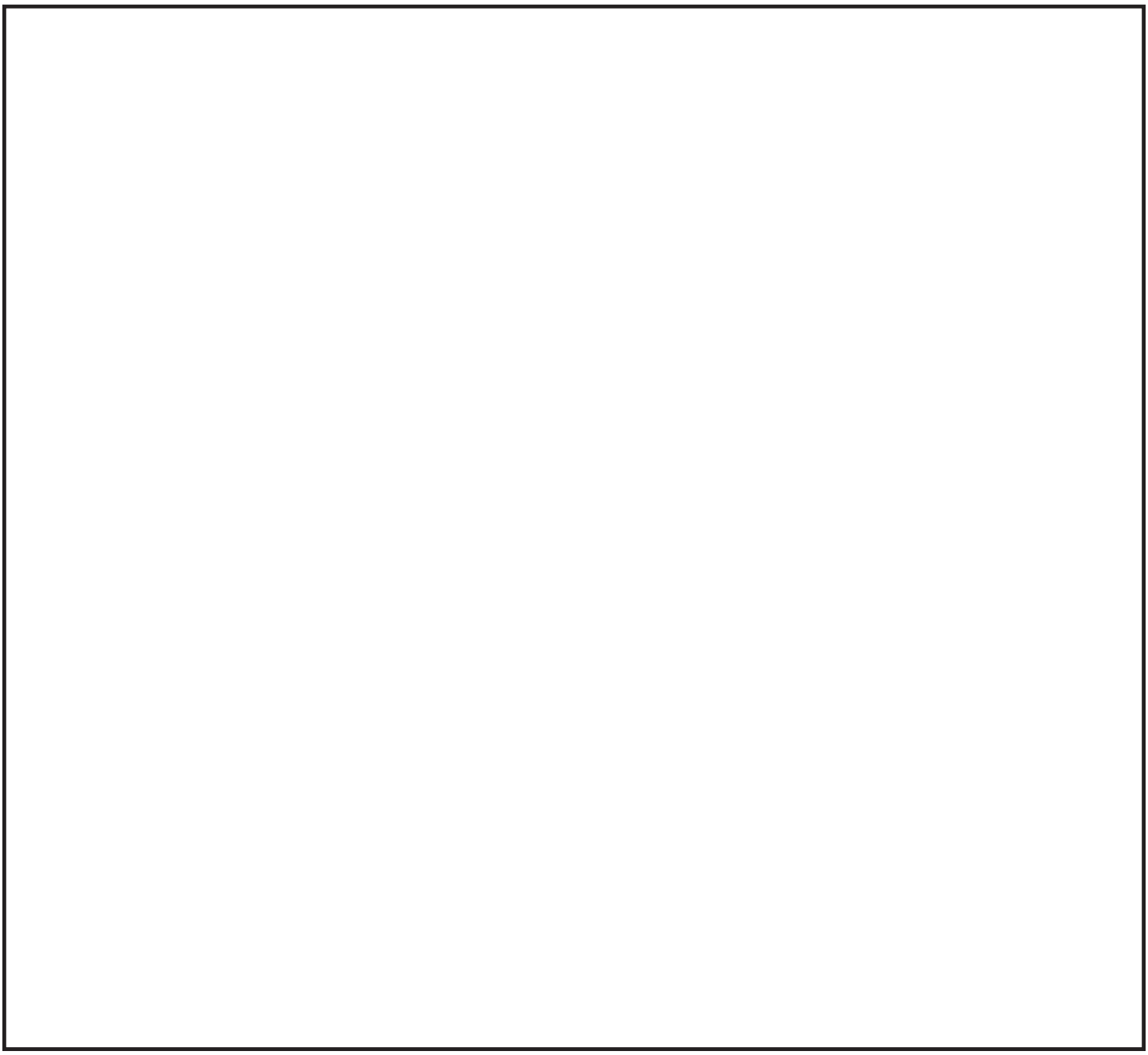
Southwest Florida
Water Management District

Well Construction at the ROMP 112 – Rutland Well Site in Sumter County, Florida

Southwest Florida Water Management District
Geohydrologic Data Section

November 2016



Cover Photo: Permanent monitor wells at the ROMP 112 – Rutland Well Site in Sumter County, Florida in order from left to right: U FLDN AQ MONITOR, SURF AQ MONITOR. Photograph by Julia Zydek.

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By Julia Zydek

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Southwest Florida Water Management District
Geohydrologic Data Section

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The hydrologic evaluations and interpretations contained in *Well Construction at the ROMP 112 – Rutland Well Site in 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.

Jason J. LaRoche
Professional Geologist
State of Florida License No. PG 2525

Date: 11-16-2016

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)

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD88).

Abbreviations and Acronyms

bls	below land surface
CME	Central Mine Equipment
District	Southwest Florida Water Management District
fig.	figure
Huss	Huss Drilling, Incorporated
NAVD88	North American Vertical Datum of 1988
NDWRAP	Northern District Water Resources Assessment Project
PVC	polyvinyl chloride
ROMP	Regional Observation and Monitor-well Program
UDR	Universal Drill Rig
WCP	well construction permit
WMIS	Water Management Information System

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By Julia Zydek

Introduction

As part of the Southwest Florida Water Management District's (District) Northern District Water Resources Assessment Project (NDWRAP) and the Hydrologic Characterization of Lake Tsala Apopka, the Regional Observation and Monitor-well Program 112 – Rutland well site (herein referred to as ROMP 112) is providing groundwater level data to help assess the interaction between groundwater in the surficial and Upper Floridan aquifers and Lake Tsala Apopka. This well site provides two long-term monitor wells; one to monitor the surficial aquifer and the other to monitor the Upper Floridan aquifer.

The NDWRAP was initiated to assess the impacts of groundwater withdrawals, monitor the fresh-water/saltwater interface, identify areas of poor groundwater quality, determine the nature of flow to major springs, and monitor groundwater levels in both the surficial and Upper Floridan aquifers in the northern six-county region of the District. The Northern District encompasses all of Hernando, Citrus, and Sumter Counties as well as portions of Pasco, Marion, and Levy Counties.

The lakes targeted for study were Lake Deaton, Lake Miona, Fort Cooper Lake, Lake Marion, and Lake Tsala Apopka (fig. 1), with the latter being part of the Hydrologic Characterization of Lake Tsala Apopka. This project is designed to use water level, flow, and climatological data to quantify the hydrologic budget of the lake to assist the District in managing lake levels.

The ROMP 112 monitor well site was completed on March 18, 2010. This report details the well construction and hydrostratigraphy at the ROMP 112 well site. The data collected at this well site supports the mission of the District to provide accurate, cost effective, and defensible data for use in the management and protection of the state's water resources and related natural systems.

Acknowledgments

Special thanks go out to Doug Rappuhn and Jake Fredericks, whose notes were used in part to compile this report. Thanks also go out to their respective drilling crews, and to Huss Drilling, Incorporated, for their continued professionalism.

Site Location

The ROMP 112 well site is located in northwestern Sumter County approximately one mile east of the Withlacoochee River. It is located in the southeast ¼ of the northwest ¼ of Section 32, Township 18 South, and Range 21 East at latitude 28° 52′ 50.24″ north and longitude 82° 13′ 41.31″ west. The land surface elevation is approximately 54 feet above the North American Vertical Datum of 1988 (NAVD88).

The well site lies on the District's Gum Slough property that is adjacent to the Carlton Half Moon Wildlife Management Area, which is owned by the Trustees of the Internal Improvement Trust Fund of the State of Florida. Both properties are managed by the Game and Freshwater Fish Commission through lease agreements. The well site is close to the Gum Slough Trail (fig. 2). The property can be found by traveling 7.6 miles west on State Road 44 from Interstate 75, heading north onto County Road 247 for approximately 1.5 miles, proceeding through the Half Moon Wildlife Management Area gate, following County Road 247 for approximately 0.8 miles, turning west on Wall Road, and proceeding over a cattle crossing to the well site (fig. 3).

The well site is located in the northeastern section of the Tsala Apopka Plain. The Tsala Apopka Plain is part of the Western Valley physiographic region, which is located in west-central Florida (White, 1970). The ROMP 112 well site is bordered by the Brooksville Ridge to the west and the Western Valley to the east and north. The Tsala Apopka Plain is described by White (1970) to be flatter and lower than the other great valleys, likely because Lake Tsala Apopka was once part of a larger lake within the Tsala Apopka Plain. The elevation of the Tsala Apopka Plain ranges from 50 to 75 feet, with its irregular topography resembling dunes (White, 1970).

The ROMP 112 well site is located in the Withlacoochee River Basin (Southwest Florida Water Management District, 1987). The Withlacoochee River and its tributaries are the primary sources of surface water drainage; however, the majority of Sumter County is poorly and internally drained through karst terrain due to a lack of well-defined surface water drain-

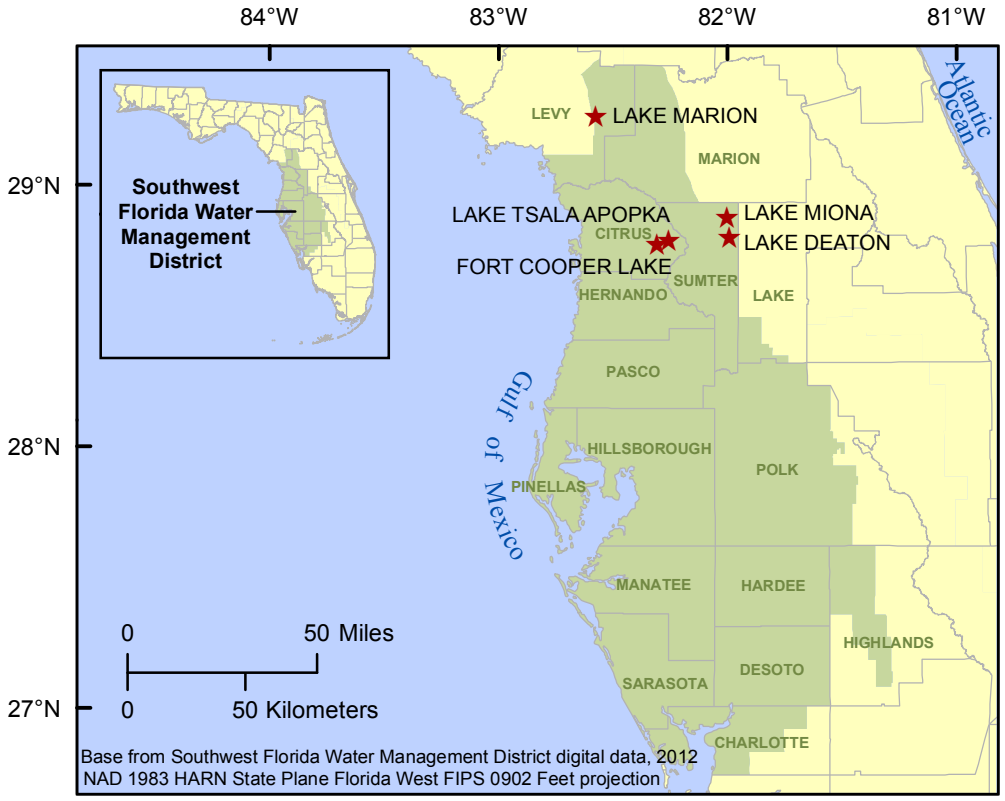


Figure 1. Northern District Water Resources Assessment Project well sites

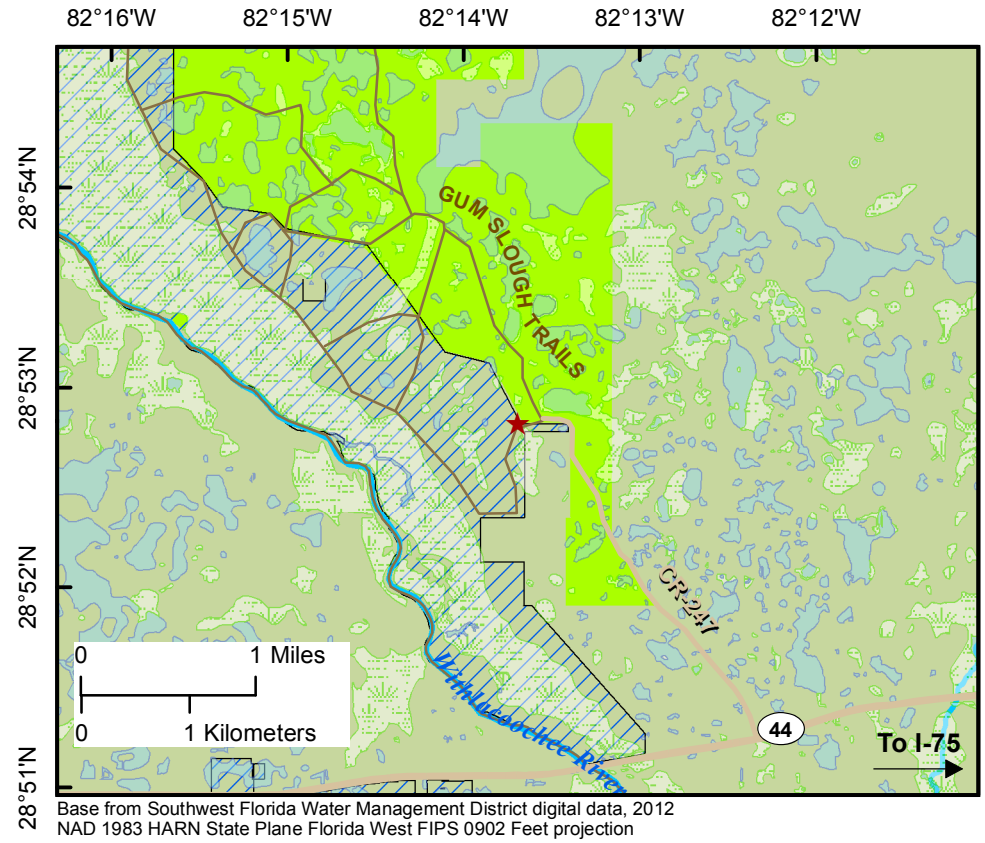
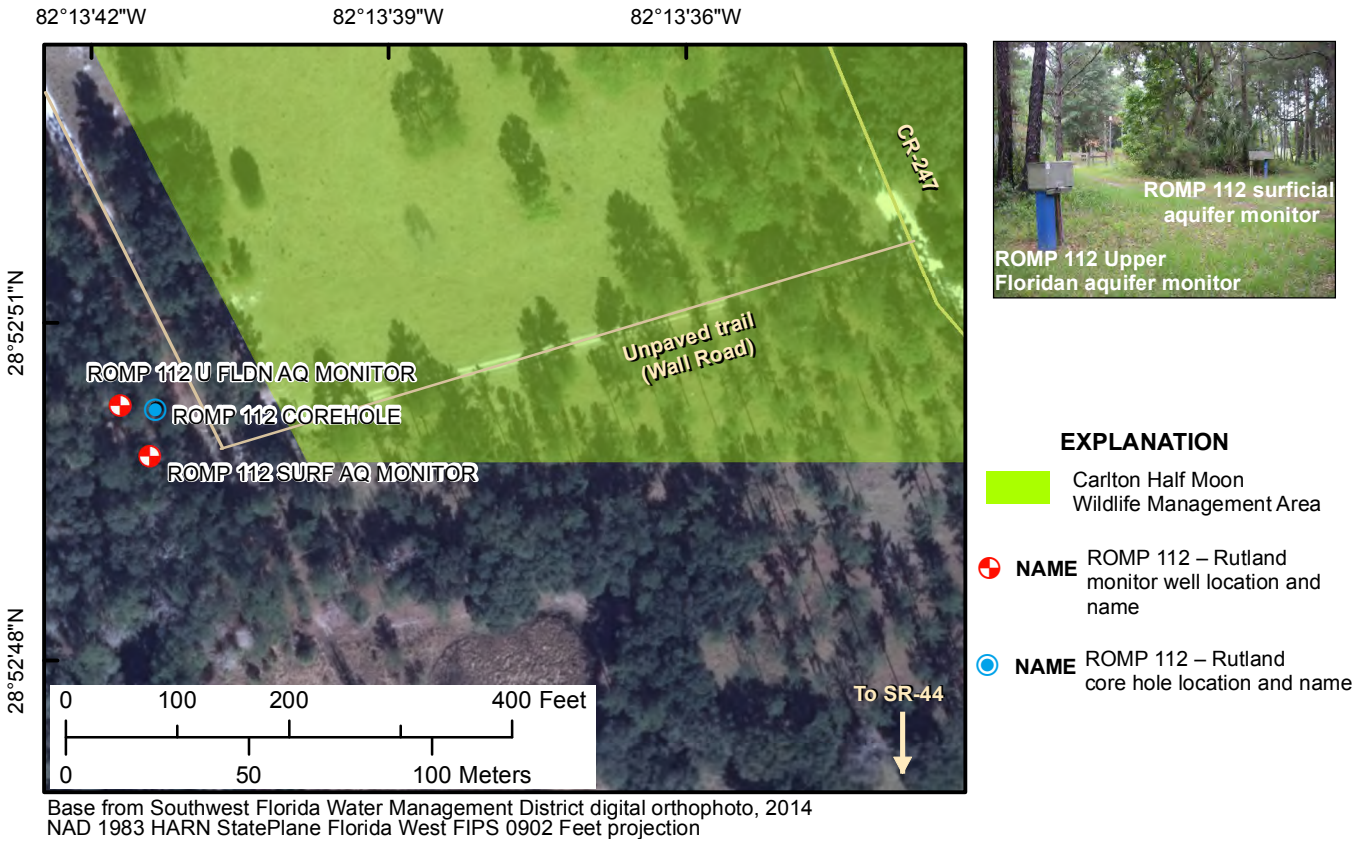


Figure 2. Location of the ROMP 112 – Rutland well site in Sumter County, Florida



[AQ, aquifer; CR, County Road; FIPS, Federal Information Processing Standards; FLDN, Floridan; HARN, High Accuracy Reference Network; NAD, North American Datum; SR, State Road; SURF, surficial]

Figure 3. Layout of the ROMP 112 – Rutland well site in Sumter County, Florida

age features. As a result, much of Sumter County is covered in small lakes, wetlands, and swamps (Southwest Florida Water Management District, 1987).

Methods

The ROMP 112 well site investigation was conducted using a variety of methods to collect hydrogeologic data including lithologic, water level, and geophysical data. The following sections provide the data collection method details specific to the ROMP 112 well site. Data collected at this well site are available for download from the District's website: www.swfwmd.state.fl.us using the Water Management Information System (WMIS). Data collection sites (wells) from this well site are compiled under the portfolio named ROMP 112 – Rutland. As of August 2016, available data include water quality and long-term water level data. Lithologic, geophysical, and stratigraphic data will be available in the future. This report, well construction details, and survey data are also available for download from the WMIS.

Lithologic Sampling

Prior to well construction, lithologic samples were collected from a pilot core hole using the District-owned Central Mine Equipment (CME) 75 drill rig equipped for split-spoon sampling. The split-spoon sampler was advanced using a 140-pound hammer through 4.5-inch hollow-stem augers, which acted as temporary casing and held the bore hole open. Continuous lithologic samples were collected in one 4-foot run from land surface to four feet below land surface (bls) and 2.5-foot runs from 4 feet bls to refusal at 21.5 feet bls. Following this, 4-inch HW (temporary steel casing) was set to 22 feet bls. District staff then performed hydraulic rotary coring using 2.98-inch NQ steel coring rods and the CME 75 drill rig to collect continuous lithologic samples during the first phase of exploratory coring from land surface to 704 feet bls. District staff collected continuous core samples in 5-foot intervals using the wireline retrieval method and the District-owned Universal Drilling Rig (UDR) 200D LS drill rig during the second phase of exploratory drilling from 698 to 1,026 feet bls (the core hole had caved in to 640 feet bls during the coring hiatus). For both phases of exploratory coring, the on-site geologist collected, described and boxed the samples

for description and storage. Photographs of the samples were taken during the second phase of exploratory coring.

Geophysical Logging

Geophysical logs are used to delineate stratigraphic units; identify permeable zones and confining units; characterize water quality; and determine well casing points and grouting requirements. Borehole geophysical logs were collected during the second phase of exploratory coring at the ROMP 112 well site. All logs were collected by District staff using District-owned Century® geophysical logging equipment during three sessions at this well site (figure 4).

One suite of logs was collected on September 1, 2010, prior to initiating phase 2 of exploratory coring. The 9165C caliper/gamma-ray tool was run from 648.4 feet bls to land surface. The entire depth of the core hole could not be logged due to tool complications

Well Construction

The ROMP 112 well site contains a surficial aquifer monitor well (District site ID 23021) and an Upper Floridan aquifer monitor well (District site ID 755810). The surficial well was constructed by District staff between December 16 and December 17, 1992 and the Upper Floridan well was constructed by Huss Drilling, Incorporated (Huss) between March 15 and March 16, 2010. The completed wells were turned over to the District's Hydrologic Data Section for long-term groundwater level monitoring.

Prior to well construction, exploratory split-spoon samples were collected from land surface to 21.5 feet bls and continuous core samples were collected from 21.5 to 1,026 feet bls. These samples were used to characterize the hydrostratigraphy of the site and to aid in the design of the monitor wells. When the formation became too hard to collect split-spoon samples, 4-inch HW temporary steel casing was set to 22 feet bls and an exploratory NQ core hole was drilled using water as the drilling fluid from 21.5 to 704 feet bls. Exploratory coring operations (phase 2) were resumed at the ROMP 112 well site in 2010 as part of the NDWRAP and the Hydrologic Characterization of Lake Tsala Apopka. During this second phase of exploratory coring, the core hole, which had caved in to 640 feet bls, was cleaned of debris and deepened from 698 to 1,026 feet bls. Upon completion of this phase of exploratory coring, the core hole was plugged to land surface by District staff on January 17, 2011.

A summary of well construction details is provided in table 1. Well construction as-built diagrams for the core hole (phases 1 and 2), surficial aquifer monitor well, and Upper Floridan aquifer monitor well are presented in appendix A. Daily logs for coring and well construction operations are available from the District's online document storage database. Additional well construction details can be found in the District's WMIS.

Surficial Aquifer Monitor Well

The surficial aquifer monitor well was constructed between December 16 and 17, 1992 using the CME 75 drill rig under Well Construction Permit (WCP) number 532585. The well construction specifications are depicted in appendix B, figure B2. The well is open to the undifferentiated sand and clay sediments and is used to monitor the groundwater level in the surficial aquifer.

District staff set up the polyvinyl chloride (PVC) casing in the following manner: a 6-inch PVC slip cap was attached to 10 feet of 6-inch PVC slotted (0.030-inch slot) well screen. A 6-inch slip-to-slip coupling connected the well screen to 8 feet of 6-inch PVC, schedule 40 well casing. This was topped with a 6-inch PVC threaded adapter and a 6-inch threaded cap. Then, District staff augered a 10-inch diameter hole from land surface to 16.5 feet bls and installed the PVC to 15 feet bls. Ten bags of 6/20 silica sand were installed from 5 to 16.5 feet bls, and 20 gallons of cement grout were installed in the annular space from land surface to 5 feet bls. After all installation was completed, the well was developed. The static water level was measured at 5 feet bls at the time of completion on December 17, 1992. A lockable metal well cover and concrete pad were installed around the finished well.

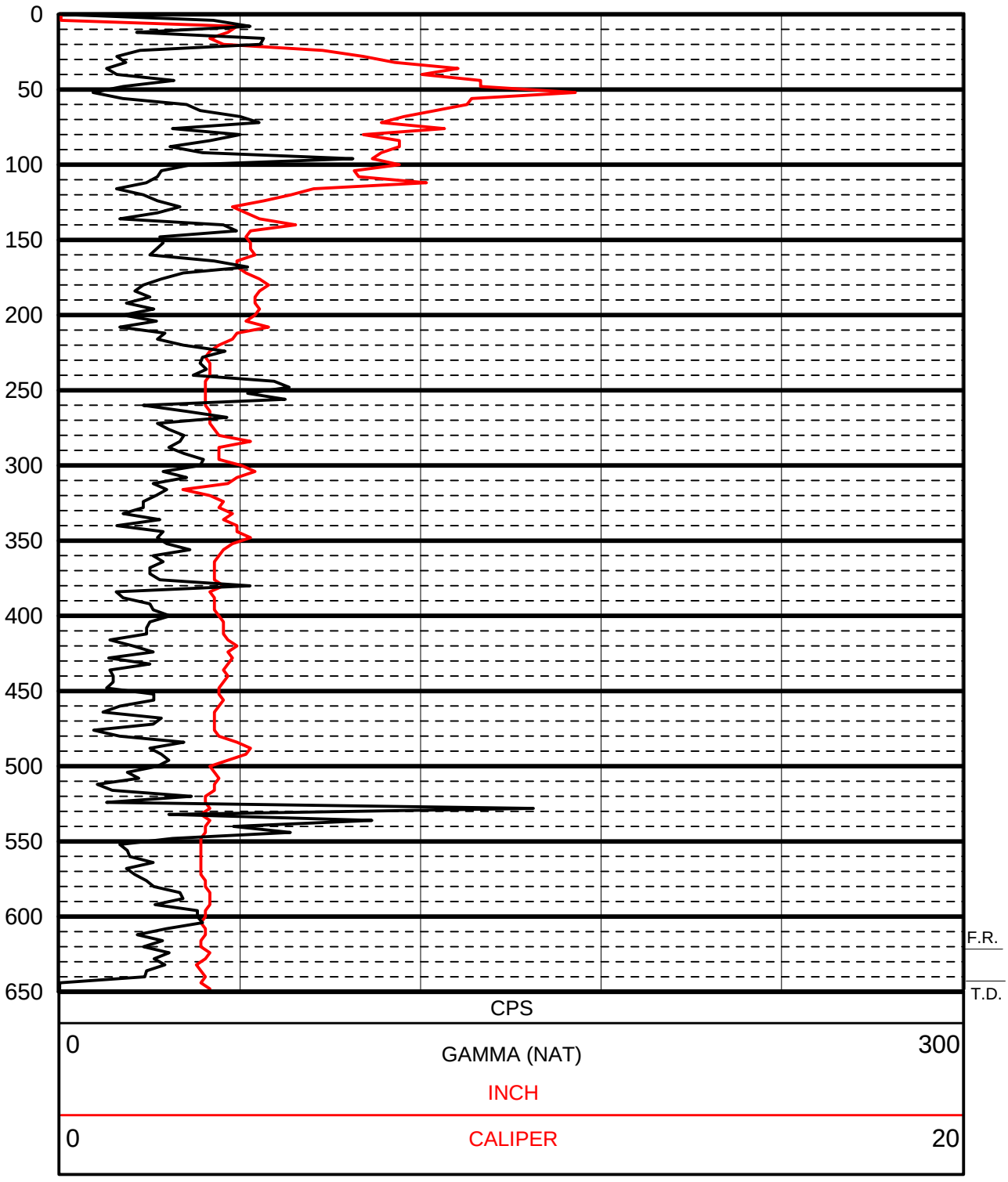
Upper Floridan Aquifer Monitor Well

The Upper Floridan aquifer monitor well was constructed between March 15 and 16, 2010, by Huss under WCP number 803356. The well construction specifications are depicted in appendix B, figure B3. The well is open to the Ocala Limestone and is used to monitor the groundwater level in the Upper Floridan aquifer.

Huss augered a 10-inch hole from land surface to 42 feet bls and installed 45 feet of 6-inch, schedule 40 PVC casing from three feet above land surface to 42 feet bls. Thirty five bags of neat cement were installed in the annulus from land surface to 42 feet bls. Huss then drilled a 6-inch open hole through the casing to 67 feet bls. The well was developed after installation was completed. A lockable metal well cover and concrete pad were installed around the finished well.

Geology

The lithostratigraphy of the ROMP 112 well site is based on lithologic samples collected from split-spoon sampling from land surface to 21.5 feet bls and exploratory coring that was conducted from 21.5 to 1,026 feet bls. The geologic units encountered at the well site include, in ascending order, the Avon Park Formation, the Ocala Limestone, and the undif-



[CPS, counts per second; NAT, natural; T.D., total depth of logging]

Figure 4. Geophysical log suite for phase 1 of exploratory coring in the COREHOLE from land surface to 648.4 feet below land surface at the ROMP 112 – Rutland well site in Sumter County, Florida. The logging was performed on September 1, 2010, using the 9165C (caliper/gamma) tool. The log was run prior to initiating the deep core drilling phase. The vertical axis scale is 1 inch per 100 feet and the horizontal axis is linear. The first reading (F.R.) is 642 feet bls for the caliper/gamma-ray log.

ferentiated sand and clay deposits. A stratigraphic column detailing the lithostratigraphy encountered at the well site is presented in figure 5. The lithologic log is presented in appendix B. Digital photographs of the lithologic core samples are presented in appendix C.

The portion of the Avon Park Formation (Middle Eocene) encountered during exploratory coring extends from 145 to 1,026 feet bls. The base of the formation was not reached during coring. The Avon Park Formation primarily consists of dolostones that are generally grayish brown to very light orange, microcrystalline to coarse grained, moderate to well indurated, and are highly altered with varying porosity. Organics are present throughout the formation as laminae.

Fossil molds and fragments observed within this formation include echinoids, bryozoa, corals, mollusks including gastropods, and benthic foraminifera such as miliolids. The foraminifera *Cushmania americana* (commonly referred to as cones) appear from 126 to 139.3 feet bls, 145 to 150.2 feet bls, 232 to 239 feet bls, and 698 to 699.1 feet bls. The appearance of the echinoid *Neolaganum dalli*, which is a fossil characteristic of the Avon Park Formation, is present from 145 to 150.2 feet bls, 157 to 162.8 feet bls, 184 to 198.8 feet bls, 205 to 210 feet bls, and 246 to 266 feet bls . Pyrite crystals are present from 139.3 to 144 feet bls, 150.2 to 157 feet bls, 698 to 699.1 feet bls, 819.5 to 820.1 feet bls, and 853.9 to 857.2 feet bls. Possible sulfide mottles – likely related to the presence of pyrite – are present between 410.5 and 419 feet bls. A glazed, striated fault is present at 418 feet bls. The first chert layer appears between 479 and 484 feet bls. The walls of molds and vugs are lined with drusy quartz from 550 to 558 feet bls, 615 to 621 feet bls, and 913 to 915 feet bls. Additionally, fractures, burrows, molds, and vugs are lined with golden brown to clear, sparry and drusy, euhedral and subhedral calcite from 508 to 519 feet bls, 534 to 544 feet bls, 550 to 558 feet bls, 594 to 600 feet bls, 610 to 615 feet bls, 689 to 694 feet bls, 703.2 to 718.1 feet bls, 949.6 to 964.3 feet bls, and 968 to 968.6 feet bls. A 4-inch bed of lignite appears at 527 feet bls. Three spikes in gamma-ray activity between 530 and 545 feet bls likely correspond to the organic material described on the lithologic log, in which the organics are said to be increasing towards the base of the description interval at 544 feet bls. At 590.5 feet bls there is a 1-foot interval of *Cushmania americana* bearing grainstone. Gypsum is present from 563.7 to 575 feet bls and 877.9 to 916.7 feet bls. Glauconite is present as an accessory mineral at approximately 1 percent between 964.3 and 1,008 feet bls. Average core recovery through the Avon Park Formation cannot be reported except for the last 43 feet where it averaged approximately 45 percent.

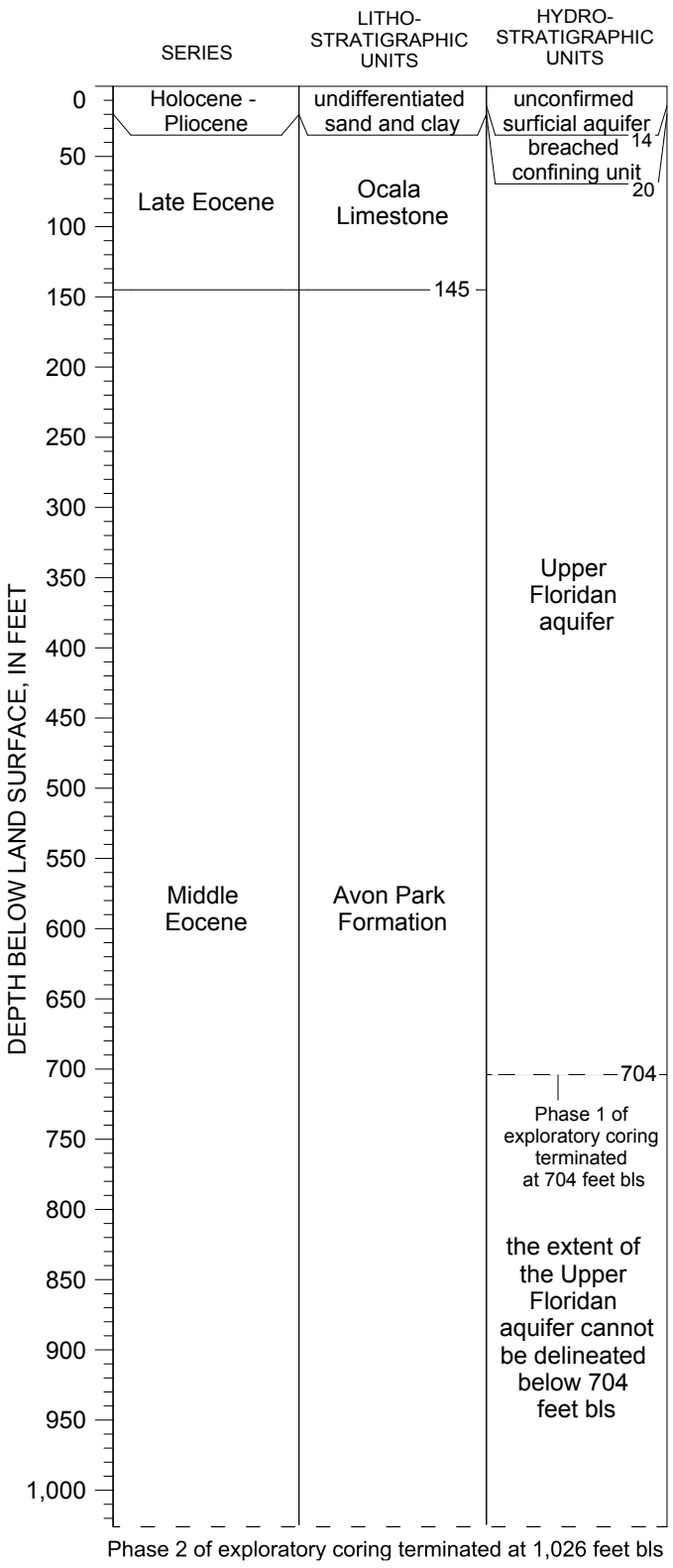
At the ROMP 112 well site, the late Eocene age Ocala Limestone extends from 20 to 145 feet bls. The Ocala Limestone unconformably overlies the Avon Park Formation (Campbell, 1989). The top of the Ocala Limestone is picked at the top of limestone below greenish to very light gray clay of the overlying undifferentiated sand and clay unit. The diagnostic benthic foraminifera, *Lepidocyclina ocalana,* was identified near the top of the unit. The general lithology of the Ocala Limestone at this location consists of white to light gray, poorly to well indurated, fine to gravel grain size, highly fossiliferous packstone, wackestone , and grainstone. Additional fossil molds and fragments observed include bryozoa, coral, benthic foraminifera such as operculinoides and miliolids, mollusks including gastropod and pelecypod molds, shark teeth, barnacle molds, and echinoids. The porosity of the limestone is predominantly intergranular and moldic. Core recovery for the Ocala Limestone cannot be reported because it was not recorded during exploratory coring.

At the ROMP 112 well site, the Pliocene to Holocene age undifferentiated sand and clay unit is present from land surface to 20 feet bls. The interval from land surface to 4 feet bls consists of light to brownish gray, fine to coarse grained quartz sand with 3 percent clay. From 4 to 9 feet bls, the lithology is white to dark reddish brown, fine to medium grained sand that is interbedded with clean, well sorted medium-grained quartz sand. From 9 to 14 feet bls, the lithology is yellowish gray to light brown, fine to medium grained sand. Greenish to very light gray clay extends from 14 to 20 feet bls. This clay bed contains plant remains and has more fine to medium grained white sand between 16 and 17 feet bls. The interval from land surface to 14 feet bls has intergranular porosity and has high

Table 1. Summary of well construction details at the ROMP 112 – Rutland well site in Sumter County, Florida

[bls, below land surface; ft, feet; ROMP, Regional Observation and Monitor-well Program; SID, site identification; SURF AQ, surficial aquifer; U FLDN AQ, Upper Floridan aquifer; WCP, well construction permit; well locations are shown in figure 2; well as-built diagrams are in appendix B]

SID	Well Name	Open Interval (ft bls)	Constructed By	Start Date (MM/DD/YYYY)	Complete Date (MM/DD/YYYY)	Status	WCP Numbers
765157	ROMP 112 COREHOLE	22-1,017	SWFWMD	01/10/1989	11/18/2010	Plugged	474044, 808119, 809418
23021	ROMP 112 SURF AQ MONITOR	5-15	SWFWMD	12/16/1992	12/17/1992	Active	532585
755810	ROMP 112 U FLDN AQ MONITOR	42-67	SWFWMD	03/15/2010	3/16/2010	Active	803356



[bls, below land surface; ft, feet]

Figure 5. Stratigraphic column detailing the hydrogeologic setting at the ROMP 112 – Rutland well site in Sumter County, Florida

permeability. Iron staining is apparent from land surface to 9 feet bls and from 14 to 20 feet bls.

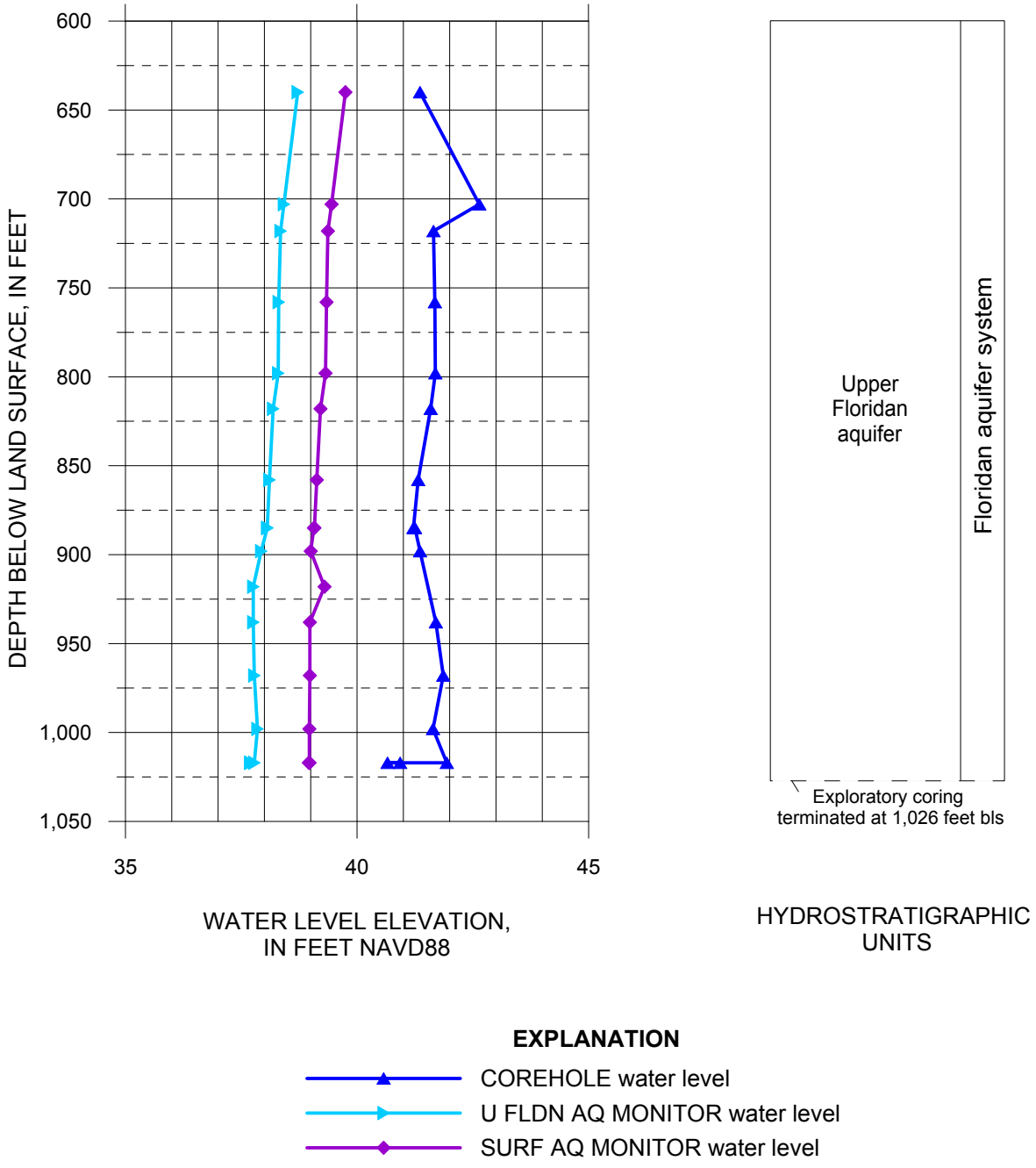
Hydrogeology

The characterization presented below is based on the lithology encountered during split-spoon sampling and hydraulic rotary coring, groundwater levels in the wells, and geophysical log data. The hydrogeologic units delineated at the ROMP 112 well site include, in descending order, a surficial aquifer, a breached semi-confining unit, and the Upper Floridan aquifer.

The current depiction of the tops and thicknesses of the hydrogeologic units present at the site is based on the hydrogeologic delineations determined by the work of the on-site geologists during both phases of exploratory coring. A representation of the hydrogeology at the ROMP 112 well site is presented in figure 5. During both phases of exploratory coring, static water level data were measured almost daily within the composite core hole. The static water level of the core hole ranged from 39 to 46 feet NAVD88 during phase 1 of exploratory coring. During phase 2 of exploratory coring, the water levels of the Upper Floridan aquifer monitor well and the surficial aquifer monitor well were also measured daily (fig. 6 and appendix D).

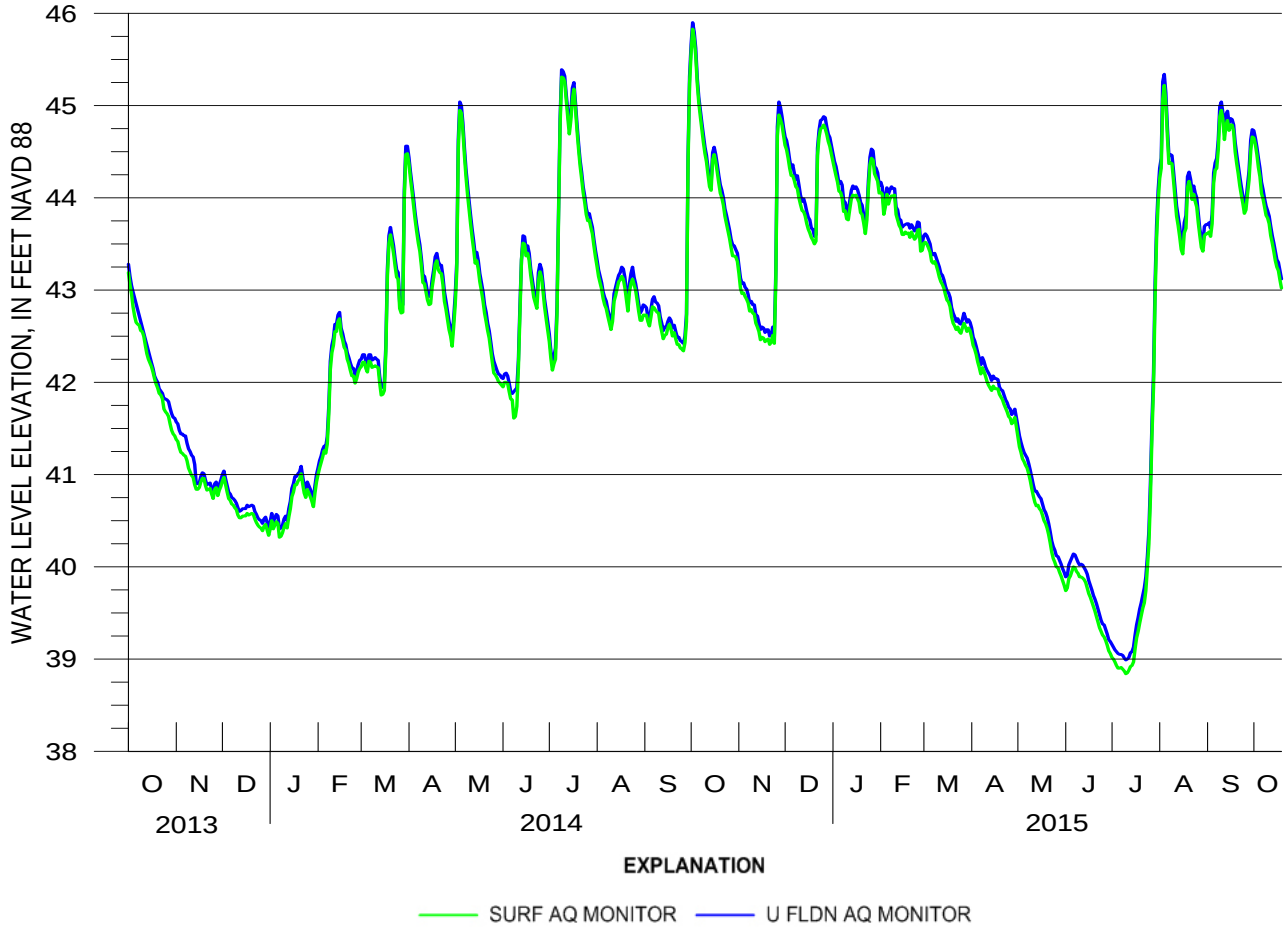
The surficial aquifer is the uppermost hydrostratigraphic unit present at the ROMP 112 well site. It extends from land surface to 14 feet bls within the fine to coarse-grained sands of the undifferentiated sand and clay deposits. There is some iron staining present in the sand, which is indicative of slow vertical movement of water that allows the iron to leach out of the deposits over time. Throughout much of Sumter County, the surficial aquifer can be absent, especially in areas where limestone is at or near land surface (Campbell, 1989).

At the ROMP 112 well site, a thin, clayey confining unit from 14 to 20 feet bls acts to retard vertical movement of water and may separate a surficial aquifer from the Upper Floridan aquifer. It is composed of greenish gray to very light gray clay, that is quartz sandy between 16 and 17 feet bls and has some iron staining. Due to the close proximity of the Withlacoochee River and numerous lakes and karst features in the upper carbonates of the Upper Floridan aquifer, this confining unit is often breached by karst openings that allow the Upper Floridan aquifer and the surficial aquifer water levels to be very close to coincident (fig. 7). This suggests the observed clay layer is an ineffective confining unit and disputes the presence of a surficial aquifer at this well site. Water level data collected over time from the surficial aquifer monitor well and the Upper Floridan aquifer monitor well at the ROMP 112 well site support the criteria for a ‘regionally unconfined Upper Floridan aquifer’ (Ron Basso, SWFWMD, written commun., 2014) (figs. 6, 7, and appendix D). The intermittent confining unit encountered at the ROMP 112 well site is likely similar to the breached semi-confining units



[AQ, aquifer; bls, below land surface; FLDN, Floridan; NAVD88, National Vertical Datum of 1988; SURF, surficial; U, Upper]

Figure 6. Static water level profile collected during phase 2 of exploratory coring at the ROMP 112 – Rutland well site in Sumter County, Florida



[SURF AQ, surficial aquifer; U FLDN AQ, Upper Floridan aquifer; NAVD88, North American Vertical Datum of 1988]

Figure 7. Long-term hydrograph of the SURF AQ MONITOR and U FLDN AQ MONITOR wells at the ROMP 112 – Rutland well site in Sumter County, Florida

observed at the ROMP 119.5 – Ross Pond well site in Marion County, Florida (LaRoche, 2012), the ROMP 102.5 – Bushnell well site in Sumter County, Florida (LaRoche, 2015), and the ROMP 115 – Royal well site in Sumter County, Florida (Jim Clayton, SWFWMD, personal commun., 2016).

At the ROMP 112 well site, the Upper Floridan aquifer extends from 20 feet bls (the top of the Ocala Limestone) to likely beyond the depth of phase 1 exploratory coring at 704 feet bls. The Upper Floridan aquifer consists of rocks of the Avon Park Formation and the Ocala Limestone (fig. 5) that have intergranular and moldic porosity. On a regional scale, the breached confining unit allows the surficial aquifer to be recharged from below by the Upper Floridan aquifer, resulting in similar water levels in both aquifers. The water level in the surficial sediments is recharged by the Upper Floridan aquifer, thus causing the deviations between the surficial and Upper Floridan aquifers as seen in figure 7.

The hydrogeology of the ROMP 112 well site cannot be characterized beyond the depth of 704 feet bls due to the lack of hydraulic and geophysical data collected during the second phase of exploratory coring. Comprehensive testing is required to delineate additional units and aquifers.

Summary

Two monitor wells were constructed at the ROMP 112 well site in Sumter County, Florida. The surficial aquifer monitor was constructed in December of 1992 and the Upper Floridan aquifer monitor was constructed in March of 2010. The wells were constructed as part of the NDWRAP to monitor groundwater levels in the surficial and the Upper Floridan aquifers near Lake Tsala Apopka. The casing and total depths of the surficial aquifer monitor well are 5 feet and 16.5 feet bls, respectively. The casing and total open hole depths of the Upper Floridan aquifer monitor well are 42 and 67 feet bls, respectively. Both wells are secured with locking well covers, surveyed, and groundwater levels are currently being monitoring by the District's Hydrologic Data Section.

Prior to well construction, exploratory split-spoon and hydraulic rotary core samples were collected to delineate the hydrogeology of the well site. The general geology at the well site is, in ascending order from oldest to youngest, the Avon Park Formation from 145 feet below land surface to the total depth of exploration of 1,026 feet bls; the Ocala Limestone from 20 to 145 feet bls; and undifferentiated sand and clay from land surface to 20 feet bls. The hydrogeology at the ROMP 112 well site includes, in descending order, a questionable surficial aquifer from land surface to 14 feet bls; a breached confining unit from 14 to 20 feet bls; and the Upper Floridan aquifer from 20 feet bls to possibly beyond 704 feet bls. This depth, and the delineation of additional hydrostratigraphic units, is subject to change if deeper exploratory work is to be done at the ROMP 112 well site in the future.

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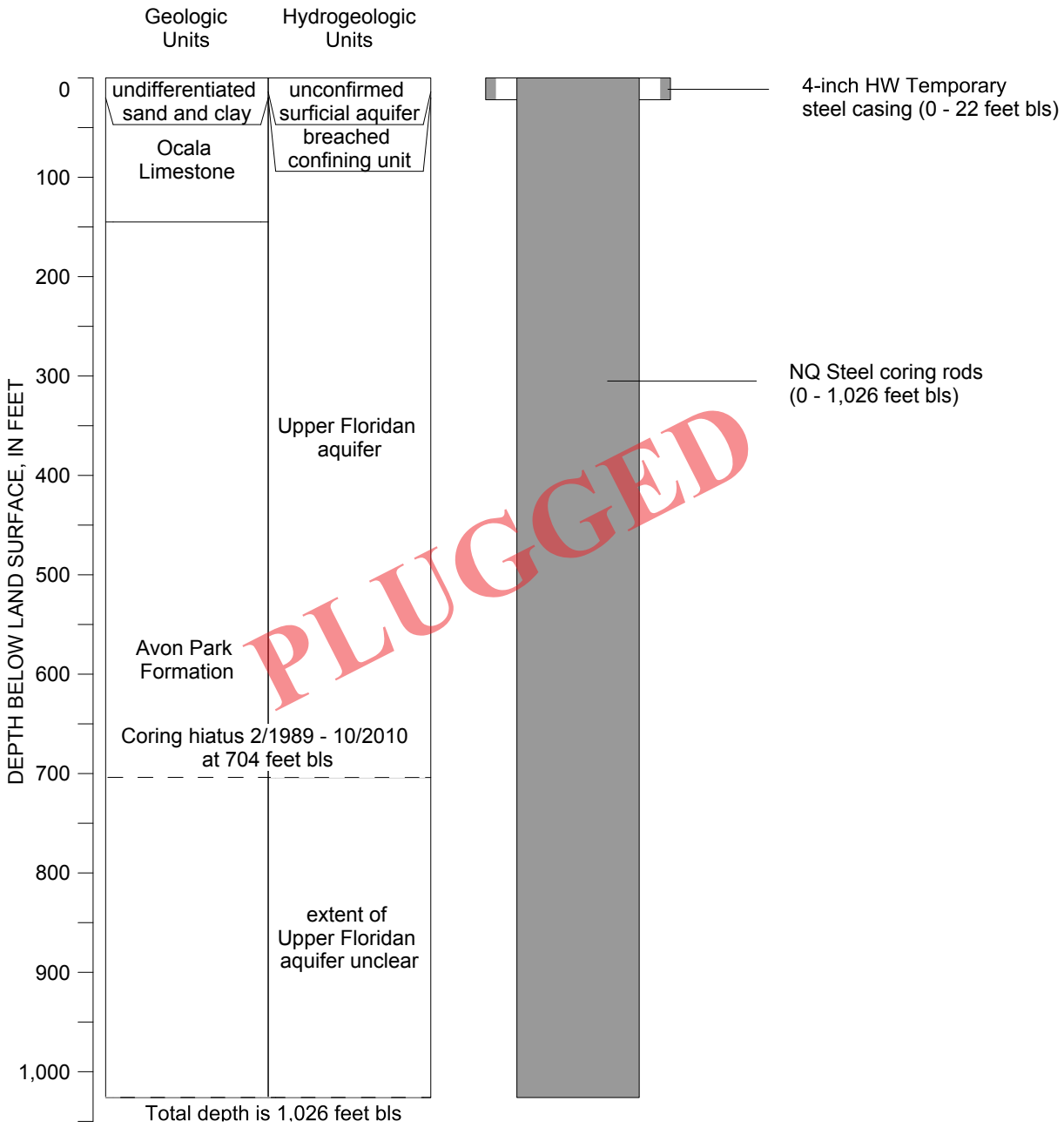
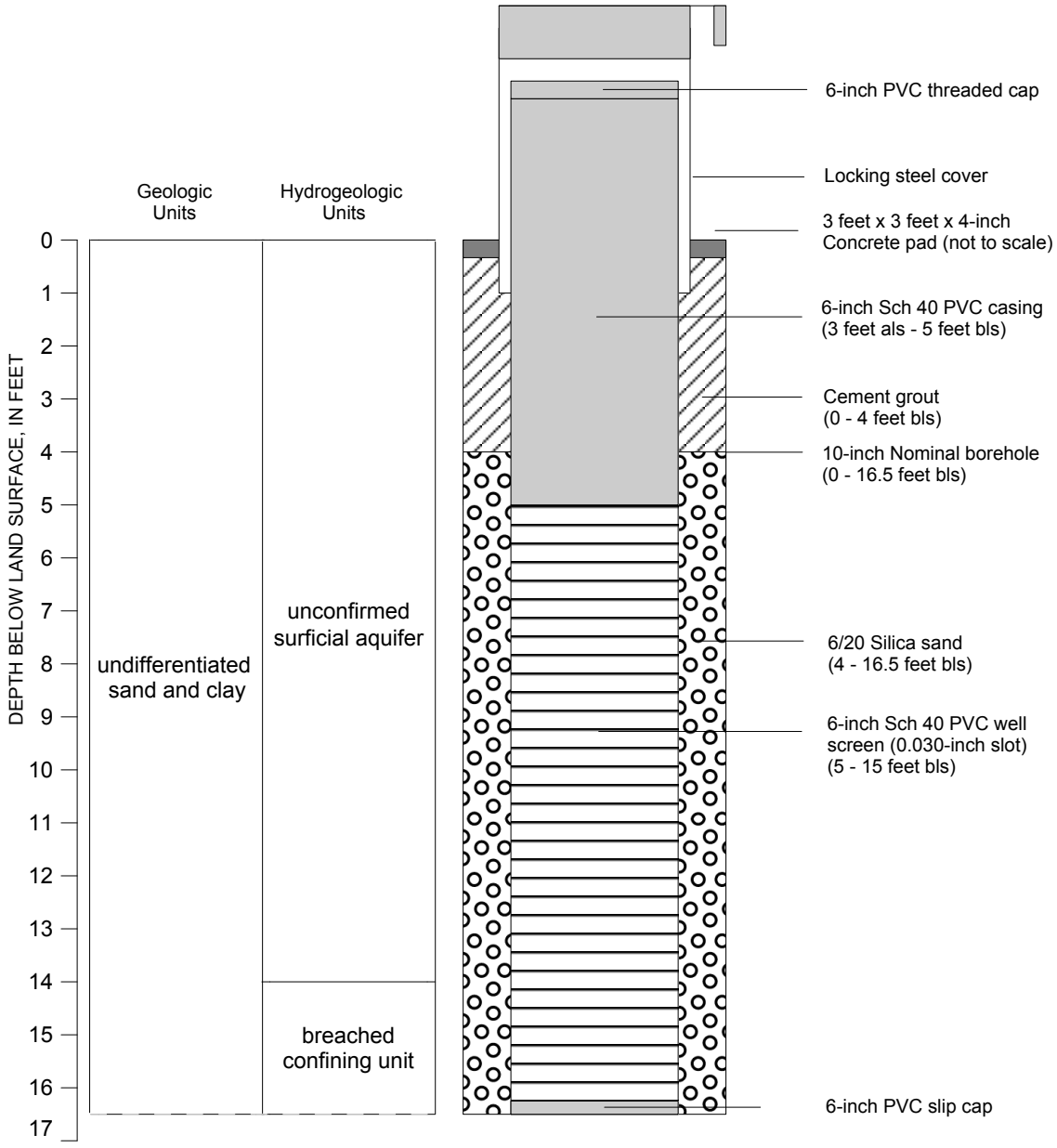
Appendix A. As-built Well Diagrams for the ROMP 112 – Rutland Well Site in Sumter County, Florida



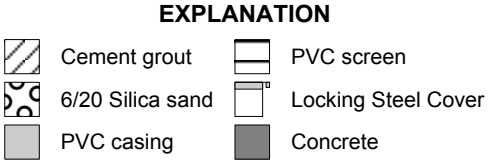
Well Name:	ROMP 112 COREHOLE
SID:	765157
WCP:	474044, 809418, 808119
S/T/R:	32/18S/21E
Latitude:	28° 52' 50.24"
Longitude:	82° 13' 41.31"
Reporting Category:	HALF
Phase 1 Const.:	1/12/1989 - 2/9/1989
Phase 2 Const.:	10/14/2010 - 11/18/2010

[bls, below land surface; Const., Construction; S/T/R, Section/Township/Range; ROMP, Regional Observation and Monitor-well Program; SID, Site Identification; WCP, Well Construction Permit]

Figure A1. As-built well diagram for the core hole at the ROMP 112 – Rutland well site in Sumter County, Florida.

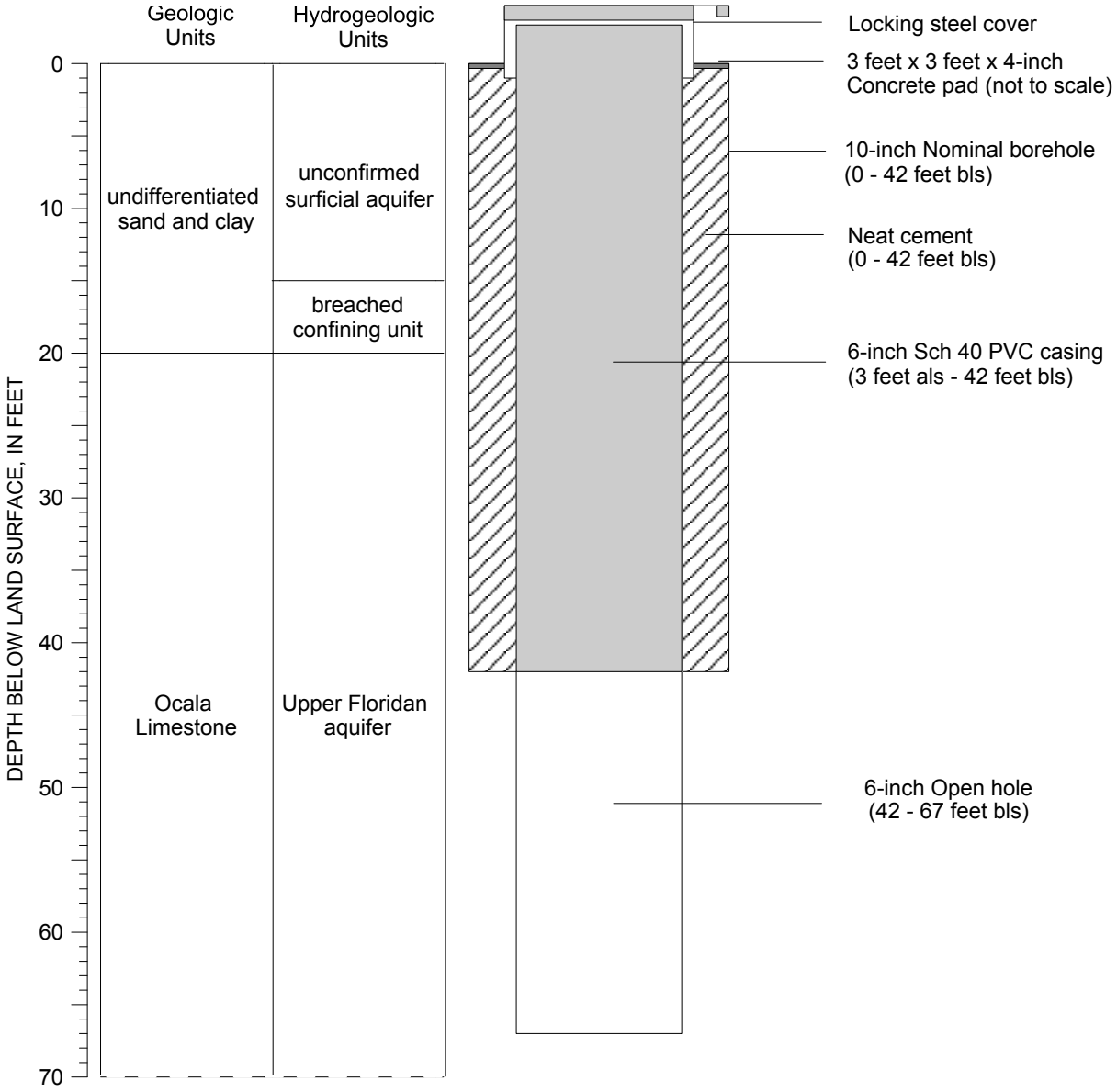


Well Name:	ROMP 112 SURF AQ MONITOR
SID:	23021
WCP:	532585
S/T/R:	32/18S/21E
Latitude:	28° 52' 59.82"
Longitude:	82° 13' 41.37"
Reporting Category:	HALF
Const. Began:	12/16/1992
Const. Complete:	12/17/1992



[als, above land surface; AQ, aquifer; bls, below land surface; Const., Construction; PVC, polyvinyl chloride; ROMP, Regional Observation Monitor-well Program; S/T/R, Section/Township/Range; Sch, Schedule; SID, Site Identification; SURF, surficial; WCP, Well Construction Permit]

Figure A2. As-built well diagram for the surficial monitor at the ROMP 112 – Rutland well site in Sumter County, Florida.



Well Name:	ROMP 112 U FLDN AQ MONITOR
SID:	755810
WCP:	803356
S/T/R:	32/18S/21E
Latitude:	28° 52' 50.27"
Longitude:	82° 13' 41.67"
Reporting Category:	HALF
Const. Began:	3/15/2010
Const. Complete:	3/16/2010

[als, above land surface; AQ, aquifer; bls, below land surface; Const., construction; FLDN, Floridan; PVC, polyvinyl chloride, ROMP, Regional Observation Monitor-well Program; S/T/R, Section/Township/Range; Sch, Schedule; SID, Site Identification; U, Upper; WCP, Well Construction Permit]

Figure A3. As-built well diagram for the Upper Floridan aquifer monitor at the ROMP 112 – Rutland well site in Sumter County, Florida.

Appendix B. Lithologic Logs for the First and Second Phases of Exploratory Coring at the ROMP 112 – Rutland Well Site in Sumter County, Florida

Appendix B1. Lithologic Log for Phase 1 of Exploratory Coring at the ROMP 112 – Rutland Well Site in Sumter County, Florida

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-16617 COUNTY - SUMTER
TOTAL DEPTH: 00704 FT. LOCATION: T.18S R.21E S.32 DA SAMPLES - NONE
LAT = 28D 52M 50S
LON = 82D 13M 41S COMPLETION DATE: 09/02/89 ELEVATION: 54 FT
OTHER TYPES OF LOGS AVAILABLE - CALIPER, GAMMA, ELECTRIC, TEMPERATURE

OWNER/DRILLER: S.W.F.W.M.D. DRILLER: LLOYD H. JOHNSON AND J. PAT (SWFWMD) [ROMP SITE 112] ("RUTLAND" DRILL SITE, CARLTON TRACT PROPERTY)

WORKED BY: JON ARTHUR; ENTERED BY ROB MINCE (2/14/89)
CASING DEPTH: 21'; TOTAL DEPTH: 704' (OBSTRUCTED AT 632'); CASING DIAMETER: 4" STEEL; NO PERMANENT MONITOR WELLS CONSTRUCTED, ALTHOUGH COREHOLE IS NOT YET PLUGGED.
SAMPLE COLLECTION: HOLLOW-STEM AUGERING: LSD - 21'; WIRELINE CORING: 21' - 704 WIRELINE CORING ACCOMPLISHED USING PLAIN WATER AS DRILLING FLUID, ALLOWING ROUTINE POTENTIOMETRIC PROFILING AND WATER SAMPLING DURING THE COURSE OF CORING. DETAILED INFORMATION AVAILABLE FROM S.W.F.W.M.D. GEOHYDROLOGIC DATA SECTION.

0. - 20. 090UDSC UNDIFFERENTIATED SAND AND CLAY
20. - 97.5 124OCALL OCALA LIMESTONE LOWER MEMBER
97.5 - 704 124AVPK AVON PARK FM.

0 - 4 SAND; LIGHT GRAY TO BROWNISH GRAY
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY UNCONSOLIDATED
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-03%, IRON STAIN- % FOSSILS: NO FOSSILS

4 - 9 SAND; WHITE TO DARK REDDISH BROWN
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; POOR INDURATION CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED ACCESSORY MINERALS: CLAY-30%, IRON STAIN- % FOSSILS: NO FOSSILS
INTERBEDDED WITH CLEAN WELL-SORTED MEDIUM QUARTZ SAND

9 - 14 SAND; YELLOWISH GRAY TO LIGHT BROWN
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; POOR INDURATION CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED ACCESSORY MINERALS: CLAY- %, QUARTZ SAND-

01%
FOSSILS: NO FOSSILS

14 - 20 CLAY; GREENISH GRAY TO VERY LIGHT GRAY POROSITY: INTERGRANULAR, LOW PERMEABILITY MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED ACCESSORY MINERALS: QUARTZ SAND-01%, IRON STAIN- % FOSSILS: PLANT REMAINS
HIGHER SAND CONTENT BETWEEN 16-17'; FINE TO MEDIUM GRAINED WHITE SAND

20 - 24 WACKESTONE; WHITE TO VERY LIGHT GRAY
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX ACCESSORY MINERALS: SPAR-02%
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS FOSSIL MOLDS
UPPER 1.5' DISAGGREGATED POSSIBLY DUE TO WEATHERING LEPIDOCYCLINA

24 - 29 PACKSTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS FOSSIL FRAGMENTS, MILIOLIDS
VARIES FROM GRAINSTONE TO WACKESTONE; LEPIDOCYCLINA

29 - 33.5 WACKESTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, MOLLUSKS, FOSSIL FRAGMENTS, SHARKS TEETH HIGHER MOLDIC POROSITY IN THIS INTERVAL; OPERCULINOIDES

33.5- 38.8 WACKESTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN TYPE: BIOGENIC, SKELETAL, CALCI-LUTITE
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS OPERCULINOIDES; BARNACLE MOLDS

38.8- 44.3 WACKESTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
GRAIN SIZE: VERY COARSE; RANGE: FINE TO GRAVEL MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, MOLLUSKS, FOSSIL FRAGMENTS OPERCULINOIDES

44.3- 49 WACKESTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE GRAIN SIZE: COARSE; RANGE: FINE TO VERY COARSE MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, MOLLUSKS, FOSSIL FRAGMENTS
MOLDS AND BURROWS FILLED WITH GRAINSTONE; INTRACLASTS

49 - 56.3 WACKESTONE; WHITE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX ACCESSORY MINERALS: SPAR- %
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, MILIOLIDS, ECHINOID BURROWED INTRACLASTS, OPERCULINOIDES

56.3- 59 PACKSTONE; WHITE TO MODERATE DARK GRAY POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: MILIOLIDS, BRYOZOA, FOSSIL FRAGMENTS, ECHINOID DARK COATING ON FOSSIL FRAGMENTS - MAY BE PYRITE OR ORGANICS

59 - 61.5 AS ABOVE

61.5- 68.5 PACKSTONE; VERY LIGHT ORANGE TO PINKISH GRAY POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: SKELETAL GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX ACCESSORY MINERALS: SPAR-03%
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, MOLLUSKS VARIES TO GRAINSTONE; EUPATAGUS (?) REPLACED BY SPAR PELOIDS

68.5- 70 AS ABOVE
SHARP COLOR CHANGE AT TOP OF THIS INTERVAL TO LIGHT GRAY MAY REFLECT ORGANIC OR PYRITE COATING - STAIN IS POST-DEPOSITIONAL; BRECCIATED

70 - 74 PACKSTONE; LIGHT GRAY TO MODERATE LIGHT GRAY POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY MOLDIC
GRAIN TYPE: SKELETAL GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT FOSSILS: ECHINOID, MOLLUSKS, MILIOLIDS, FOSSIL MOLDS ABUNDANT PELECYPOD AND GASTROPOD MOLDS

74 - 83 AS ABOVE
BRECCIATED; HIGHLY RECRYSTALLIZED CLASTS SURROUNDED BY SKELETAL, PELOIDAL GRAINSTONE

83 - 95 GRAINSTONE; YELLOWISH GRAY TO LIGHT GRAY POROSITY: INTERGRANULAR, INTRAGRANULAR POSSIBLY HIGH PERMEABILITY

GRAIN TYPE: SKELETAL GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: SPAR-01% FOSSILS: MILIOLIDS, ORGANICS
SPAR COMPONENT HIGHLY VARIABLE; ABUNDANT MILIOLIDS; 1 INCH PEAT LAYER AT TOP OF INTERVAL

95 - 97.5 LIMESTONE; GRAYISH YELLOW TO YELLOWISH GRAY POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN TYPE: SKELETAL, CRYSTALS
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT ACCESSORY MINERALS: SPAR-45%
FOSSILS: FOSSIL MOLDS, BRYOZOA, MOLLUSKS, MILIOLIDS, CORAL

97.5- 97.5 LIMESTONE; GRAYISH YELLOW TO YELLOWISH GRAY POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY GRAIN TYPE: SKELETAL, CRYSTALS
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
BIOSPARITE; SPAR CEMENT GRADES TO MICRITE CEMENT TOWARD BASE

97.5- 99 PEAT; BLACK TO VERY LIGHT GRAY
THIN INTERLAYERED CARBONATES AT TOP AND BOTTOM OF INTERVAL ALTERED, CHALKY AND SKELETAL

99 - 103.8 MUDSTONE; VERY LIGHT GRAY TO LIGHT GRAY SEDIMENTARY STRUCTURES: FISSILE, BIOTURBATED, LAMINATED FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, FOSSIL MOLDS "BURROWS" INFILLED BY MILLIOLID WACKESTONE; MUDSTONE IS LAMINATED; NUMEROUS VERY THIN (LESS THAN 1 MM) ORGANIC LAYERS WITHIN MUDSTONE; SORITES

103.8- 112 PACKSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
GRAIN TYPE: SKELETAL, CALCILUTITE GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX ACCESSORY MINERALS: SPAR-05%, ORGANICS-01% FOSSILS: CORAL, MOLLUSKS, FOSSIL FRAGMENTS BENTHIC FORAMINIFERA, MILIOLIDS

112 - 119 MUDSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, LOW PERMEABILITY GRAIN TYPE: CALCILUTITE, SKELETAL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED, BIOTURBATED OTHER FEATURES: DOLOMITIC
FOSSILS: MILIOLIDS, BENTHIC FORAMINIFERA, PLANT REMAINS SORITES; ROOTS; APPROX. 2% CONE MOLDS

119 - 126 AS ABOVE
A FEW ORGANIC-RICH LAMINATIONS

126 - 133.5 DOLOSTONE;
POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS 50-90% ALTERED
GOOD INDURATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS, CORAL ARCHIAS; PACKSTONE WITH MATRIX SELEC-

TIVE DOLOMITIZATION
CONE AND MOLLUSK MOLDS; POROSITY DECREASES TOWARD BASE, 3" LAYER AT 129.5 AND BOTTOM 1' IS A CHALKY DOLOMITIZED MUDSTONE

133.5- 139.3 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS 50-90% ALTERED
GOOD INDURATION
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA SORITES, MOLLUSK AND CONE MOLDS

139.3- 142.5 DOLOSTONE; YELLOWISH GRAY TO PINKISH GRAY POROSITY: INTERGRANULAR
OTHER FEATURES: SPECKLED, CHALKY FOSSILS: FOSSIL MOLDS, ORGANICS
LAYER OF ORGANICS AT 139.7; CONTAINS SMALL (5MM) STREAKS/BLEBS OF MED. GRAY PYRITIC (?) AMORPHOUS MATERIAL

142.5- 144 SAME AT 139; HAS FRACTURES COATED WITH WELL-DEVELOPED PYRITE CRYSTALS

144 - 145 CLAY; LIGHT OLIVE GRAY TO BLACK POROSITY: ; POOR INDURATION SEDIMENTARY STRUCTURES: INTERBEDDED ACCESSORY MINERALS: ORGANICS-50% OTHER FEATURES: DOLOMITIC

145 - 150.2 DOLOSTONE; YELLOWISH GRAY
0% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED GOOD INDURATION
FOSSILS: FOSSIL MOLDS
PERONELLA DALLI; ABUNDANT CONE AND MOLLUSK MOLDS; GASTROPOD CASTS; BIOTURBATED AT BASE

150.2- 157 DOLOSTONE; WHITE TO YELLOWISH GRAY
50-90% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CHALKY
SPOTTED WITH VERY TINY PYRITE CRYSTALS; A 7" BED OF ABOVE LITHOLOGY AT 152.5'

157 - 162.8 MUDSTONE; WHITE TO YELLOWISH GRAY GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED OTHER FEATURES: CHALKY
FOSSILS: MILIOLIDS, ECHINOID
PERONELLA DALLI; VARIABLE LITHOLOGY WITH DOLOMITIZED REMNANT PACKSTONE

162.8- 166.5 DOLOSTONE; YELLOWISH GRAY
0% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL GRAIN SIZE: FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED FOSSILS: FOSSIL MOLDS
BURROWS

166.5- 169.3 DOLOSTONE; LIGHT GRAY TO YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
FOSSILS: ECHINOID, CORAL, FOSSIL MOLDS

169.3- 175 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE POROSITY: INTERGRANULAR, PIN POINT VUGS; 50-90% ALTERED EUHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: CROSS-BEDDED, BIOTURBATED LAMINATED
FOSSILS: ORGANICS, FOSSIL MOLDS
CHALKY AND LESS MOLDIC AT TOP OF INTERVAL, GRADES TO NEXT LITHOLOGY

175 - 184 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC 50-90% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; MODERATE INDURATION OTHER FEATURES: CHALKY
FOSSILS: ECHINOID, FOSSIL MOLDS

184 - 198.8 DOLOSTONE; GRAYISH ORANGE TO YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION FOSSILS: FOSSIL MOLDS
ABUNDANT PERONELLA DALLI MOLDS AT TOP OF INTERVAL; BURROWS POROSITY DECREASES WITH DEPTH; MORE FRIABLE AND CHALKY WITH DEPTH

198.8- 199 MUDSTONE; WHITE POROSITY: INTERGRANULAR GRAIN TYPE: CALCILUTITE MODERATE INDURATION FOSSILS: NO FOSSILS

199 - 205 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED EUHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION FOSSILS: FOSSIL MOLDS
MATRIX-SELECTIVE DOLOMITIZATION OF A PACKSTONE INTERBEDDED WITH MUDSTONE; FOSSILS DISSOLVED OUT - ONLY MOLDS/VUGS REMAIN; THIS DESCRIPTION ACCOUNTS FOR MOST DOLOSTONES IN THIS SECTION

205 - 210 AS ABOVE
INTERBEDDED; PERONELLA DALLI (?) MOLDS

210 - 216.5 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED EUHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED, INTERBEDDED FOSSILS: FOSSIL MOLDS
BURROWS IN THIN DOLOMITIZED MUDSTONE BEDS FILLED WITH PRIMARY LITHOLOGY - DOLOMITIZED, MOLDIC PACKSTONE

216.5- 219 NO SAMPLES CAVITY

219 - 224.3 DOLOSTONE; YELLOWISH GRAY TO GRAYISH BROWN POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED, INTERBEDDED FOSSILS: FOSSIL MOLDS, ORGANICS
BURROWS; SOFT-SEDIMENT DEFORMATION, VARIABLE ORIGINAL LITHOLOGY FROM MUDSTONE TO WACKESTONE

224.3- 229 DOLOSTONE; YELLOWISH GRAY TO MODERATE LIGHT GRAY POROSITY: INTERGRANULAR, MOLDIC, LOW PERMEABILITY
50-90% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
FOSSILS: FOSSIL MOLDS
DOLOMITIZED MUDSTONE TO WACKESTONE; SOME MOLLUSK MOLDS

229 - 232 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED FOSSILS: FOSSIL MOLDS, ORGANICS
FRIABLE AND CHALKY IN PARTS

232 - 239 DOLOSTONE; GRAYISH BROWN TO YELLOWISH GRAY POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED FOSSILS: FOSSIL MOLDS
MOLLUSK, ECHINOID AND CONE (?) MOLDS; BURROWS IN MICRITIC LAYER; DOLOMITIZED WACKESTONE IS THE DOMINANT LITHOLOGY

239 - 243 DOLOSTONE; YELLOWISH GRAY POROSITY: INTERGRANULAR; 50-90% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BEDDED
FOSSILS: FOSSIL MOLDS
INTERLAYERED WITH ABOVE LITHOLOGY AT TOP OF INTERVAL DOLOMITIZED MUDSTONE; MOLLUSK MOLDS

243 - 246 AS ABOVE
MORE MOLDIC AND LAMINATED

246 - 250 DOLOSTONE; YELLOWISH GRAY TO LIGHT GRAY
POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED FOSSILS: FOSSIL MOLDS
VARIABLE ORIGINAL LITHOLOGY FROM MUD- TO GRAINSTONE MOLLUSK, FORAM AND PERONELLA DALLI MOLDS

250 - 258 AS ABOVE

258 - 266 DOLOSTONE; YELLOWISH GRAY
0% POROSITY: INTERGRANULAR, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; GOOD INDURATION FOSSILS: FOSSIL MOLDS
DOLOMITIZED MUDSTONE GRADING DOWN TO DOLOMITIC WACKESTONE WITH PERONELLA DALLI (?) AND FORAM MOLDS

266 - 270 DOLOSTONE; VERY LIGHT GRAY TO YELLOWISH GRAY POROSITY: INTERGRANULAR; 50-90% ALTERED
GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: INTERBEDDED FOSSILS: FOSSIL MOLDS

DOLOMITIZED MICRITE WITH MOLLUSK, FORAM (?) AND GASTROPOD MOLDS
270 - 274.6 DOLOSTONE; YELLOWISH GRAY TO LIGHT GRAY POROSITY: INTERGRANULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: INTERBEDDED FOSSILS: FOSSIL MOLDS
INTERBEDDED DOLOMITIZED MUDSTONE AND GRAINSTONE - THE LATTER ARE VERY POROUS

274.6- 285.3 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: CHALKY FOSSILS: FOSSIL MOLDS
GASTROPOD, MOLLUSK AND FORAM MOLDS; DOL. MUDSTONE GRADES DOWNWARD TO AN INTERBEDDED - BIOTURBATED DOLOMITIC MUDSTONE

285.3- 295 DOLOSTONE; YELLOWISH GRAY TO LIGHT GRAY POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
FOSSILS: FOSSIL MOLDS
UPPER 2 FT NON-MOLDIC; BIOTURBATION AND LITHOLOGIC VARIATIONS INCREASE WITH DEPTH

295 - 304 AS ABOVE
POOR RECOVERY

304 - 309 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY POROSITY: INTERGRANULAR, INTRAGRANULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED PELOIDS

309 - 319 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
FOSSILS: FOSSIL MOLDS
DOLOMITIZED WACKESTONE TO PACKSTONE; MUDSTONE AT BASE

319 - 324 NO SAMPLES

324 - 344 SAME LITHOLOGY AS ABOVE; VERY POOR RECOVERY

344 - 349 DOLOSTONE; PINKISH GRAY TO WHITE 50-90% ALTERED
GRAIN SIZE: VERY FINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED OTHER FEATURES: CALCAREOUS

349 - 354 NO SAMPLES

354 - 368 DOLOSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED GRAIN SIZE: VERY FINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS
MORE CALCAREOUS THAN ABOVE

368 - 379.1 DOLOSTONE; WHITE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, MOLDIC; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: SILT- %
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

379.1- 379.3 CLAY; LIGHT GRAY GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED OTHER FEATURES: STROMATAL

379.3- 389 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
DOLOMITIC WACKESTONE - TO PACKSTONE

389 - 399 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR; 10-50% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED OTHER FEATURES: STROMATAL
FOSSILS: MILIOLIDS
DOLOMITIZED MUDSTONE - TO WACKESTONE; SOMEWHAT CALCAREOUS

399 - 410.5 DOLOSTONE; PINKISH GRAY TO WHITE 10-50% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED OTHER FEATURES: CHALKY

410.5- 419 DOLOSTONE; WHITE TO VERY LIGHT GRAY POROSITY: INTERGRANULAR; 10-50% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED OTHER FEATURES: CHALKY
MOTTLED WITH LIGHT GRAY SULFIDE (?) MATERIAL; GLAZED STRIATED FAULT AT 418; 417.5 TO 419 IS BRECCIATED, CRUMBLY DOLOMITE CLAY AND ORGANICS

419 - 425.5 AS ABOVE, FROM 410 TO 417.5; AT AROUND 423, MOTTLING GRADES TO REDUCED-FE REPLACED ROOT CASTS (?)

425.5- 434 DOLOSTONE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CHALKY

434 - 440 DOLOSTONE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: CHALKY

440 - 450 DOLOSTONE; WHITE TO VERY LIGHT ORANGE POROSITY: INTERGRANULAR, MOLDIC; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED OTHER FEATURES: CHALKY

FOSSILS: FOSSIL MOLDS, ORGANICS
WELL DEVELOPED ROOT MOLDS FROM 444.2 TO 444.8; GASTROPOD AND MOLLUSK MOLDS

450 - 458.5 AS ABOVE
TURITELLA MOLDS; DOLOMITIZED MUD - TO WACKESTONE AS ABOVE

458.5- 463 DOLOSTONE; VERY LIGHT ORANGE POROSITY: INTERGRANULAR; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED OTHER FEATURES: CHALKY
GRADES FROM DOLOMITIC PACKSTONE DOWNWARD TO MUDSTONE

463 - 470 DOLOSTONE; WHITE TO VERY LIGHT ORANGE POROSITY: INTERGRANULAR, MOLDIC; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: LAMINATED, BIOTURBATED FOSSILS: FOSSIL MOLDS
DOLOMITIZED PACKSTONE

470 - 479 AS ABOVE
DOLOMITIZED MUD TO WACKESTONE

479 - 484 DOLOSTONE; WHITE
POROSITY: INTERGRANULAR; 10-50% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION ACCESSORY MINERALS: CHERT- %
FOSSILS: OOLITES
MUDSTONE; 1" GRAYISH BROWN CHERT LAYER AT TOP OF INTERVAL

484 - 494 DOLOSTONE; WHITE TO VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, PIN POINT VUGS; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CHALKY
FEW MOLLUSK AND ROOT MOLDS; GRADES FROM DOLOMITIC
WACKESTONE IN UPPER 3' TO A DOLOMITIC MUDSTONE

494 - 494.1 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION ACCESSORY MINERALS: ORGANICS-35%, QUARTZ-02% OTHER FEATURES: CHALKY
1-4 MM DOUBLY TERMINATED QUARTZ CRYSTALS EMBEDDED IN ORGANIC-RICH DOLOMITE; DRILLERS NOTE: "THESE MAY BE CAVINGS"; MATRIX LITHOLOGY IS CONSISTENT WITH SURROUNDING INTERVALS AND THIS CORE BOX DOES CONTAIN CHERT - MAY BE IN PLACE, NOT CAVINGS

494.1- 499 AS ABOVE
WHITE DOLOMITIZED MUDSTONE; CONTAINS 2" CHERT LAYER (BROWN-BLACK) AT 498.7'; PORTIONS OF INTERVAL BIOTURBATED/REWORKED

499 - 508.8 DOLOSTONE; WHITE TO VERY LIGHT ORANGE POROSITY: INTERGRANULAR, MOLDIC; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CHALKY

FOSSILS: FOSSIL MOLDS, ECHINOID, BRYOZOA
VARIES FROM DOLOMITIZED MUDSTONE - TO WACKESTONE

508.8- 510 DOLOSTONE;
POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS 10-50% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION ACCESSORY MINERALS: SPAR-02%
FOSSILS: FOSSIL MOLDS, ECHINOID, BENTHIC FORAMINIFERA MOLLUSKS
DOLOMITIZED PACKSTONE WITH GOLD-BROWN CALCITE SPAR FILLING MOLDS AND VUGS

510 - 519 DOLOSTONE; WHITE TO VERY LIGHT GRAY
POROSITY: INTERGRANULAR, VUGULAR; 10-50% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED, BIOTURBATED, MOTTLED ACCESSORY MINERALS: SPAR-02%, CHERT-01%
OTHER FEATURES: CHALKY FOSSILS: FOSSIL MOLDS
VUGS FILLED WITH GOLDEN BROWN TO CLEAR CALCITE AND TRANSLUCENT CHERT

519 - 524 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
90-100% ALTERED
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION ACCESSORY MINERALS: SPAR-02%
FOSSILS: FOSSIL MOLDS
DOLOMITIZED WACKESTONE; HIGHLY ALTERED - LESS CALCAREOUS THAN ABOVE

524 - 527 DOLOSTONE; WHITE
POROSITY: INTERGRANULAR, FRACTURE; 50-90% ALTERED GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: SPAR-02%
FRACTURES LINED WITH GOLDEN BROWN CALCITE

527 - 534 DOLOSTONE; LIGHT OLIVE GRAY TO WHITE 90-100% ALTERED
GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED
ACCESSORY MINERALS: SPAR- %, CHERT-%
BURROW MOLDS; TOP 4" IS LIGNITE; JUST BELOW LIGNITE IS A 4" CHERT LAYER

534 - 544 DOLOSTONE; GRAYISH BROWN TO BROWNISH GRAY 50-90% ALTERED
GRAIN SIZE: FINE; MODERATE INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED ACCESSORY MINERALS: SPAR-03%, ORGANICS-05%
CALCITE-LINED VUGS; BURROWS; "SANDY" APPEARANCE; ORGANICS INCREASE TOWARD BASE

544 - 550 DOLOSTONE; PINKISH GRAY TO GRAYISH BROWN POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: ORGANICS- %, SPAR-02% FOSSILS: FOSSIL MOLDS
DOLOMITE WACKESTONE; DOLOMITE CRYSTALS COARSEN AND BECOME EUHEDRAL WITH DEPTH

550 - 558 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION

SEDIMENTARY STRUCTURES: LAMINATED ACCESSORY MINERALS: SPAR-02%, ORGANICS-02% FOSSILS: FOSSIL MOLDS
THIN ORGANIC LAYER AT 554; BURROWS; DOLOMITIC MUDSTONE - WACKESTONE; GOLDEN BROWN DRUSY CALCITE LINING VUGS

558 - 560.5 AS ABOVE
DOLOMITIZED MUDSTONE

560.5- 563.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: ORGANICS-02%, SPAR-03% OTHER FEATURES: CHALKY
FOSSILS: FOSSIL MOLDS, ECHINOID
VUGS AS ABOVE

563.7- 575 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED; EUHEDRAL GRAIN SIZE: FINE
CEMENT TYPE(S): GYPSUM CEMENT SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: ORGANICS-02%, SPAR-02% FOSSILS: FOSSIL MOLDS
VARIES FROM CHALKY DOLOMITIC MUDSTONE TO WELL-INDURATED DOLOMITIC MOLDIC WACKESTONE

575 - 580 MUDSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: SPAR-02%
OTHER FEATURES: DOLOMITIC FOSSILS: FOSSIL MOLDS, ECHINOID

580 - 590.5 AS ABOVE 590.5- 594 AS ABOVE
TOP 1' OF INTERVAL IS DICTYCONUS-BEARING GRAINSTONE; VUGS AND BURROWS; NO LONGER DRUSY

594 - 600 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED ACCESSORY MINERALS: SPAR-03%, GYPSUM-01%
HEALED FRACTURE AT BOTTOM OF INTERVAL; VUGS FILLED WITH CALCITE AND GYPSUM

600 - 610 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS 90-100% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED ACCESSORY MINERALS: SPAR-01%
FOSSILS: FOSSIL MOLDS, MOLLUSKS, ECHINOID BENTHIC FORAMINIFERA
TOP OF INTERVAL IS CALCAREOUS

610 - 615 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: SPAR-01%, QUARTZ-01%
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, ECHINOID DOLOMITIC WACKESTONE; FORAM AND ECHINOID MOLDS; CALCITE
FILLED VUG, SMALL QUARTZ CLUSTER FOUND IN MOLD

615 - 621 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 90-100% ALTERED EUHEDRAL
GRAIN SIZE: FINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED ACCESSORY MINERALS: SPAR-02%
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA DRUSY VUGS AS ABOVE

621 - 631.5 AS ABOVE
SELECTIVELY DOLOMITIZED WACKESTONE TO PACKSTONE

631.5- 637 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED; EUHEDRAL GRAIN SIZE: FINE; GOOD INDURATION
ACCESSORY MINERALS: SPAR-01% FOSSILS: FOSSIL MOLDS
CALCITE LINING FRACTURES

637 - 644 DOLOSTONE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: SPAR-01%
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MOLLUSKS

644 - 651.8 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED ACCESSORY MINERALS: SPAR-01%
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MOLLUSKS LAMINATED IN BOTTOM 2" OF INTERVAL

651.8- 655 AS ABOVE
NO LAMINATIONS

655 - 660 DOLOSTONE; PINKISH GRAY
POROSITY: INTERGRANULAR; 90-100% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED, BRECCIATED ACCESSORY MINERALS: ORGANICS-01%

660 - 669 DOLOSTONE; PINKISH GRAY
POROSITY: INTERGRANULAR, MOLDIC, VUGULAR; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: LAMINATED ACCESSORY MINERALS: ORGANICS-01% FOSSILS: FOSSIL MOLDS, MOLLUSKS

669 - 674 CALCARENITE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE UNCONSOLIDATED
OTHER FEATURES: DOLOMITIC
ONLY FINE CUTTINGS RECOVERED IN 125 MICROMETER SCREEN

674 - 679 DOLOSTONE; YELLOWISH GRAY
POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED GRAIN SIZE: VERY FINE; GOOD INDURATION
FOSSILS: FOSSIL MOLDS, MOLLUSKS

679 - 689 SAME AS CUTTINGS AT 669-674, PLUS MINOR AMOUNTS OF DARK BROWN BLACK ORGANIC (?) MATERIAL

689 - 694 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: BIOTURBATED, LAMINATED WHITE, DOLOMITIC INTERCLAST; CALCITE-LINED VUGS; ROOT MOLDS/BURROWS AT BASE

694 - 698 DOLOSTONE; WHITE
POROSITY: INTERGRANULAR, PIN POINT VUGS; 50-90% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CHALKY

698 - 704 DOLOSTONE; WHITE TO YELLOWISH GRAY POROSITY: INTERGRANULAR; 50-90% ALTERED GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION SEDIMENTARY STRUCTURES: LAMINATED, BIOTURBATED ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: CHALKY
BROWNISH GRAY TO BLACK 2" CHERT LAYER AT TOP OF INTERVAL SOFT SEDIMENT DEFORMATION SHOWN BY LAMINATIONS; ORGANIC LAYER AT 703
704 TOTAL DEPTH

Appendix B2. Lithologic Log for Phase 2 of Exploratory Coring at the ROMP 112 – Rutland Well Site in Sumter County, Florida

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-19301 COUNTY - CI19310 TOTAL DEPTH: 1026 FT. LOCATION: T.18S R.21E S.32
29 SAMPLES FROM 695 TO 1026 FT. LAT = 28D 52M 50S
LON = 81D 13M 41S
COMPLETION DATE: N/A ELEVATION: 54 FT OTHER TYPES OF LOGS AVAILABLE - NONE
OWNER/DRILLER: SWFWMD-ROMP 112 CARLTON HALF MOON (CME DEEP) WORKED BY: SCOTT BARRETT DYER 03282012
LATITUDE SECONDS ROUNDED DOWN FROM 50.25
LONGITUDE SECONDS ROUNDED DOWN FROM 41.31 BOTH LATITUDE AND ELEVATION ARE SURVEYED
DATA SAMPLES ARE 29 BOXES OF CORE
CORE RECOVERY WAS GOOD EXCEPT FOR THE LAST 43 FEET

695.0 - 1026.0 124AVPK AVON PARK FM.

695 - 698 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
16% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-07%, ORGANICS-02% OTHER FEATURES: CALCAREOUS, FROSTED

698 - 699.1 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-08%, PYRITE-03% ORGANICS-01%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS, CONES

699.1- 702.5 MUDSTONE; VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS GRAIN TYPE: CALCILUTITE, SKELETAL, CRYSTALS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT ACCESSORY MINERALS: DOLOMITE-08%, QUARTZ-01% OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
AT 701 FT THERE IS A 2 INCH LAYER OF COARSE DOLOMITE
SECTION CONTAINS ANHEDRAL FINE QUARTZ CRYSTALS

702.5- 702.9 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: MANGANESE OXIDE-02%
OTHER FEATURES: CALCAREOUS

702.9- 703 MUDSTONE; VERY LIGHT ORANGE
05% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 01% ALLOCHEMICAL CONSTITUENTS GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT ACCESSORY MINERALS: DOLOMITE-03%
OTHER FEATURES: DOLOMITIC

703 - 703.2 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-03% OTHER FEATURES: DOLOMITIC
2MM LAYER OF ORGANICS AT BOTTOM OF INTERVAL

703.2- 705.1 DOLOSTONE; GRAYISH BROWN
09% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-03%, ORGANICS-03% CALCITE-01%
FOSSILS: FOSSIL MOLDS
SLIGHTLY MICRITIC AT TOP AND BOTTOM 2 INCHES OF INTERVAL EUHEDRAL CALCITE CRYSTALS IN VUGS AT BOTTOM OF INTERVAL

705.1- 706.8 DOLOSTONE; VERY LIGHT ORANGE
04% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: MICRO-CRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-02% CALCITE-01%
OTHER FEATURES: CALCAREOUS

706.8- 707.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
09% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-03%, ORGANICS-03% FOSSILS: FOSSIL MOLDS

707.1- 708.5 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
09% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-03%, ORGANICS-04% FOSSILS: FOSSIL MOLDS
THERE ARE NODULES OF MOLDIC CALCAREOUS DOLOSTONE

708.5- 711.1 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
09% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-16%, CALCILUTITE-03% CALCITE-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS
THERE ARE BEDS OF VERY FINE DOLOSTONE WITH ORGANICS; MOLDS IN LAST 3 INCHES CONTAIN EUHEDRAL CALCITE CRYSTALS

711.1- 711.4 DOLOSTONE; VERY LIGHT ORANGE
03% POROSITY: INTERCRYSTALLINE, INTERGRANULAR PIN POINT VUGS; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT

711.4- 713 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-18%, CALCILUTITE-10% OTHER FEATURES: CALCAREOUS

713 - 713.1 DOLOSTONE; VERY LIGHT ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-10%, CALCILUTITE-02% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

713.1- 714.6 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-18%, CALCILUTITE-07% OTHER FEATURES: CALCAREOUS

714.6- 716.8 DOLOSTONE; DARK YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-18%,

CALCILUTITE-03% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
716.8- 718 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
20% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-08%, QUARTZ-03% FOSSILS: FOSSIL MOLDS

718 - 718.1 DOLOSTONE; GRAYISH BROWN
09% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-06%, CALCILUTITE-03% CALCITE-01%, QUARTZ-01% OTHER FEATURES: CALCAREOUS
QUARTZ AND CALCITE CRYSTALS IN MOLDS ON EXTERIOR OF CORE

718.1- 718.8 PEAT; DARK YELLOWISH BROWN ACCESSORY MINERALS: SILT-SIZE DOLOMITE-05% FOSSILS: ECHINOID

718.8- 723 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
07% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-15%, CALCILUTITE-03% OTHER FEATURES: CALCAREOUS
FOSSILS: ECHINOID

723 - 726.7 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
05% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-01%, QUARTZ-01%

726.7- 728 DOLOSTONE; YELLOWISH GRAY
04% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-03%, ORGANICS-03% OTHER FEATURES: CALCAREOUS

728 - 728.5 CALCILUTITE; DARK YELLOWISH BROWN
07% POROSITY: INTERGRANULAR POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX ACCESSORY MINERALS: CLAY-04%, ORGANICS-02%

728.5- 731.2 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS

50-90% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
731.2- 733 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR PIN POINT VUGS; 90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, CALCILUTITE-02% FOSSILS: FOSSIL MOLDS
MICRITE AND CLAY IN VARVES AT 731.8 FEET

733 - 738.2 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
11% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT OTHER FEATURES: SUCROSIC

738.2- 739.4 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
06% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-01% FOSSILS: FOSSIL MOLDS

739.4- 743.1 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-02% OTHER FEATURES: POOR SAMPLE
ONLY 3 FEET OF CORE FOR A 5 FOOT INTERVAL

743.1- 754 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, CALCITE-05% QUARTZ-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS
INTERVAL DEMONSTRATES HIGH CALCAREOUS NATURE; CRYSTALS OF CALCITE AND MICRITE THROUGHOUT

754 - 755.4 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
09% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-02%, CALCITE-01% OTHER FEATURES: CALCAREOUS

755.4- 756.5 DOLOSTONE; VERY LIGHT ORANGE
10% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE INTERGRANULAR; 90-100% ALTERED; ANHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-02% OTHER FEATURES: CALCAREOUS

756.5- 757.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-05% OTHER FEATURES: CALCAREOUS

757.1- 758 DOLOSTONE; GRAYISH ORANGE
14% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

758 - 761.2 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
12% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: CALCITE-02% OTHER FEATURES: CALCAREOUS

761.2- 762.4 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: INTERGRANULAR, MOLDIC; 50-90% ALTERED ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: CALCAREOUS

762.4- 768 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-02%, CALCITE-02% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

768 - 769.9 DOLOSTONE; GRAYISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-02%, QUARTZ-01% OTHER FEATURES: CALCAREOUS

769.9- 772.1 MUDSTONE; VERY LIGHT ORANGE
07% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 99% ALLOCHEMICAL CONSTITUENTS GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE

CEMENT TYPE(S): CALCILUTITE MATRIX, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCITE-01%, ORGANICS-01%
ORGANICS AND CALCITE CRYSTALS IN 2MM LAYER AROUND 771.9 FT

772.1- 774.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-02%, CALCITE-03% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

774.2- 774.8 DOLOSTONE; GRAYISH ORANGE
07% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-04%, CALCITE-01% ORGANICS-02%
OTHER FEATURES: CALCAREOUS, VARVED

774.8- 778.1 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: CALCITE-02% FOSSILS: FOSSIL MOLDS

778.1- 779.3 DOLOSTONE; GRAYISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

779.3- 779.6 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
12% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: CALCITE-01% FOSSILS: FOSSIL MOLDS

779.6- 780.4 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-03%
OTHER FEATURES: CALCAREOUS

780.4- 781.2 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
08% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
50-90% ALTERED; SUBHEDRAL

GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-03%, CALCITE-02% QUARTZ-01%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS
CALCITE AND QUARTZ AT TOP AND BOTTOM OF INTERVAL; MOLDIC AND VUGULAR FEATURES TOWARD CENTER OF INTERVAL

781.2- 783 DOLOSTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
07% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ-02%, CALCITE-01% FOSSILS: FOSSIL MOLDS
QUARTZ CONCENTRATED AROUND 782.0 FT

783 - 783.3 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
07% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-02%
ORGANICS IN 2MM VARVE AT BOTTOM OF INTERVAL

783.3- 784.4 DOLOSTONE; GRAYISH ORANGE
09% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-01% FOSSILS: FOSSIL MOLDS

784.4- 785.4 DOLOSTONE; GRAYISH ORANGE
06% POROSITY: INTERGRANULAR; 90-100% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-02%

785.4- 788.9 DOLOSTONE; VERY LIGHT ORANGE
09% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

788.9- 788.4 DOLOSTONE; GRAYISH ORANGE
07% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-04%
OTHER FEATURES: CALCAREOUS

788.4- 791.6 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR

90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

791.6- 793 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
07% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-08%

793 - 797 DOLOSTONE; VERY LIGHT ORANGE
07% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: MICRO-CRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-02%, CALCILUTITE-02% CALCITE-01%
OTHER FEATURES: CALCAREOUS

797 - 798 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
08% POROSITY: INTERGRANULAR, FRACTURE; 50-90% ALTERED ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, CALCITE-02% ORGANICS-02%
OTHER FEATURES: CALCAREOUS

798 - 801.3 DOLOSTONE; GRAYISH BROWN
15% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, QUARTZ-01% FOSSILS: FOSSIL MOLDS
QUARTZ IN VUGS AROUND 800.0 FT

801.3- 801.9 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-04% OTHER FEATURES: VARVED
FOSSILS: FOSSIL MOLDS

801.9- 805.2 DOLOSTONE; GRAYISH BROWN
12% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-01% FOSSILS: FOSSIL MOLDS

805.2- 806 DOLOSTONE; GRAYISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC

90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

806 - 809.7 DOLOSTONE; GRAYISH BROWN
12% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

809.7- 811.5 DOLOSTONE; GRAYISH BROWN
07% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ-02%, ORGANICS-02%

811.5- 813 DOLOSTONE; GRAYISH BROWN
07% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL GRAIN SIZE: VERY FINE; RANGE: MICRO-CRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-02% OTHER FEATURES: CALCAREOUS

813 - 819.5 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
15% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-03%
FOSSILS: FOSSIL MOLDS

819.5- 820.1 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-05%, ORGANICS-02% PYRITE-01%
OTHER FEATURES: CALCAREOUS

820.1- 823 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
15% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

823 - 825.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE

90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

825.1- 828.2 DOLOSTONE; GRAYISH ORANGE
14% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-02% FOSSILS: FOSSIL MOLDS

828.2- 830.2 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE, MOLDIC, INTERGRANULAR
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

830.2- 831 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
08% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

831 - 832 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
09% POROSITY: MOLDIC, INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

832 - 832.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
07% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: CALCILUTITE-03% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

832.6- 833 DOLOSTONE; GRAYISH ORANGE
07% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT

833 - 835.2 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

835.2- 838 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
12% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT OTHER FEATURES: POOR SAMPLE FOSSILS: FOSSIL MOLDS
ONLY 1 FOOT OF CORE FOR 2.8 FOOT INTERVAL

838 - 838.9 DOLOSTONE; GRAYISH BROWN
12% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

838.9- 845.3 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
10% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

845.3- 845.6 DOLOSTONE; GRAYISH BROWN
08% POROSITY: INTERGRANULAR; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

845.6- 849 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
10% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT FOSSILS: FOSSIL MOLDS

849 - 852.3 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
09% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: CALCITE-06% OTHER FEATURES: CALCAR-
EOUS
CALCITE CRYSTALS IN FRACTURES, MOLDS AND INTERGRANULAR

852.3- 853.9 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
07% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS

853.9- 857.2 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
14% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCITE-05%, CALCILUTITE-04% ORGANICS-05%, PYRITE-01%
OTHER FEATURES: CALCAREOUS, GRANULAR FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
HIGHLY CALCAREOUS DUE TO CALCITE AND MICRITE THROUGHOUT

857.2- 862 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
16% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-02%, ORGANICS-04% OTHER FEATURES: SPECKLED, GRANULAR, CALCAREOUS FOSSILS: FOSSIL FRAGMENTS

862 - 864.2 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
16% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT OTHER FEATURES: GRANULAR FOSSILS: FOSSIL FRAGMENTS

864.2- 871 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
14% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-04%, CALCITE-01% OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

871 - 877.9 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-04%, CALCITE-03% CALCILUTITE-03%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE FOSSILS: FOSSIL MOLDS
ONLY 2.5 FEET OF CORE FOR 7 FOOT INTERVAL

877.9- 881.4 PEAT; DARK GRAY
ACCESSORY MINERALS: GYPSUM-04%

881.4- 883 PEAT; BLACK
ACCESSORY MINERALS: GYPSUM-20%
SOLID GYPSUM ALONG ONE SIDE OF CORE; GYPSUM IS PRESENT OVER THE ENTIRE INTERVAL

883 - 884 PEAT; BLACK
ACCESSORY MINERALS: GYPSUM-01%
GYPSUM IN FORM OF FINE NEEDLES THROUGHOUT INTERVAL

884 - 886 DOLOSTONE; BROWNISH GRAY TO BLACK
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-10%

886 - 886.8 PEAT; BLACK

886.8- 888 DOLOSTONE; BROWNISH GRAY TO BLACK
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-10%

888 - 889 PEAT; BLACK
ACCESSORY MINERALS: CLAY-15%

889 - 889.9 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-10%

889.9- 890.3 PEAT; BLACK TO DARK YELLOWISH BROWN ACCESSORY MINERALS: DOLOMITE-10%

890.3- 895.5 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-20%

895.5- 896 PEAT; DARK YELLOWISH BROWN ACCESSORY MINERALS: CLAY-12%

896 - 896.3 PEAT; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
05% POROSITY: INTERGRANULAR ACCESSORY MINERALS: CALCILUTITE-25% FOSSILS: ALGAE

896.3- 902.5 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-04%

902.5- 903 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
10% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-08%,

CALCILUTITE-03%

903 - 907.2 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
06% POROSITY: INTERCRYSTALLINE, INTERGRANULAR PIN POINT VUGS; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-03%

907.2- 909.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-05%

909.6- 910.2 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-03%

910.2- 910.9 DOLOSTONE; DARK YELLOWISH BROWN
08% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-03% OTHER FEATURES: POOR SAMPLE
5 INCHES OF THIS INTERVAL ARE MISSING

910.9- 911.1 GYPSUM; WHITE TO DARK YELLOWISH BROWN ACCESSORY MINERALS: DOLOMITE-15%

911.1- 912.5 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR PIN POINT VUGS; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-03%

912.5- 913 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-03%

913 - 915 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
14% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

ACCESSORY MINERALS: ORGANICS-05%, QUARTZ-01% SMALL DRUSY QUARTZ IN SOME MOLDS

915 - 916.3 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-08%

916.3- 916.7 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-08%, GYPSUM-02% CALCILUTITE-01%
OTHER FEATURES: CALCAREOUS

916.7- 917.2 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
12% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-04% FOSSILS: FOSSIL MOLDS

917.2- 917.5 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
08% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-04% FOSSILS: FOSSIL MOLDS

917.5- 918 DOLOSTONE; GRAYISH BROWN
12% POROSITY: MOLDIC, INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-08%, CALCITE-02% OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

918 - 919 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
09% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, MOLDIC
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-06%, CALCITE-05%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

919 - 920 DOLOSTONE; MODERATE YELLOWISH BROWN
14% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-08%, CALCITE-01% FOSSILS: FOSSIL FRAGMENTS

920 - 923.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
16% POROSITY: MOLDIC, INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-08% OTHER FEATURES: GRANULAR, SUCROSIC FOSSILS: FOSSIL MOLDS

923.6- 924 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: INTERGRANULAR; 90-100% ALTERED; ANHEDRAL GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-07%

924 - 925.1 DOLOSTONE; DARK YELLOWISH BROWN
06% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-05%, CALCITE-03% CALCILUTITE-O2%
FOSSILS: FOSSIL MOLDS

925.1- 928.1 PEAT; DARK YELLOWISH BROWN
07% POROSITY: INTERGRANULAR
ACCESSORY MINERALS: DOLOMITE-01%, SILT-SIZE DOLOMITE-01% OTHER FEATURES: DOLOMITIC

928.1- 931 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
07% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, FRACTURE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-07%, CALCITE-02% OTHER FEATURES: CALCAREOUS

931 - 933 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-04% OTHER FEATURES: GRANULAR

933 - 934.7 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-03%

OTHER FEATURES: GRANULAR

934.7- 935.4 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-02%, ORGANICS-03% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS, GRANULAR

935.4- 937.9 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE, FRACTURE, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-03%, ORGANICS-02% CALCILUTITE-01%
OTHER FEATURES: CALCAREOUS

937.9- 941 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
10% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-05%, CALCILUTITE-04% CALCITE-02%
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC

941 - 929 WACKESTONE; GRAYISH YELLOW TO TRANSPARENT
2I% POROSITY: PIN POINT VUGS POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-07%

929 - 948.9 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS, FRACTURE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-07%, CALCILUTITE-03% CALCITE-01%
OTHER FEATURES: CALCAREOUS

948.9- 949.6 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
09% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT ACCESSORY MINERALS: ORGANICS-08%

949.6- 964.3 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: VUGULAR, INTERGRANULAR, FRACTURE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO COARSE; GOOD INDURATION CEMENT TYPE(S): DOLOMITE CEMENT

ACCESSORY MINERALS: ORGANICS-04%, CALCITE-02% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS
MEDIUM AND COARSE GRAINS AROUND VUGS; CALCITE CRYSTALS IN AND AROUND VUGS

964.3- 965 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
14% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-04%, GLAUCONITE-01%

965 - 967 DOLOSTONE; LIGHT OLIVE GRAY
09% POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, GLAUCONITE-01% CALCITE-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

967 - 968 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, GLAUCONITE-01%

968 - 968.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, CALCITE-02% GLAUCONITE-01%
OTHER FEATURES: CALCAREOUS CALCITE IN FRACTURES AND VUGS

968.6- 969.2 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, GLAUCONITE-01%

969.2- 969.7 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-02%, CALCITE-02% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

969.7- 970.6 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-06%, CALCITE-01% CALCILUTITE-01%
OTHER FEATURES: CALCAREOUS

970.6- 971.1 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
09% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-04%, CALCITE-03% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS

971.1- 971.4 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-05%, CALCITE-03% CALCILUTITE-03%
OTHER FEATURES: CALCAREOUS

971.4- 971.7 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
07% POROSITY: INTERGRANULAR, PIN POINT VUGS INTERCRYSTALLINE; 90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-03%, CALCITE-02% CALCILUTITE-03%
OTHER FEATURES: CALCAREOUS

971.7- 973 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-07%, CALCILUTITE-06% CALCITE-01%
OTHER FEATURES: CALCAREOUS

973 - 973.5 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-08%, CALCILUTITE-05% CALCITE-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

973.5- 974.4 DOLOSTONE; MODERATE YELLOWISH BROWN
11% POROSITY: INTERGRANULAR, PIN POINT VUGS

90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-08%, CALCILUTITE-03% CALCITE-01%
OTHER FEATURES: CALCAREOUS

974.4- 975 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-04%, CALCITE-06% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS

975 - 975.9 DOLOSTONE; MODERATE YELLOWISH BROWN
12% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MEDIUM TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: ORGANICS-10%, CALCITE-04% CALCILUTITE-02%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

975.9- 981.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCILUTITE-09%, CALCITE-08% ORGANICS-08%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS

981.6- 983 DOLOSTONE; DARK YELLOWISH BROWN
08% POROSITY: INTERGRANULAR, PIN POINT VUGS
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX ACCESSORY MINERALS: CALCITE-10%, CALCILUTITE-04% ORGANICS-07%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL FRAGMENTS

983 - 988 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
08% POROSITY: INTERGRANULAR, INTERCRYSTALLINE PIN POINT VUGS; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-04%, CALCILUTITE-02% ORGANICS-05%, GLAUCONITE-01%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE ONLY 1.5 FEET OF CORE FOR 5.0 FOOT INTERVAL

988 - 993 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
16% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-03%, ORGANICS-05%
GLAUCONITE-01%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, SUCROSIC FOSSILS: FOSSIL MOLDS
ONLY 2.0 FEET OF CORE FOR 5.0 FOOT INTERVAL

993 - 998 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
14% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-06%, ORGANICS-05% CALCILUTITE-01%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE, SUCROSIC FOSSILS: FOSSIL MOLDS
ONLY 1.0 FEET OF CORE FOR 5.0 FOOT INTERVAL

998 - 1003.2 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
08% POROSITY: INTERGRANULAR, FRACTURE, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT ACCESSORY MINERALS: SPAR-03%, CALCITE-02%, CALCILUTITE-01% ORGANICS-04%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE ONLY 2.5 FEET OF CORE FOR 5.3 FOOT INTERVAL

1003.2- 1008 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
08% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, MOLDIC
90-100% ALTERED; ANHEDRAL GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-02%, CALCILUTITE-01% ORGANICS-06%, GLAUCONITE-01%
OTHER FEATURES: CALCAREOUS, POOR SAMPLE FOSSILS: FOSSIL MOLDS
ONLY 3.0 FEET OF CORE FOR 5.0 FOOT INTERVAL

1008 - 1015 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
12% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCITE-03%, CALCILUTITE-02% ORGANICS-04%, QUARTZ-01%
OTHER FEATURES: CALCAREOUS FOSSILS: FOSSIL MOLDS
ONLY 6 FEET OF CORE FOR 7 FOOT INTERVAL

1015 - 1017 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, FRACTURE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION CEMENT TYPE(S): DOLOMITE CE-

MENT
ACCESSORY MINERALS: CALCITE-02%, CALCILUTITE-02% OTHER FEATURES: CALCAREOUS
ONLY 1.3 FEET OF CORE FOR A 2 FOOT INTERVAL

1017 - 1026 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
08% POROSITY: INTERCRYSTALLINE, INTERGRANULAR PIN POINT VUGS; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT OTHER FEATURES: POOR SAMPLE
ONLY 1.0 FEET OF CORE FOR A 9.0 FOOT INTERVAL

1026 TOTAL DEPTH

Appendix C. Digital Photographs of Core Samples Retrieved from the First and Second Phases of Exploratory Coring at the ROMP 112 – Rutland Well Site in Sumter County, Florida

Appendix C1. Digital Photographs of Core Samples Retrieved from land surface to 704 feet bls at the ROMP 112 – Rutland Well Site in Sumter County, Florida


GSA
CM
IN
16.5
19.0


GSA
CM
IN
22.0
21.5'
21.0
24'


GSA
CM
IN
29'
34.0'


GSA
CM
IN
ROMP 112 - 40'
44.0'


GSA
CM
IN
49.0
54.0
56.5'


GSA
CM
IN
56.5'
59.0
64'
61.0'


GSA
CM
IN
67.0'
ROMP 112
78.0'
82.0'


GSA
CM
IN
82'
93.0'


GSA
CM
IN
RDMP
112


GSA
CM
IN
RDMP
112
109.0'
112.5'


GSA
CM
IN
112.5'
119.0'


GSA
CM
IN
124'
ROMP
112
133.5'


GSA
CM
IN
134'


GSA
CM
IN
149'


GSA
CM
IN
151.8
161.0


GSA
CM
IN
169.0


GSA
CM
IN
mm


GSA
CM
IN
mm


GSA
CM
IN
196'
204'


GSA
CM
IN
214.0'
219.0'
216.5'-219'
cavity


GSA
CM
IN
ROMP
224.
228.5'


GSA
CM
IN
229'
ROMP
112
228.5'


GSA
CM
IN


GSA
CM
IN
112
249'
255.0


GSA
CM
IN
255.0
ROMP
112
259.0
265.3'


GSA
CM
IN
112
265.3
269
274'


GSA
CM
IN
ROMP
112
284.0


GSA
CM
IN
ROMP
112
285.5
298.8

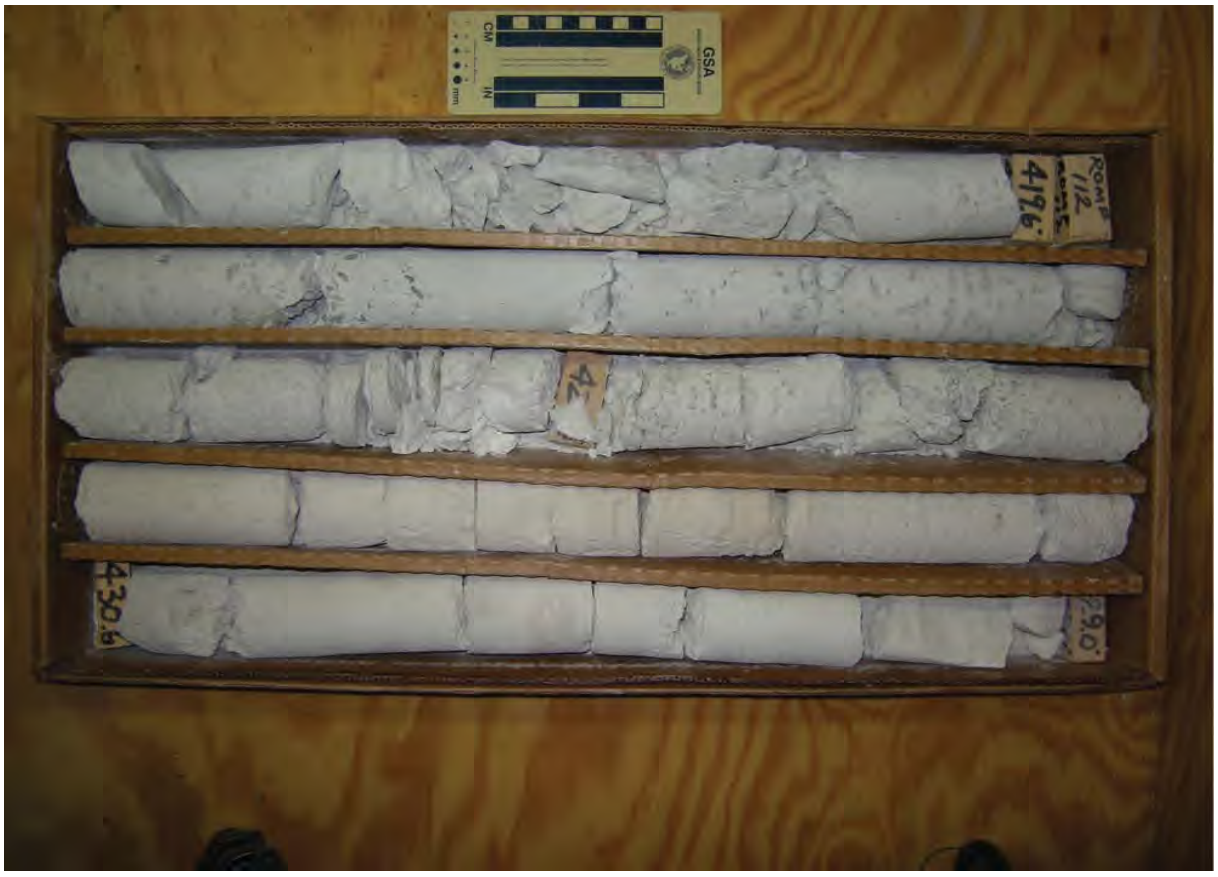

GSA
CM
IN
mm
RGMP 112
298.8'
309.6'
314.0'

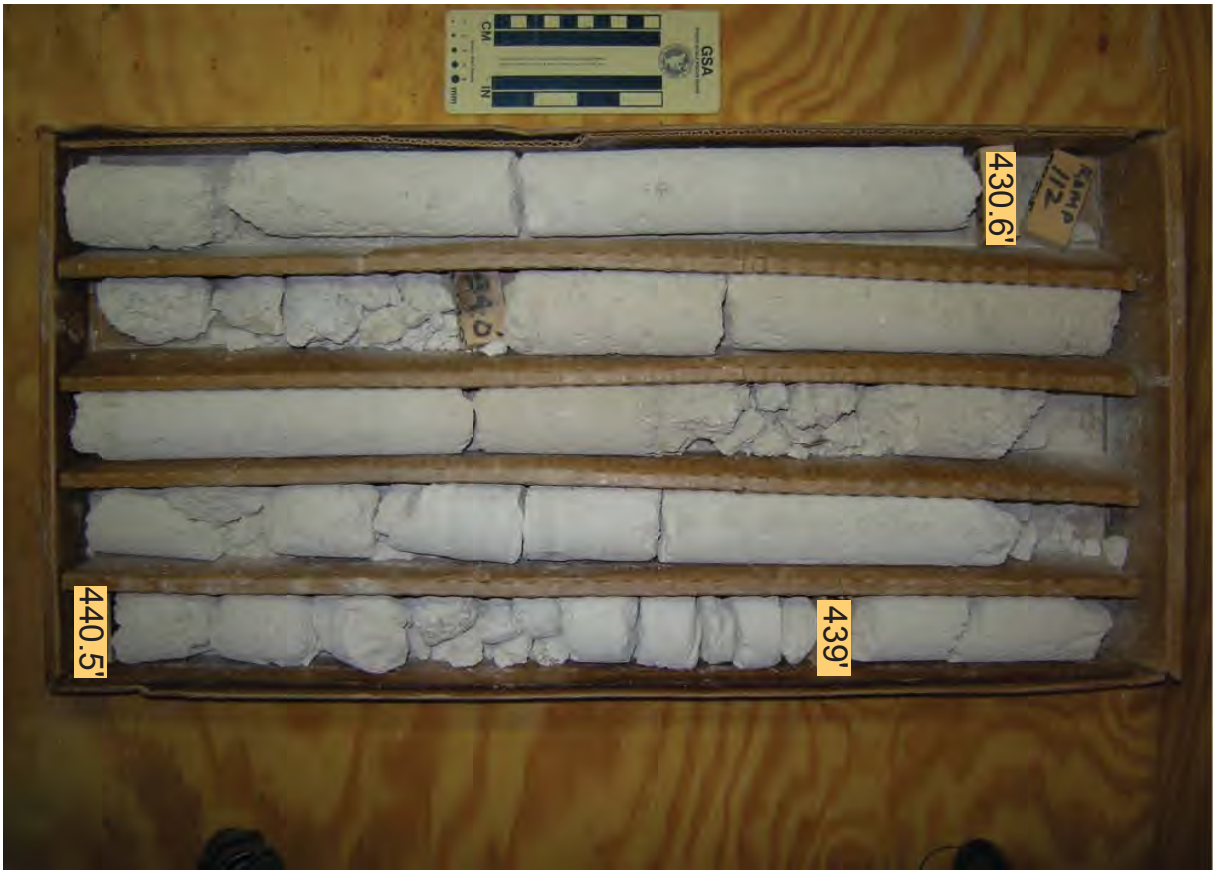

GSA
CM
IN
mm
RGMP 112 310.5'
319-324' no samples
329.0'
324'
334'
339'
344'
359'
364'
368'


GSA
CM
IN
374'
379'
389'
384'


GSA
CM
IN
399'
409'
409'


GSA
CM
IN
#112
409'
419.6'


GSA
CM
IN
419.6'
430.6'


430.6'
439'
440.5'


444.0
#112
440.5
454'
454.5'

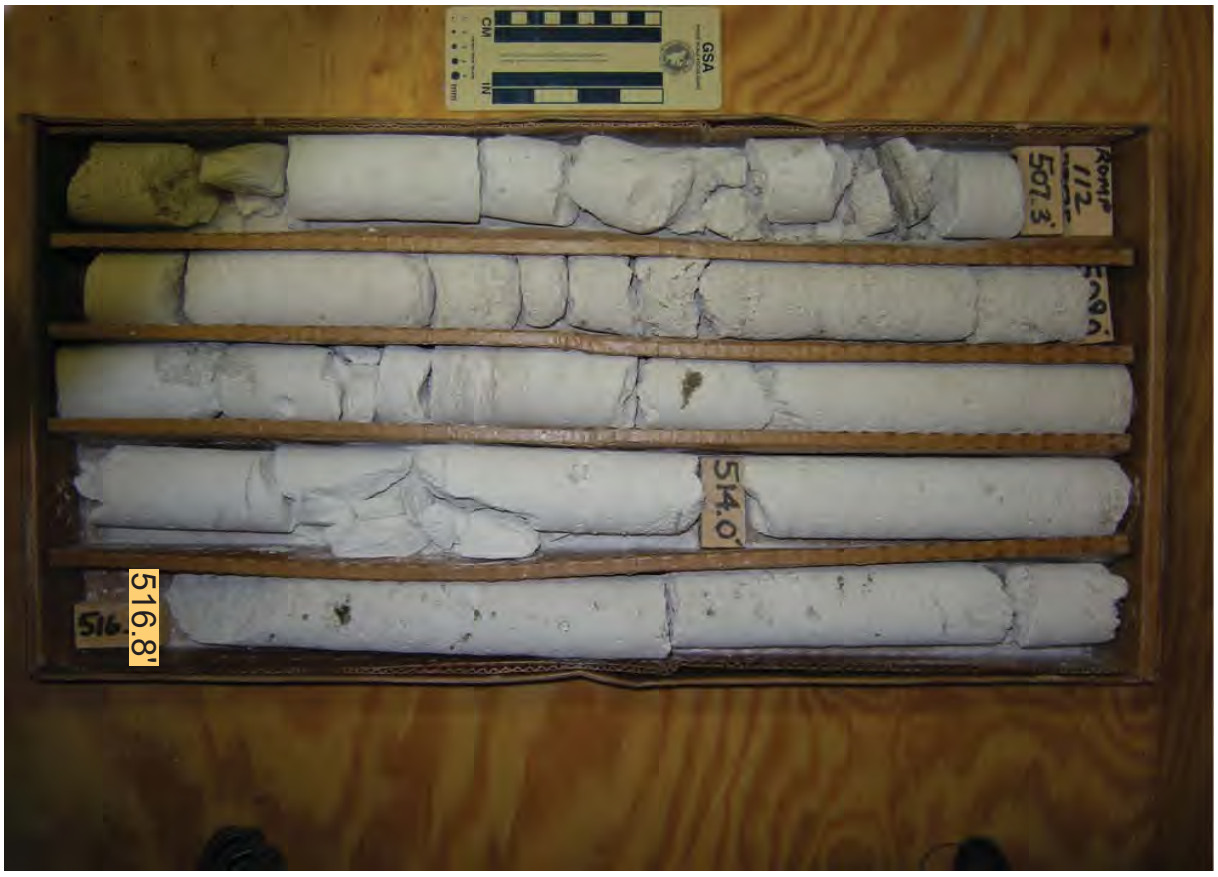

GSA
CM
IN
454.5'
464.0
444.3'


GSA
CM
IN
468.
479.


GSA
CM
IN
488'


GSA
CM
IN
488'


GSA
CM
IN
499.0
497.8'
507.3'


GSA
CM
IN
507.3'
514.0'
516.8'


GSA
CM
IN
ROMP 112
516.0
519.0
524.0
526.0


GSA
CM
IN
526.0
ROMP 112
534'
536'


GSA
CM
IN
5390
536.0
5480
548.0


GSA
CM
IN
#112
5480
548.0
558


ROMP 112
569


589.5'
589'


599.5'


GSA
CM
IN
#112
609.0'
609.5'


GSA
CM
IN
ROMP 112
609.5'
619.0'


KCMP 112
619.3'
629.0'
631.5'


KCMP 112
631.5'
639'
644'

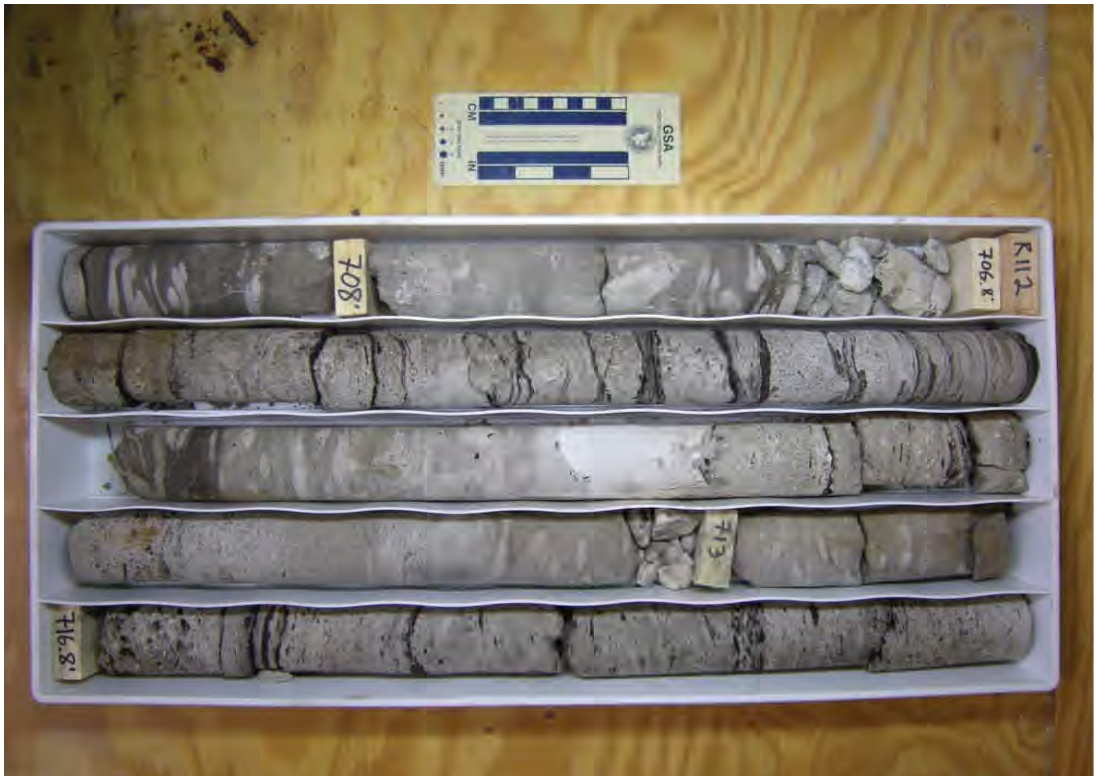

GSA
CM
IN
654'

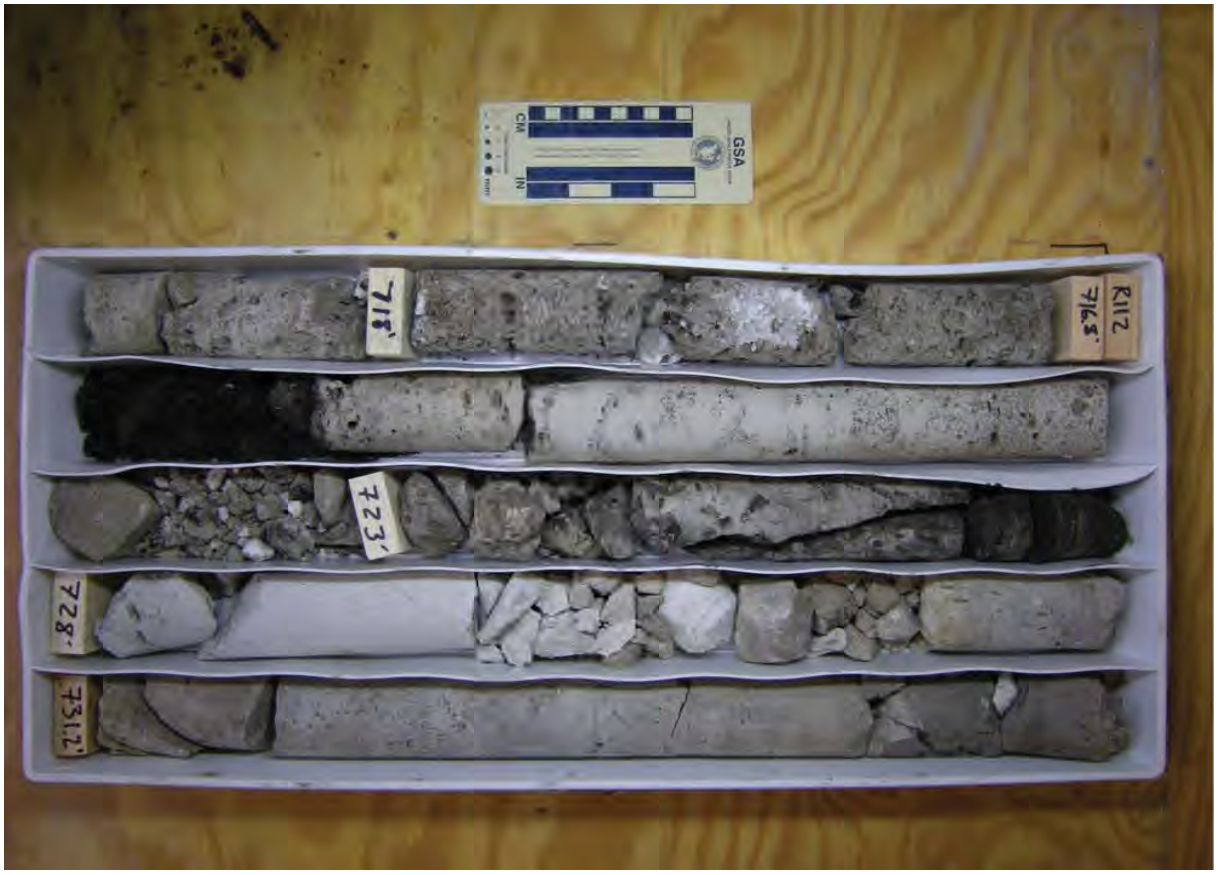

GSA
CM
IN
679'

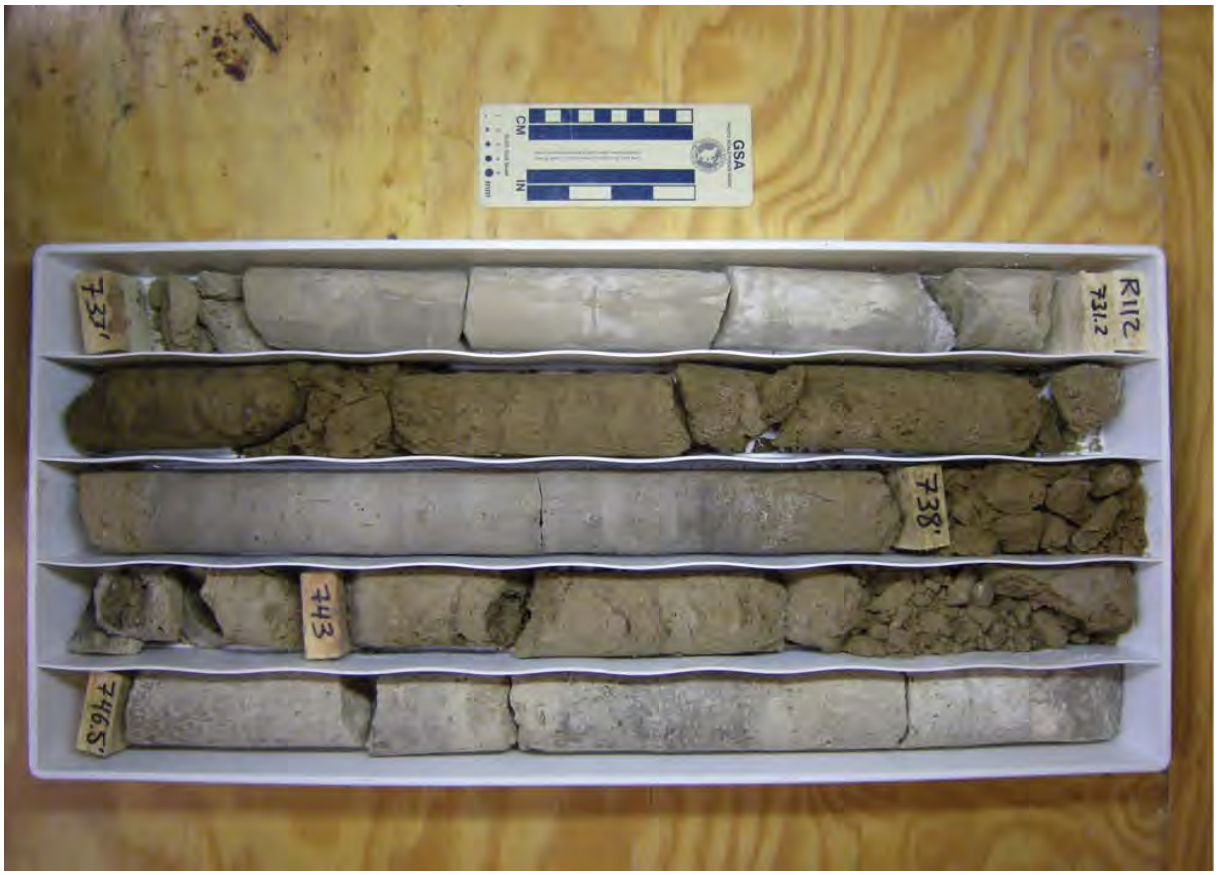

CM
IN
GSA
6890'
6840'
6790'


CM
IN
GSA
6990'
TD

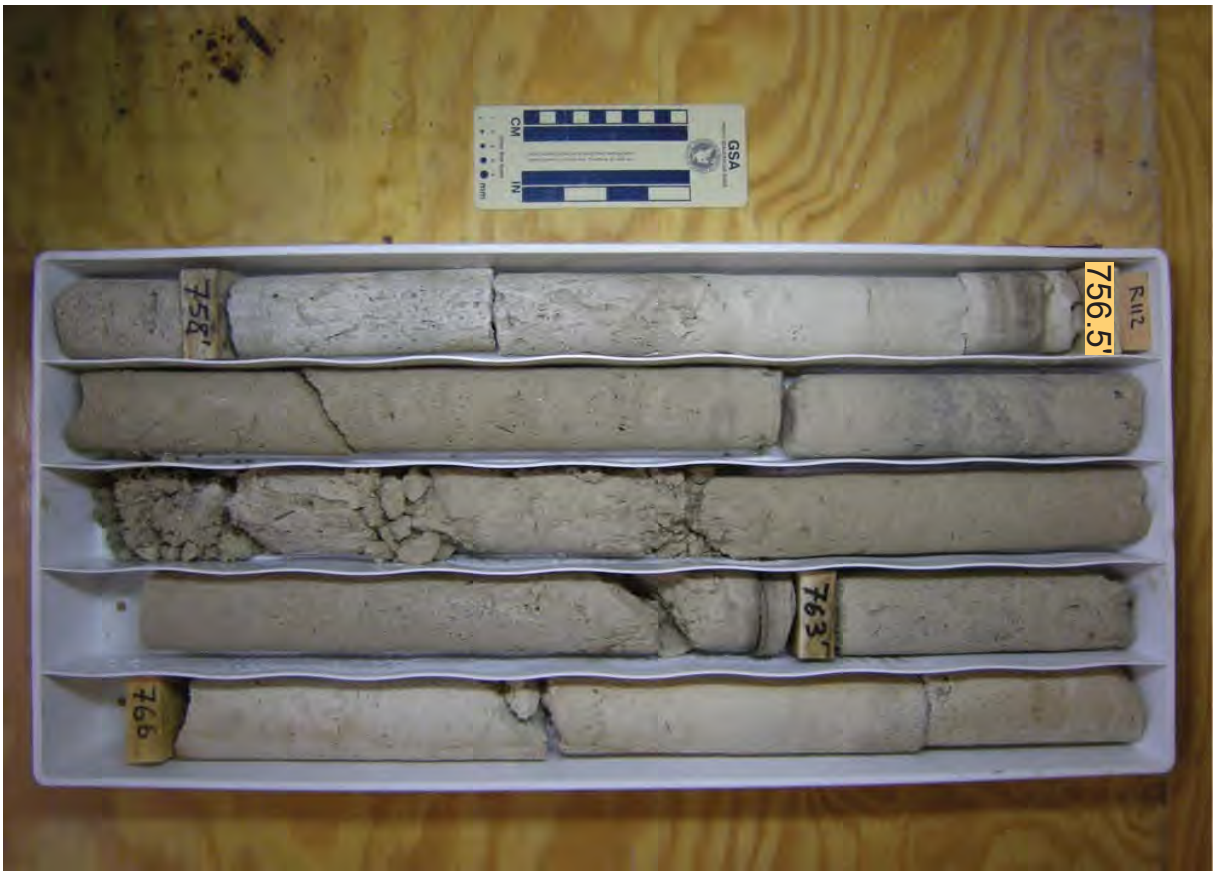
Appendix C2. Digital Photographs of Core Samples Retrieved from 698 to 1,026 feet bls at the ROMP 112 – Rutland Well Site in Sumter County, Florida




GSA
CM
IN
R112
716.5'
718'
723'
728'
731.2'


GSA
CM
IN
R112
731.2
733'
738'
743
746.5'


748'
R112
746.5'
753'
756.5'


758'
R112
756.5'
763'
766'


R112
766'
768'
773'
776
GSA
CM
IN


R112
776
778'
783'
785'
GSA
CM
IN

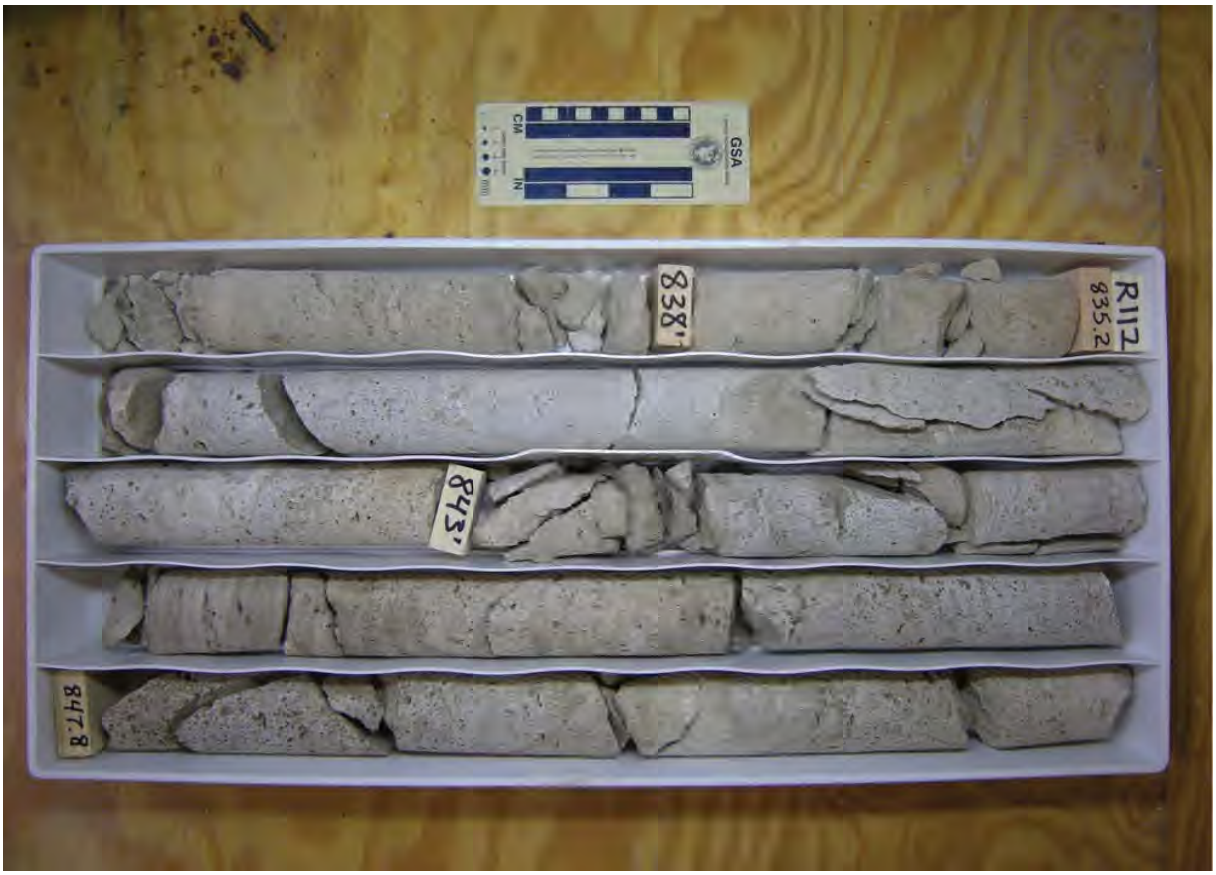

GSA
CM
IN
R112
785'
788'
793'
795


GSA
CM
IN
R112
795'
798'
803'
805

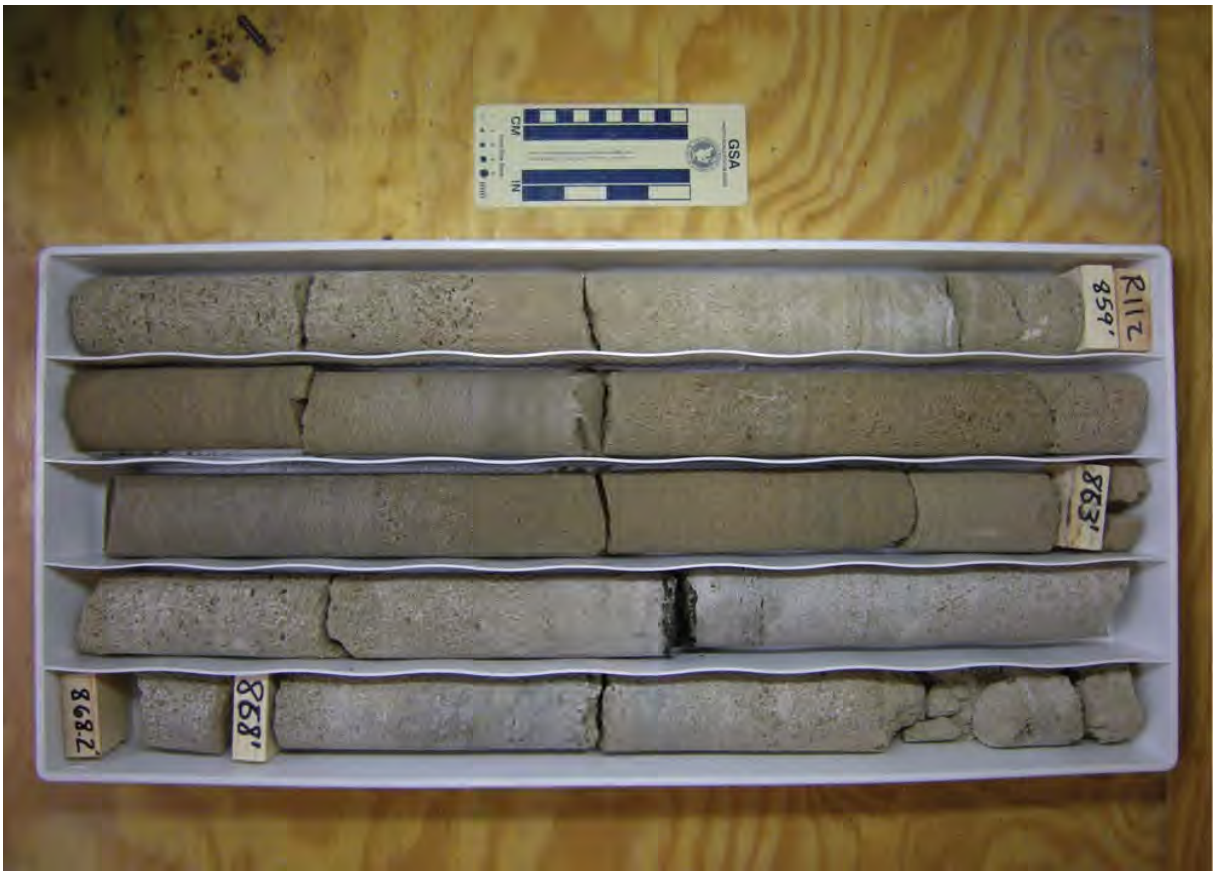

R 112
805
808
813
815.2


R-112
815.2
818
823.
826.

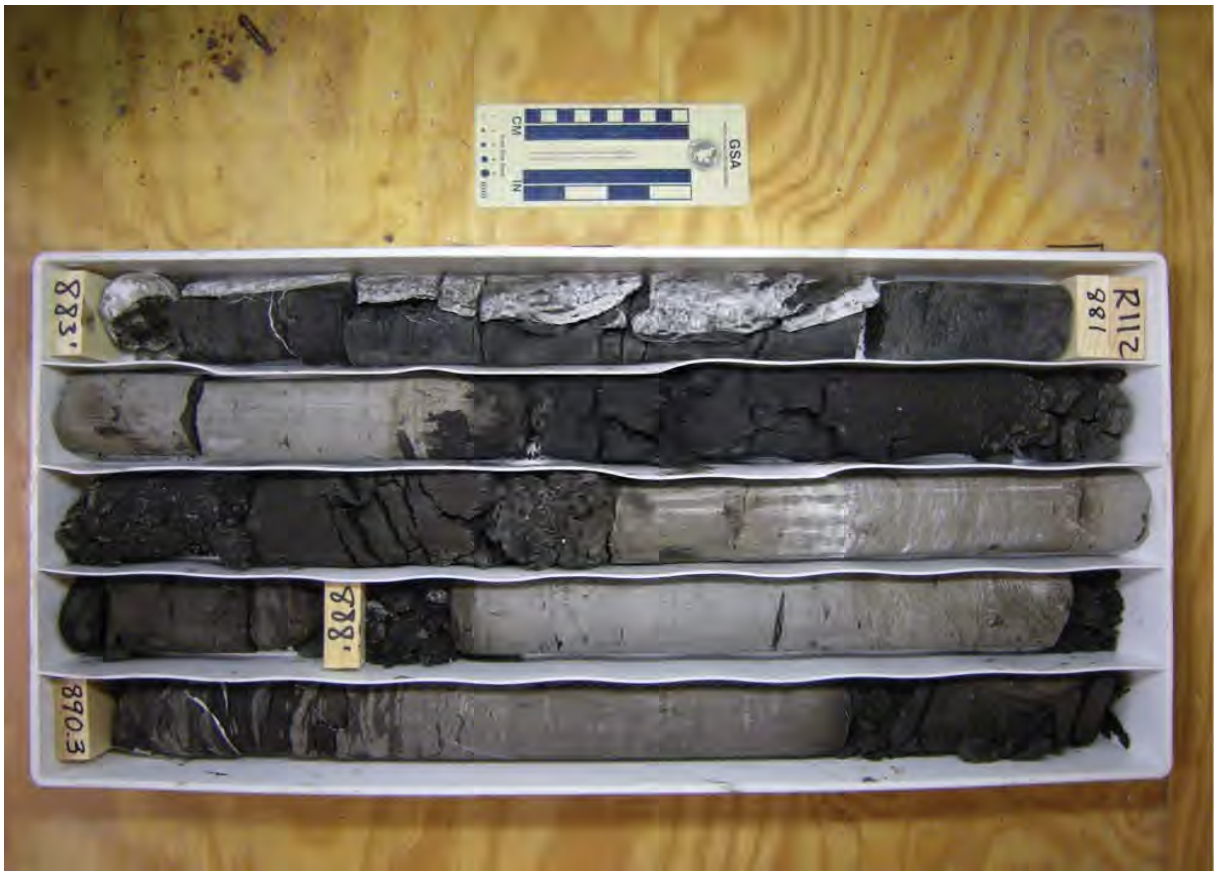

CM
IN
GSA
R112
826
828'
833
835.2

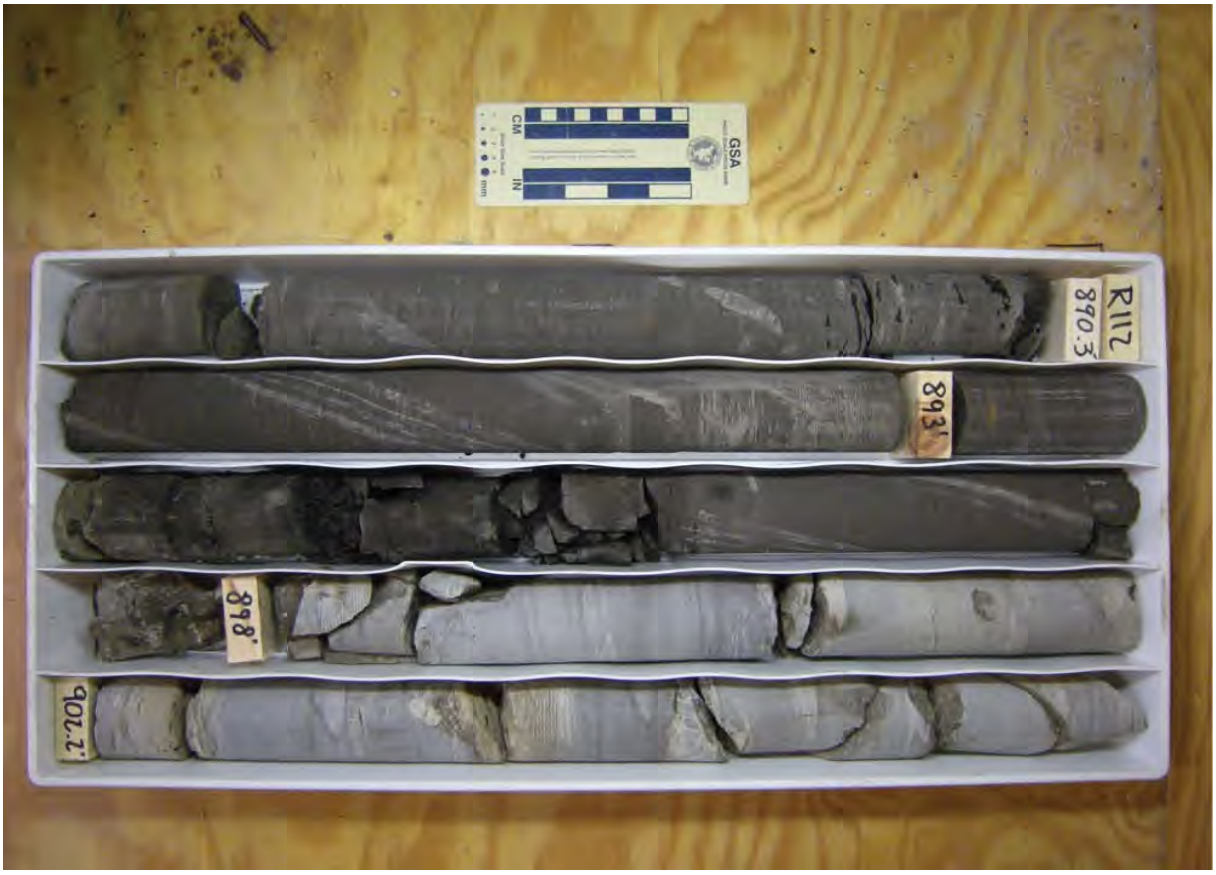

CM
IN
GSA
838'
R112
835.2
843'
847.8


GSA
CM
IN
R11Z
847.8
847.8'
853'
858'
859

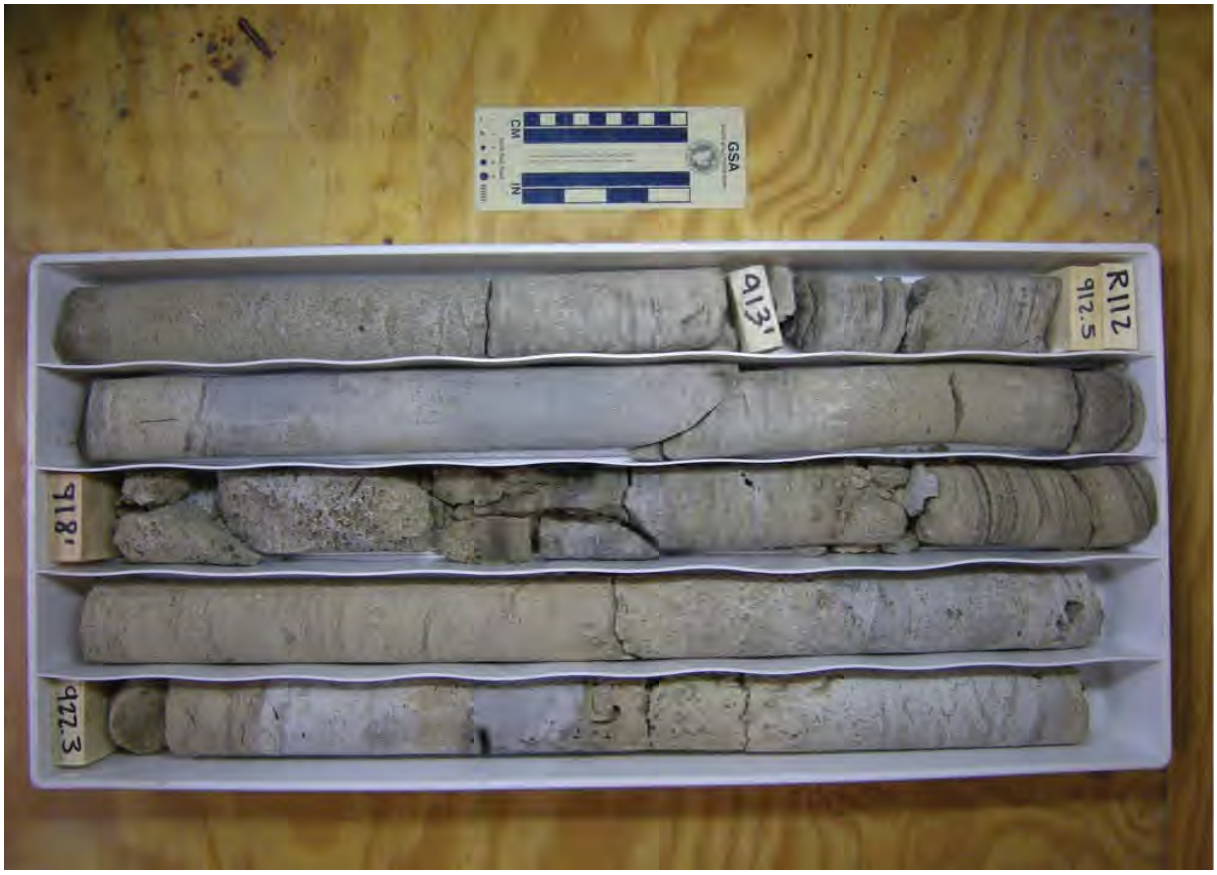

GSA
CM
IN
R11Z
859'
863'
868'
868.2'


GSA
CM
IN
R112
868.2'
873'
878'
881'


GSA
CM
IN
883'
R112
981
898'
890.3

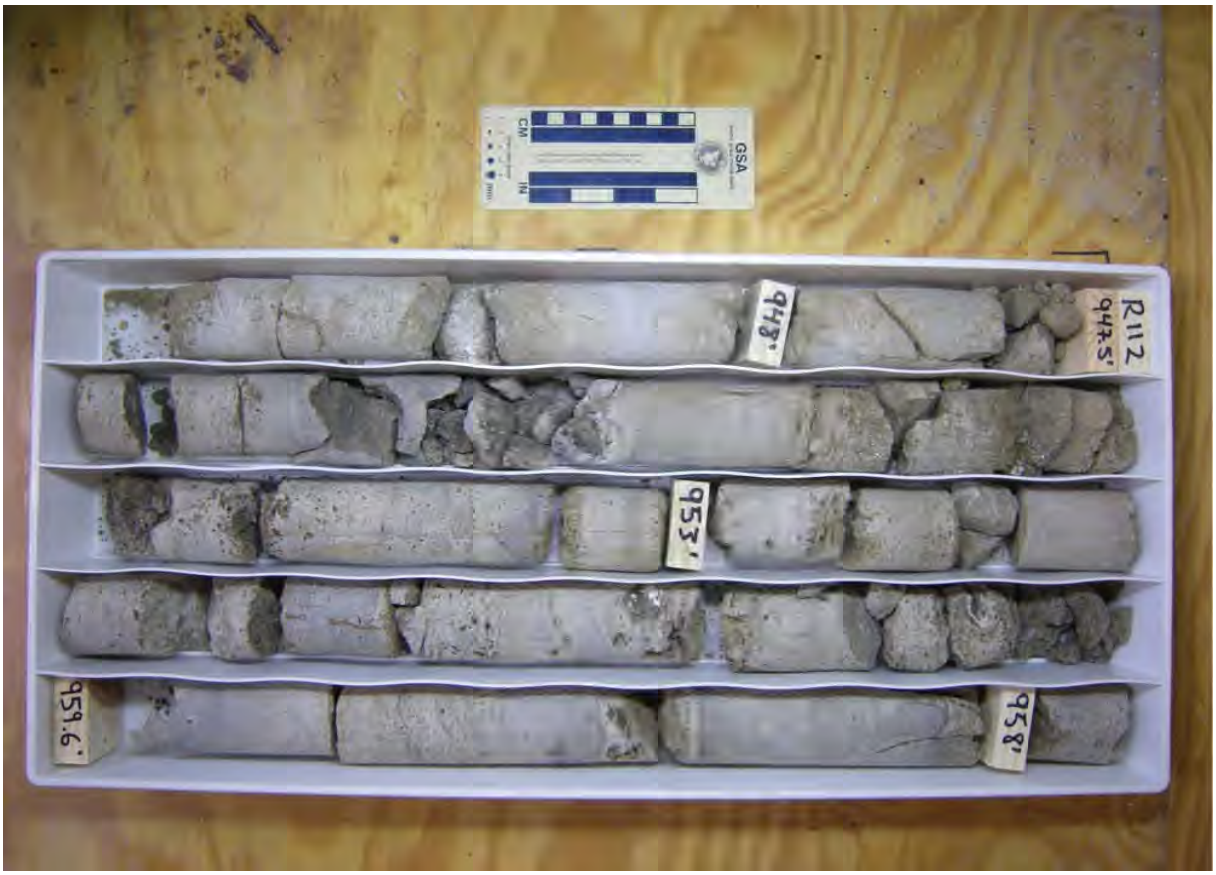

R112
890.3'
893'
898'
902.2'


R 112
902.2'
903'
908'
912.5'


GSA
CM
IN
R112
912.5
913'
918'
922.3


GSA
CM
IN
R112
922.3'
923'
928'
933'
933.8'


R112
933.8'
938'
943'
947.5'
GSA
CM
IN

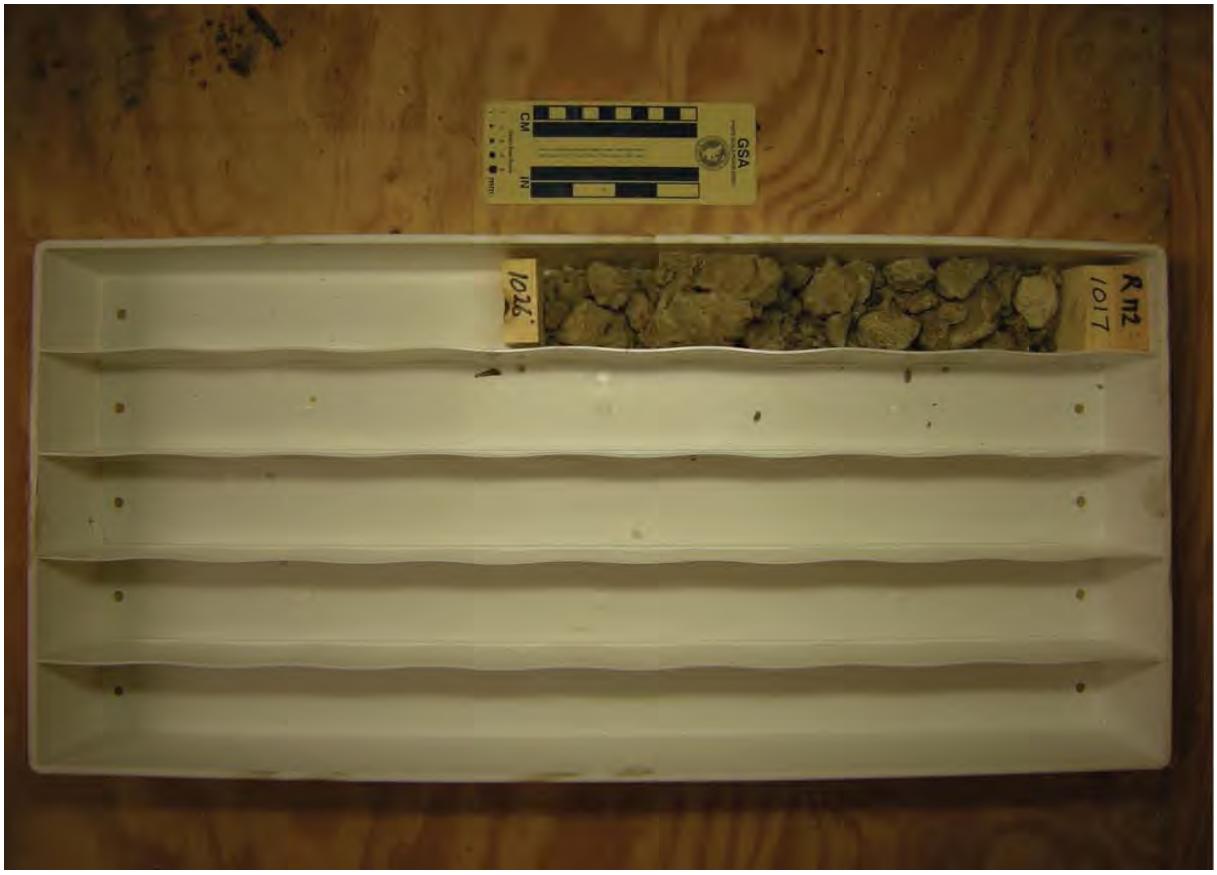

R112
947.5'
948'
953'
958'
959.6'
GSA
CM
IN


GSA
CM
IN
R112
959.6'
963'
968'
971'


GSA
CM
IN
R112
971'
973'
978'
980'


R112
980'
983'
988'
993'
998'
1003'
1003.2'


R112
1003.2'
1008'
1013'
1017'


CM
IN
GSA
1026'
Rm2
1017

Appendix D. Daily Water Levels Recorded During Exploratory Core Drilling at the ROMP 112 – Rutland Well Site in Sumter County, Florida

Appendix D. Daily water levels recorded during both phases of exploratory core drilling at the ROMP 112 – Rutland well

[ft, feet; bls, below land surface; HH:MM, hour:minute; MM/DD/YY, month/day/year; NAVD88, North American Vertical Datum of 1988; ---, not applicable;

Date (MM/DD/YY)	Time (HH:MM)	Deepest Casing Depth (ft bls)	Core Hole Total Depth (ft bls)	HW Casing Annulus Static Water Level (ft bls)	HW Casing Annulus Static Water Level (ft NAVD88)	Core Hole Static Water Level (ft bls)	Core Hole Static Water Level (ft NAVD88)
01/16/89	12:00	---	21.5	---	---	14.00	40.00
01/17/89	07:00	---	29	---	---	13.80	40.20
01/17/89	12:00	---	39	---	---	13.80	40.20
01/17/89	14:30	---	49	---	---	13.72	40.28
01/17/89	---	---	59	---	---	13.73	40.27
01/18/89	07:45	---	69	---	---	13.83	40.17
01/18/89	10:30	---	79	---	---	13.85	40.15
01/18/89	13:30	---	99	---	---	13.78	40.22
01/19/89	07:15	---	119	---	---	13.80	40.20
01/19/89	---	---	139	---	---	13.88	40.12
01/19/89	---	---	159	---	---	13.44	40.56
01/23/89	---	---	179	---	---	13.61	40.39
01/24/89	17:45	---	199	---	---	13.57	40.43
01/24/89	---	---	219	---	---	13.81	40.19
01/24/89	14:15	---	239	---	---	13.80	40.20
01/24/89	19:30	---	249	---	---	13.92	40.08
01/25/89	---	---	259	---	---	13.89	40.11
01/25/89	---	---	269	---	---	13.96	40.04
01/25/89	---	---	289	---	---	13.96	40.04
01/25/89	20:00	---	309	---	---	13.88	40.12
01/26/89	---	---	319	---	---	13.96	40.04
01/26/89	---	---	329	---	---	14.05	39.95
01/26/89	---	---	349	---	---	14.05	39.95
01/30/89	---	---	369	---	---	14.19	39.81
01/30/89	---	---	389	---	---	14.19	39.81
01/31/89	---	---	409	---	---	14.17	39.83
01/31/89	---	---	429	---	---	14.18	39.82
01/31/89	---	---	469	---	---	13.79	40.21
02/01/89	---	---	469	---	---	13.31	40.69
02/01/89	---	---	489	---	---	13.61	40.39
02/01/89	---	---	509	---	---	13.65	40.35
02/01/89	---	---	529	---	---	11.91	42.09
02/01/89	21:00	---	529	---	---	11.91	42.09
02/02/89	07:15	---	529	---	---	12.76	41.24
02/02/89	10:30	---	529	---	---	13.66	40.34
02/02/89	---	---	549	---	---	13.97	40.03

site in Sumter County, Florida

well locations are shown in figure 3; well as-built diagrams are in appendix B]

Upper Floridan Monitor Static Water Level (ft bls)	Upper Floridan Monitor Static Water Level (ft NAVD88)	Surficial Monitor Static Water Level (ft bls)	Surficial Monitor Static Water Level (ft NAVD88)	Comments
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	Recovered overnight
---	---	---	---	Recovered during pump repair
---	---	---	---	Recovered during lunch
---	---	---	---	Recovered overnight
---	---	---	---	
---	---	---	---	Recovered over weekend
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	Recovered overnight
---	---	---	---	
---	---	---	---	
---	---	---	---	Recovered during dinner
---	---	---	---	Recovered overnight
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	Recovered overnight
---	---	---	---	
---	---	---	---	Recovered during dinner; note quality difference and water level rise
---	---	---	---	Recovered overnight; note quality difference and water level rise
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	
---	---	---	---	Significant water level change
---	---	---	---	

Appendix D. Daily water levels recorded during both phases of exploratory core drilling at the ROMP 112 – Rutland well

[ft, feet; bls, below land surface; HH:MM, hour:minute; MM/DD/YY, month/day/year; NAVD88, North American Vertical Datum of 1988; ---, not applicable;

Date (MM/DD/YY)	Time (HH:MM)	Deepest Casing Depth (ft bls)	Core Hole Total Depth (ft bls)	HW Casing Annulus Static Water Level (ft bls)	HW Casing Annulus Static Water Level (ft NAVD88)	Core Hole Static Water Level (ft bls)	Core Hole Static Water Level (ft NAVD88)
02/06/89	---	---	554	---	---	13.57	40.43
02/06/89	---	---	574	---	---	13.21	40.79
02/07/89	---	---	584	---	---	13.07	40.93
02/07/89	07:00	---	594	---	---	12.49	41.51
02/08/89	---	---	604	---	---	12.48	41.52
02/08/89	---	---	624	---	---	9.47	44.53
02/08/89	---	---	644	---	---	9.36	44.64
02/09/89	---	---	664	---	---	9.36	44.64
02/09/89	---	---	684	---	---	8.92	45.08
02/09/89	---	---	704	---	---	11.25	42.75
10/06/10	08:00	---	640	---	---	12.36	41.64
10/07/10	09:30	---	640	---	---	11.97	42.03
10/11/10	10:30	---	640	---	---	11.64	42.36
10/12/10	07:30	---	640	---	---	12.45	41.55
10/13/10	07:30	---	640	---	---	12.67	41.33
10/14/10	09:00	---	640	---	---	12.64	41.36
10/18/10	11:00	---	703	---	---	11.36	42.64
10/19/10	07:30	---	718	---	---	12.35	41.65
10/20/10	10:00	---	758	---	---	12.32	41.68
10/21/10	07:00	---	798	---	---	12.31	41.69
10/25/10	10:00	---	818	---	---	12.41	41.59
10/26/10	07:30	---	858	---	---	12.68	41.32
10/27/10	07:30	---	885	---	---	12.78	41.22
10/28/10	07:30	---	885	---	---	12.75	41.25
11/01/10	11:00	---	898	---	---	12.64	41.36
11/02/10	07:30	---	918	---	---	---	---
11/03/10	07:30	---	938	---	---	12.3	41.70
11/04/10	07:15	---	968	---	---	12.14	41.86
11/08/10	10:00	---	998	---	---	12.36	41.64
11/10/10	07:30	---	1,017	---	---	12.06	41.94
11/16/10	07:30	---	1,017	---	---	13.34	40.66
11/17/10	07:30	---	1,017	---	---	13.07	40.93

site in Sumter County, Florida

well locations are shown in figure 3; well as-built diagrams are in appendix B]

Upper Floridan Monitor Static Water Level (ft bls)	Upper Floridan Monitor Static Water Level (ft NAVD88)	Surficial Monitor Static Water Level (ft bls)	Surficial Monitor Static Water Level (ft NAVD88)	Comments
---	---	---	---	
---	---	---	---	
---	---	---	---	Recovered overnight
---	---	---	---	Recovered during dinner
---	---	---	---	Recovered overnight
---	---	---	---	
---	---	---	---	
---	---	---	---	Small cavity
---	---	---	---	
---	---	---	---	
14.59	39.41	13.59	40.41	Core hole caved in from 704 - 640 ft bls after phase 1
14.72	39.28	13.71	40.29	Core hole caved in from 704 - 640 ft bls after phase 1
15.04	38.96	14.02	39.98	Core hole caved in from 704 - 640 ft bls after phase 1
14.99	39.01	13.98	40.02	Core hole caved in from 704 - 640 ft bls after phase 1
15.28	38.72	14.25	39.75	Core hole caved in from 704 - 640 ft bls after phase 1
15.28	38.72	14.25	39.75	Core hole caved in from 704 - 640 ft bls after phase 1
15.58	38.42	14.55	39.45	
15.65	38.35	14.63	39.37	
15.69	38.31	14.66	39.34	
15.7	38.3	14.68	39.32	
15.81	38.19	14.79	39.21	
15.89	38.11	14.87	39.13	
15.94	38.06	14.92	39.08	
15.94	38.06	14.93	39.07	
16.07	37.93	15	39	
16.24	37.76	14.7	39.3	
16.24	37.76	15.02	38.98	
16.22	37.78	15.02	38.98	
16.15	37.85	15.03	38.97	
16.22	37.78	15.03	38.97	Corehole 3-inch slipped down hole (slip depth not recorded)
16.31	37.69	15.04	38.96	
16.3	37.7	15.03	38.97	

Southwest Florida
Water Management District