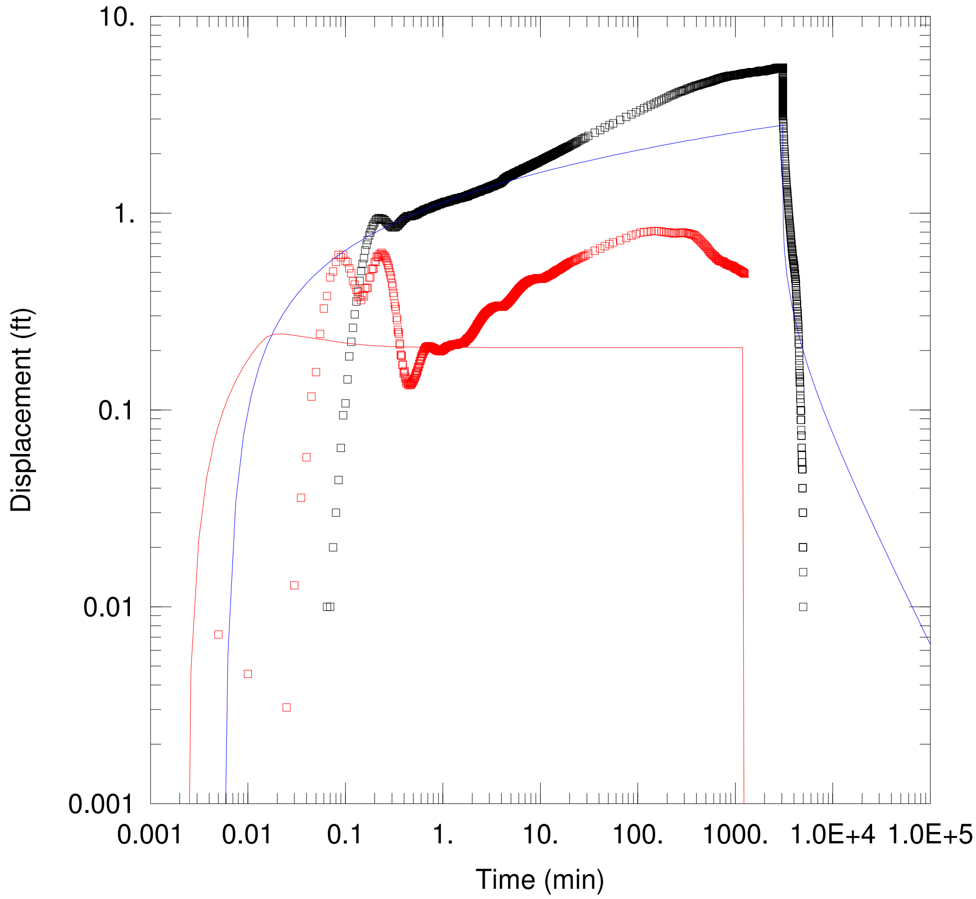
Aquifer Model: Confined Solution Method: Butler

K = 64.1 ft/day Le = 1105.6 ft

Figure G36. Curve-match analysis for slug test 36A at the ROMP 117 well site in Northeast Sumter County, Florida.

Page intentionally blank

Appendix H. Curve-match Analyses of Aquifer Performance Tests Performed at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida



ROMP 117, UFA APT

Data Set: D:\MyFiles 2\ROMP 117\117 apt\UFA APT\R117_UFA_LeoDD+REC.aqt
Date: 05/20/14 Time: 08:07:49

PROJECT INFORMATION

Company: SWFWMD
Client: JMC
Project: ROMP 117 - Lake Okahumpka
Location: nr Wildwood, FL
Test Well: UFA PW
Test Date: 6/15/2010

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
UFA PW	0.1	0

Observation Wells

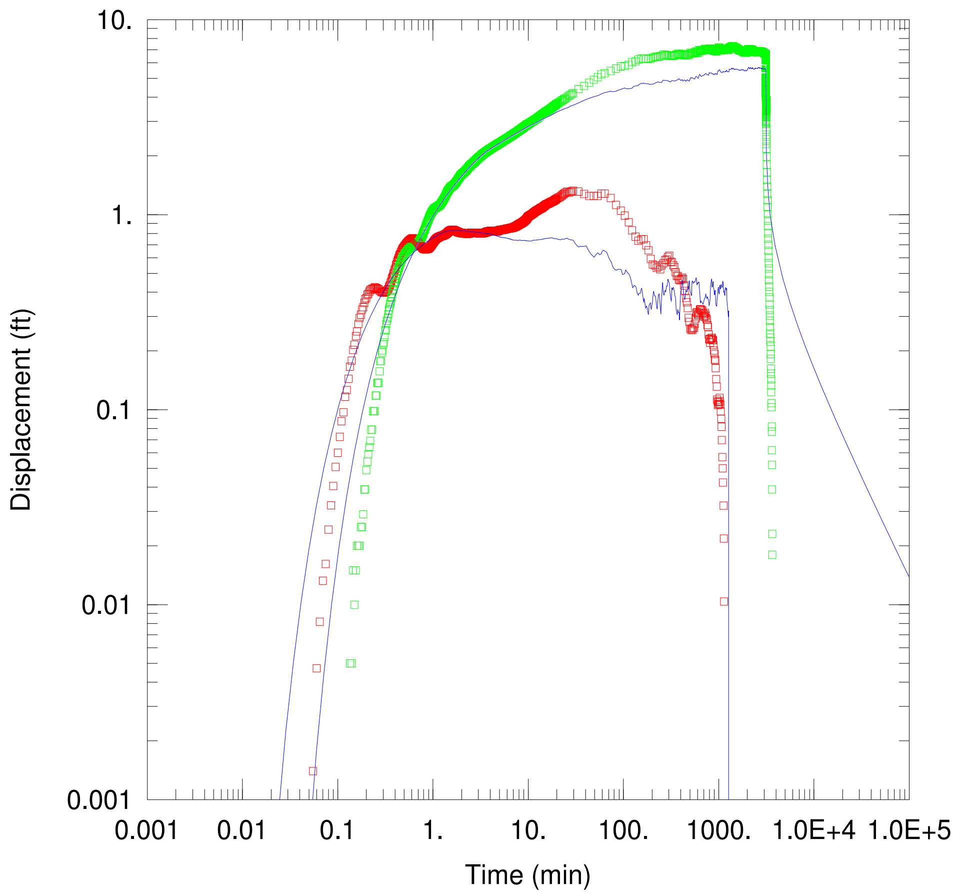
Well Name	X (ft)	Y (ft)
□ OB well	143.2	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.03E+5 ft^2/day
Kz/Kr = 0.1
S = 4.417E-5
b = 302. ft

Figure H1. Theis analysis of drawdown and recovery phases of the Upper Floridan aquifer performance test at the ROMP 117 well site in Northeast Sumter County, Florida.



LOWER FLORIDAN AQUIFER APT AT ROMP 117

Data Set: D:\MyFiles 2\ROMP 117\117 apt\LFA APT\R117LFAaptOB_H-J.aqt
Date: 05/20/14 Time: 08:23:47

PROJECT INFORMATION

Company: SWFWMD
Client: JMC
Project: ROMP 117 - Lake Okahumpka
Location: nr Wildwood, FL
Test Well: LFA PW
Test Date: 5/24/2010

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
LFA PW	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
LFA OB	0	171.4

SOLUTION

Aquifer Model: Confined

Solution Method: Theis

T = 6.857E+4 ft^2/day

Kz/Kr = 0.1

S = 0.001809

b = 1600. ft

Figure H1. Theis analysis of drawdown and recovery phases of the Lower Floridan (below middle confining unit I) aquifer performance test at the ROMP 117 well site in Northeast Sumter County, Florida.

Appendix I. Water Quality Data for Samples Collected at the ROMP 117 – Lake Okahumpka Well Site in Northeast Sumter County, Florida

Table I1. Field data for the water quality samples collected at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

[bls, below land surface; CH, COREHOLE; Cl^-, chloride; cond., conductance; Fm, Formation; ft, feet; LFA, Lower Floridan aquifer; Ls, Limestone; MCU I, middle confining unit 1; mg/L, milligrams per liter; NA, not applicable; No., number; pH, hydrogen ion concentration; SID, site identification number; SO_4^{2-}, sulfate; SU, standard units; UFA, Upper Floridan aquifer; °C, degrees centigrade; µS/cm, microsiemens per centimeter; ---, no measurement] *There was no water quality sample collected during slug test 16 (793-830 ft bls). Slug test 17 and water quality sample 17 covered the bottom 13 ft of slug test 16 interval. All numbered samples represent slug test water quality samples sent to the District laboratory for standard complete analysis. **Site name for SID 670304 is COREHOLE 1 (samples 1-33) and for SID 704493 is COREHOLE 2 (all remaining samples).

Water Quality Sample No.*	SID**	Date (MM/DD/YY)	Time (HH:MM)	Sample/ Open Interval (ft bls)	Lithostratigraphic/ Hydrostratigraphic Unit	Temperature (°C)	pH (SU)	Specific Conductance (µS/cm)	Major Anions		Comments
									Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	
1	670304	09/07/06	17:00	85.5-115	Ocala Ls/UFA	24.0	7.60	298	4.2	38	Casing at 85.5 ft bls, centrifugal pump, no packer
2	670304	09/12/06	14:00	85.5-140	Ocala Ls/UFA	23.1	7.80	321	5.5	0	Casing at 85.5 ft bls, wireline bailer, no packer
3	670304	09/14/06	15:30	134-180	Ocala Ls/UFA	22.9	8.00	284	4.2	0	Packer used, airlifted sample
4	670304	10/04/06	8:05	218-240	Avon Park Fm/UFA	22.6	7.85	292	6.2	2	Packer used, airlifted sample
5	670304	10/05/06	11:35	243-280	Avon Park Fm/UFA	23.3	7.73	300	2.5	0	Packer used, wireline bailer
6	670304	10/09/06	15:45	299-325	Avon Park Fm/UFA	24.3	7.79	302	6.0	0	Packer used, wireline bailer
7	670304	10/11/06	16:30	329-380	Avon Park Fm/UFA & mcu I	23.4	7.50	308	4.0	1	Packer used, wireline bailer
8	670304	10/12/06	16:25	382-420	Avon Park Fm/mcu I	24.2	7.90	343	3.9	0	Packer used, wireline bailer
9	670304	10/17/06	13:45	422-465	Avon Park Fm/mcu I	23.8	7.93	373	3.9	5	Packer used, wireline bailer
10	670304	10/20/06	8:45	505-540	Avon Park Fm/mcu I	23.6	7.64	384	4.5	0	Packer used, wireline bailer
11	670304	10/25/06	14:30	562-590	Avon Park Fm/mcu I	23.3	7.77	380	7.1	35	Packer used, nested bailer
12	670304	10/30/06	11:15	614-640	Avon Park Fm/LFA	24.3	7.74	379	8.9	27	Packer used, nested bailer
13	670304	11/01/06	14:15	652-590	Avon Park Fm/LFA	24.6	7.85	370	8.7	0	Packer used, nested bailer
14	670304	11/03/06	11:50	702-740	Avon Park Fm/LFA	24.1	8.02	374	4.1	30	Packer used, airlifted sample
15	670304	01/31/07	9:35	747-780	Avon Park Fm/LFA	22.0	7.77	371	10.5	33	Packer used, nested bailer
17	670304	02/08/07	13:30	817-830	Avon Park Fm/LFA	23.3	7.81	371	5.1	20	Packer used, nested bailer
18	670304	02/16/07	13:40	836-870	Avon Park Fm/LFA	22.2	7.76	380	6.8	30	Packer used, nested bailer
19	670304	02/21/07	11:25	878-910	Avon Park Fm/LFA	24.1	7.84	394	3.1	9	Packer used, nested bailer
20	670304	02/27/07	8:30	912-950	Avon Park Fm/LFA	24.0	7.68	416	12.5	46	Packer used, nested bailer
21	670304	03/02/07	9:02	969-990	Avon Park Fm/LFA	24.5	7.70	395	8.3	42	Packer used, nested bailer
22	670304	03/09/07	12:13	988-1,030	Avon Park Fm/LFA	25.4	7.72	379	5.1	31	Packer used, nested bailer
23	670304	03/15/07	14:56	1,031-1,070	Avon Park Fm/LFA	25.2	7.76	379	4.6	33	Packer, centrifugal pump
24	670304	03/22/07	10:00	1,072-1,110	Avon Park Fm/LFA	24.3	7.70	408	2.8	17	Packer used, nested bailer

Table I1. Field data for the water quality samples collected at the ROMP 117 – Lake Okahumpka well site in Northeast Sumter County, Florida.

[bls, below land surface; CH, COREHOLE; Cl^-, chloride; cond., conductance; Fm, Formation; ft, feet; LFA, Lower Floridan aquifer; Ls, Limestone; MCU I, middle confining unit 1; mg/L, milligrams per liter; NA, not applicable; No., number; pH, hydrogen ion concentration; SID, site identification number; SO_4^{2-}, sulfate; SU, standard units; UFA, Upper Floridan aquifer; °C, degrees centigrade; µS/cm, microsiemens per centimeter; ---, no measurement] *There was no water quality sample collected during slug test 16 (793-830 ft bls). Slug test 17 and water quality sample 17 covered the bottom 13 ft of slug test 16 interval. All numbered samples represent slug test water quality samples sent to the District laboratory for standard complete analysis. **Site name for SID 670304 is COREHOLE 1 (samples 1-33) and for SID 704493 is COREHOLE 2 (all remaining samples).

Water Quality Sample No.*	SID**	Date (MM/DD/YY)	Time (HH:MM)	Sample/ Open Interval (ft bls)	Lithostratigraphic/ Hydrostratigraphic Unit	Temperature (°C)	pH (SU)	Specific Conductance (µS/cm)	Major Anions		Comments
									Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	
25	670304	03/26/07	15:35	1,101-1,140	Avon Park Fm/LFA	25.7	7.62	396	6.7	32	Packer used, nested bailer
26	670304	03/29/07	12:20	1,168-1,210	Avon Park Fm & Oldsmar Fm/LFA	26.2	7.79	393	5.7	34	Packer used, nested bailer
27	670304	04/04/07	9:30	1,211-1,250	Oldsmar Fm/LFA	24.1	7.68	404	4.4	39	Packer used, nested bailer
28	670304	04/10/07	13:55	1,251-1,285	Oldsmar Fm/LFA	24.1	7.70	401	6.8	22	Packer used, nested bailer
29	670304	04/12/07	9:45	1,286-1,325	Oldsmar Fm/LFA	24.3	7.77	396	6.2	36	Packer used, nested bailer
30	670304	04/18/07	15:54	1,335.5-1,365	Oldsmar Fm/LFA	24.8	7.76	404	4.5	10	Packer used, nested bailer
31	670304	05/01/07	12:30	1,356-1,405	Oldsmar Fm/LFA	26.4	7.80	402	6.1	41	Packer used, nested bailer
32	670304	05/04/07	13:00	1,395-1,445	Oldsmar Fm/LFA	26.1	7.75	405	10.5	22	Packer used, nested bailer
33	670304	05/14/07	15:26	1,454-1,500	Oldsmar Fm/LFA	25.7	7.69	404	8.8	34	Packer used, nested bailer
NA	704493	10/28/08	12:00	1,466-1,497	Oldsmar Fm/LFA	24.0	8.07	370	---	---	Airlift sample at start of CH 2
34	704493	11/05/08	11:57	1,537-1,577	Oldsmar Fm/LFA	23.2	7.32	405	16.5	41	Packer used, nested bailer
NA	704493	11/06/08	9:30	1,616-1,617	Oldsmar Fm/LFA	24.8	7.75	418	6.8	41	Airlift between core runs
NA	704493	12/08/08	10:00	1,746-1,747	Cedar Keys Fm/LFA	24.5	8.15	421	---	---	Airlift between core runs
35	704493	12/17/08	14:00	1,797-1,807	Cedar Keys Fm/LFA	24.8	7.85	446	16.5	65	Packer used, nested bailer
NA	704493	12/18/08	12:00	1,816-1,817	Cedar Keys Fm/LFA	24.2	8.27	439	---	---	Airlift between core runs
NA	704493	01/29/09	12:00	1,825-1,827	Cedar Keys Fm/LFA	25.3	8.21	430	---	---	Airlift between core runs
NA	704493	02/03/09	13:00	1,840-1,847	Cedar Keys Fm/LFA	25.4	8.16	427	---	---	Airlift between core runs
NA	704493	02/04/09	17:20	1,876-1,877	Cedar Keys Fm/LFA	24.2	8.39	411	---	---	Airlift between core runs
NA	704493	02/10/09	9:00	1,886-1,887	Cedar Keys Fm/LFA	22.0	8.06	963	---	---	Airlift between core runs
NA	704493	02/10/09	13:00	1,896-1,897	Cedar Keys Fm/LFA	25.6	8.13	1002	9.5	489	Airlift between core runs
NA	704493	02/11/09	11:00	1,916-1,917	Cedar Keys Fm/LFA	25.2	8.19	918	---	---	Airlift between core runs
36	704493	02/17/09	16:15	1,898-1,947	Cedar Keys Fm/LFA	23.7	7.77	965	11.5	507	Packer used, nested bailer
NA	704493	02/24/09	11:30	2,005-2,007	Cedar Keys Fm/LFA	25.2	8.01	1,302	18.5	989	Airlift sample for SO_4 check

Table I2. Results of laboratory analyses of water quality samples collected at the ROMP 117 – Lake Okahumpka well site

[bls, below land surface; Ca^{2+}, calcium; $CaCO_3$, calcium carbonate; Cl^-, chloride; Fe^{2+}, iron; Fm, Formation; ft, foot; K^+, potassium; L FLDN AQ and LFA, No., number; pH, hydrogen ion concentration; SID, site identification number; SiO_2, silica dioxide; SO_4^{2-}, sulfate; Sr^{2+}, strontium; SU, standard units; SURF AQ, µS/cm, microsiemens per centimeter] .*There was no water quality sample collected during slug test 16 (793-830 ft bls). Slug test 17 (817-830) and water

Water Quality Sample No.	SID	Site (Well) Name	Date (MM/DD/YY)	Time (HH:MM)	Sample/Open Interval (ft bls)	Geologic/Hydro-geologic Unit	pH SU)	Specific Conduc-tance (µS/cm)	Major Anions	
									Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)
1	670304	COREHOLE 1	09/07/06	17:00	85.5-115	Ocala Ls/UFA	7.89	298	7.5	1.6
2	670304	COREHOLE 1	09/12/06	14:00	85.5-140	Ocala Ls/UFA	7.92	301	7.8	1.5
3	670304	COREHOLE 1	09/14/06	15:30	134-180	Ocala Ls/UFA	8.27	296	7.5	0.6
4	670304	COREHOLE 1	10/04/06	8:05	218-240	Avon Park Fm/UFA	8.22	295	6.8	1.9
5	670304	COREHOLE 1	10/05/06	11:35	243-280	Avon Park Fm/UFA	8.10	302	7.1	1.8
6	670304	COREHOLE 1	10/09/06	15:45	299-325	Avon Park Fm/UFA	8.03	299	6.7	6.6
7	670304	COREHOLE 1	10/11/06	16:30	329-380	Avon Park Fm/UFA & mcu I	8.09	309	6.8	8.8
8	670304	COREHOLE 1	10/12/06	16:25	382-420	Avon Park Fm/mcu I	8.10	341	7.3	17.5
9	670304	COREHOLE 1	10/17/06	13:45	422-465	Avon Park Fm/mcu I	8.13	394	7.9	23.6
10	670304	COREHOLE 1	10/20/06	8:45	505-540	Avon Park Fm/mcu I	7.99	363	7.8	29.8
11	670304	COREHOLE 1	10/25/06	14:30	562-590	Avon Park Fm/mcu I	8.09	358	7.9	28.6
12	670304	COREHOLE 1	10/30/06	11:15	614-640	Avon Park Fm/LFA	8.19	352	8.2	26.2
13	670304	COREHOLE 1	11/01/06	14:15	652-690	Avon Park Fm/LFA	8.23	350	8.2	25.5
14	670304	COREHOLE 1	11/03/06	11:50	702-740	Avon Park Fm/LFA	8.10	345	8.1	25.7
15	670304	COREHOLE 1	01/31/07	9:35	747-780	Avon Park Fm/LFA	7.94	376	6.2	28.1
17	670304	COREHOLE 1	02/08/07	13:30	817-830	Avon Park Fm/LFA	7.98	379	7.0	24.9
18	670304	COREHOLE 1	02/16/07	13:40	836-870	Avon Park Fm/LFA	8.11	378	7.7	21.8
19	670304	COREHOLE 1	02/21/07	11:25	878-910	Avon Park Fm/LFA	8.07	389	8.4	33.1
20	670304	COREHOLE 1	02/27/07	8:30	912-950	Avon Park Fm/LFA	8.00	394	8.5	41.5
21	670304	COREHOLE 1	03/02/07	9:02	969-990	Avon Park Fm/LFA	7.86	369	8.3	38.7
22	670304	COREHOLE 1	03/09/07	12:13	988-1,030	Avon Park Fm/LFA	8.06	375	8.6	24.2
23	670304	COREHOLE 1	03/15/07	14:56	1,031-1,070	Avon Park Fm/LFA	8.02	374	8.9	23.6
24	670304	COREHOLE 1	03/22/07	10:00	1,072-1,110	Avon Park Fm/LFA	8.06	378	8.6	25.2
25	670304	COREHOLE 1	03/28/07	15:35	1,101-1,140	Avon Park Fm/LFA	8.03	382	8.9	31.6
26	670304	COREHOLE 1	03/29/07	12:20	1,168-1,210	Avon Park Fm/LFA	8.11	388	9.0	27.3
27	670304	COREHOLE 1	04/04/07	9:30	1,211-1,250	Oldsmar Fm/LFA	8.01	394	8.7	29.8
28	670304	COREHOLE 1	04/10/07	13:55	1,251-1,285	Oldsmar Fm/LFA	8.15	393	8.7	28.3
29	670304	COREHOLE 1	04/12/07	9:45	1,286-1,325	Oldsmar Fm/LFA	8.13	394	8.7	29.6
30	670304	COREHOLE 1	04/18/07	15:54	1,335.5-1,365	Oldsmar Fm/LFA	7.99	398	8.8	30.0
31	670304	COREHOLE 1	05/01/07	12:30	1,356-1,405	Oldsmar Fm/LFA	8.00	397	8.8	32.1
32	670304	COREHOLE 1	05/04/07	13:00	1,395-1,445	Oldsmar Fm/LFA	7.99	399	8.7	29.1
33	670304	COREHOLE 1	05/14/07	15:26	1,454-1,500	Oldsmar Fm/LFA	8.12	397	9.1	28.7

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

in Northeast Sumter County, Florida

Lower Floridan aquifer; Ls, Limestone; MCU, middle confining unit; Mg^{2+}, magnesium; mg/L, mcu I, middle confining unit I; milligrams per liter; Na^{+}, sodium; surficial aquifer; U FLDN AQ and UFA, Upper Floridan aquifer; WQ, water quality; WQMP, Water Quality Monitoring Program; µg/L, micrograms per liter; quality sample 17 tested the bottom 13 ft of the test interval for slug test 16.

Major Cations						Si as SiO_2 (mg/L)	Total Dissolved Solids (mg/L)	Total Alkalinity $CaCO_3$ (mg/L)	Comments
Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^{1+} (mg/L)	K^{1+} (mg/L)	Fe^{2+} (mg/L)	Sr^{2+} (mg/L)				
52.4	3.99	5.27	0.81	63.8	0.25^{U}	11.1	179	154.6	Casing at 85.5 ft bls, centrifugal pump, no packer
51.9	4.02	5.00	0.71	26.2	0.25^{U}	11.6	182	144.6	Casing at 85.5 ft bls, wireline bailer, no packer
51.8	3.87	4.74	0.67	12.5^{U}	0.25^{U}	12.0	192	155.1	Packer, airlifted sample
52.6	4.98	4.83	0.7	12.5^{U}	0.25^{U}	12.1	179	142.0	Packer, airlifted sample
50.6	5.14	4.76	0.63	12.5^{U}	0.25^{U}	11.9	176	162.0	Packer, wireline bailer
50.9	5.51	4.68	0.90	24.5	0.25^{U}	11.9	168	134.9	Packer, wireline bailer
50.3	5.63	4.65	0.84	12.5^{U}	0.25^{U}	12.0	174	139.5	Packer, wireline bailer
58.6	5.63	5.09	0.90	53.0	0.25^{U}	13.0	198	145.8	Packer, wireline bailer
64.2	7.94	5.57	1.17	26.7	0.46	13.7	225	160.9	Packer, wireline bailer
65.0	9.11	5.56	1.18	204.0	0.69	15.1	243	159.0	Packer, wireline bailer
64.1	9.14	5.74	1.16	88.1	0.34	17.0	242	158.2	Packer, nested bailer
62.6	9.71	5.60	1.05	12.5^{U}	0.66	14.0	232	160.9	Packer, nested bailer
62.5	10	5.59	0.98	26.0	0.66	13.7	232	165.1	Packer, nested bailer
59.0	10.3	5.30	1.06	56.0	0.69	13.8	226	160.1	Packer, airlifted sample
60.4	9.99	5.28	1.13	34.0	0.7	14.0	237	157.3	Packer, nested bailer
59.5	9.91	5.04	0.95	84.0	0.71	13.9	230	162.5	Packer, nested bailer
59.4	10.1	4.94	1.09	46.9	0.72	13.7	239	159.1	Packer, nested bailer
61.4	10.2	4.94	0.91	129.0	0.75	13.8	236	156.2	Packer, nested bailer
61.9	10.2	5.16	0.99	12.5^{U}	0.72	13.8	240	153.9	Packer, nested bailer
48.9	14.2	4.69	1.07	16.1	0.45	14.8	225	144.4	Packer, nested bailer
56.7	10.8	4.78	0.86	25.9	0.66	13.1	232	157.1	Packer, nested bailer
57.9	9.7	4.76	0.84	227.0	0.69	13.0	235	163.0	Packer, centrifugal pump
58.8	9.73	4.82	0.91	194.0	0.72	13.1	246	182.2	Packer, nested bailer
59.1	11	5.18	1.08	120.0	0.82	13.1	234	164.5	Packer, nested bailer
61.6	10.5	5.17	1.07	47.8	0.83	13.3	237	160.0	Packer, nested bailer
64.8	10.5	5.40	1.14	117.0	0.93	13.0	246	162.3	Packer, nested bailer
64.8	10.7	5.28	1.03	127.0	0.9	13.1	240	165.8	Packer, nested bailer
66.1	10.5	5.20	1.02	55.0	0.92	13.3	240	165.2	Packer, nested bailer
63.8	11.1	5.26	1.14	205.0	0.86	13.0	242	166.1	Packer, nested bailer
66.0	10.9	5.27	0.99	128.0	0.89	13.2	235	164.2	Packer, nested bailer
63.5	10.9	5.26	0.98	34.5	0.91	12.9	240	161.9	Packer, nested bailer
63.5	10.5	5.38	1.00	69.1	0.91	12.8	245	164.4	Packer, nested bailer

Table I2. Results of laboratory analyses of water quality samples collected at the ROMP 117 – Lake Okahumpka well site

[bls, below land surface; Ca^{2+}, calcium; $CaCO_3$, calcium carbonate; Cl^-, chloride; Fe^{2+}, iron; Fm, Formation; ft, foot; K^+, potassium; L FLDN AQ and LFA, No., number; pH, hydrogen ion concentration; SID, site identification number; SiO_2, silica dioxide; SO_4^{2-}, sulfate; Sr^{2+}, strontium; SU, standard units; SURF AQ, µS/cm, microsiemens per centimeter] .*There was no water quality sample collected during slug test 16 (793-830 ft bls). Slug test 17 (817-830) and water

Water Quality Sample No.	SID	Site (Well) Name	Date (MM/DD/YY)	Time (HH:MM)	Sample/ Open Interval (ft bls)	Geologic/Hydrogeologic Unit	pH SU)	Specific Conductance (µS/cm)	Major Anions	
									Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)
34	704493	COREHOLE 2	11/05/08	11:57	1,537-1,577	Oldsmar Fm/LFA	7.97	418	8.9	28.5
35	704493	COREHOLE 2	12/17/08	14:00	1,761-1,797	Cedar Keys Fm/LFA	7.87	445	8.7	41.2
NA	704493	COREHOLE 2	02/10/09	13:30	1,896-1,897	Cedar Keys Fm/LFA	8.09	978	10.2	367.0
36	704493	COREHOLE 2	02/17/09	16:15	1,898-1,947	Cedar Keys Fm/LFA	8.38	930	10.1	364.0
NA	736139	L FLDN AQ PRODUCTION/MONITOR	06/25/12	12:42	625-1,467	Avon Park Fm & Oldsmar Fm/LFA	8.03	391	8.2	27.0
NA	784272	SURF AQ MONITOR	06/25/12	13:48	5-15	Undifferentiated Sand & Clay/surficial aquifer	6.35	497	44.4	122.0
NA	704501	U FLDN AQ PRODUCTION/MONITOR	06/25/12	13:50	225-352	Avon Park Fm/UFA	8.04	292	7.7	1.7

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

in Northeast Sumter County, Florida

Lower Floridan aquifer; Ls, Limestone; MCU, middle confining unit; Mg^{2+}, magnesium; mg/L, mcu I, middle confining unit I; milligrams per liter; Na^{+}, sodium; surficial aquifer; U FLDN AQ and UFA, Upper Floridan aquifer; WQ, water quality; WQMP, Water Quality Monitoring Program; µg/L, micrograms per liter; quality sample 17 tested the bottom 13 ft of the test interval for slug test 16.

Major Cations						Si as SiO_2 (mg/L)	Total Dissolved Solids (mg/L)	Total Alkalinity $CaCO_3$ (mg/L)	Comments
Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^{1+} (mg/L)	K^{1+} (mg/L)	Fe^{2+} (mg/L)	Sr^{2+} (mg/L)				
66.8	9.46	6.17	1.40	25.7	0.92	12.9	300	170.0	Packer, nested bailer
69.4	9.58	5.26	0.93	12.5^{U}	1.17	12.8	264	167.7	Packer, nested bailer
147.0	40.20	6.31	1.81	2.5^{U}	4.45	13.8	748	147.7	Airlifted between core runs, high sulfates
145.0	36.50	6.79	1.84	52.8	4.23	13.8	684	158.8	Packer, nested bailer
62.8	9.41	4.97	0.93	2.5^{U}	0.78	13.2	235	163.7	Initial WQMP baseline sample for LFA well
50.0	7.46	26.40	5.81	1160.0	0.24	9.6	342	36.3	Initial WQMP baseline sample for surficial well
51.3	3.90	4.58	0.65	157.0	0.11	12.2	174	141.2	Initial WQMP baseline sample for UFA well

Southwest Florida
Water Management District