CITY OF NAPLES SALTWATER MONITORING WELLS

WELL COMPLETION REPORT

JANUARY 12, 2016

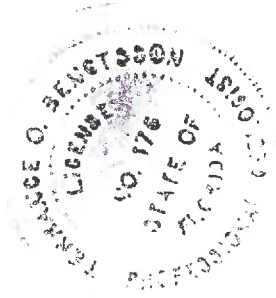
***Prepared for*:**

CITY OF NAPLES
735 8TH STREET
NAPLES, FLORIDA 34102

***Prepared by*:**

JOHNSON ENGINEERING

2122 Johnson Street
Fort Myers, Florida 33901
(239) 334-0046



Terrance O. Bengtsson, P.G.
License No. 176
Johnson Engineering, Inc.
E.B. #642 & G.B. #503

EXECUTIVE SUMMARY

The City of Naples (City) renewed their water use permit (WUP, 11-00017-W) from the South Florida Water Management District (SFWMD) in 2010, and subsequently modified the permit in 2012 with a letter modification to clarify the permit limiting condition 26, which details the monitoring program and installation of three, saline-water monitoring wells: SALT-1, SALT-2 and SALT-3.

The purpose of the monitoring wells was to provide sentry data for potential seawater intrusion into the Lower Tamiami aquifer, the source of drinking water for the City's Coastal Ridge Wellfield. The City contracted Johnson Engineering Inc. (JEI) to develop well design drawings and specifications, and select monitoring locations. The City selected Florida Design Drilling, Corp. to permit, construct and sample the monitoring wells following the specifications from JEI or modifications made during construction as directed by JEI or the City. JEI provided an onsite geologist for logging, sampling, and limited construction oversight while construction was in progress to observe general progress and quality of the work.

The monitoring wells were located between the coast and Coastal Ridge Wellfield, near US Highway 41 (Tamiami Trail; Figure 1). The three monitoring sites were selected to complement existing monitoring well locations and cover areas with potential seawater intrusion. The wells were constructed to monitor near the base of the Lower Tamiami aquifer, which most existing monitoring wells do not reach, and in theory, is where saline water is most likely to appear first. The depths for the monitoring interval targeted the transition zone between fresh and saline water.

The hydrogeology encountered at the three well sites was generally consistent with other published descriptions of wellbores nearby, except for the lack of clay, silt and/or marl separating the Water Table and Lower Tamiami aquifers. Each well site was drilled to reach beneath the Lower Tamiami aquifer into the Sandstone aquifer with total depths reaching 260, 220 and 230 feet below land surface (bls) at well sites SALT-1, SALT-2 and SALT-3, respectively. The SALT-1, SALT-2 and SALT-3 wells were completed at total depths of 145, 185, and 165 feet bls), respectively, and had 10 feet of open well screen above these depths to monitor the aquifer.

Initial sampling of the completed wells resulted in recording dissolved chloride concentrations of 442, 46, and 49 milligrams per liter (mg/L), and total dissolved solids (TDS) concentrations of 928, 368 and 193 mg/L from SALT-1, SALT-2 and SALT-3 wells, respectively. Based on geophysical logging and water quality sampling with depth in each well, these concentrations continued to increase with depth below the Lower Tamiami aquifer at the SALT-1 and SALT-3 wells. Water quality at the SALT-2 well was consistently fresh throughout the Lower Tamiami aquifer and beneath it to a depth of 220 feet bls. Saline water is present in the Lower Tamiami aquifer at the SALT-1 well approximately 2,900 feet from Coastal Ridge production wells CR 301 and CR 304. Saline water is present in the underlying Sandstone aquifer at the SALT-3 well 4,300 feet from Coastal Ridge production well CR 328.

These wells will be added to the City's Saline Water Monitoring Plan that calls for monthly sampling and quarterly reporting of water level elevations, TDS and chloride concentrations, and specific conductance. The intent of the plan is to monitor for intrusion of saline water and avoid or minimize adverse impacts that may occur if saline water migrates inland towards the City's Coastal Ridge Wellfield.

EXECUTIVE SUMMARY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

The City of Naples (City) renewed their water use permit (WUP, 11-00017-W) from the South Florida Water Management District (SFWMD) in 2010, and the permit had limiting conditions that required updating their existing monitoring program and installing three, new saline-water monitoring wells. General well design and well locations were given in exhibits of the WUP staff report (application 080612-12). The permit was subsequently modified in 2012 with a letter modification (application 120709-23) to clarify the permit limiting condition 26 regarding updating of the monitoring program and installation of the three monitoring wells: SALT-1, SALT-2 and SALT-3. The City contracted Johnson Engineering Inc. (JEI) to review the permit requirements, determine the best locations for the monitoring wells and develop a well design and well construction specifications.

After reviewing previous hydrogeologic publications (SFWMD, 1986; Prinos, 2013) and existing information on the City's Saline Water Monitoring Plan, and coordinating with the City and SFWMD, JEI selected three locations that met the objectives of the monitoring plan and had the best logistics for monitoring sites. The well locations are shown in Figure 1, and are located near the north-south segment of US Highway 41 (Tamiami Trail) approximately 0.5 to 0.8 miles west of the Coastal Ridge Wellfield and approximately 0.5 to 1.0 mile east of saline water bodies of the Moorings, Venetian and Clam Bay.

1.1 **Design of Saline Monitoring Well**

The design development for the saline monitoring well included review of details given the 2008 staff report for WUP 11-00017-W, proposed design developed for the City, as well as a U. S. Geological Survey publication specifically addressing saltwater intrusion monitoring of the Collier County coast (Prinos, 2013). JEI recommended a design for a single monitor zone well that is constructed near the base of the producing aquifer, Lower Tamiami aquifer, and has a screened monitoring zone of 10 feet near the bottom of the well. The design was recommended as the best option for providing the most reliable data for the specified parameters required by the permit limiting conditions. The total depth and monitoring interval of each well were specified in the design as being determined by JEI during drilling, but specifications called for approximately 170 feet of 4-inch diameter, schedule 40, PVC casing and 10 feet of 4-inch diameter, 0.02-inch slotted well screen (Figure 2). Based on a recent publication by the SFWMD (Geddes, E., and E. Richardson, A. Dodd, 2015) and other previous publications with lithologic data, the base of the Lower Tamiami aquifer was expected to be found at a depth of 160 to 200 feet below land surface (bls) depending on location.

The monitoring wells were to be completed with a 2-feet by 2-feet by 6-inches cement well pad with an approximate 3 feet of well casing above the pad. An aluminum lockable cover was required to protect the well and have a well identification label (Figure 3).

1.2 **Well Construction**

The City selected Florida Design Drilling, Corp. to construct the monitoring wells following the specifications from JEI, and JEI provided limiting construction oversight while construction was in progress to observe general progress and quality of the work. JEI also provided an onsite geologist for logging, sampling, and inspection of the wells. Florida Design Drilling, Corp. was contracted by the City to permit, construct and complete the three monitoring wells as designed or modified during construction as directed by JEI or the City. Florida Design Drilling, Corp. provided all drilling equipment, drilling materials, well casing, pumps, and geophysical logging equipment, via their sub-contractor, MV Geophysical Surveys, Inc. and All Webbs Enterprises, Inc.

1.3 **General Hydrogeology**

The Naples area has three aquifer systems, the Surficial, Intermediate and Upper Floridan. Within each aquifer system multiple aquifers and confining units may be present. The hydraulic properties and water quality vary vertically and horizontally within each discrete aquifer. With a focus on fresh groundwater supply and the City's production wells, only the Surficial Aquifer System (SAS) is described in this report. The Intermediate Aquifer System (IAS) underlies the SAS, and may contain brackish water. Water quality deteriorates with depth through the IAS and underlying Upper Floridan Aquifer System.

The SAS includes the Water Table and Lower Tamiami aquifers, which are typically good producers of high quality groundwater. The Water Table aquifer is highly variable, generally consists of sand, shell and/or limestone. In some areas the aquifer has highly porous limestone associated with Pliocene reef facies and may be highly productive. The aquifer is seasonally recharged directly from rainfall and Big Cypress Basin canals, and recharges the underlying Lower Tamiami aquifer. The Water Table aquifer and underlying Lower Tamiami aquifer are generally separated by marl, clay and/or clayey sand of varying thickness, which produce varying degrees of hydraulic separation between the two aquifers. In some locations the two aquifers are not hydraulicly separated and may respond to hydrologic conditions as a single aquifer unit.

The Lower Tamiami aquifer is the principle source of drinking and irrigation water in Collier County, as it typically has good quality water and high aquifer yields. The aquifer has a variable and often complex mix of limestone, sandstone, sand and marl that varies the overall thickness of the aquifer. The base of the Lower Tamiami aquifer may not be well defined with a distinct confining layer of low permeable clay. Rather, base of the aquifer may be a gradational change from a limestone, sandy limestone and sand with varying amounts of silt and clay. The underlying aquifer is identified locally as the Sandstone aquifer and is part of the IAS. The change from one aquifer to another may be subtle and transitional. Generally, the Lower Tamiami aquifer is more permeable than the Sandstone aquifer, and has hydraulic conductivity that is at least an order of magnitude higher than the Sandstone aquifer.

2.0 WELL CONSTRUCTION

2.1 **Location**

JEI evaluated suitable well locations for the proposed monitoring wells using previous publications, reports, suggestions from the City staff, and locations of existing monitoring wells. The three recommended monitoring locations (Figure 1) were approved by the City and SFWMD, with the exact drilling locations coordinated by Florida Design Drilling, Corp. and associated siting agencies. The well location of SALT 1 is in the median of Mooring Line Drive East, near the intersection with US 41, in Section 34, Township 49S and Range 25E (Latitude- 26^0 10' 28" N, Longitude- 81^0 48' 00" W; Figure 4). The well location of SALT 2 is on a City owned parcel with a pump station near the intersection of Granada Boulevard and Capri Drive, approximately 0.2 miles from the intersection of Granada Boulevard and US 41, in Section 15, Township 49S and Range 25E (Latitude- 26^0 12' 12" N, Longitude- 81^0 47' 49" W; Figure 5). The well location of SALT 3 is on Collier County right-of-way near the intersection of Sandpine Drive and Trail Boulevard, approximately 100 feet from US 41 in Section 34, Township 48S and Range 25E (Latitude- 26^0 14' 39" N, Longitude- 81^0 48' 02" W; Figure 6).

2.2 **Construction Details**

All three monitoring wells were constructed in a similar manner using mud rotary and reverse air drilling techniques for installing an 8-inch diameter, schedule 40 PVC pipe for surface casing and a 4-inch diameter, schedule 40 PVC pipe for the monitor well casing (Table 1). Mud rotary drilling was used to maintain an open borehole through the Water Table aquifer to reach competent rock at or near the top of the Lower Tamiami aquifer. Lithologic cuttings were collected every 10 feet from the land surface to the bottom of the borehole, which was 60 feet below land surface (bls). The surface casings were grouted into the nominal 12-inch diameter boreholes from the bottom of the borehole to land surface to isolate the overlying Water Table aquifer from the Lower Tamiami aquifer. The grout was 100 percent Portland type I cement. Reverse air drilling with a 7.75-inch button tooth bit was used to drill pilot holes through the Lower Tamiami aquifer for collection of lithologic and water quality samples. Due to sanding problems encountered within the Lower Tamiami aquifer, mud rotary drilling was also used to reach a field determined total depth for the borehole. Geophysical logs were run from 60 feet bls to the bottom of the borehole and the combined results from the geophysical logging, and water quality and lithologic sampling were used to determine an appropriate monitoring zone for each site.

The wells were completed with the 4-inch diameter PVC casing, 10 feet of 0.02-inch slotted well casing and 2 to 5 feet of 4-inch diameter well casing for a sump at the base of the well. Each borehole was backfilled from the total depth to the base of the well sump using 100 percent neat Portland Type 1 cement, then filled with 6/20 silica sand from the base of the well sump to the top of the monitoring interval, and then filled with 100 percent Portland cement from the top of the monitoring interval to land surface (Figure 2).

Table 1- General Well Construction of Monitoring Wells SALT-1, SALT-2 and SALT-3

Well Name	Total Wellbore Depth (ft bls)	Surface Casing Depth (ft bls)/ Diameter (in)	Monitoring Casing Depth (ft bls)/ Diameter (in)	Screened Interval (ft bls)	Total Depth (ft bls)	Date Completed
SALT-1	260	60/8	135/4	135-145	147	10/20/2015
SALT-2	220	60/8	170/4	170-180	185	10/28/2015
SALT-3	230	60/8	153/4	153-163	165	11/11/2015

Note 1- ft=feet, 2- in=inches, 3- bls=below land surface

Construction of SALT-1 well started on October 8, 2015 and was completed on October 20, 2015. Limestone rock was found at 50 feet BLS and was competent to set surface casing at 60 feet BLS. Sanding problems developed at a depth of 155 feet bls and limited forward progress with reverse air drilling. A fine grain sand was being dredged from 155 to 160 feet bls and after 1.5 hours with no forward progress, mud rotary drilling was used to establish a stable borehole. The remainder of the hole was drilled with mud rotary from 160 to a total depth of 260 feet bls. The bottom 30 feet of hole consisted of a soft silty marl and clay, which was interpreted as a confining unit that would likely isolate the aquifer above from the aquifer below. The interpretation of the geophysical logs taken from the open hole interval suggested that the lower portion of the borehole from approximately 165 feet BLS and below contained poor water quality. Consequently the lower portion of the borehole was backfilled with 100 percent neat Portland cement, Type I, from 260 to 147 feet bls. The monitoring zone was selected at 135 to 145 feet bls and the well was completed with 135 feet of 4-inch diameter PVC pipe, 10 feet of 4-inch diameter slotted PVC pipe and 2 feet of 4-inch diameter PVC pipe.

Construction of SALT-2 well started on October 19, 2015 and was completed on October 28, 2015. Limestone rock was found between 30 and 40 feet bls and was competent to set surface casing at 60 feet bls. Sanding problems developed at a depth of 138 feet bls and limited forward progress drilling with reverse air. A fine grain sand was being dredged from 138 to 140 feet bls, and after approximately 8 hours of reverse air drilling with no progress, mud rotary drilling was used to reestablish a stable borehole. The remainder of the hole was drilled with mud rotary from 140 to a total depth of 220 feet bls. The bottom 10 feet of hole consisted of a soft silty clay, which was interpreted as a confining unit that would likely isolate the aquifer above from the aquifer below. The interpretation of the geophysical logs of the open hole interval suggested that the entire borehole contained good water quality. The monitoring interval was selected based on lithology and geophysical logs suggesting permeable material. The lower portion of the borehole from 185 to 220 feet bls was backfilled with 100 percent neat Portland Type I cement. The monitoring zone was selected at 170 to 180 feet BLS and the well was completed with 170 feet of 4-inch diameter PVC pipe, 10 feet of 4-inch diameter slotted PVC pipe and 5 feet of 4-inch diameter PVC pipe.

Construction of SALT-3 well started on November 4, 2015 and was completed on November 11, 2015. Limestone rock was found between 40 and 50 feet bls and was competent to set surface casing at 60 feet bls. The entire borehole was drilled with mud rotary from land surface to a total depth of 230 feet bls. The bottom 20 feet of hole consisted of a soft silty marl and clay, which was interpreted as a confining unit that would likely isolate the aquifer above from the aquifer below. The interpretation of the geophysical logs from the open hole interval suggested that the lower portion of the borehole from approximately 165 feet BLS and below contained poor water quality, and consequently the lower portion of the borehole was backfilled with 100 percent neat Portland cement, Type I, from 230 to 165 feet BLS. The monitoring zone was selected at 153 to 163 feet bls and the well was completed with 153 feet of 4-inch diameter PVC pipe, 10 feet of 4-inch diameter slotted PVC pipe and 2 feet of 4-inch diameter PVC pipe.

Following completion, Florida Drilling air-developed the wells and installed a temporary pump, piping, throttling device and flow measuring device. Using this equipment, the wells were developed by over pumping and step drawdown tests were performed on each well. The wells were video-logged to verify construction details.

2.3 **Lithologic Sampling**

Lithologic samples were collected from drill cuttings after every 10 feet or less of drilling, and were described in the field and again in the lab. Lithologic log summaries are presented in Appendix A. The log descriptions were generally consistent with descriptions from other available lithologic logs of the SAS in the Naples area, and no unexpected formation material or depths were found. A very fine sand layer or seam was present at all three locations starting at an approximate depth of 157 feet bls at the SALT-1 well site, 138 feet bls at the SALT-2 site and 140 feet bls and the SALT-3 site. The sand seam was approximately 3 to 5 feet thick. Between depths of approximately 160 and 210 feet bls, a mix of fine sand, silt, clay, shell, sandy limestone and sandstone was found in varying amounts and thickness that obscured the contact between the Tamiami and Peace River Formations. All three sites had a clay confining layer starting at an approximate depth of 210 feet bls that hydraulically isolates the aquifers that lie below this depth. All three sites had minimal clay material between the Water Table and Lower Tamiami aquifers, which suggests minimal hydraulic separation between the two aquifers.

2.4 **Water Quality Sampling**

Water samples were collected every 20 feet while drilling with reverse air, and were collected from the discharge line of the drill rig into 500 milliliter bottles. The samples were tested in the field using an YSI model 556 meter, a TPW turbidity meter and low-range Hach chloride test strips to analyze specific conductance, pH, turbidity, and chloride concentration. Separate water bottle samples were sent to Sanders Lab for analyses of alkalinity, chloride, sulfate and TDS concentrations, as well as turbidity, specific conductance and pH.

Drilling the bottom portion of SALT-2 well and all of SALT-3 well was performed using mud rotary. Water quality samples were collected at selected intervals using a temporary well casing,

backfilling the bottom of the borehole with bentonite, and developing the well by pumping. Water samples were collected at 170 to 180 feet bls, 160 to 170 feet bls, and 150 to 160 feet bls in the SALT-2 well. Water samples were collected from SALT-3 well at intervals of 200 to 210 feet bls, 180 to 190 feet bls, 155 to 165 feet bls, and 130 to 140 feet bls, using the same method used at the SALT-2 well. A summary table of the field measurements and laboratory test results are provided in Table 2, and copies of the laboratory reports and Chain of Custody forms are provided in Appendix B.

2.5 **Geophysical Logging**

The geophysical logs using x-y caliper, natural gamma, spontaneous potential and dual induction logging tools were produced by MV Geophysical Surveys for SALT-1 and SALT-3 wells, and by All Webbs Enterprises for the SALT-2 well. Copies of the logs are provided in Appendix C.

The dual induction logs of SALT-1 and SALT-3 wells were able to depict significant changes in resistivity in long and short intervals down the boreholes, and coupled with water quality data suggested that water conductivity (salinity) increases below approximately 165 feet BLS. The dual induction logs of SALT-2 well indicated that little change in resistivity occurs in the borehole, suggesting that the water salinity remains relativity low through the entire length.

2.6 **Monitoring Zone Selection**

The plan for constructing these monitoring wells was to locate the transition zone from fresh to saline water defined by 250 mg/L chloride concentration and to complete the wells with a 10-foot monitoring interval that would produce water from the formation. The estimated depth of finding the 250 mg/L chloride concentration was near, either above or below, the base of the Lower Tamiami aquifer at approximately 170 feet bls. This estimated depth contained uncertainties due to lack of existing water quality and hydraulic data collected vertically within the Lower Tamiami and Sandstone aquifers.

The water quality data collected with depth at the SALT-1 well along with the geophysical logs indicated that salinity was increasing below 165 feet bls. Due to the presence of a fine sand seam located at 157 to 165 feet bls, an interval of 135 of 145 feet bls was selected get away from potential sanding problems for the well, and have an anticipated chloride concentration near 250 mg/L. Water quality and geophysical data collected from the SALT-2 well indicated fresh water to the bottom of the borehole, consequently an interval of 170 to 180 feet bls was selected to be as deep as possible and be in competent productive rock. The selection of the monitoring interval for SALT-3 well considered the geophysical logs indicating that salinity was likely increasing with depth below 165 feet bls, and the presence of a competent producing zone at 153 to 163 feet bls.

Table 2- Summary of Water Quality Field Measurements and Laboratory Analysis

FIELD MEASUREMENTS										
Well Name	Date	Time	Depth FT (BLS)	Temp C degrees	pH Log M/L	Specific Conductance micros/cm	Turbidity NTU	Chloride mg/L	TDS* mg/L	Sulfate mg/L
SALT-1	10/9/15	10:40	60-70	28.68	7.88	568	45.62	52	-	-
		12:06	80-90	27.36	8.08	596	288.8	39	-	-
		1:30	100-110	27.26	8.05	530	227.2	39	-	-
		2:55	120-130	28.47	7.83	550	188.7	52	-	-
	10/12/15	8:40	140-150	26.66	7.82	654	62.47	70	-	-
		11:00	150-155	28.45	7.61	813	50.35	102	-	-
SALT-2	10/20/15	9:00	60-70	25.14	7.61	628	107.6	43	-	-
		10:25	80-90	26.4	7.77	636	99.4	43	-	-
		11:25	100-110	25.96	7.65	626	50.49	46	-	-
		12:02	120-130	26.97	7.62	626	59.29	46	-	-
	10/22/15	18:10	150-160	-	-	449	-	<27	-	-
		17:30	160-170	-	-	515	-	36	-	-
		16:45	170-180	-	-	636	-	46	-	-
SALT-3	11/9/15	2:45	130-140	32.22	7.60	506	-	-	278	-
		1:45	155-165	31.39	7.50	520	-	-	251	-
		12:30	180-190	33.78	8.10	559	-	-	280	-
		11:20	200-210	29.83	7.30	1267	-	-	632	-
LABORATORY ANALYSIS										
Well Name	Date	Time	Depth	Alkalinity mg/L	pH** Log M/L	Specific Conductance micros/cm	Turbidity NTU	Chloride mg/L	TDS* mg/L	Sulfate mg/L
SALT-1	10/19/15	10:35	135-145	42	9.16	1620	3.9	442	928	112
SALT-2	10/20/15	9:00	60-70	232	8.53	571	74.5	44	372	30
	10/20/15	10:25	80-90	248	8.38	566	66.2	38	392	22
	10/20/15	11:25	100-110	246	8.20	571	51.2	39	388	22
	10/20/15	12:03	120-130	250	8.14	560	45.9	39	324	22
	10/21/15	8:30	130-140	254	8.02	557	36.7	40	352	17
	10/22/15	18:10	150-160	200	7.85	377	76.9	15	208	10
	10/22/15	17:30	160-170	196	7.83	407	152	37	216	14
	10/22/15	16:45	170-180	424	8.20	481	247	48	228	21
	10/28/15	14:38	170-180	164	8.35	587	49.9	46	368	29
SALT-3	11/9/15	2:45	130-140	420	8.00	438	73.2	43	306	64
	11/9/15	1:45	155-165	1910	7.84	444	47.9	54	293	32
	11/13/15	1:20	153-163	92	7.87	318	0.2	49	193	4
	11/9/15	12:30	180-190	930	8.09	499	137	69	348	60
	11/9/15	11:20	200-210	198	7.77	1100	60.6	247	663	101

**Estimated from Specific Conductance*
***Past Holding Time*
FT (BLS)= Feet Below Land Surface
C degrees= Degrees Celius
Log M/L= Log Based Moles per Liter
mg/L= Milligrams per Liter
micros/cm=Micro-siemens per centimeter
NTU=Nephelometric Turbidity Units

2.7 **Step Drawdown Testing**

In order to assess the well yield, 3-hour step-drawdown tests were performed on SALT-2 and SALT-3 wells to determine a general drawdown response to different pumping rates. The test results were used to estimate specific capacity of the well. An electric, submersible, 10-horsepower motor was installed in the well by Florida Design Drilling, Corp. placing the pump impeller bowls at an approximate depth of 100 feet bls. The discharge rates from SALT-2 and SALT-3 were recorded using a flowmeter totalizer, and the discharge was routed to a nearby storm drain. Florida Design Drilling, Corp. installed an InSitu Troll 700 pressure transducer and datalogger to record changes in pressure before, during and after pumping. The transducer was set at a depth of 85.00 feet bls in SALT-2 and 84.72 feet bls in SALT-3. After the installation of the pump and transducer, and a trial pump test, pumping steps of 10 and 15 gallons per minute (gpm) for SALT-2 and 10 and 20 gpm for SALT-3. The duration between pumping rates was one hour and a one hour recovery period ended each test.

Due to the amount of drawdown recorded during the initial installation and pumping trial, the time steps of the step test of SALT-1 well were reduced to only 3.75 and 18.5 minutes at pumping rates of 5 and 10 gpm, respectively. The test was set up and performed in the same manor used at SALT-2 and SALT-3 with the transducer set at a depth of 86.48 feet bls.

Graphs of the drawdown results are shown in Figures 7, 8 and 9 for SALT-1, SALT-2 and SALT-3, respectively. Table 3 below provides a summary of the results and the calculated specific capacities for the three wells. The specific yield of the SALT-3 well is high for a 10-foot screened interval and indicates that portion of the aquifer must be fairly permeable. The specific yield at SALT-1 well is approaching an order of a magnitude less than the specific yield at SALT-3 and suggests that the permeably must be fairly low.

Table 3- Summary of Step Drawdown Tests

Well Name	Pump Rate (GPM)	Water Level above Transducer (Feet)	Drawdown (Feet)	Specific Capacity (GPM/FT)
SALT-1	0	86.48	MP	--
	5	55.10	31.38	0.16
	10	9.59	76.89	0.13
SALT-2	0	85.00	MP	--
	10	53.04	31.96	0.31
	15	4.63	80.37	0.19
SALT-3	0	84.72	MP	--
	10	76.45	8.27	1.21
	20	63.32	21.4	0.93

Note MP= measuring point

2.8 **Video-Logging**

Wells SALT-1, SALT-2 and SALT-3 were video-logged from top of casing to the bottom of the well by MV Geophysical Surveys, Inc. to ensure the proper construction of the well. The video logging was performed on December 17, 2015 and included a downhole view from top to the bottom of the borehole and a sidehole view to examine all of the PVC joints. A DVD disk of video logs was sent to the City on December 22, 2015. The video logs indicated that the wells met design specification, and no problems were noted except the amount of debris in the bottom of the SALT-1 well. The SALT-1 well was pumped clear of debris on December 21, 2015 by Florida Design Drilling, Corp.

3.0 WELL COMPLETION

3.1 **Final Completion of Wells**

All three wells were completed as designed with 2 by 2 feet well pads and aluminum protective covers that enclose approximately 3 feet of capped well casing as shown in Figure 3. The protective covers were lockable and cemented into the well pads. The well sites were restored to preconstruction conditions by removing tire ruts and replacing grass sod.

The surveyed elevations and State Plane coordinates of the wells are given in Table 4.

3.2 Well Sampling

Well development and step drawdown test results indicated that each well can be sampled with a small 10 to 15-gpm submersible pump. Purging volumes for SALT-1, SALT-2 and SALT-3 wells are approximately 93, 108 and 97 gallons, respectively, so purging 3 well volumes with a 10 gpm pump will require approximately 30 minutes.

Table 4- Well Completion and Survey Location and Elevation

City Well Site	SFWMD Well Name	SFWMD Well ID	Casing Type	Casing Diameter (Inches)	Casing Depth (feet bls)	Total Depth (feet bls)	Well Screen Interval
WUP 11-00017-W (120709-23)							
1	SALT-1	255111	PVC	4	135	147	135-145
2	SALT-2	255112	PVC	4	170	185	170-180
3	SALT-3	255113	PVC	4	153	165	153-163
City Well Site	SFWMD Well Name	SFWMD Well ID	X Location (State Plane, East)*	Y Location (State Plane, East)*	Elevation, Top of Pad (Feet, NAVD88)**	Elevation, Top of Well Plug (Feet, NAVD88)**	Elevation, Top of Metal Lid Cover (Feet, NAVD88)**
1	SALT-1	255111	393632	669890	12.14	14.76	15.11
2	SALT-2	255112	394852	680445	10.51	13.39	13.76
3	SALT-3	255113	393742	695280	14.71	17.76	18.04

bls - Below Land Surface

**Source- City of Naples GIS*

***Source- Marco Surveying & Mapping, 01/05/2016*

Convert NAVD88 to NGVD29 add 1.266 feet at SALT-1 and SALT-2, and add 1.250 feet at SALT-3

3.3 Conclusion from Construction and Testing

SALT-1 well is completed with a monitoring interval of 135 to 145 feet bls, which is near the base of the Lower Tamiami aquifer, and has recorded saline water with a TDS and chloride concentration of 928 and 442 mg/L, respectively. Based on the geophysical logs, salinity (conductance) increases significantly below 165 feet bls an suggests that the well may be monitoring the transition zone of the seawater front that lies at the base and under the Lower Tamiami aquifer.

SALT-2 well is completed with a monitoring interval of 170 to 180 feet bls, which is at the base of the Lower Tamiami aquifer or the top of the Sandstone aquifer. The water quality data and geophysical logs taken from the well indicate that fresh water is present to a depth of 220 feet bls.

SALT-3 well is completed with a monitoring interval of 153 to 163 feet bls, which is near the base of the Lower Tamiami aquifer, and has recorded saline water with a TDS and chloride concentration of 348 and 69 mg/L, respectively. A water sample collected at a depth of 200 to 210 feet bls recorded a TDS and chloride concentration of 663 and 247 mg/L, respectively. Saline water is likely present just below a depth of 210 feet bls in the Sandstone aquifer.

4.0 REFERENCES

E. Geddes, E. Richardson and A. dodd, 2015; "*Hydrogeologic Unit Mapping Update for the Lower West Coast Water Supply Planning Area*", SFWMD Technical Publication WS 34, February 2015, West Palm Beach, Florida .

Prinos, S. T., 2013; *Saltwater Intrusion in the Surficial Aquifer System of the Big Cypress Basin, Southwest Florida, and a Proposed Plan for Improved Salinity Monitoring*, USGS Open File Report 2013-1088, 58 pp. http://pubs.usgs.gove/of/2013/1088/.

SFWMD, 1986; "*Preliminary Assessment of the Groundwater Resources of Western Collier County, Florida*", SFWMD Technical Publication 86-1, Part 2- Text, February 1986, DRE 220, West Palm Beach, FL.

FIGURES

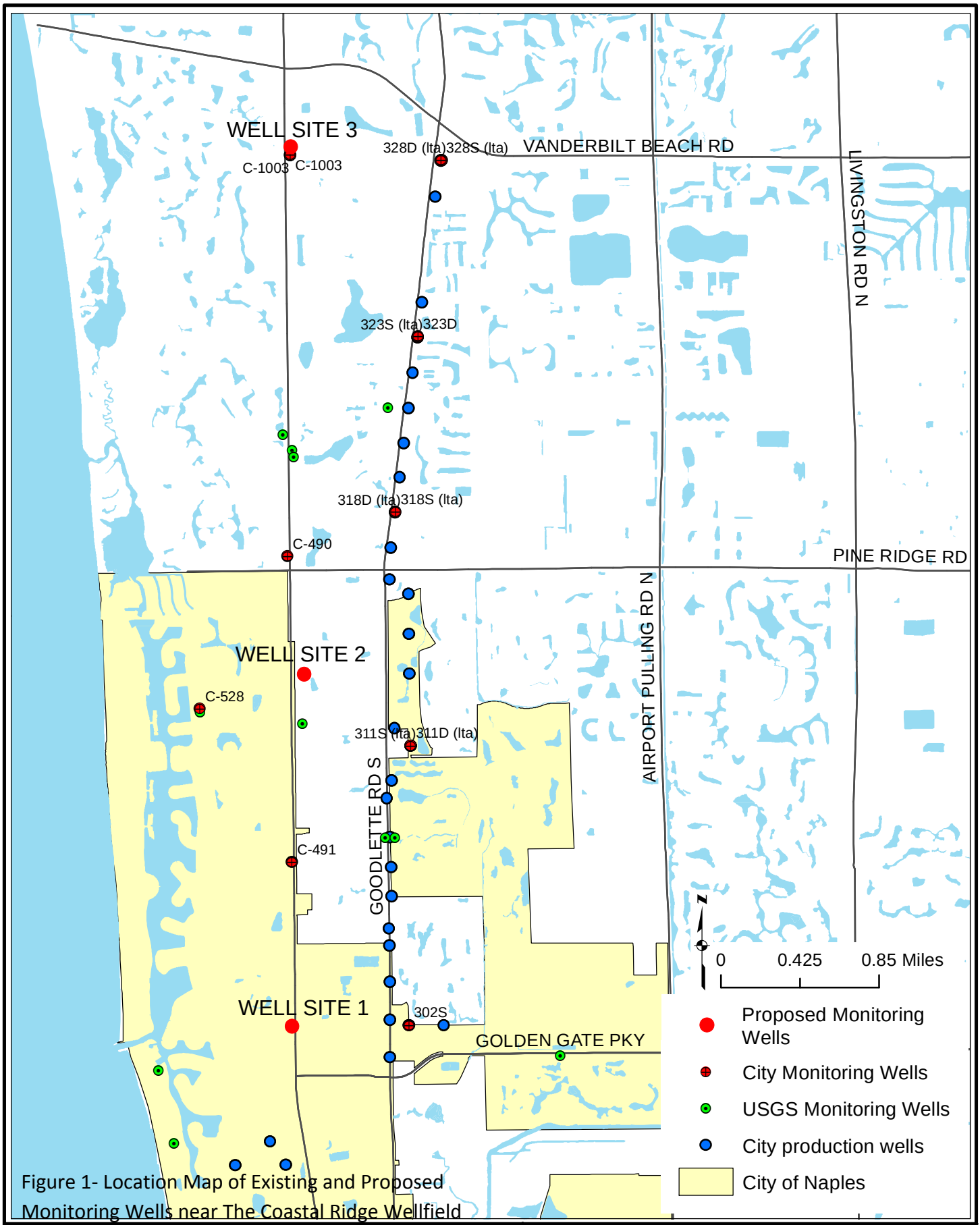


Figure 1- Location Map of Existing and Proposed Monitoring Wells near The Coastal Ridge Wellfield

L:\2012000\20129093-001 - City of Naples\Wells\regional_map.mxd

JOHNSON ENGINEERING
2122 JOHNSON STREET
P.O. BOX 1550
FORT MYERS, FLORIDA 33902-1550
PHONE (239) 334-0046
FAX (239) 334-3661
E.B. #642 & G.B. #503

Existing and Proposed Monitoring Wells near the Coastal Ridge Wellfield

DATE	PROJECT	FILE NO.	SCALE	SHEET
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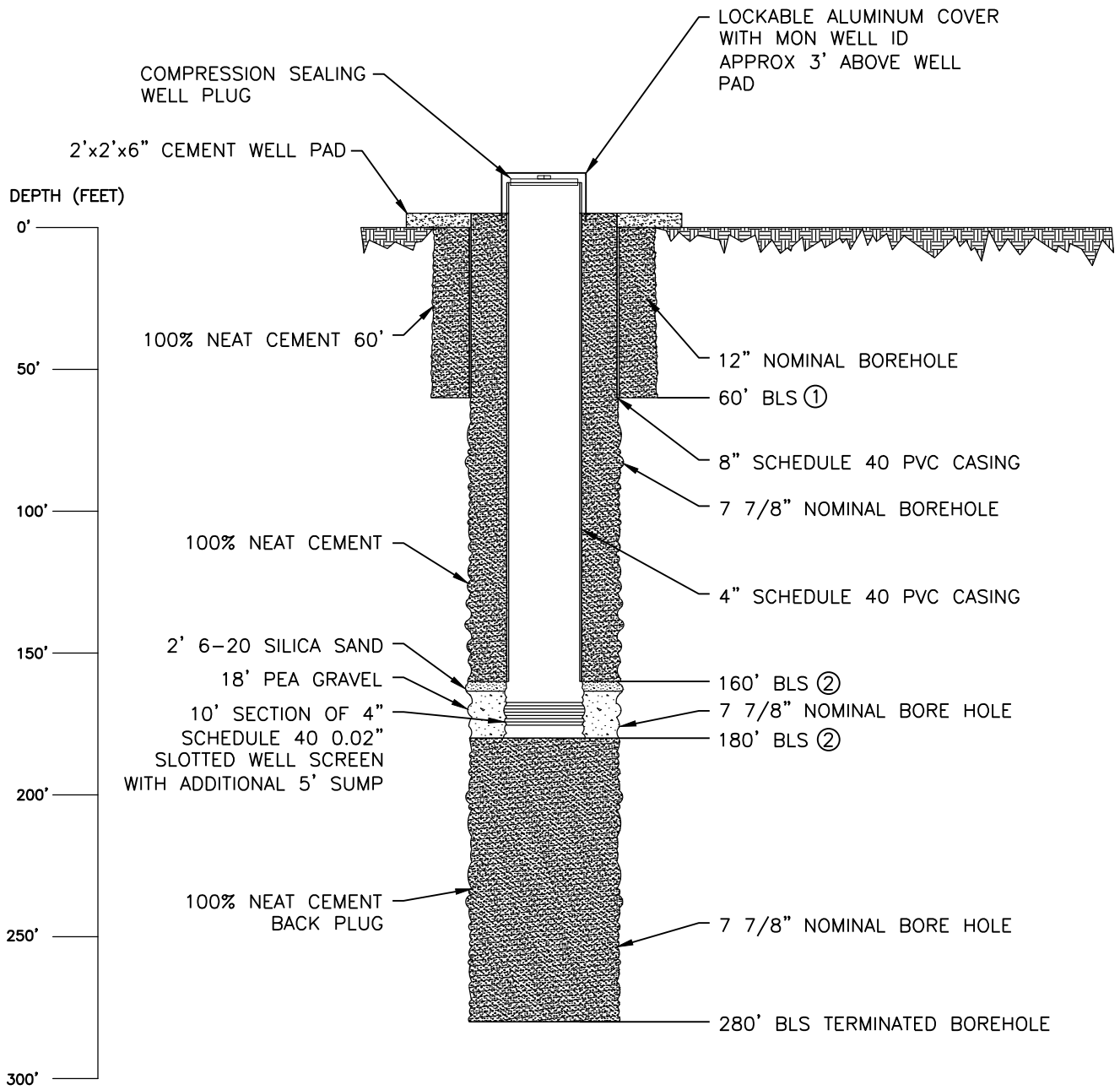


LOWER TAMIAMI MONITORING WELL

NTS

NOTES:
① FIRST COMPETENT ROCK WITHIN LOWER TAMIAMI AQUIFER
② MONITORING ZONE DEPTHS APPROXIMATE (±10 FEET)
③ BLS = BELOW LAND SURFACE

Figure 2- Well Construction Design

O:\2012\20129093-000\Water Mgmt\Drawings\Typical Monitoring Well.dwg (Lower Tamiami Monitoring Well) mll2 Jun 22, 2015 - 11:42am

JOHNSON ENGINEERING
2122 JOHNSON STREET
P.O. BOX 1550
FORT MYERS, FLORIDA 33902-1550
PHONE (239) 334-0046
FAX (239) 334-3661
E.B. #642 & L.B. #642

Monitoring Well Design

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
February 2014	20129093-002		As Shown	1 Of 1

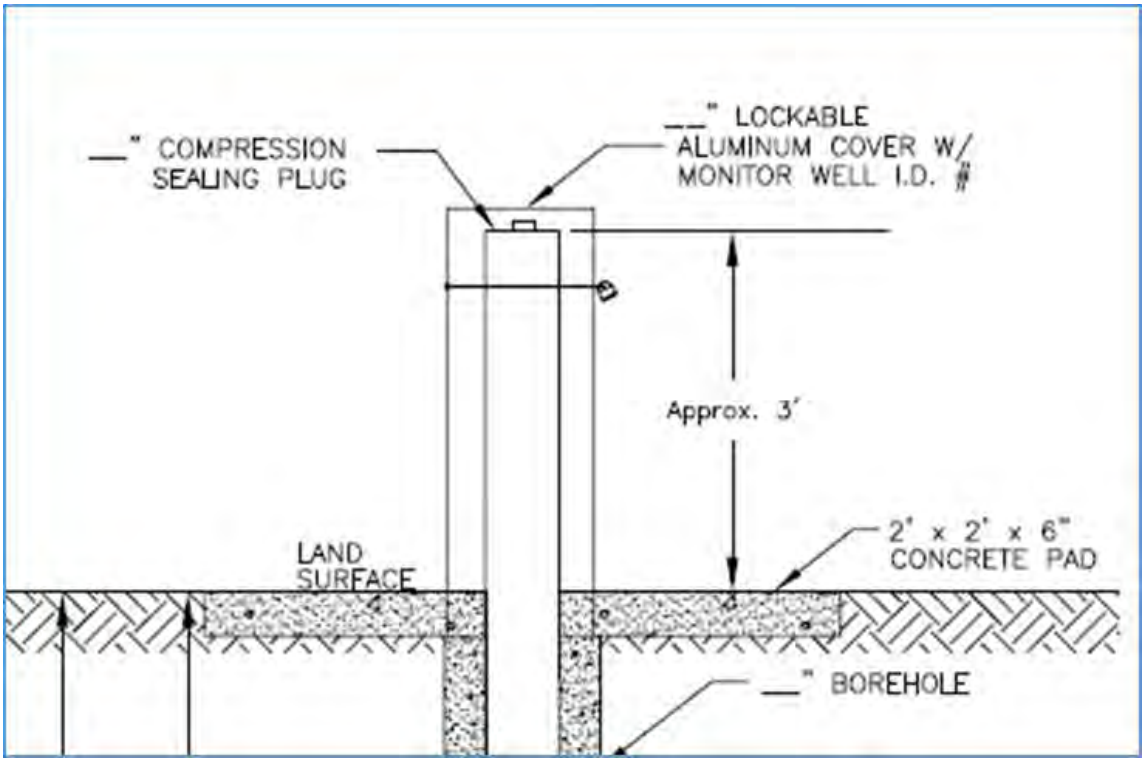
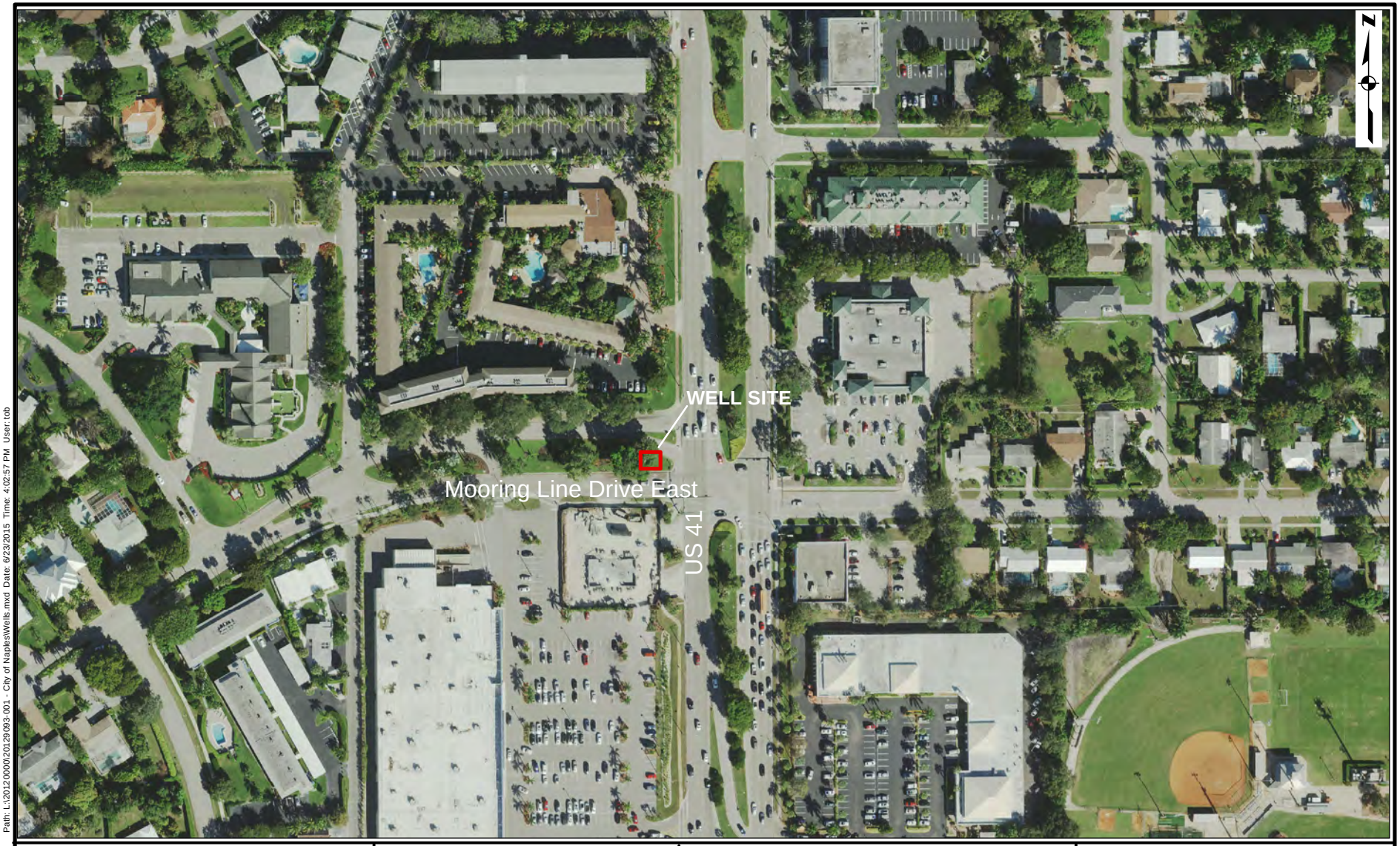


Figure 3- Example of Planned Completion of Monitoring Wells

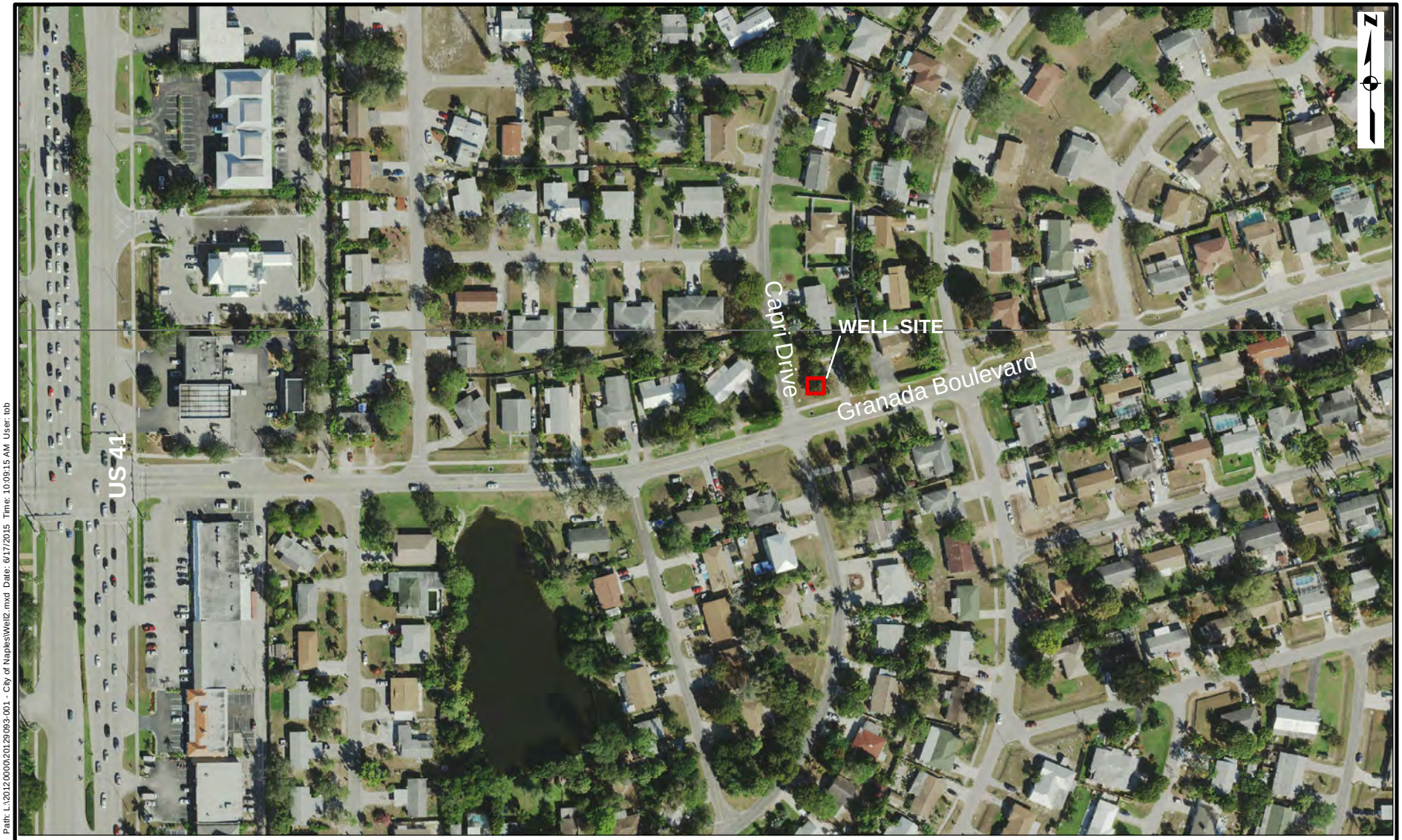


Path: L:\2012\0000\20129093-001 - City of Naples\Wells.mxd Date: 6/23/2015 Time: 4:02:57 PM User: tob

Mooring Line Drive East and Tamiami Trail (US 41)	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 1

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
06/11/15	20150110-001	00-00-00	1" = 1,500'	2

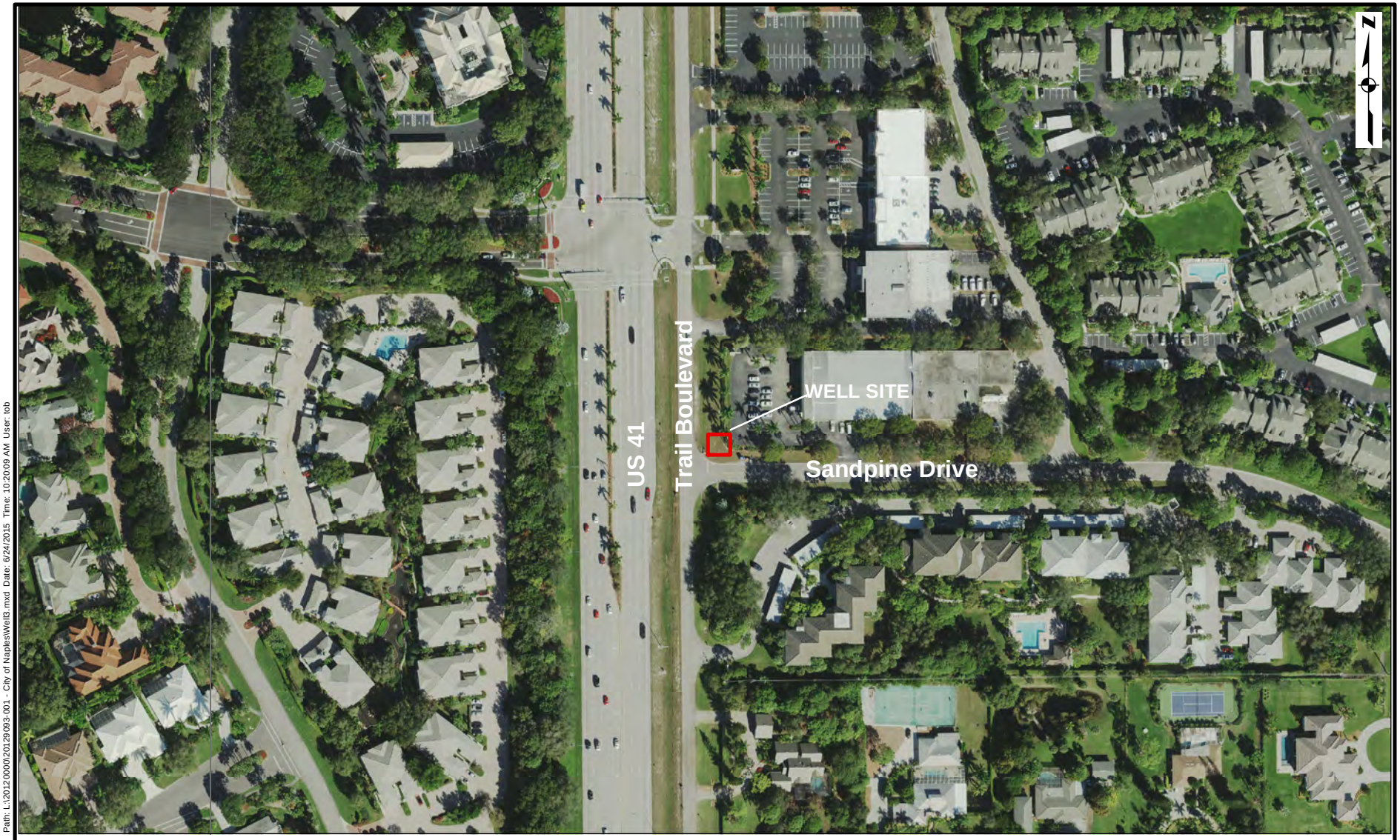
Figure 4- Well Location of Monitoring Well SALT-1



Path: L:\2012\0000\20129.093-001 - City of Naples\Well2.mxd Date: 6/17/2015 Time: 10:09:15 AM User: tob

Capri Drive and Granada Boulevard	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 2			
				DATE 06/11/15	PROJECT NO. 20150110-001	FILE NO. 00-00-00	SCALE 1" = 1,500'	SHEET 3

Figure 5- Well Location of Monitoring Well SALT-2



Path: L:\2012\0000\20129093-001 - City of Naples\Well3.mxd Date: 6/24/2015 Time: 10:20:09 AM User: tob

Trail Boulevard and Sandpine Drive	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 3

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
06/11/15	20150110-001	00-00-00	1" = 1,500'	4

Figure 6- Location Map of Monitoring Well SALT-3

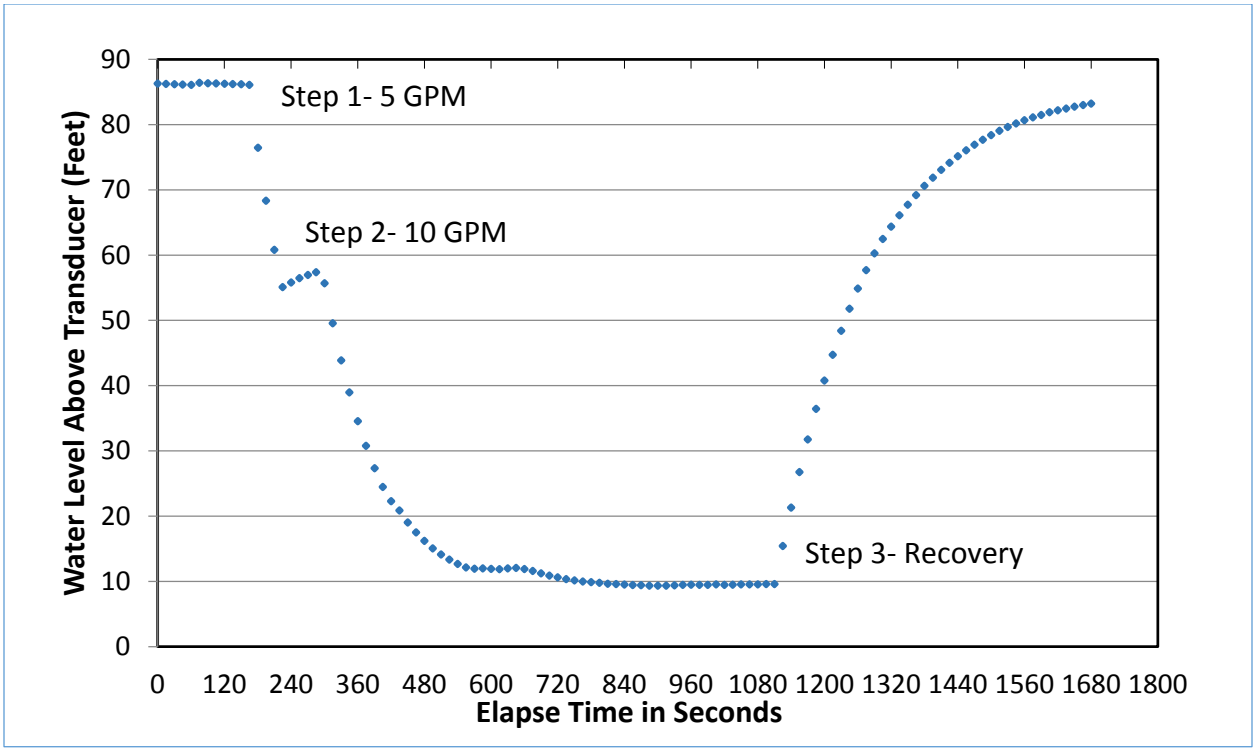


Figure 7- Water Level Drawdowns during Step Drawdown Test of SALT-1 Well

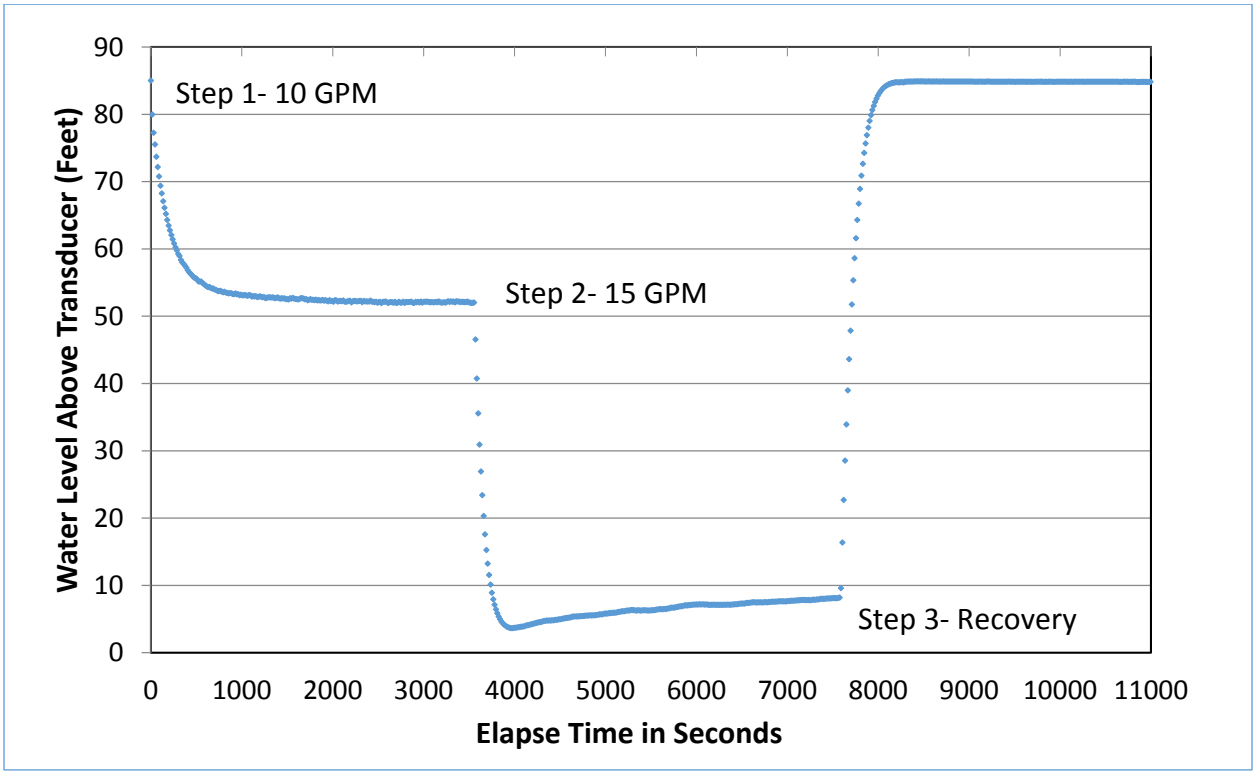


Figure 8- Water Level Drawdowns during Step Drawdown Test of SALT-2

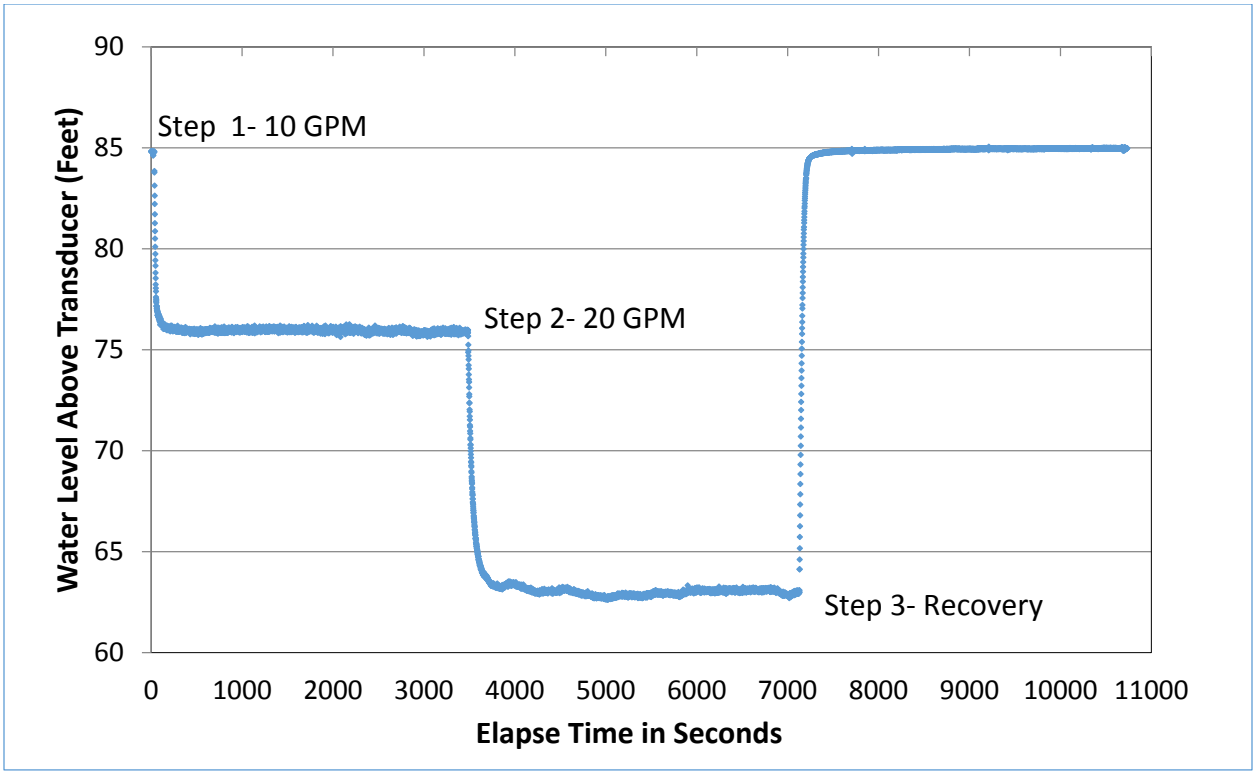


Figure 9- Water Level Drawdowns during Step Drawdown Test of SALT-3 Well

APPENDIX A

Lithologic Logs

Appendix A1- Lithologic Log of Monitoring Well SALT-1

Depth (feet, bls)	Lithology at SALT-1 Location- S 27/T 49S/R 25E, Lat- $26^0$10'28"N Long- $81^0$48'00"
0-10	SAND, fine to very fine quartz sand, sub-angular to rounded, trace of shell; light gray(7.5YR 2.5/3).
10-20	SAND, fine quartz sand, sub-angular, few specks of shell; light brown (7.5YR 2.5/3)
20-30	SAND, fine quartz sand, sub-angular, with fine grain round carbonate sand, possible Halimeda plates, trace fine grain phosphatic sand, slightly adhesive; light brown (7.5YR 2.5/3).
30-40	Same as above.
40-50	SAND and SHELL, mollusk shells, bivalves some between 0.5 to 1.5 inches, some limestone fragments; light olive gray.
50-60	LIMESTONE, coarse grain irregular surfaces, coralline or worm tubes, bivalve shell fragments. Possible calcite or dolomite crystals; light gray with white to brown to blue gray fragments.
60-70	LIMESTONE, same as above, but smaller limestone fragments.
70-80	LIMESTONE, medium to coarse grain, hard to slightly friable, cream color with occasional amber color fragments.
80-90	LIMESTONE, fine to medium grain, soft, friable, some shell fragments, few shells stained black, cream with white and black specks.
90-100	LIMESTONE, fine to medium grained, angular, friable, spine fragments (urchin spines?), shell fragments cream with white specks
100-110	SAND, very fine to fine quartz sand with some limestone fragments, medium to coarse grain, some adhesion, slightly darker cream than above.
110-120	LIMESTONE, coarse fragments, moldic porosity, some shell, hard but slightly friable.
120-128	SANDY LIMESTONE, friable with shells, full intact bivalve shells, cream.
128-130	SAND, very fine sand with few shell fragments and silt.
130-140	SANDY LIMESTONE, hard, abundant shell hash, light gray with cream specks
140-150	SANDY LIMESTONE, medium grained, shell fragments, sub-angular medium quartz sand, light gray, some very fine sand.
150-157	SANDY LIMESTONE as above
157-160	SAND, very fine quartz sand, olive green stain and gray clay nodules.
160-170	SAND, very fine to fine sand, silt, sub-round to round grains, gray.
170-180	SANDY LIMESTONE, some small shell fragments, round quartz sand, medium to coarse limestone fragments, cream, light gray matrix.
180-190	SANDY LIMESTONE, mixture of light tan and gray limestone, micro-moldic, shell fragments, some phosphate coarse sand.
190-200	SAND, medium to coarse round quartz grains, gray.

Depth (feet, bls)	Lithology (continued)
200-208	SANDY LIMESTONE and marl, soft clay, tan limestone flakes, gray, very fine sand.
208-210	CLAY, soft, olive gray marl.
210-220	Clay, silt, limestone fragments, very soft, olive gray, sticky.
220-230	CLAY with silt, gray, very soft, sticky.
230-240	CLAY, sand, very soft, sticky, gray.
240-250	CLAY, same as above.
250-260	CLAY, as above but with fine phosphate grains.

Appendix A-2- Lithologic Log of Monitoring Well SALT-2

Depth (feet, bls)	Lithology Location- S 12/T 49S/R 25E, Lat- $26^0$12'12"N Long- $81^0$47'49"
0-10	SAND, fine to very fine quartz sand, sub-rounded, shell fragments medium to coarse; brown; some organic fragments some silt, wet
10-20	SAND, same as above no shell fragments, wet
20-30	MARL, gray, medium grain quartz sand, lime mud, coarse grain size friable limestone, soft
30-40	LIMESTONE, coarse grain size some fine grain quartz sand, phosphate nodules and grains, minor clay
40-50	LIMESTONE gray to dark gray, hard coarse fragments; minor amount of shell fragments
50-60	LIMESTONE, coarse grain angular fragments, hard light to dark gray "salt and pepper" appearance, phosphate stain?
60-70	LIMESTONE, dark gray, some lighter gray to white fragment with moldic porosity, medium to coarse grain, angular to flat grains
70-80	SANDY LIMESTONE, cream fine-grained sandy limestone, with dark gray flat limestone fragments, friable
80-90	SANDY LIMESTONE, light brown occasional dark gray limestone fragments, some shell fragments, white to amber, medium grain.
90-100	SANDY LIMESTONE as above with more shell, some fragments 0.25 to 0.5 inches size, mostly medium to coarse grain size.
100-110	SAND with occasional dark gray limestone pieces, some shell fragments, somewhat firm but wet.
110-120	SANDY LIMESTONE light brown to pale yellow, very friable, shell hash, medium to coarse grain size some phosphate grains; a 0.5 inch amber chalcedony fragment.
120-130	SANDY LIMESTONE, medium grain quartz sand, occasional shell fragments, phosphate grains, friable.
130-138	SAND and shell, very fine quartz sand, shell fragments 0.25 to 2.0 inches bivalve fragments and echinoid plates.
138-140	SAND, dredging very fine sand.
140-150	SAND and silt, very soft gray very fine sand and silt, some shell and black phosphate sand.
150-160	SANDY LIMESTONE, gray and cream, shell, echinoid plates, phosphate grains, some very fine quartz sand.
160-170	SAND and silt, very fine, gray, mushy, some clay with limestone and shell fragments minor phosphate.
170-180	SANDSTONE, gray and tan angular fragments, some clay in matrix.
180-190	CLAY, gray, soft with silt and some fine grained sandstone
190-200	CLAY as above no silt.

Depth (feet, bls)	Lithology (continued)
200-210	CLAYEY SAND, gray, sub-angular but uniform medium grain size, a little silt.
210-220	CLAYEY SAND, olive gray, as above

Appendix A-3- Lithologic Log of Monitoring Well SALT-3

Depth (feet, bls)	**Lithology** **Location- S 34/T 48S/R 25E, Lat- $26^0$14'39"N Long- $81^0$48'02"**
0-10	SAND, fine to very fine quartz sand, sub-rounded; light brown; minor organic fragments, very wet
10-20	SAND, same as above, wet.
20-30	SAND, fine to very fine quartz sand; some silt and clay, light brown; some organic fragments; more firm than above.
30-40	SAND, very fine quartz sand; minor clay, gray; some limestone/marl fragments; wet but firm.
40-50	LIMESTONE indurated, medium to coarse grain, some hard fragments stained dark blue gray; overall light gray.
50-60	LIMESTONE, more coarse grain than above, hard angular fragments, light gray, possibly siliceous cement or chalcedony fragments, chert looking, some with dark iron (?) stain.
60-70	LIMESTONE, gray, medium to coarse grain, larger grains size dark gray and hard, lighter gray fragments softer, soft, some silt and/or clay; some cohesion of compared to sample above.
70-80	LIMESTONE, light gray, medium to coarse grain, mostly medium, some dark gray fragments, some silt, very fine sand.
80-90	LIMESTONE, medium grain, some very fine quartz sand, silt, very fine phosphate flakes, slightly friable, softer than dark fragments described above.
90-100	SANDSTONE with some coarse grain, angular limestone fragments, some very fine phosphate grains; cream silt and very fine quartz sand.
100-110	SAND LIMESTONE, medium to coarse, angular to sub-round with occasional limestone fagments and shell, light brown, some very fine phosphate grains, somewhat friable.
110-120	LIMESTONE, medium, sub-round fragments, some clay.
120-130	SAND, very fine quartz sand with silt and minor clay medium grain quartz sand, occasional shell fragments, wet, sticky, gray.
130-140	SANDY LIMESTONE, medium to coarse, sub-angular, minor clay and shell fragments, wet, gray
140-150	SAND, very fine quartz sand, minor silt and shell fragments, wet, gray.
150-160	LIMESTONE, gray, shell fragments coarse grained, micro moldic porosity, angular, hard.
160-165	LIMESTONE with shell fragments.
165-167	CLAY, soft, cohesive limestone and shell fragments in clay.
170-180	CLAY, gray, soft, sticky.

Depth (feet, bls)	Lithology (continued)
180-190	CLAYEY SAND, medium, sub-round to round quartz sand bound by clay and occasional clay nodules, frosted to clear quartz sand grains, minor shell fragments, gray.
190-200	CLAYEY SAND, as above.
200-210	CLAYEY SAND, as above but more clay nodules, gray
210-220	CLAY, medium grain limestone grains, gray, marl, medium grain phosphate, some fine sand and silt, gray
220-230	CLAY, as above

APPENDIX B

Laboratory Reports of Water Quality Analysis
Of Samples from Monitoring Wells SALT-1, SALT-2 and SALT-3

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1511154

Page 1 of 5

All subsequent pages are identified by: F1511154 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact**:

None

Client: Florida Design Drilling Corp.,

Florida Drilling
7733 Hooper Road
West Palm Beach, FL 33411

Phone: 561-845-1233
Fax: bruce@fldrilling.com
E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of $25.00 per report. Reports older than 1 year are available for a fee of $50.00 per report. Copies will be provided within 1 week of the time of the request.

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

Comments:
Original TDS analysis for F1511154-02A and -04A run on 11/13/2015 did not match corresponding Conductivity analysis data.

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511154

Report Date: 12/02/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-01	210-200	Ground Water	GRAB	11/10/15 8:30	11/9/15 11:20

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	198		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	243		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	7.77	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	1100		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	101		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	663		20	20	mg/L	SM2540C	NB151116069	11/13/15 16:15	JS	E84380
Turbidity	60.6		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-02	190-180	Ground Water	GRAB	11/10/15 8:30	11/9/15 12:30

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	930		2	2	mg/l CaCO3	SM2320B	NB151202005	11/11/15 13:45	JS	E84380
Chloride	69		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	8.09	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	499		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	60		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	348	Q	20	20	mg/L	SM2540C	NB151116069	11/27/15 14:15	JS	E84380
Turbidity	137		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-03	165-155	Ground Water	GRAB	11/10/15 8:30	11/9/15 13:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	1910		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	54		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	7.82	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	444		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	32		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	293		20	20	mg/L	SM2540C	NB151116069	11/13/15 16:15	JS	E84380

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511154

Report Date: 12/02/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-03	165-155	Ground Water	GRAB	11/10/15 8:30	11/9/15 13:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Turbidity	47.9		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-04	140-130	Ground Water	GRAB	11/10/15 8:30	11/9/15 14:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	420		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	43		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	8.00	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	438		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	64		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	306	Q	20	20	mg/L	SM2540C	NB151116069	11/27/15 14:15	JS	E84380
Turbidity	73.2		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F1511154

Project Name: SW3

Project Location: Naples

Customer Type:

Kit #: FOR LAB USE ONLY

Requested Due Date: 11/18/15

Client	FLORIDA DRILLING
Address	7733 HOOPER RD West Palm Beach 33711
Phone	239 849-7277
Fax	
Report To:	
Bill to:	
P.O. #	

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST, H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): TOBI ROSENCRANZ

Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives: pH	Preservatives: Ice	Analysis Requested: pH, Cond., Turb, TDS	Analysis Requested: Alk *	Analysis Requested: Cl⁻, SO4 °	Sample ID # (Lab Use Only)
GW	210'-200'	11/9/15	1120	G			X	X	X	1A/B/C
	190'-180'		1230				X	X	X	2A/B/C
	165'-155'		1345				X	X	X	3A/B/C
	140'-130'		1445				X	X	X	4A/B/C

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...	CLIENT	11/9/15	1719		11/10/15	0830
		Client Initial:						
		Samples On Ice Yes No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774 10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only)

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
West Palm Beach 33411
Phone: (239) 849-7277
Fax:

Report To:
Bill to:
P.O. #

Project Name: SW3
Project Location: NAPLES
Customer Type:
Kit #: FOR LAB USE ONLY
Requested Due Date:

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): TOM ROSENKRANZ
Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested PH	Alka	Cond	Turb	TDS	Sulfate	Chloride	Sample ID # (Lab Use Only)
	Ground water 210'-200'	11/9	11:20A				X		X	X	X			1A
	GW 190'-180'	11/9	12:30P					X						1B
	GW 165-155'	11/9	1:45P											
	GW 140'-130'	11/9	2:45P											

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...						
		Client Initial:						
		Samples On Ice (Yes) No						
			Relinquished:	11/9	5:19P			

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1511247

Page 1 of 3

All subsequent pages are identified by: F1511247 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact:**

None

Client: Florida Design Drilling Corp.,

Florida Drilling
7733 Hooper Road
West Palm Beach, FL 33411

Phone: 561-845-1233
Fax: bruce@fldrilling.com
E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.

Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of $25.00 per report. Reports older than 1 year are available for a fee of $50.00 per report. Copies will be provided within 1 week of the time of the request.

Comments:

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511247

Report Date: 11/27/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511247-01	SW3	Ground Water	GRAB	11/16/15 8:20	11/13/15 13:20

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	92		2	2	mg/l CaCO3	SM2320B	NB151120003	11/19/15 14:02	GC	E84380
Chloride	49		1	4	mg/L	SM4500Cl-E	NB151127007	11/27/15 9:28	JS	E84380
pH	7.87	Q	0.01	0.01	std units	SM4500H-B	FB151125001	11/23/15 10:40	LA	E85457
Specific Conductance	318		1	1	µmhos/cm	EPA120.1	FB151122017	11/19/15 13:01	LA	E85457
Sulfate	4	I	2	8	mg/L	ASTM-D516-90	NB151120002	11/19/15 16:25	JS	E84380
Total Dissolved Solids	193		20	20	mg/L	SM2540C	NB151123027	11/20/15 15:39	GC/JS	E84380
Turbidity	0.2		0.1	0.1	NTU	EPA180.1	FB151122007	11/17/15 16:15	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F151247

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
WEST PALM BEACH, FL 33411
Phone:
Fax:

Report To:
Bill to:
P.O. #

Preservative: HCL = H, HNO_3 = N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Project Name: SW3
Project Location: MAPLES 163'-153'
Customer Type:
Kit #:
Requested Due Date:

Sampled By (PRINT): TOBY ROSENKRANZ
Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives: pH	Preservatives: Ice	Analysis Requested: pH, TDS	Analysis Requested: COND., TURB	Analysis Requested: ALK	Analysis Requested: Cl-, SO4	Sample ID # (Lab Use Only)
GW	SW3	11/13/15	1320	G		X	X				1A
						X		X			1B
						X			X		1C
						X				X	1D

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...		11/13	3:43P		11/16/15	0820
		Client Initial:						
		Samples On Ice (Yes) No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774 10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1510381

Page 1 of 3

All subsequent pages are identified by: F1510381 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact:**

None

Client: Florida Design Contractors

1326 S. Kkillian Drive

Lake Park, FL 33403

Phone: 561-845-1233

Fax:

E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.

Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

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Comments:

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Contractors

Client Project: Misc Testing

Lab Project: F1510381

Report Date: 10/30/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510381-01	WATER SAMPLE	Ground Water	GRAB	10/19/15 11:53	10/19/15 10:35

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	42		2	2	mg/l CaCO3	SM2320B	NB151023013	10/23/15 9:55	JS	E84380
Chloride	442		1	4	mg/L	SM4500Cl-E	NB151023001	10/22/15 15:32	JS	E84380
pH	9.16	Q	0.01	0.01	std units	SM4500H-B	FB151023002	10/22/15 15:20	LA	E85457
Specific Conductance	1620		1	1	µmhos/cm	EPA120.1	FB151021012	10/20/15 13:56	KT	E85457
Sulfate	112		2	8	mg/L	ASTM-D516-90	NB151030016	10/29/15 17:47	JS	E84380
Total Dissolved Solids	928		20	20	mg/L	SM2540C	FB151023012	10/20/15 14:58	KT	E85457
Turbidity	3.9		0.1	0.1	NTU	EPA180.1	FB151021010	10/20/15 13:00	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F1510381

Project Name: SWMW #1

Project Location: NAPLES

Customer Type:

Kit #: FOR LAB USE ONLY

Requested Due Date: 10/30

Client: Florida Drilling

Address: 7733 HOOPER RD
West Palm Beach FL 33411

Phone: (239)(849)7277

Fax:

Report To:

Bill to:

P.O. #

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): TOBY ROSENKRANZ

Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested: Temp.	pH *	Alkalinity	Conductivity *	Turbidity	TDS *	Sulfate	Chloride	Sample ID # (Lab Use Only)
GW	Water Sample	10/19/15	10:35AM	G			10/19/15	X							*1A
									X						●1B
											X				□1C

Bottle Lot #	COMMENTS:	Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
			10/19	10:49AM		10/19/15	10:50
			10/19/15	11:50		10/19/15	1053

Okay to Run As Is..
Client Initial:

Samples On Ice: Yes No

7.4°

1050 Endeavor Ct, Nokornis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1510437

Page 1 of 3

All subsequent pages are identified by: F1510437 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact**:

None

Client: Florida Design Contractors

1326 S. Kkillian Drive

Lake Park, FL 33403

Phone: 561-845-1233

Fax:

E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

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Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of $25.00 per report. Reports older than 1 year are available for a fee of $50.00 per report. Copies will be provided within 1 week of the time of the request.

Comments:

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Contractors

Client Project: Misc Testing

Lab Project: F1510437

Report Date: 11/03/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510437-01	NAPLES 140 BLS	Ground Water	GRAB	10/22/15 8:30	10/21/15 8:35

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	254		2	2	mg/l CaCO3	SM2320B	NB151023013	10/23/15 9:55	JS	E84380
Chloride	40		1	4	mg/L	SM4500Cl-E	NB151027011	10/27/15 9:37	JS	E84380
pH	8.02	Q	0.01	0.01	std units	SM4500H-B	FB151023002	10/22/15 15:20	LA	E85457
Specific Conductance	557		1	1	µmhos/cm	EPA120.1	FB151103015	10/22/15 13:00	KT	E85457
Sulfate	17		2	8	mg/L	ASTM-D516-90	NB151102005	10/30/15 16:51	JS	E84380
Total Dissolved Solids	352		20	20	mg/L	SM2540C	FB151027005	10/22/15 16:30	KT	E85457
Turbidity	36.7		0.1	0.1	NTU	EPA180.1	FB151023016	10/22/15 9:36	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F1516437

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
WEST PALM BEACH, FL 33411
Phone:
Fax:

Report To:
Bill to:
P.O. #

Project Name: SWMW #2
Project Location:
Customer Type:
Kit #: FOR LAB USE ONLY
Requested Due Date: 10 BD

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT)
Sampler Signature

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested pH, TDS (A)	Cond./Turb. (A)	Alkalinity (B)	Cl, SO4 (C)	Sample ID # (Lab Use Only)
GW	NAPLES 140 BLS	10/21/15	0885	G			X	X	X	X	01A/B/C

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...						
		Client Initial:	CLIENT	10/21/15	—	KCL	10/22/15	0830
		Samples On Ice (Yes) No						
	9.6°							

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only)

Client: Florida Drilling
Address: 7733 Hooper Rd
West Palm Beach FL 33411
Phone: (239) 849-7227
Fax:

Report To:
Bill to:
P.O. #

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Project Name: SWMW #1
Project Location: NAPLES
Customer Type:
Kit #: FOR LAB USE ONLY
Requested Due Date:

Sampled By (PRINT): Toby Rosenkranz
Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested pH	Alkalinity	Conductivity	TDS	Sulfate	Chloride	Turbidity	Sample ID # (Lab Use Only)
	Ground water sample	10/21	8:35AM											

Bottle Lot #	COMMENTS:	Okay to Run As Is...	Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Client Initial:		10/21	6:05PM			
		Samples On Ice (Yes) No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

3 bottles recid
1 depth - 3 times
bottles labeled
as SMW #2
all bottle (3)
same analysis

Sanders Laboratories, Inc.
Environmental Testing Services

Non-Conforming Sample Receipt Report

Date: 10/22/15

Project #: _____

Client: FLORIDA DRILLING

Project: _____

Reason for Report:

_____ Chilling Process had not yet begun (samples received same day)

__X__ Samples not at required temperature (0-6°C)(samples received day or more later)

_____ Required preservation not used

_____ Incorrect preservation used

_____ Parameter holding time exceeded

_____ Inappropriate sample containers

_____ Inadequate sample volume

_____ Sample bottle leaked or broke

_____ Other (explain)_____

Client Contacted: _____ Yes _____ No

Who Contacted: _____

How Contacted: _____ Phone _____ Fax _____ Email
_____ In Person

Person Completing Report: _____

Copy to be attached to receiving COC
Original to be attached to original COC

If there are any questions please contact Andrew Konopacki or Tami Bright at 941-488-8103.

Effective March 9th, 2009

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1510454

Page 1 of 5

All subsequent pages are identified by: F1510454 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact**:

None

Client: Florida Design Drilling Corp.,

7733 Hooper Road

West Palm Beach, FL 33411

Phone: 561-845-1233

Fax:

E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

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Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

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Comments:

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1510454

Report Date: 11/06/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510454-01	NAPLES 160-150 BLS	Ground Water	GRAB	10/23/15 8:30	10/22/15 18:10

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	200		2	2	mg/l CaCO3	SM2320B	NB151104010	11/4/15 9:25	JS /GC	E84380
Chloride	15	V	1	4	mg/L	SM4500Cl-E	NB151027011	10/27/15 9:37	JS	E84380
pH	7.85	Q	0.01	0.01	std units	SM4500H-B	FB151027008	10/26/15 16:17	LA	E85457
Specific Conductance	377		1	1	µmhos/cm	EPA120.1	FB151105015	10/29/15 13:54	KS/KT	E85457
Sulfate	10		2	8	mg/L	ASTM-D516-90	NB151102005	10/30/15 16:51	JS	E84380
Total Dissolved Solids	208		20	20	mg/L	SM2540C	FB151030017	10/27/15 13:28	KT	E85457
Turbidity	76.9		0.1	0.1	NTU	EPA180.1	FB151027010	10/23/15 10:24	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510454-02	NAPLES 170-160 BLS	Ground Water	GRAB	10/23/15 8:30	10/22/15 17:30

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	196		2	2	mg/l CaCO3	SM2320B	NB151104010	11/4/15 9:25	JS /GC	E84380
Chloride	37		1	4	mg/L	SM4500Cl-E	NB151027011	10/27/15 9:37	JS	E84380
pH	7.83	Q	0.01	0.01	std units	SM4500H-B	FB151027008	10/26/15 16:17	LA	E85457
Specific Conductance	407		1	1	µmhos/cm	EPA120.1	FB151105015	10/29/15 13:54	KS/KT	E85457
Sulfate	14		2	8	mg/L	ASTM-D516-90	NB151102005	10/30/15 16:51	JS	E84380
Total Dissolved Solids	216		20	20	mg/L	SM2540C	FB151030017	10/27/15 13:28	KT	E85457
Turbidity	152		0.1	0.1	NTU	EPA180.1	FB151027010	10/23/15 10:24	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510454-03	NAPLES 180 BLS	Ground Water	GRAB	10/23/15 8:30	10/22/15 16:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	424		2	2	mg/l CaCO3	SM2320B	NB151104010	11/4/15 9:25	JS /GC	E84380
Chloride	48		1	4	mg/L	SM4500Cl-E	NB151027011	10/27/15 9:37	JS	E84380
pH	8.20	Q	0.01	0.01	std units	SM4500H-B	FB151027008	10/26/15 16:17	LA	E85457
Specific Conductance	481		1	1	µmhos/cm	EPA120.1	FB151105015	10/29/15 13:54	KS/KT	E85457
Sulfate	21		2	8	mg/L	ASTM-D516-90	NB151102005	10/30/15 16:51	JS	E84380
Total Dissolved Solids	228		20	20	mg/L	SM2540C	FB151030017	10/27/15 13:28	KT	E85457

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1510454

Report Date: 11/06/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1510454-03	NAPLES 180 BLS	Ground Water	GRAB	10/23/15 8:30	10/22/15 16:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Turbidity	247		0.1	0.1	NTU	EPA180.1	FB151027010	10/23/15 10:24	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F1510454

Project Name: SWMW #2

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
WEST PALM BEACH, FL 33411
Phone:
Fax:

Report To:
Bill to:
P.O. #

Project Location:
Customer Type:
Kit #: FOR LAB USE ONLY

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Requested Due Date: 11.2.15

Sampled By (PRINT)
Sampler Signature

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives: pH	Preservatives: Ice	Analysis Requested: pH, TDS	Analysis Requested: Cond, Turb	Analysis Requested: Alkalinity	Analysis Requested: Cl, SO4	Sample ID # (Lab Use Only)
GW	NAPLES 160-150' BLS	10/22/15	1810	G			X	X	X	X	01A/B/C
↓	170-160	↓	1730	↓			X	X	X	X	02A/B/C
↓	180	↓	1645	↓			X	X	X	X	03A/B/C

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
3121080		Okay to Run As Is...	CLIENT	10/22/15	—	KC	10/23/15	0830
		Client Initial:						
		Samples On Ice						
	18°	Yes / No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only)

Project Name: SWMW #2

Project Location: NAPLES

Customer Type:

Kit #: FOR LAB USE ONLY

Requested Due Date:

Client: FL Drilling

Address: 7733 HOOPER RD
West Palm Beach 33411

Phone: (239) 849-7277

Fax:

Report To:

Bill to:

P.O. #

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): Toby Rosenbaum

Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested pH	Alka	Cond	Turb.	TDS	Sulfate	Chlorides	Sample ID # (Lab Use Only)
	1) Ground water Sample 180-170	10/22	4:45P											
	2) " " " 170-160	10/22	5:30P											
	3) " " " 160-150	10/22	6:10P											

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...	Toby Rosenbaum	10/22	6:30P			
		Client Initial:						
		Samples On Ice (Yes) No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774 10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1511154

Page 1 of 5

All subsequent pages are identified by: F1511154 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact**:

None

Client: Florida Design Drilling Corp.,

Florida Drilling
7733 Hooper Road
West Palm Beach, FL 33411

Phone: 561-845-1233
Fax: bruce@fldrilling.com
E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of $25.00 per report. Reports older than 1 year are available for a fee of $50.00 per report. Copies will be provided within 1 week of the time of the request.

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

Comments:
Original TDS analysis for F1511154-02A and -04A run on 11/13/2015 did not match corresponding Conductivity analysis data.

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511154

Report Date: 12/02/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-01	210-200	Ground Water	GRAB	11/10/15 8:30	11/9/15 11:20

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	198		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	243		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	7.77	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	1100		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	101		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	663		20	20	mg/L	SM2540C	NB151116069	11/13/15 16:15	JS	E84380
Turbidity	60.6		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-02	190-180	Ground Water	GRAB	11/10/15 8:30	11/9/15 12:30

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	930		2	2	mg/l CaCO3	SM2320B	NB151202005	11/11/15 13:45	JS	E84380
Chloride	69		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	8.09	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	499		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	60		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	348	Q	20	20	mg/L	SM2540C	NB151116069	11/27/15 14:15	JS	E84380
Turbidity	137		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-03	165-155	Ground Water	GRAB	11/10/15 8:30	11/9/15 13:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	1910		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	54		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	7.82	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	444		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	32		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	293		20	20	mg/L	SM2540C	NB151116069	11/13/15 16:15	JS	E84380

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511154

Report Date: 12/02/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-03	165-155	Ground Water	GRAB	11/10/15 8:30	11/9/15 13:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Turbidity	47.9		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511154-04	140-130	Ground Water	GRAB	11/10/15 8:30	11/9/15 14:45

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	420		2	2	mg/l CaCO3	SM2320B	NB151112010	11/11/15 13:45	JS	E84380
Chloride	43		1	4	mg/L	SM4500Cl-E	NB151113002	11/13/15 11:18	JS	E84380
pH	8.00	Q	0.01	0.01	std units	SM4500H-B	FB151111011	11/11/15 10:19	LA	E85457
Specific Conductance	438		1	1	µmhos/cm	EPA120.1	FB151116010	11/11/15 13:06	KT/LA	E85457
Sulfate	64		2	8	mg/L	ASTM-D516-90	NB151118037	11/17/15 16:39	JS	E84380
Total Dissolved Solids	306	Q	20	20	mg/L	SM2540C	NB151116069	11/27/15 14:15	JS	E84380
Turbidity	73.2		0.1	0.1	NTU	EPA180.1	FB151116012	11/10/15 15:54	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F1511154

Project Name: SW3

Project Location: Naples

Customer Type:

Kit #: FOR LAB USE ONLY

Requested Due Date: 11/18/15

Client	FLORIDA DRILLING
Address	7733 HOOPER RD West Palm Beach 33711
Phone	239 849-7277
Fax	
Report To:	
Bill to:	
P.O. #	

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST, H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): TOBI ROSENCRANZ

Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives: pH	Preservatives: Ice	Analysis Requested: pH, Cond., Turb, TDS	Analysis Requested: Alk *	Analysis Requested: Cl⁻, SO4 °	Sample ID # (Lab Use Only)
GW	210'-200'	11/9/15	1120	G			X	X	X	1A/B/C
	190'-180'		1230				X	X	X	2A/B/C
	165'-155'		1345				X	X	X	3A/B/C
	140'-130'		1445				X	X	X	4A/B/C

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...	CLIENT	11/9/15	1719		11/10/15	0830
		Client Initial:						
		Samples On Ice Yes No						

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Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only)

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
West Palm Beach 33411
Phone: (239) 849-7277
Fax:

Report To:
Bill to:
P.O. #

Project Name: SW3
Project Location: NAPLES
Customer Type:
Kit #: FOR LAB USE ONLY
Requested Due Date:

Preservative: HCL = H, HNO_3= N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Sampled By (PRINT): TOM ROSENKRANZ
Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives pH	Preservatives Ice	Analysis Requested PH	Alka	Cond	Turb	TDS	Sulfate	Chloride	Sample ID # (Lab Use Only)
	Ground water 210'-200'	11/9	11:20A				X		X	X	X			1A
	GW 190'-180'	11/9	12:30P					X						1B
	GW 165-155'	11/9	1:45P											
	GW 140'-130'	11/9	2:45P											

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...						
		Client Initial:						
		Samples On Ice (Yes) No						
			Relinquished:	11/9	5:19P			

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774
10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

Sanders Laboratories
Environmental Testing Services

Laboratory Test Report

Lab Project #: F1511247

Page 1 of 3

All subsequent pages are identified by: F1511247 . These pages may include, but are not limited to: Analytical Data, Chains of Custodys, Subcontracted Data and Case Narratives.

Questions regarding this report should be directed to your **Laboratory Contact:**

None

Client: Florida Design Drilling Corp.,

Florida Drilling
7733 Hooper Road
West Palm Beach, FL 33411

Phone: 561-845-1233
Fax: bruce@fldrilling.com
E-mail: account@floridadesigncontractors.com

Project Name: Misc Testing

QUALIFIER DEFINITIONS

B: Results based upon colony counts outside the acceptable range.
I: The reported value is greater than or equal to the laboratory MDL but less than the laboratory PQL.
J: Estimated Value.
J7: Excessive amounts of Sodium Sulfite used to dechlorinate the sample due to high levels of chlorine present.
K: Off scale low, actual value is known to be less than the value given.
L: Off scale high, actual value is known to be greater than the value given.
Q: Sample held beyond acceptable holding time.
U: The compound was analyzed for, but not detected.
V: Indicates that the analyte was detected at or above the MDL in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Y: The laboratory analysis was from an improperly preserved sample.
Z: Too many colonies were present for accurate counting.
HACH results may not meet NELAC standards.

A statement of estimated uncertainty of results is available upon request.

Analytical results provided relate only to the samples received for this project.

Test results meet all the requirements of the NELAC standards, unless otherwise noted.

Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.

Sanders Laboratories follows DEP standard operating procedures for field sampling, unless otherwise noted.

Laboratory PQL's are available upon request.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of $25.00 per report. Reports older than 1 year are available for a fee of $50.00 per report. Copies will be provided within 1 week of the time of the request.

Comments:

Approved by:

R. Koutselas

Radica Koutselas/QA Officer
Jeff Walsh/Project Manager

SANDERS LABORATORIES, INC.

Laboratory Test Report

Client: Florida Design Drilling Corp.,

Client Project: Misc Testing

Lab Project: F1511247

Report Date: 11/27/15

Lab ID	Sample Description	Matrix	Sample Type	Received Date/Time	Sample Date/Time
F1511247-01	SW3	Ground Water	GRAB	11/16/15 8:20	11/13/15 13:20

Parameter	Result	Qual	MDL	PQL	Units	Method	Batch #	Analysis Date/Time	Analyst	Lab ID
Alkalinity	92		2	2	mg/l CaCO3	SM2320B	NB151120003	11/19/15 14:02	GC	E84380
Chloride	49		1	4	mg/L	SM4500Cl-E	NB151127007	11/27/15 9:28	JS	E84380
pH	7.87	Q	0.01	0.01	std units	SM4500H-B	FB151125001	11/23/15 10:40	LA	E85457
Specific Conductance	318		1	1	µmhos/cm	EPA120.1	FB151122017	11/19/15 13:01	LA	E85457
Sulfate	4	I	2	8	mg/L	ASTM-D516-90	NB151120002	11/19/15 16:25	JS	E84380
Total Dissolved Solids	193		20	20	mg/L	SM2540C	NB151123027	11/20/15 15:39	GC/JS	E84380
Turbidity	0.2		0.1	0.1	NTU	EPA180.1	FB151122007	11/17/15 16:15	KT	E85457

Sanders Laboratories
Environmental Testing Services

CHAIN OF CUSTODY RECORD

Project # (Lab Use Only): F151247

Client: FLORIDA DRILLING
Address: 7733 HOOPER RD
WEST PALM BEACH, FL 33411
Phone:
Fax:

Report To:
Bill to:
P.O. #

Preservative: HCL = H, HNO_3 = N, $Na_2S_2O_3$ = ST
H_2SO_4 = S, NaOH = SH, NH_4Cl = NH

Project Name: SW3
Project Location: MAPLES 163'-153'
Customer Type:
Kit #:
Requested Due Date:

Sampled By (PRINT): TOBY ROSENKRANZ
Sampler Signature:

Matrix	Sample Description	Sample Date	Sample Time	Sample Type	Preservatives: pH	Preservatives: Ice	Analysis Requested: pH, TDS	Analysis Requested: COND., TURB	Analysis Requested: ALK	Analysis Requested: Cl-, SO4	Sample ID # (Lab Use Only)
GW	SW3	11/13/15	1320	G		X	X				1A
						X		X			1B
						X			X		1C
						X				X	1D

Bottle Lot #	COMMENTS:		Relinquished By/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
		Okay to Run As Is...		11/13	3:43P		11/16/15	0820
		Client Initial:						
		Samples On Ice (Yes) No						

1050 Endeavor Ct, Nokomis, FL 34275-3623 (941) 488-8103 fax(941) 484-6774 10090 Bavaria Rd., Fort Myers, FL 33913 (239) 590-0337 fax (239) 590-0536

APPENDIX C

Geophysical Logs

MV Geophysical

DUAL INDUCTION LL3 / SP LOG

Company Florida Design Drilling Corp. | Well SWM-1 | Field Naples | County Collier | State Florida | Country USA

Company	Florida Design Drilling Corp.
Well	SWM-1
Field	Naples
County	Collier
State	Florida
Country	USA

Location: API # :

City of Naples
2329 9th Street N, Naples, FL 34103
Johnson Engineering, Inc.

SEC TWP RGE

Other Services: XY/GR, DIL/SP

Elevation: K.B. D.F. G.L.

Permanent Datum	G.L.	Elevation
Log Measured From	G.L.	
Drilling Measured From	G.L.	

Date	13-OCT-2015		
Run Number	ONE		
Depth Driller	260'		
Depth Logger	255'		
Bottom Logged Interval	253'		
Top Log Interval	60'		
Open Hole Size	7.875"		
Type Fluid	MUD		
Density / Viscosity	NA/NA		
Max. Recorded Temp.	NA		
Estimated Cement Top	SURFACE		
Time Well Ready	10:00 12/13/2015		
Time Logger on Bottom	11:00 12/13/2015		
Equipment Number	MVGS-1		
Location	Fort Myers		
Recorded By	S.Miller/C.Miller		
Witnessed By	T.Braxton (JE)	Toby R. (FDD)	

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	7.875"	60'	260'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	8" PVC	8" ID	SURFACE	60'
Prot. String				
Production String				
Liner				
Invoice No.	2015161	2x/pdf/las	fnapswm1.db	* FIELD PRINT *

<<< Fold Here >>>

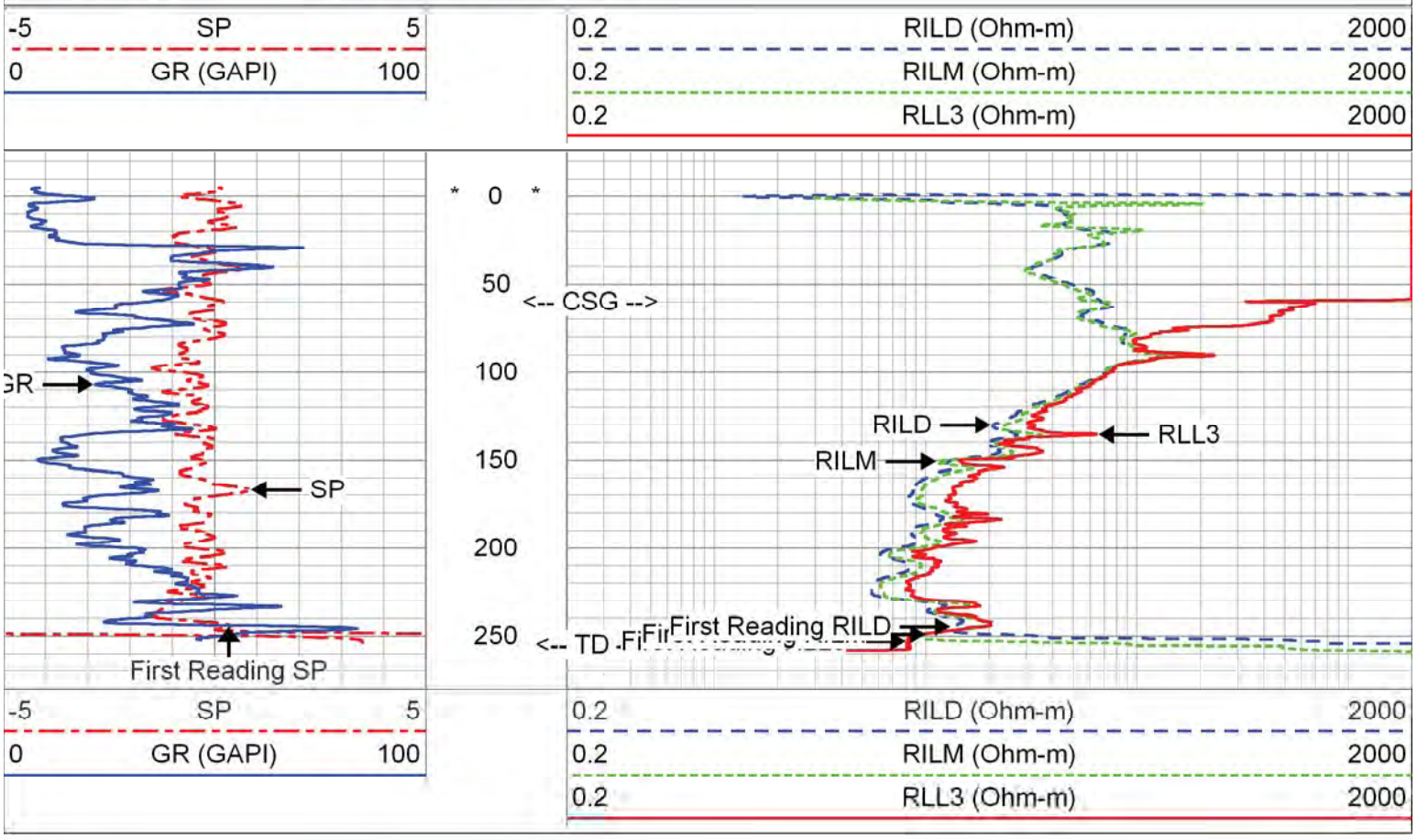
Comments

Rm=9.711 ohm-m @ 80.1 degF

MV Geophysical

MAIN PASS

Database File	fnapswm1.db
Dataset Pathname	MDIL
Presentation Format	dil-5
Dataset Creation	Tue Oct 13 11:44:57 2015
Charted by	Depth in Feet scaled 1:1200

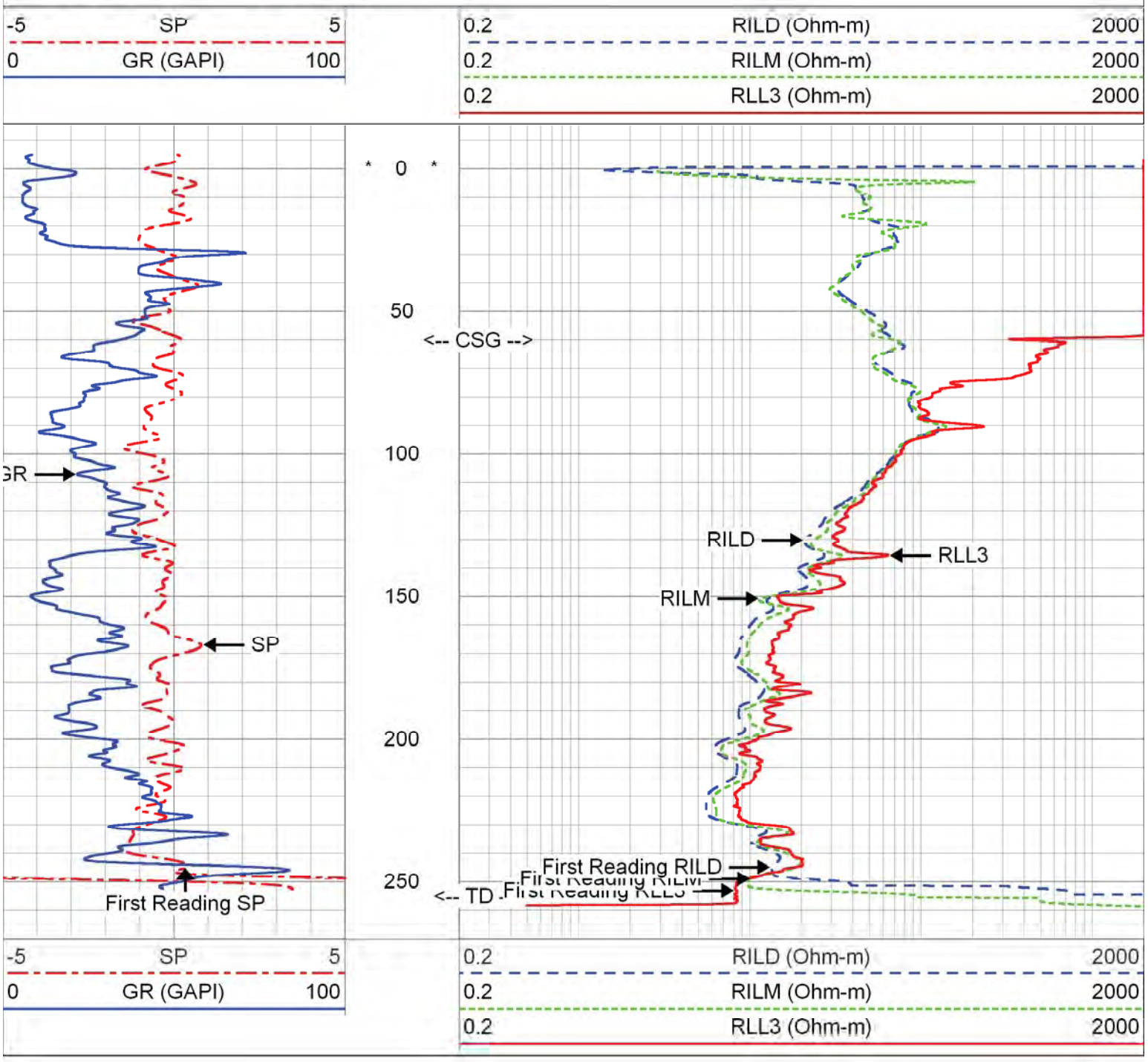


MV Geophysical

MAIN PASS

Geophysical

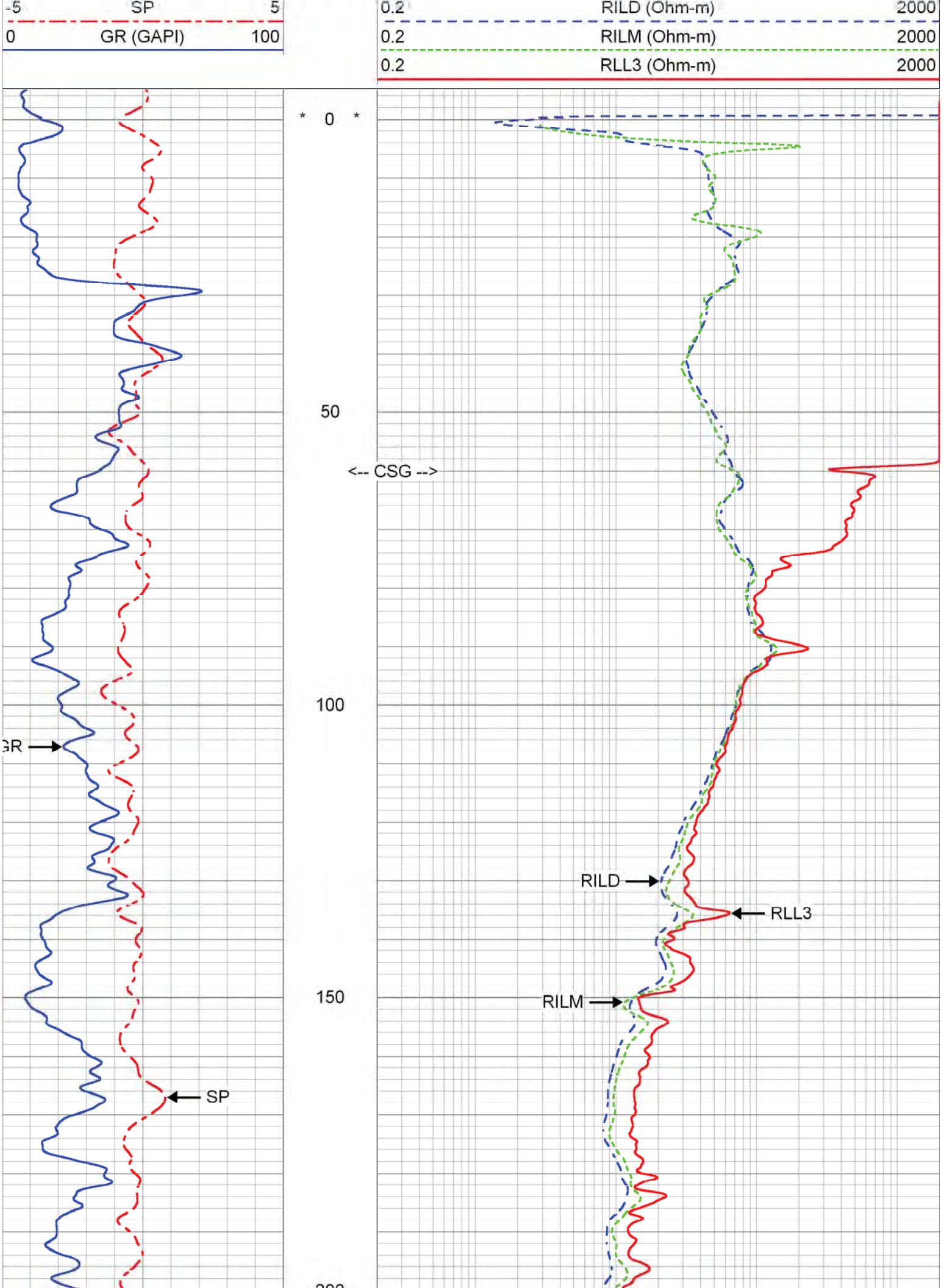
Database File	fnapswm1.db
Dataset Pathname	MDIL
Presentation Format	dil-5
Dataset Creation	Tue Oct 13 11:44:57 2015
Charted by	Depth in Feet scaled 1:600

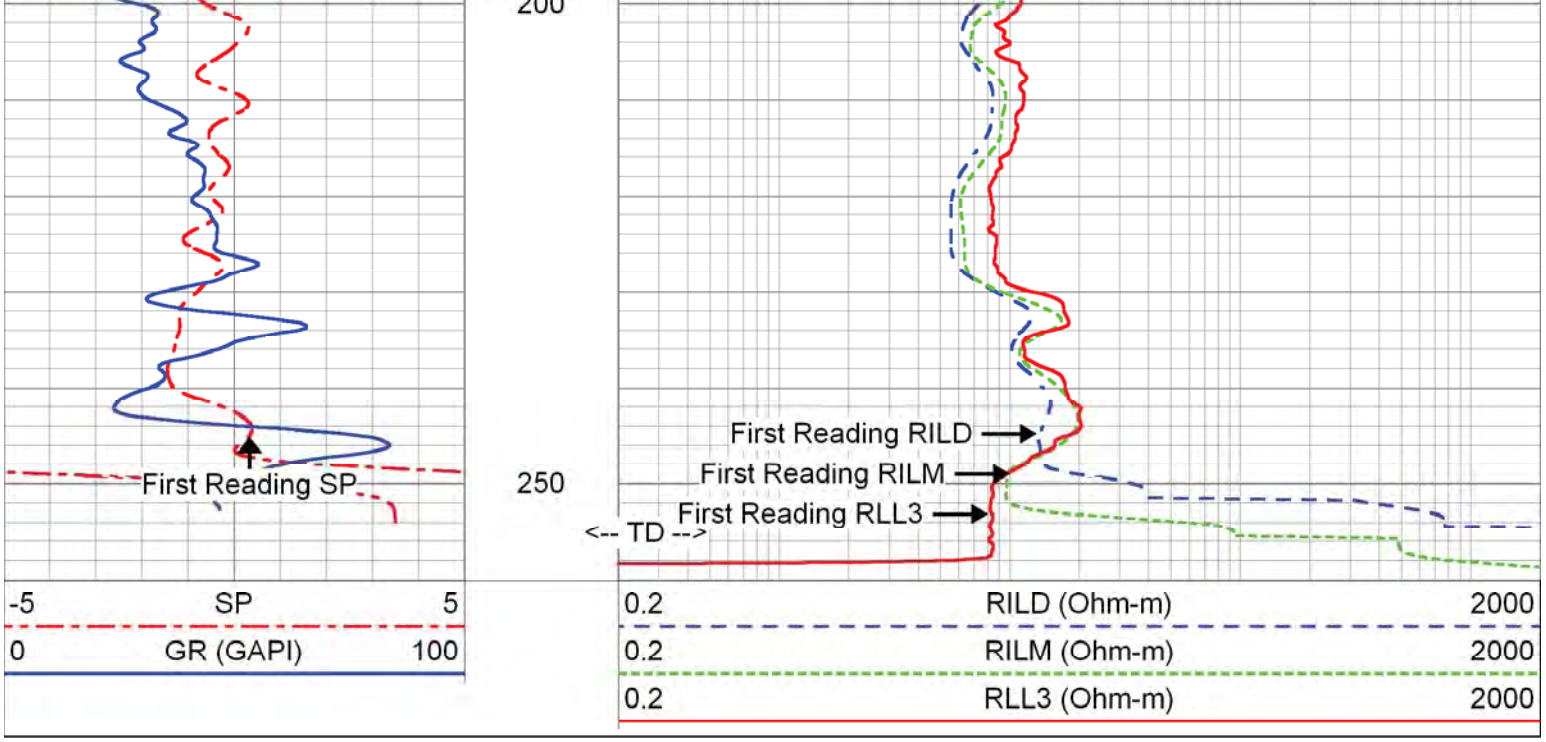


MV Geophysical

MAIN PASS

Database File	fnapswm1.db
Dataset Pathname	MDIL
Presentation Format	dil-5
Dataset Creation	Tue Oct 13 11:44:57 2015
Charted by	Depth in Feet scaled 1:240

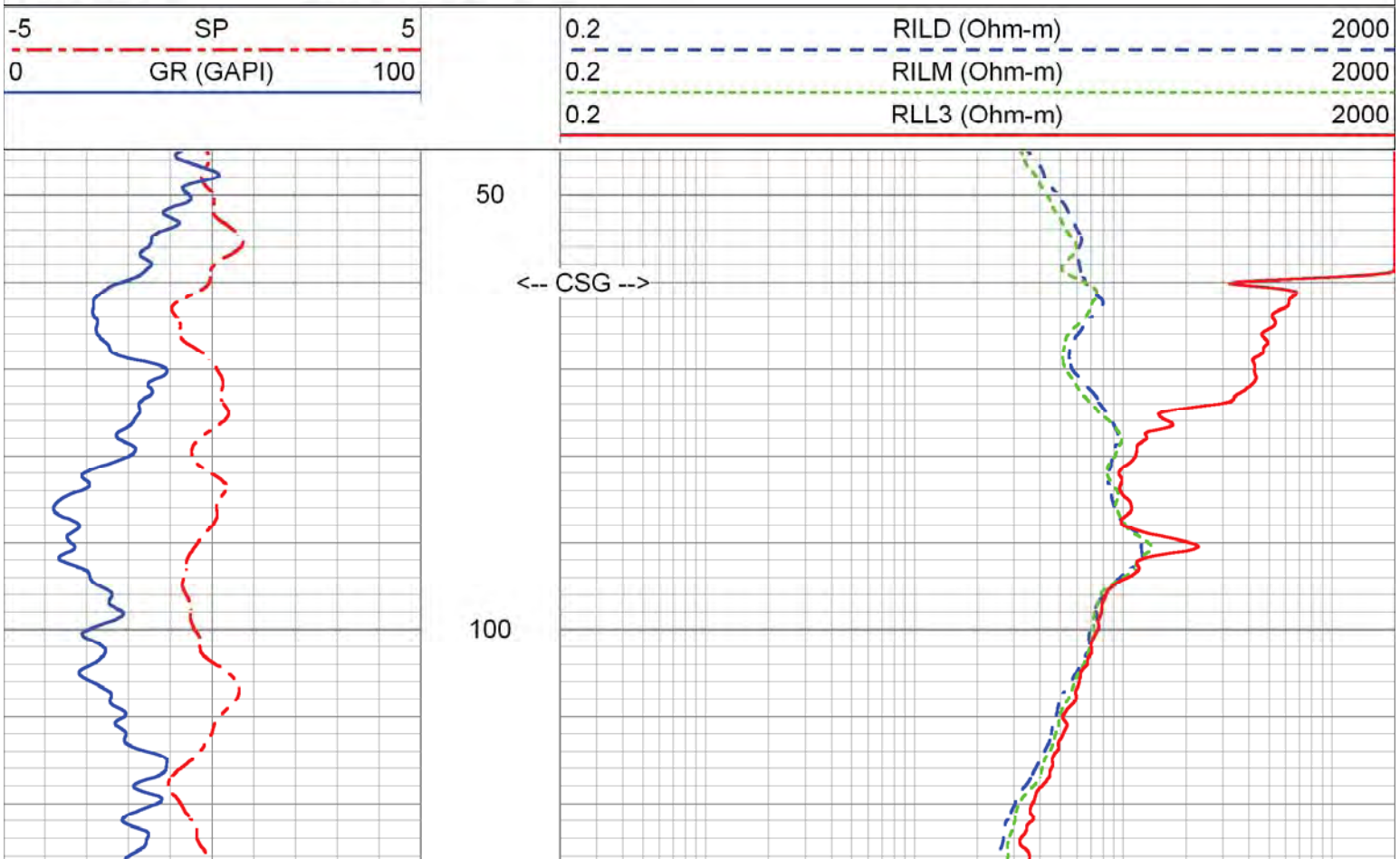

-5
SP
5
0
GR (GAPI)
100
0.2
RILD (Ohm-m)
2000
0.2
RILM (Ohm-m)
2000
0.2
RLL3 (Ohm-m)
2000
* 0 *
50
<-- CSG -->
100
150
GR
SP
RILD
RLL3
RILM

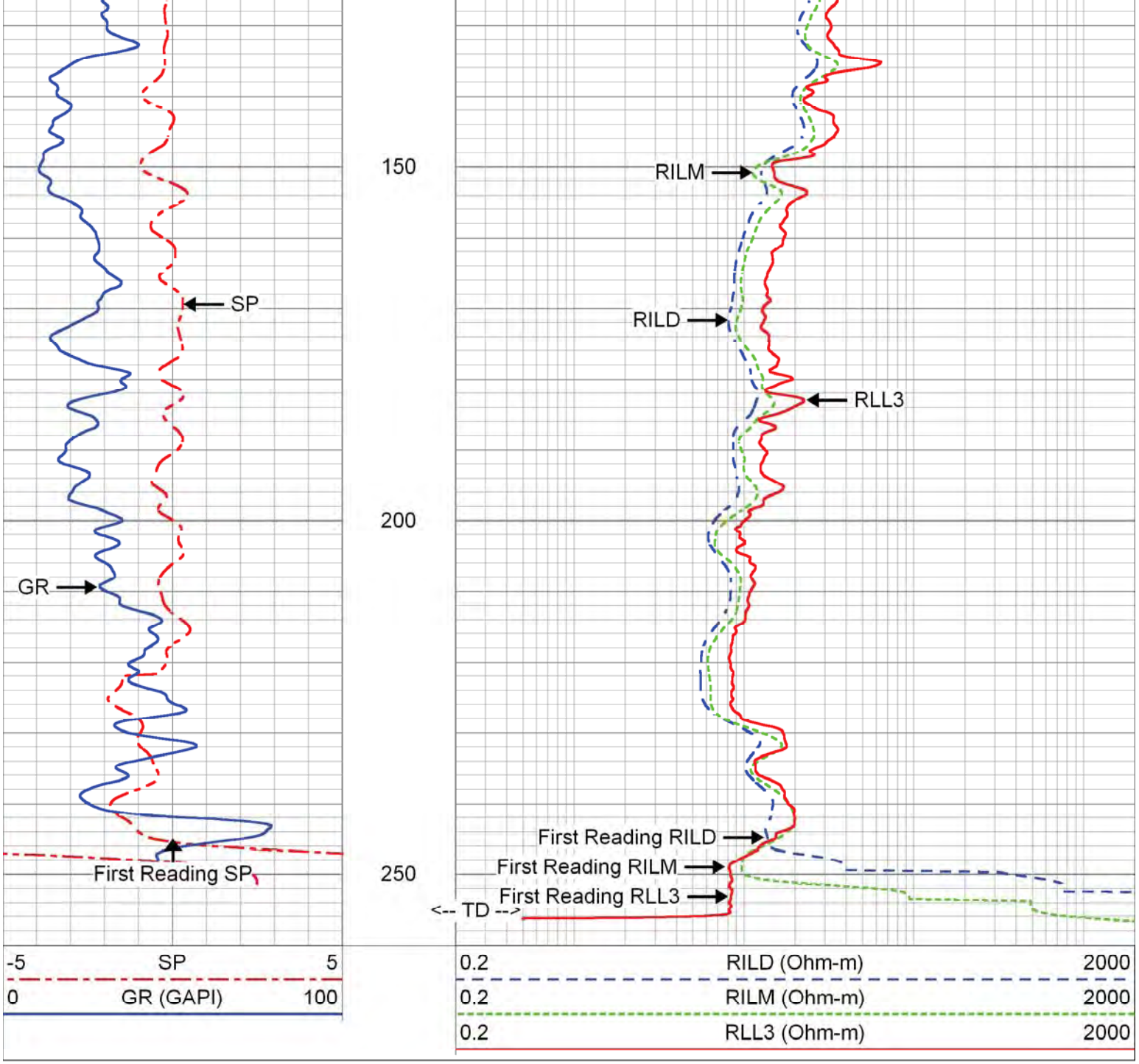


MV Geophysical

REPEAT SECTION

Database File	fnapswm1.db
Dataset Pathname	RDIL
Presentation Format	dil-5
Dataset Creation	Tue Oct 13 11:40:23 2015
Charted by	Depth in Feet scaled 1:240





Calibration Report

Database File	fnapswm1.db
Dataset Pathname	pass4
Dataset Creation	Tue Oct 13 11:15:13 2015

Dual Induction Calibration Report

Serial-Model:	5390-R
Surface Cal Performed:	Tue Mar 24 17:35:03 2015
Downhole Cal Performed:	Tue Mar 24 17:37:23 2015
After Survey Verification Performed:	Tue Dec 16 11:57:45 2014

Surface Calibration

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.011	0.656	V	0.000	400.002	mmho/m	619.940	-6.652

Medium	0.022	0.823	V	0.000	464.000	mmho/m	579.469	-13.005

Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.004	0.643	V	0.000	500.000	mmho/m	782.224	-2.798
Medium	0.006	0.745	V	0.000	500.000	mmho/m	676.404	-3.938

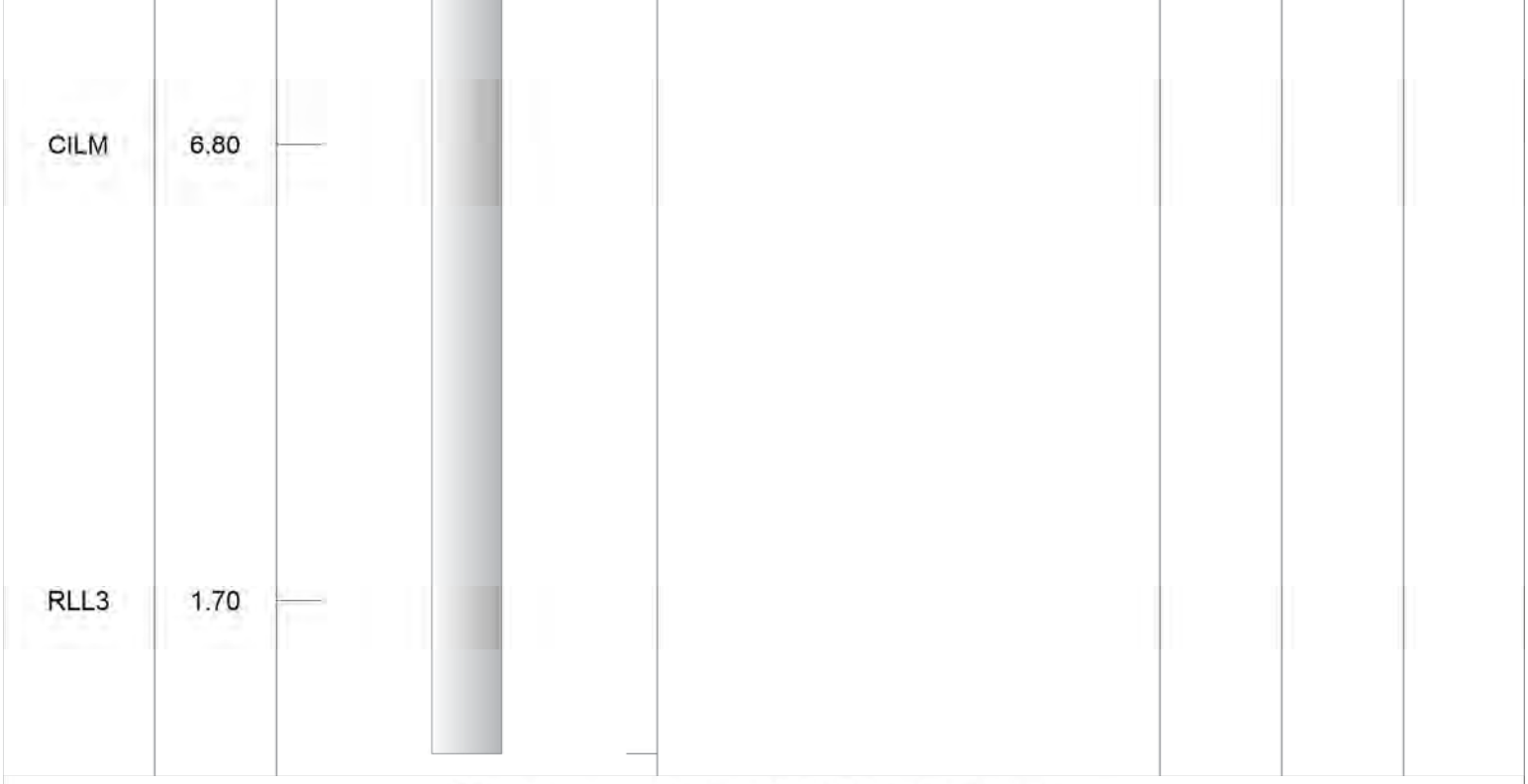
Downhole Calibration

	Readings			References			Results	
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Shallow	0.012	2.503	V	2.000	500.000	Ohm-m	199.928	-0.460

After Survey Verification

	Readings			Targets			Results	
Internal:	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	-43.158	78.288	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	-9.475	466.701	mmho/m	1.000	0.000
Shallow	0.000	0.000	Ohm-m	494.500	2.000	Ohm-m	1.000	0.000

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
SP CILD	10.60 10.60		R (5390)	20.90	4.00	345.00



Dataset:	fnapswm1.db: field/well/run1/pass4
Total length:	20.90 ft
Total weight:	345.00 lb
O.D.:	4.00 in

MV Geophysical

Company	Florida Design Drilling Corp.		
Well	SWM-1		
Field	Naples		
County	Collier		
State	Florida	Country	USA

MV Geophysical

X-Y CALIPER GAMMA RAY LOG

Company	Florida Design Drilling Corp.
Well	SWM-1
Field	Naples
County	Collier
State	Florida
Country	USA

Location: API # :
City of Naples
2329 9th Street N, Naples, FL 34103
Johnson Engineering, Inc.
SEC TWP RGE

Company Florida Design Drilling Corp.
Well SWM-1
Field Naples
County Collier
State Florida Country USA

Other Services: XY/GR, DIL/SP

Elevation: K.B., D.F., G.L.

Permanent Datum G.L. Elevation
Log Measured From G.L.
Drilling Measured From G.L.

Date	13-OCT-2015
Run Number	ONE
Depth Driller	260'
Depth Logger	255'
Bottom Logged Interval	255'
Top Log Interval	SURFACE
Open Hole Size	7.875"
Type Fluid	MUD
Density / Viscosity	NA/NA
Max. Recorded Temp.	NA
Estimated Cement Top	SURFACE
Time Well Ready	10:00 12/13/2015
Time Logger on Bottom	10:30 12/13/2015
Equipment Number	MVGS-1
Location	Fort Myers
Recorded By	S.Miller/C.Miller
Witnessed By	T.Braxton (JE)

Borehole Record

Run Number	Bit	From	To
ONE	7.875"	60'	260'

Tubing Record

Size	Wgt/Ft	Top	Bottom
8" PVC	8" ID	SURFACE	60'

	Size	Wgt/Ft	Top	Bottom
Casing Record				
Surface String	8" PVC	8" ID	SURFACE	60'
Prod. String				
Production String				
Liner				

Size Weight From To

Toby R. (FDD)

Invoice No.	2015161
	2x/pdf/las
	fnapswm1.db
	* FIELD PRINT *

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Comments

MAXIMUM ARM EXTENSION: 33"

FUTURE CASING SIZE: 4.5" OD

BOREHOLE VOLUMES IN CUBIC FEET

MV Geophysical

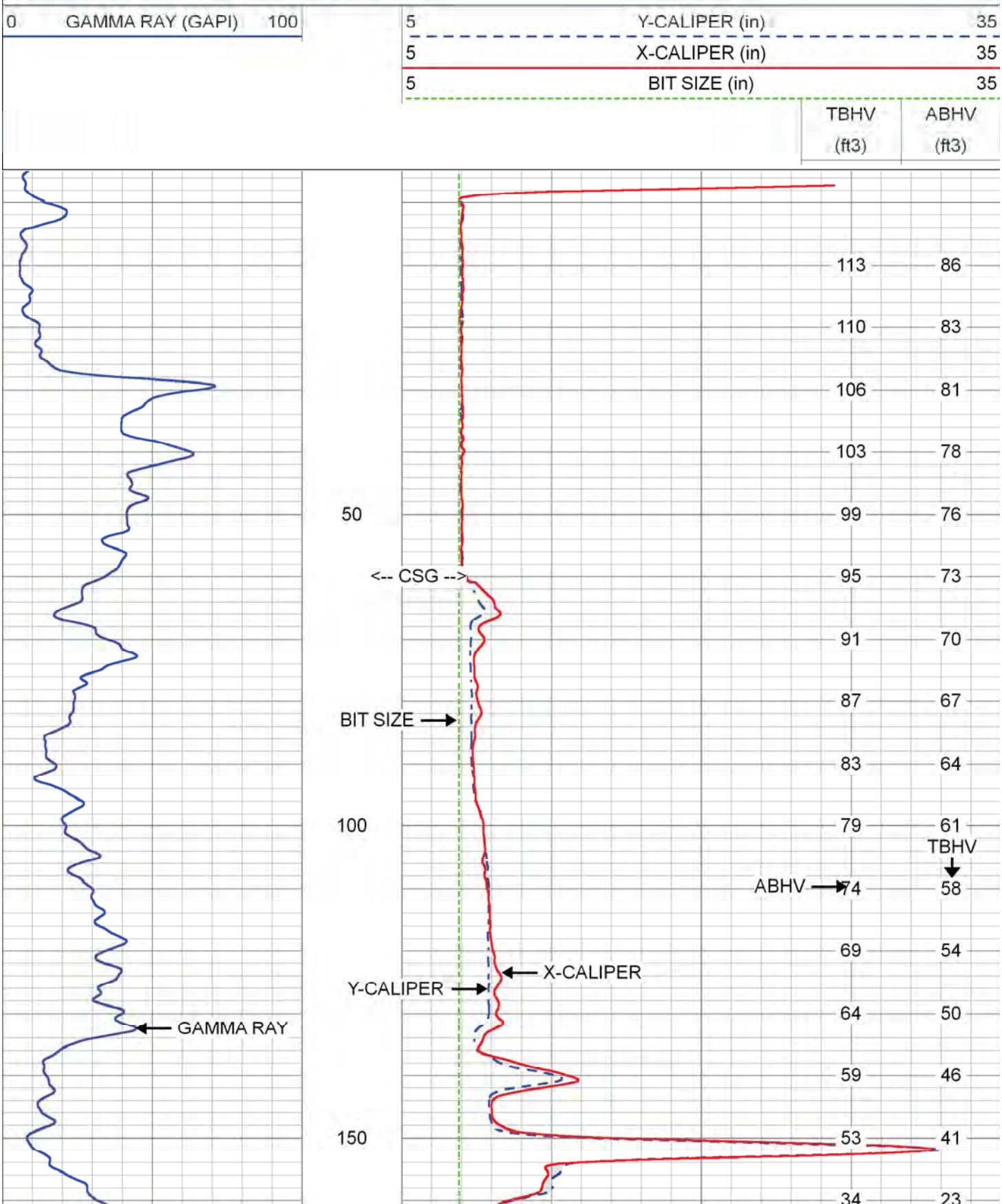
MAIN PASS

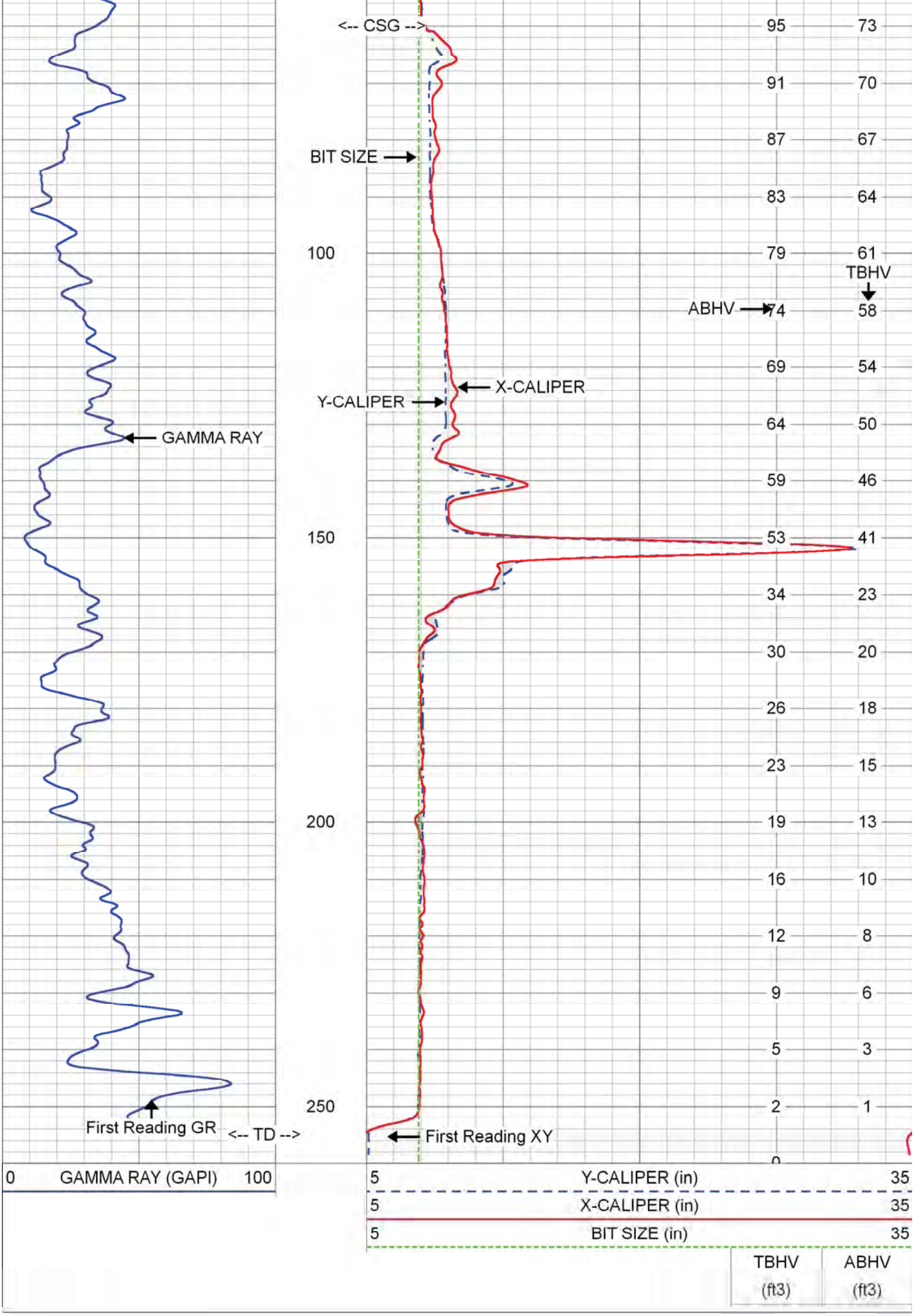
Database File	fnapswm1.db
Dataset Pathname	MXY
Presentation Format	xy535-5
Dataset Creation	Tue Oct 13 12:08:22 2015

MV Geophysical

MAIN PASS

Database File	fnapswm1.db
Dataset Pathname	MXY
Presentation Format	xy535-5
Dataset Creation	Tue Oct 13 12:08:22 2015
Charted by	Depth in Feet scaled 1:240

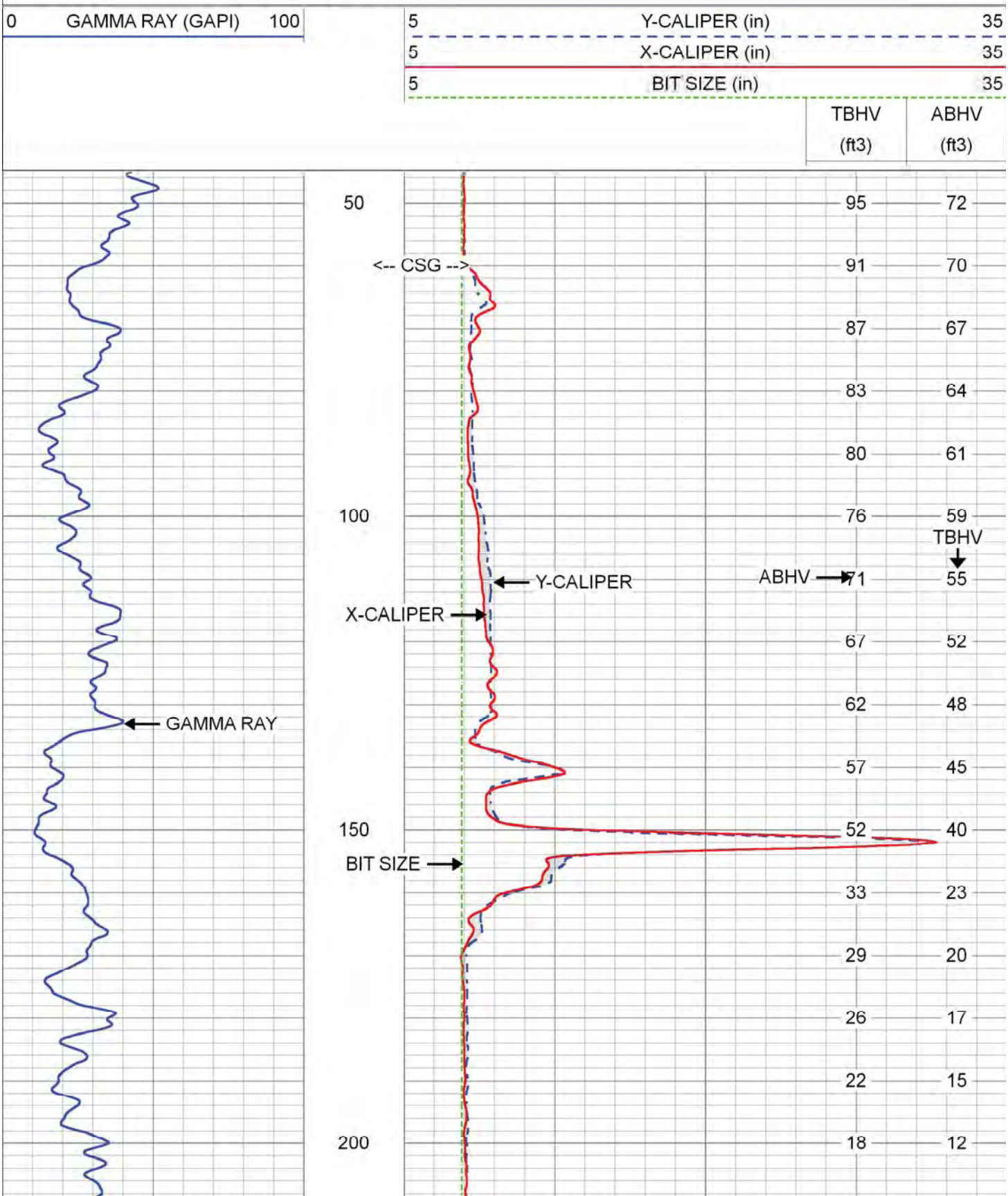


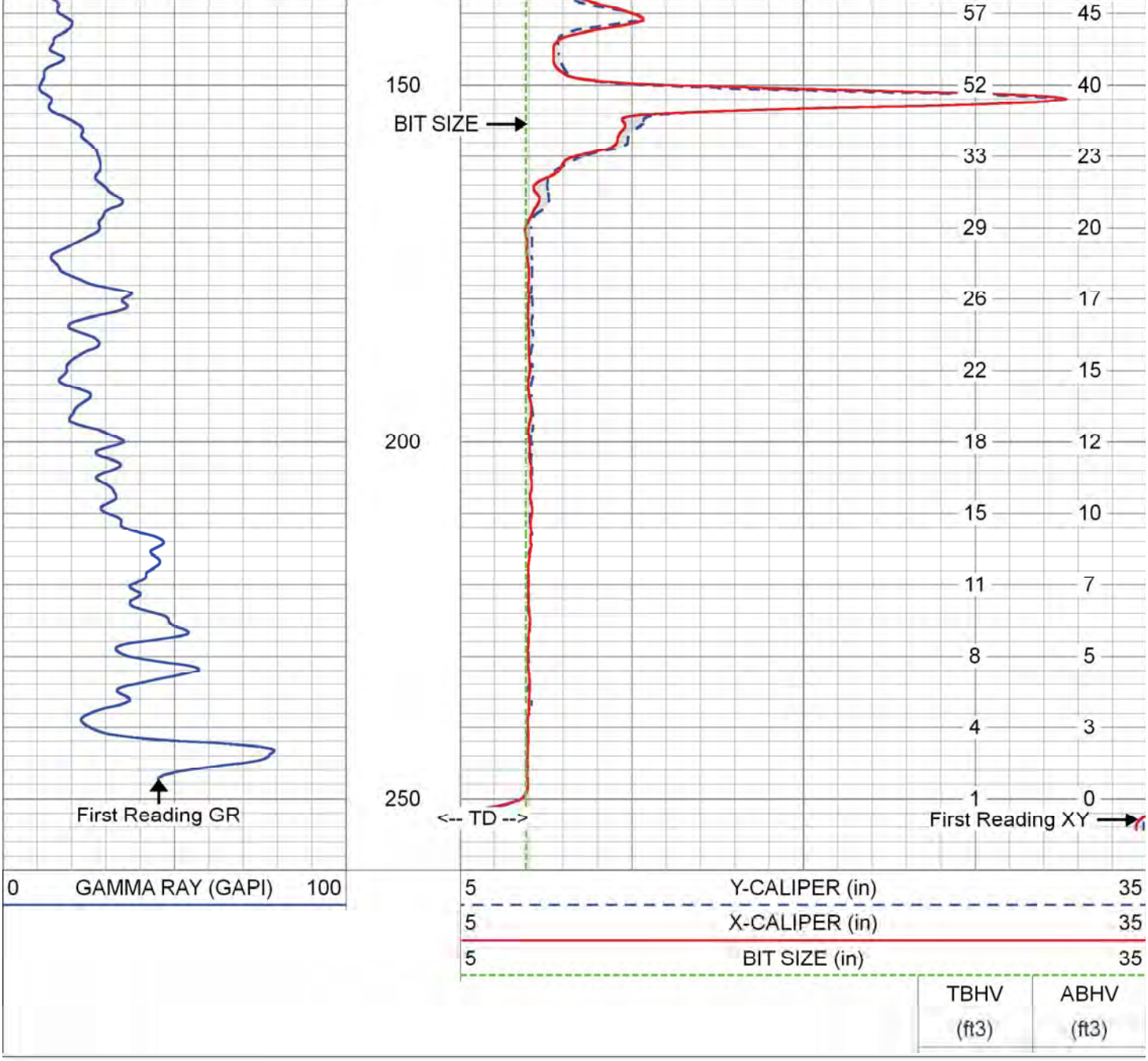

<-- CSG -->
BIT SIZE
100
GAMMA RAY
Y-CALIPER
X-CALIPER
150
200
250
First Reading GR
<-- TD -->
First Reading XY
95 73
91 70
87 67
83 64
79 61
TBHV
ABHV
74 58
69 54
64 50
59 46
53 41
34 23
30 20
26 18
23 15
19 13
16 10
12 8
9 6
5 3
2 1
0 GAMMA RAY (GAPI) 100
5 Y-CALIPER (in) 35
5 X-CALIPER (in) 35
5 BIT SIZE (in) 35
TBHV (ft3)
ABHV (ft3)

MV Geophysical

REPEAT SECTION

Database File	fnapswm1.db
Dataset Pathname	RXY
Presentation Format	xy535-5
Dataset Creation	Tue Oct 13 12:18:02 2015
Charted by	Depth in Feet scaled 1:240





Calibration Report

Database File	fnapswm1.db
Dataset Pathname	pass2
Dataset Creation	Tue Oct 13 10:46:05 2015

XY Caliper Calibration Report

Serial Number:	01S		
Tool Model:	XYCS		
Performed:	Tue Oct 13 10:40:39 2015		
Small Ring:	8	in	
Large Ring:	33	in	
	X Caliper	Y Caliper	
Reading with Small Ring:	601	631	cps
Reading with Large Ring:	1133	1086	cps
Gain:	0.0469925	0.0549451	
Offset:	-20.2425	-26.6703	

Gamma Ray Calibration Report

Gamma Ray Calibration Report

Serial Number:	01	
Tool Model:	GROH	
Performed:	Wed Oct 07 10:48:27 2015	
Calibrator Value:	120.0	GAPI
Background Reading:	13.5	cps
Calibrator Reading:	134.2	cps
Sensitivity:	0.9939	GAPI/cps

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			GR-GROH (01)	2.75	3.50	40.00
GR	5.90					
			XYC-XYCS (01S)	6.60	3.50	110.00

Dataset: fnapswm1.db: field/well/run1/pass2
Total length: 9.35 ft
Total weight: 150.00 lb
O.D.: 3.50 in

MV Geophysical

Company	Florida Design Drilling Corp.
Well	SWM-1
Field	Naples
County	Collier
State	Florida
Country	USA

ALLWEBBS ENTERPRISES, INC.

DUAL INDUCTION GAMMA RAY LOG

Company	FLORIDA DESIGN DRILLING CORP.
Well	SWM-2
Field	NAPLES
County	COLLIER
State	FLORIDA

Company	FLORIDA DESIGN DRILLING CORP.
Well	SWM-2
Field	NAPLES
County	COLLIER
State	FLORIDA
Location:	API # :
	CITY OF NAPLES
	1123 GRANADA BLVD
	NAPLES, FL 34103
SEC	TWP RGE
Permanent Datum	Elevation
Log Measured From	
Drilling Measured From	

Other Services: SEE COMMENTS

Elevation: K.B. / D.F. / G.L.

Date	26-OCT-2015
Run Number	ONE
Depth Driller	218'
Depth Logger	218'
Bottom Logged Interval	216'
Top Log Interval	CASING
Open Hole Size	7.875"
Type Fluid	MUD
Density / Viscosity	NA
Max. Recorded Temp.	NA
Estimated Cement Top	NA
Time Well Ready	0000
Time Logger on Bottom	0000
Equipment Number	VA-202
Location	JUPITER
Recorded By	LEE
Witnessed By	R. TOBY (FDD)

Borehole Record

Run Number	Bit	From	To
ONE	7.875"	CASING	218'

Borehole Record

Run Number	Bit	From	To
		SURFACE	60'

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	8.00" PVC	8.00" ID	SURFACE	60'
Prot. String				
Production String				
Liner				

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Comments

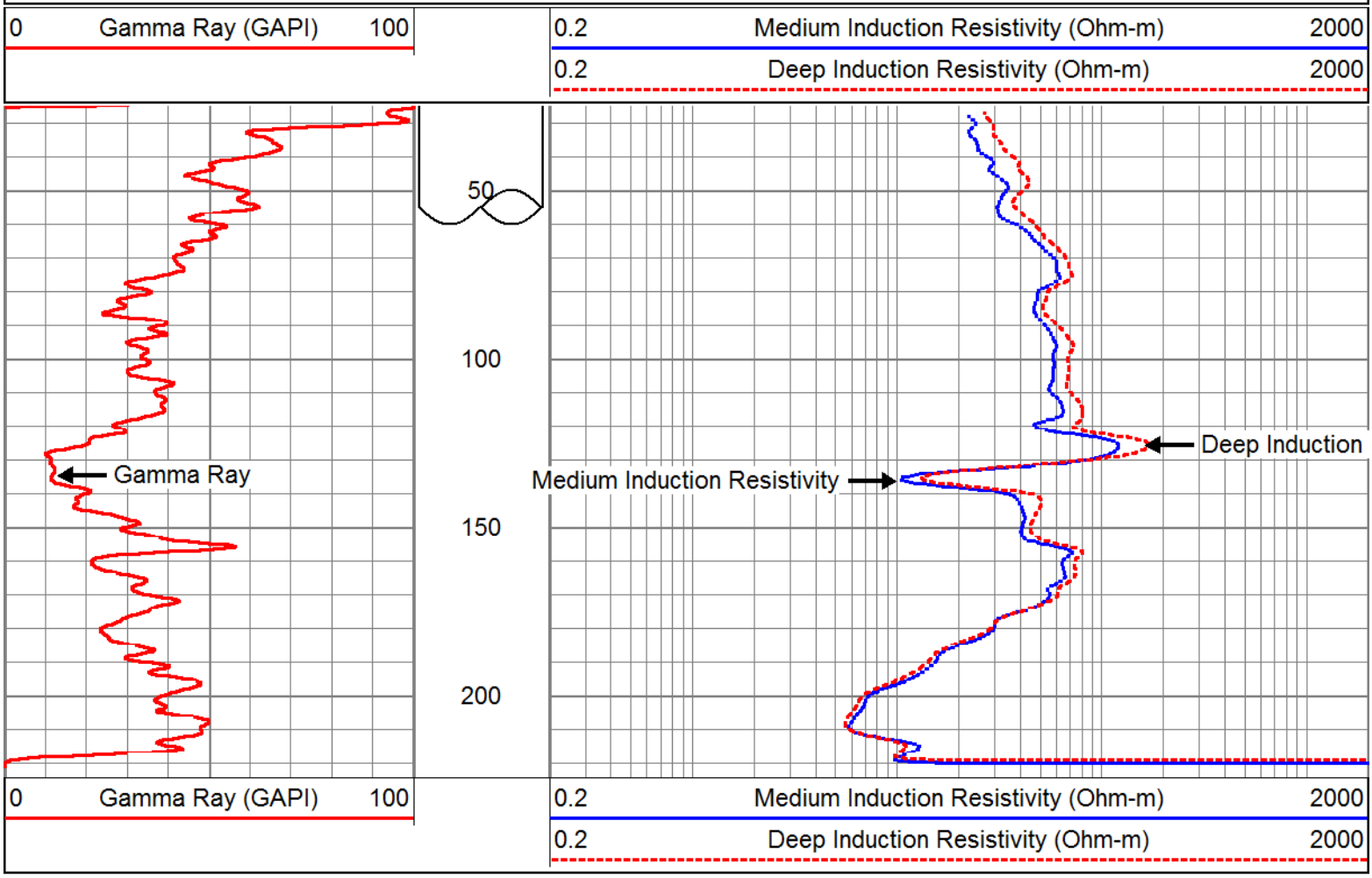
XYC/GR

ALLWEBBS

MAIN PASS

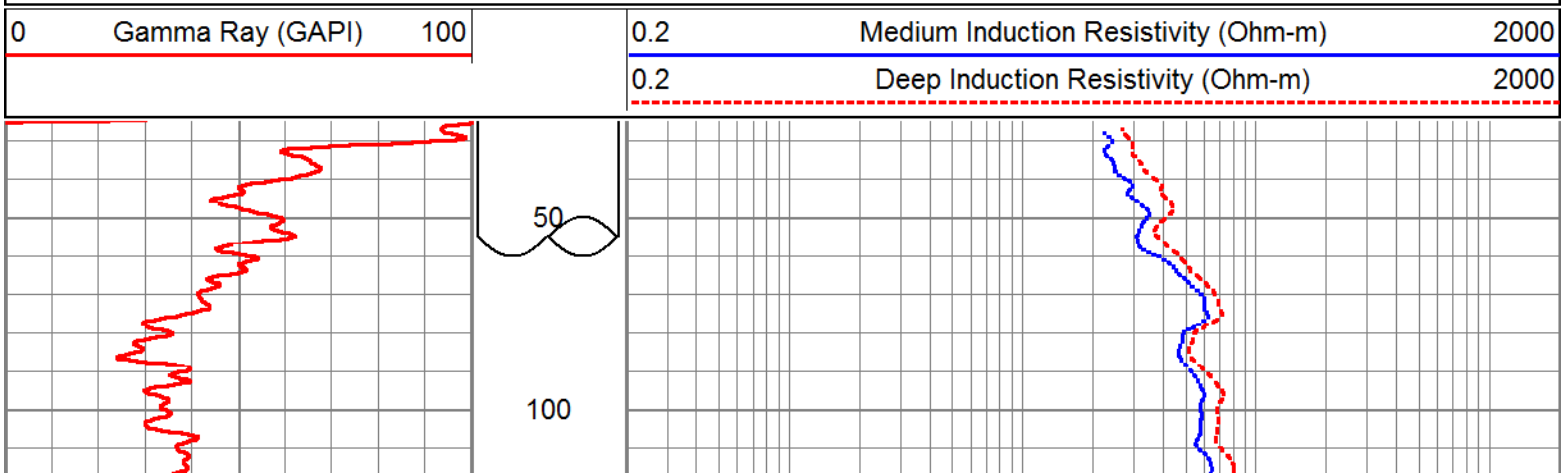
ENTERPRISES, INC.

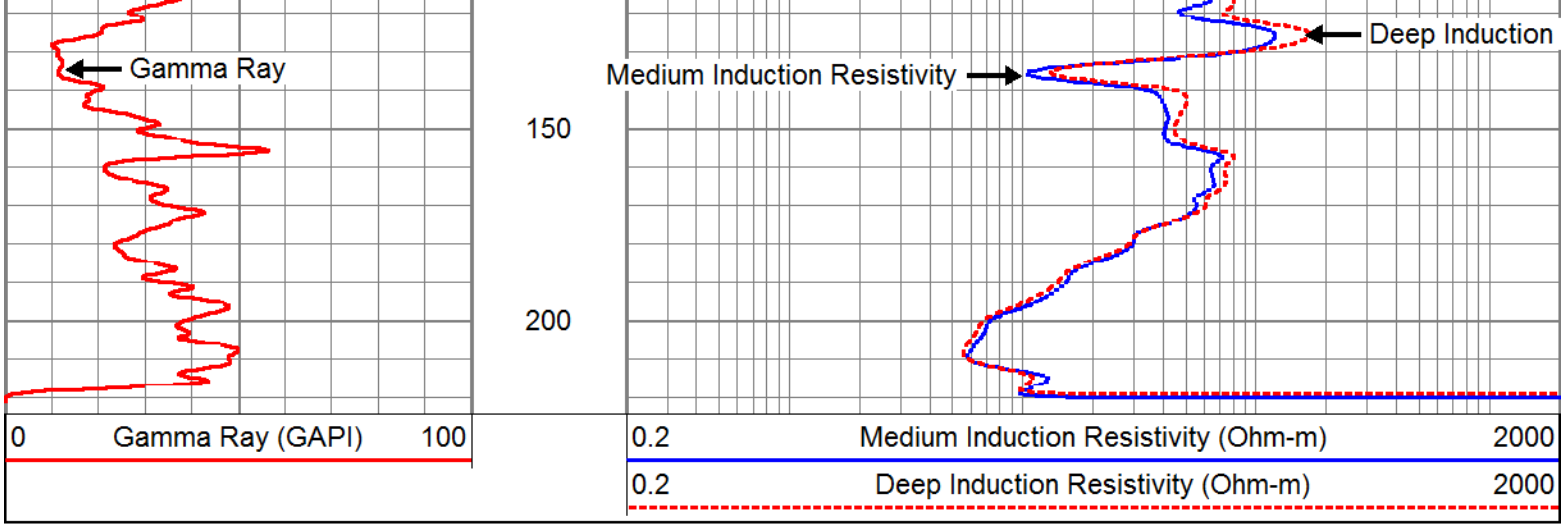
Database File: fddnaples.db
Dataset Pathname: DILMP3
Presentation Format: dil
Dataset Creation: Mon Oct 26 11:55:03 2015 by Log Open-Cased 071220
Charted by: Depth in Feet scaled 1:600



MAIN PASS

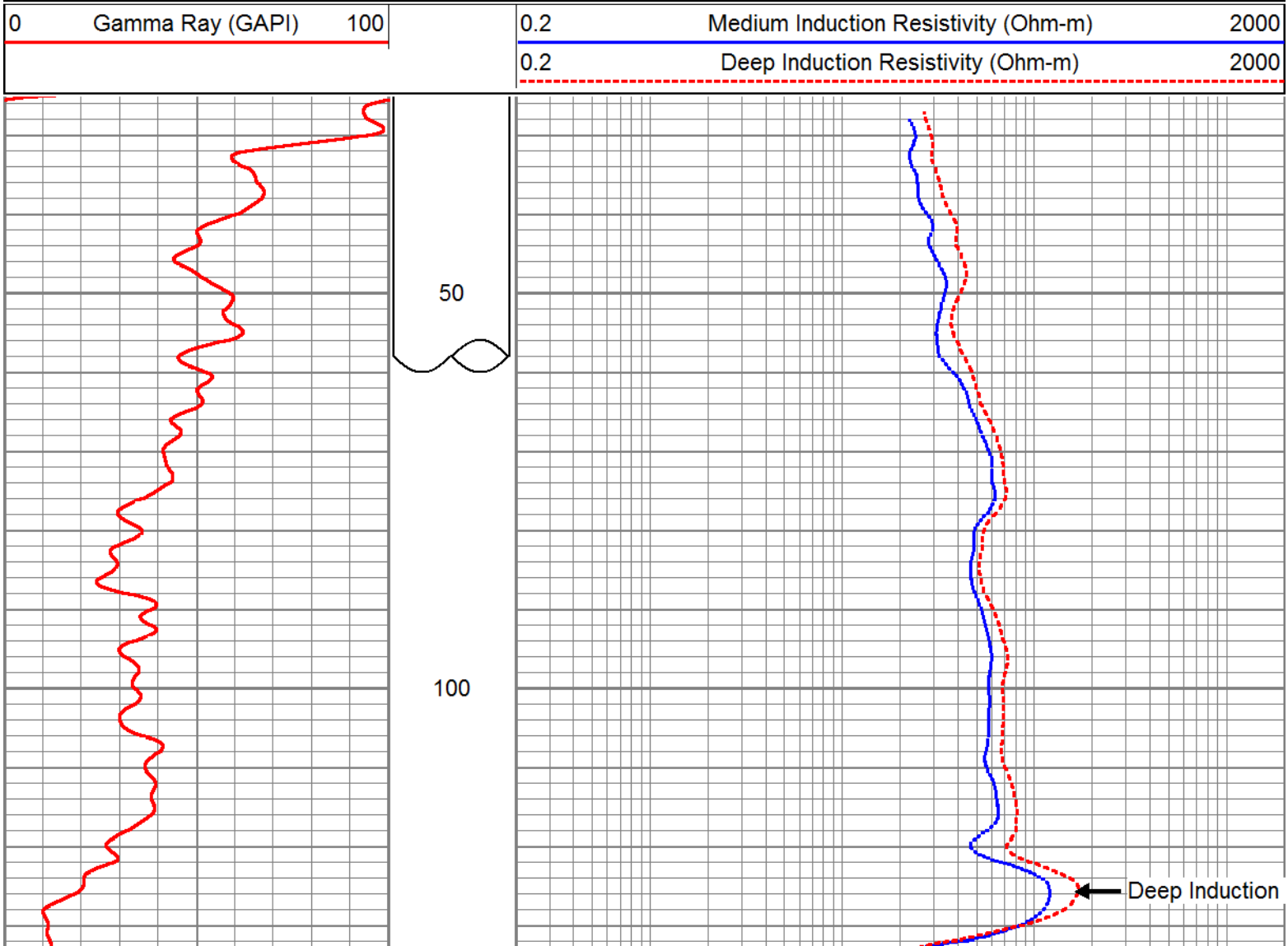
Database File: fddnaples.db
Dataset Pathname: DILMP3
Presentation Format: dil
Dataset Creation: Mon Oct 26 11:55:03 2015 by Log Open-Cased 071220
Charted by: Depth in Feet scaled 1:600

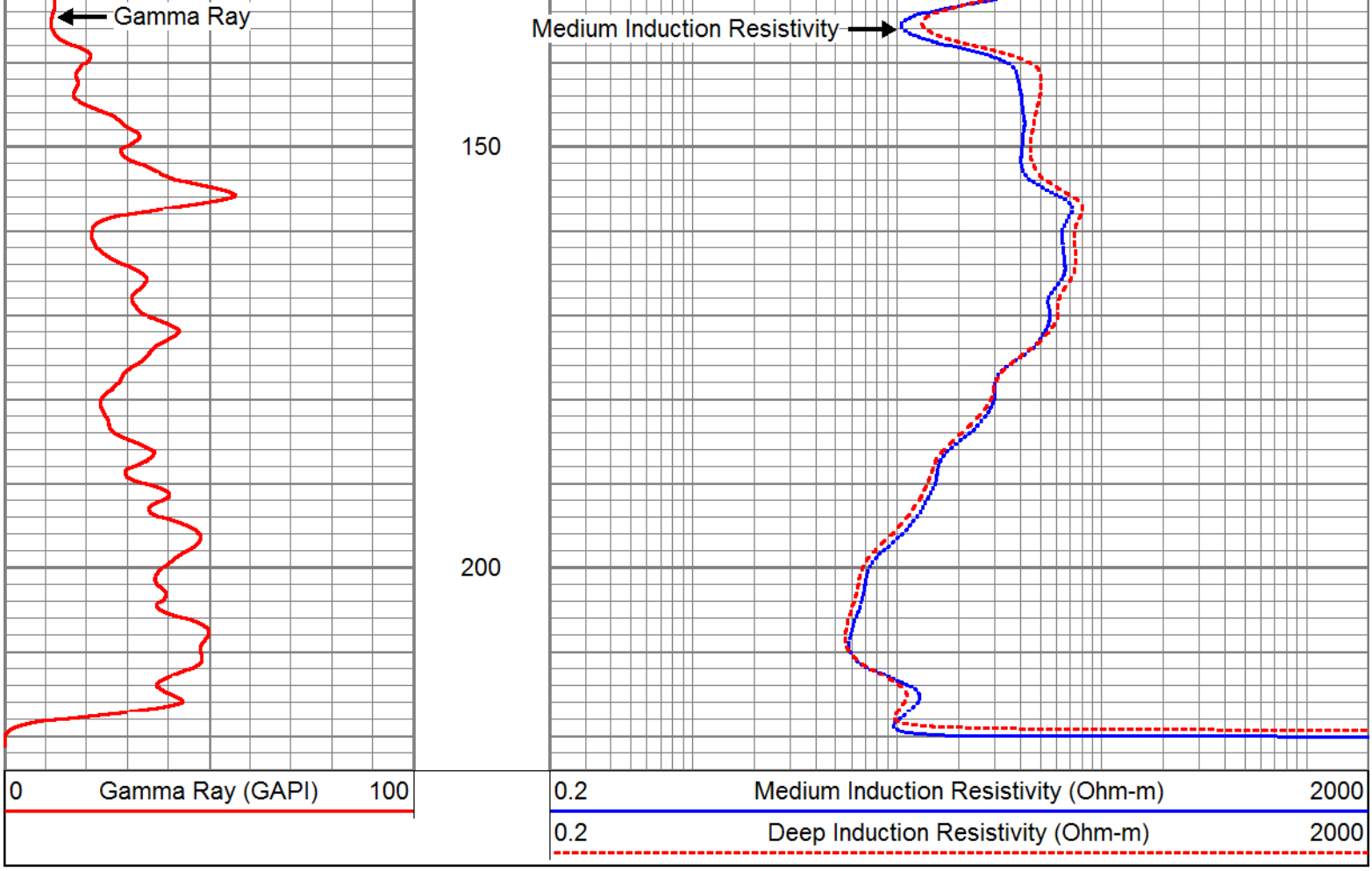




MAIN PASS

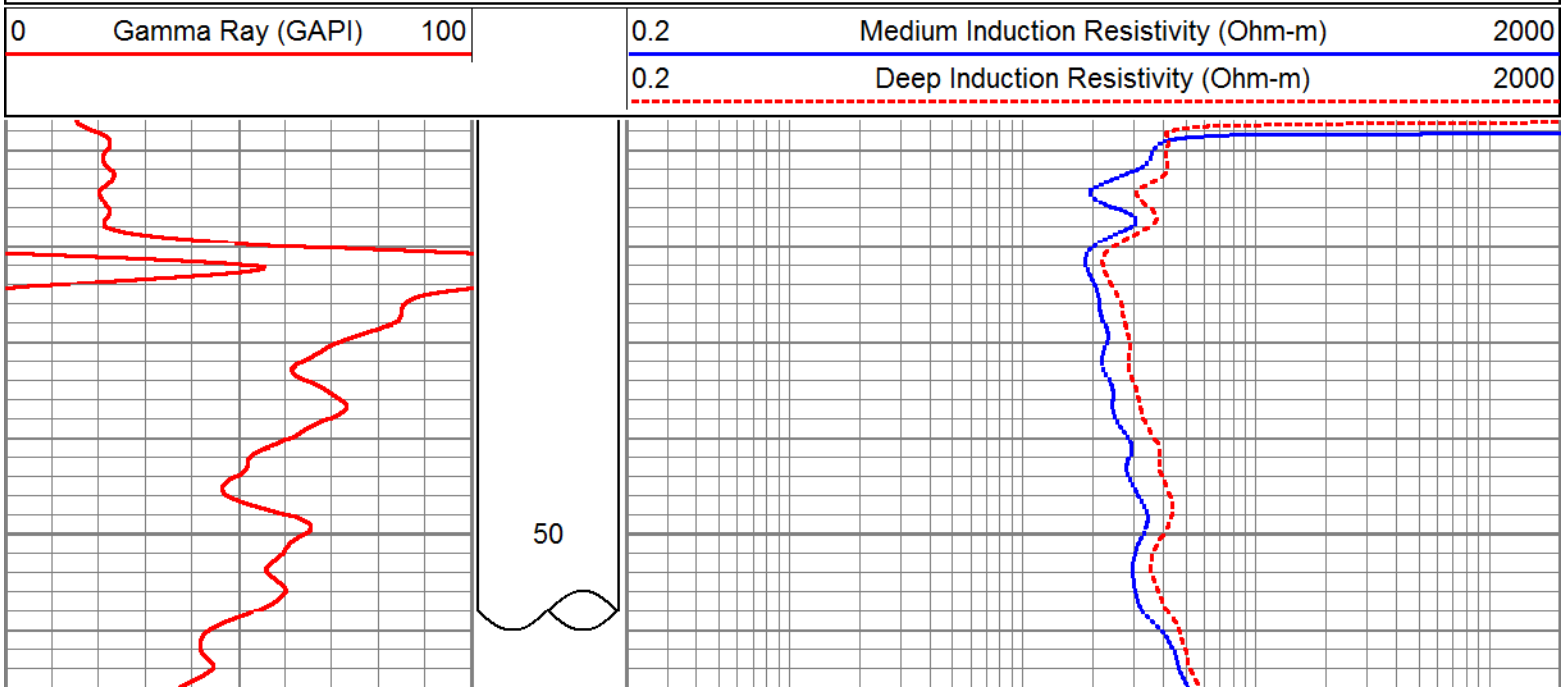
Database File:	fddnaples.db
Dataset Pathname:	DILMP3
Presentation Format:	dil
Dataset Creation:	Mon Oct 26 11:55:03 2015 by Log Open-Cased 071220
Charted by:	Depth in Feet scaled 1:240

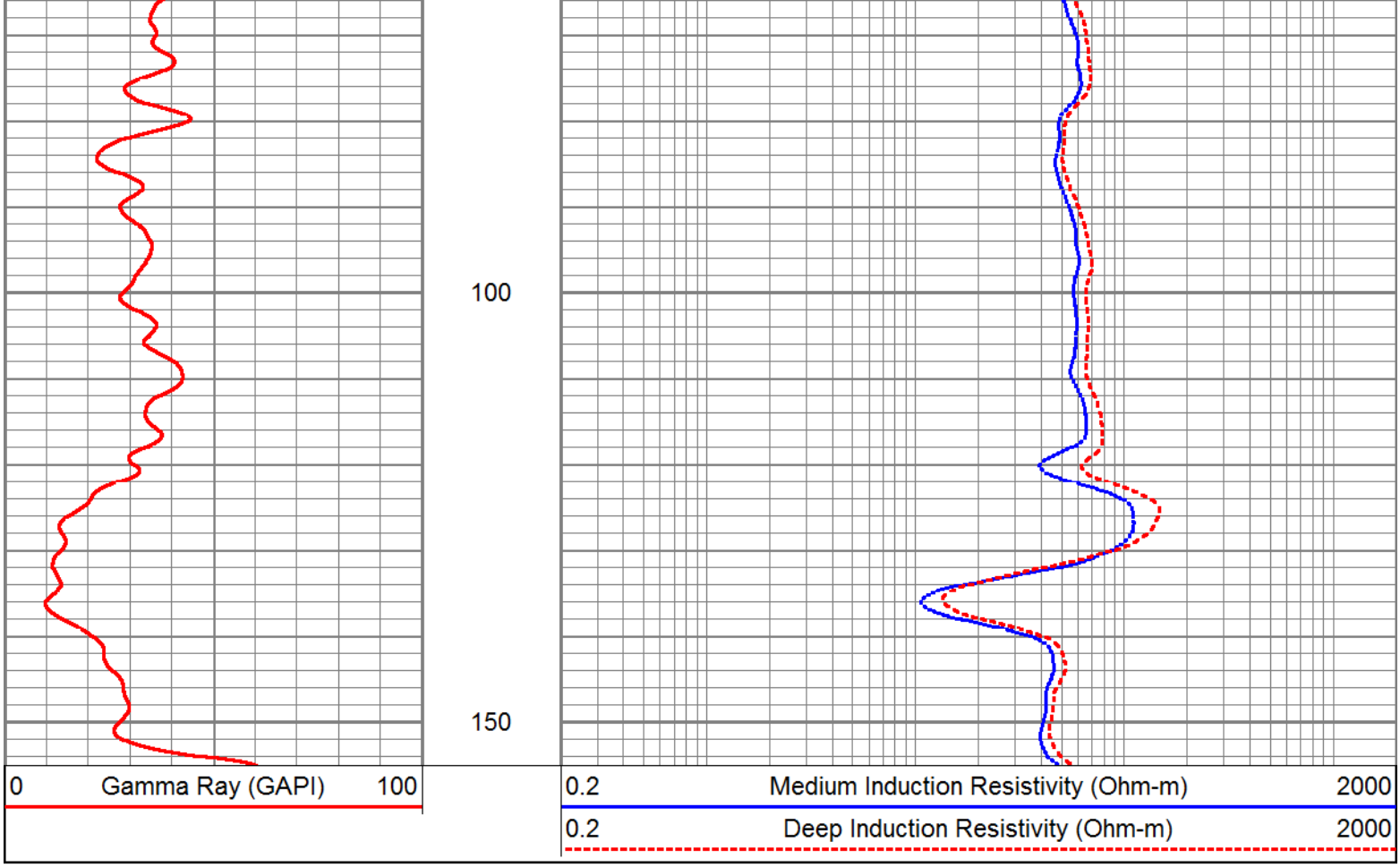




REPEAT PASS

Database File:	fddnaples.db
Dataset Pathname:	DILDNMP
Presentation Format:	dil
Dataset Creation:	Mon Oct 26 12:24:39 2015 by Calc Open-Cased 071220
Charted by:	Depth in Feet scaled 1:240





Calibration Report

Database File: fddnaples.db
Dataset Pathname: DILDNMP
Dataset Creation: Mon Oct 26 12:24:39 2015 by Calc Open-Cased 071220

Gamma Ray Calibration Report

Serial Number:	5562	
Tool Model:	6CHAN	
Performed:	Tue May 21 11:14:51 2013	
Calibrator Value:	120.0	GAPI
Background Reading:	21.4	
Calibrator Reading:	73.9	
Sensitivity:	1.2872	GAPI/

Dual Induction Calibration Report

Serial-Model: 5562-6CHAN
Surface Cal Performed:

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		m	b
Deep	32134.400	41811.700	0.000	1650.000	mmho-m	0.171	-5478.970
Medium	33023.100	50028.000	0.000	3300.000	mmho-m	0.194	-6408.530

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	6.50		RGDILGR-6CHAN (5562) Robertson Geologging Dual Induction Gamma Ray	7.06	1.50	13.67
CILD	2.63					
CILM	1.54					

Dataset:	fddnaples.db: field/well/run1/DILDNMP
Total Length:	7.06 ft
Total Weight:	13.67 lb
O.D.	1.50 in

ALLWEBBS ENTERPRISES, INC.

X-Y CALIPER GAMMA RAY LOG

Company	FLORIDA DESIGN DRILLING CORP.
Well	SWM-2
Field	NAPLES
County	COLLIER
State	FLORIDA

Company	FLORIDA DESIGN DRILLING CORP.
Well	SWM-2
Field	NAPLES
County	COLLIER
State	FLORIDA
Location:	API # :
	CITY OF NAPLES
	1123 GRANADA BLVD
	NAPLES, FL 34103
SEC	TWP RGE
Permanent Datum	Elevation
Log Measured From	
Drilling Measured From	

Other Services: SEE COMMENTS

Elevation: K.B. D.F. G.L.

Date	26-OCT-2015
Run Number	ONE
Depth Driller	218'
Depth Logger	218'
Bottom Logged Interval	216'
Top Log Interval	CASING
Open Hole Size	7.875"
Type Fluid	MUD
Density / Viscosity	NA
Max. Recorded Temp.	NA
Estimated Cement Top	NA
Time Well Ready	0000
Time Logger on Bottom	0000
Equipment Number	VA-202
Location	JUPITER
Recorded By	LEE
Witnessed By	R. TOBY (FDD)

Borehole Record

Run Number	Bit	From	To
ONE	7.875"	CASING	218'

Borehole Record

Run Number	Bit	From	To

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	8.00" PVC	8.00" ID	SURFACE	60'
Prot. String				
Production String				
Liner				

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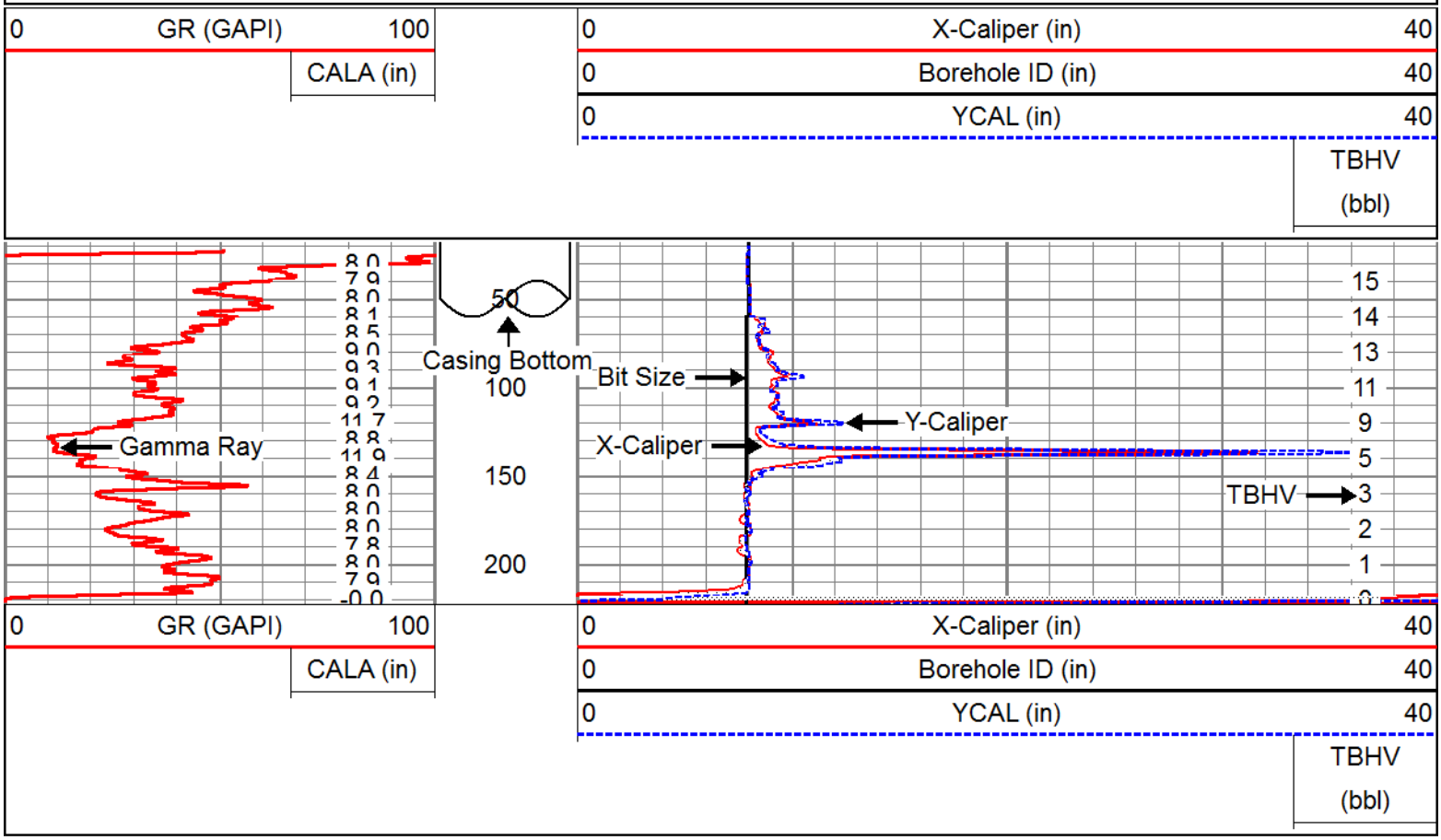
Comments

DIL/GR

ALLWEBBS

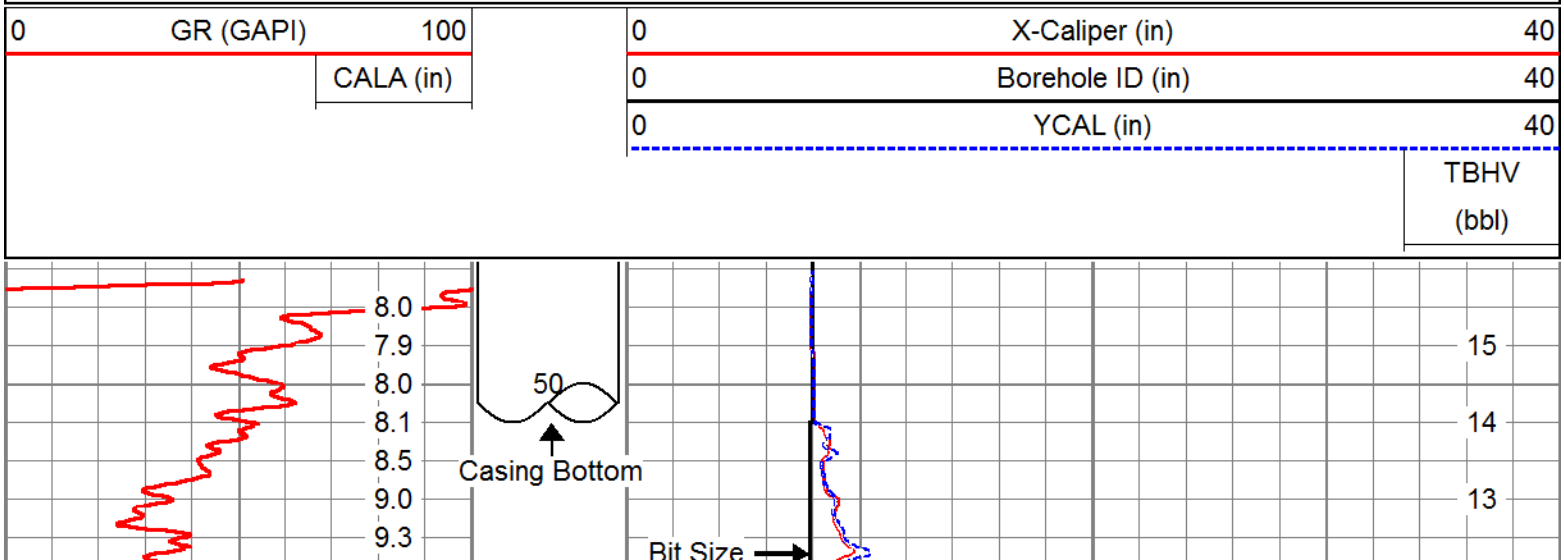
MAIN PASS

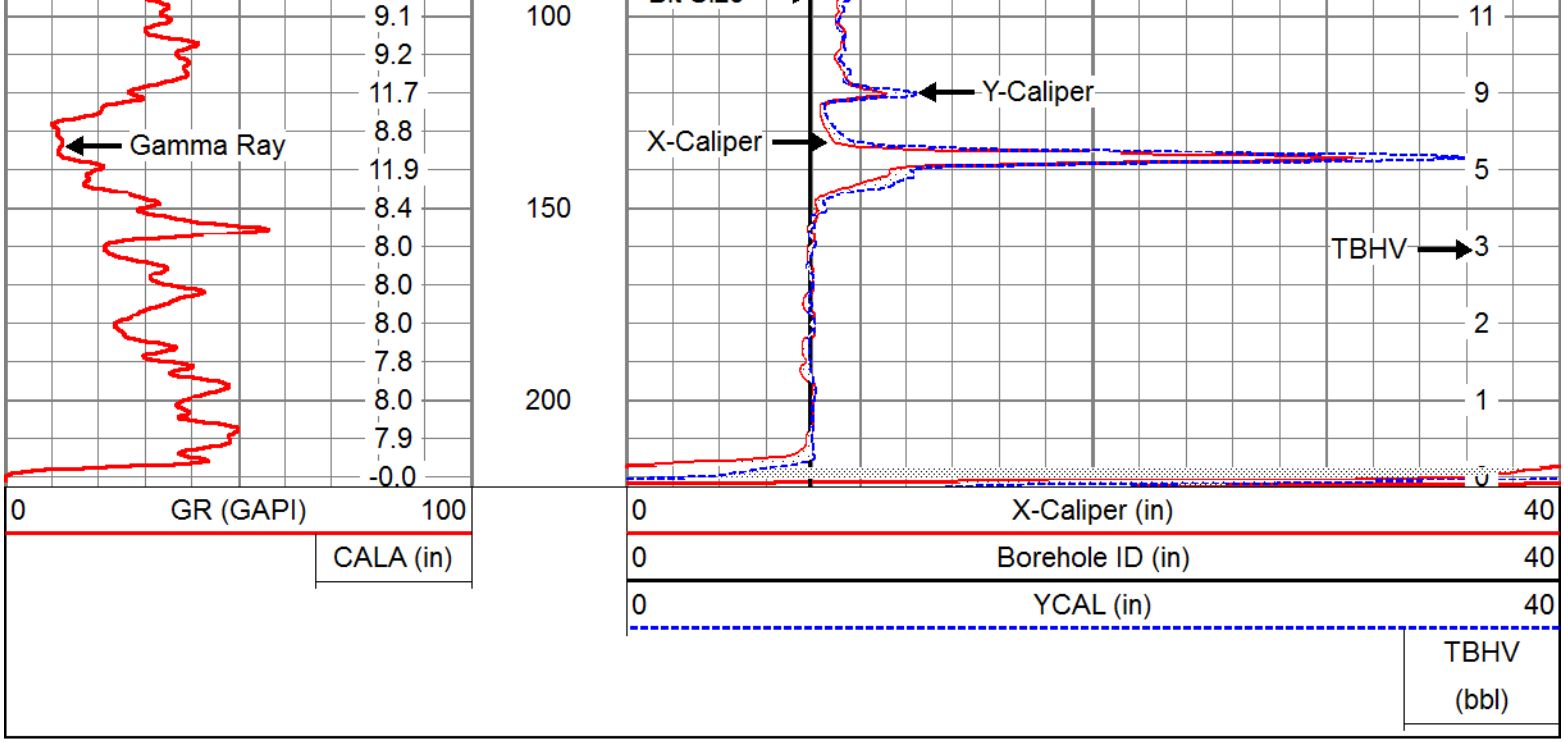
Database File:	fddnaples.db
Dataset Pathname:	XYCMP
Presentation Format:	xyc
Dataset Creation:	Mon Oct 26 11:04:48 2015 by Log Open-Cased 071220
Charted by:	Depth in Feet scaled 1:1200



MAIN PASS

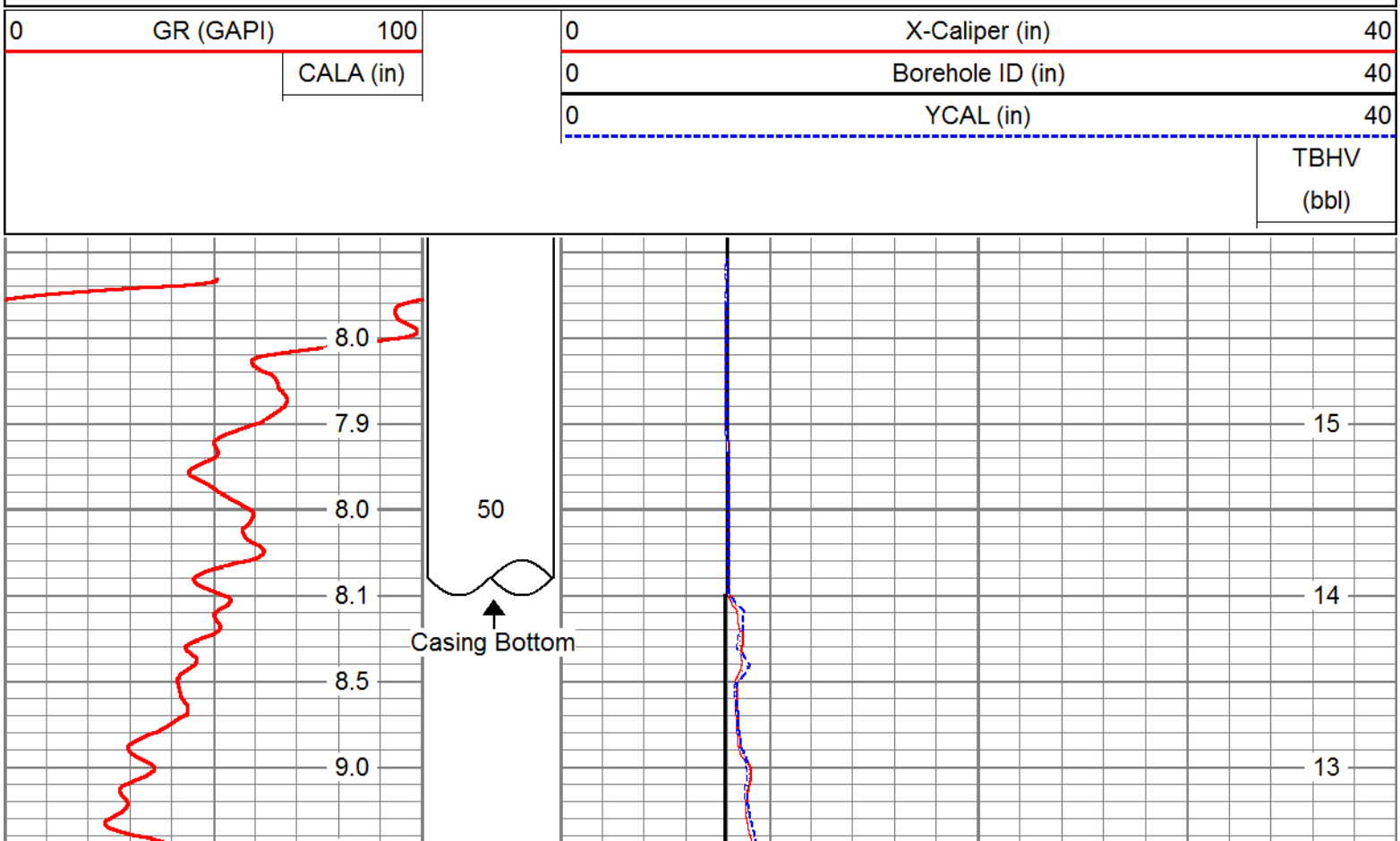
Database File:	fddnaples.db
Dataset Pathname:	XYCMP
Presentation Format:	xyc
Dataset Creation:	Mon Oct 26 11:04:48 2015 by Log Open-Cased 071220
Charted by:	Depth in Feet scaled 1:600

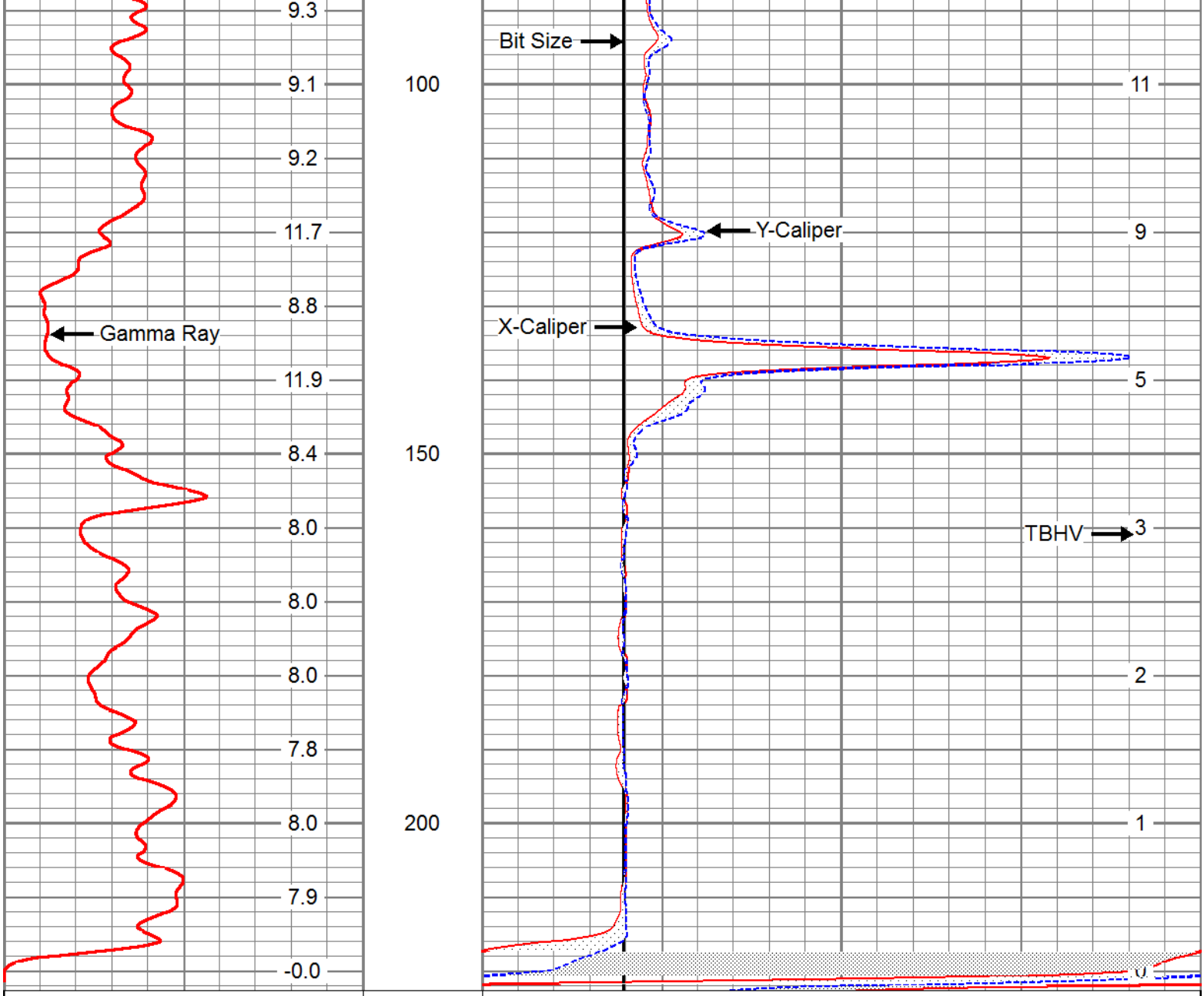




MAIN PASS

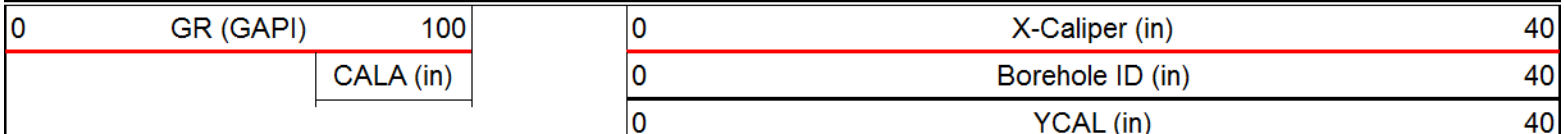
Database File: fddnaples.db
Dataset Pathname: XYCMP
Presentation Format: xyc
Dataset Creation: Mon Oct 26 11:04:48 2015 by Log Open-Cased 071220
Charted by: Depth in Feet scaled 1:240

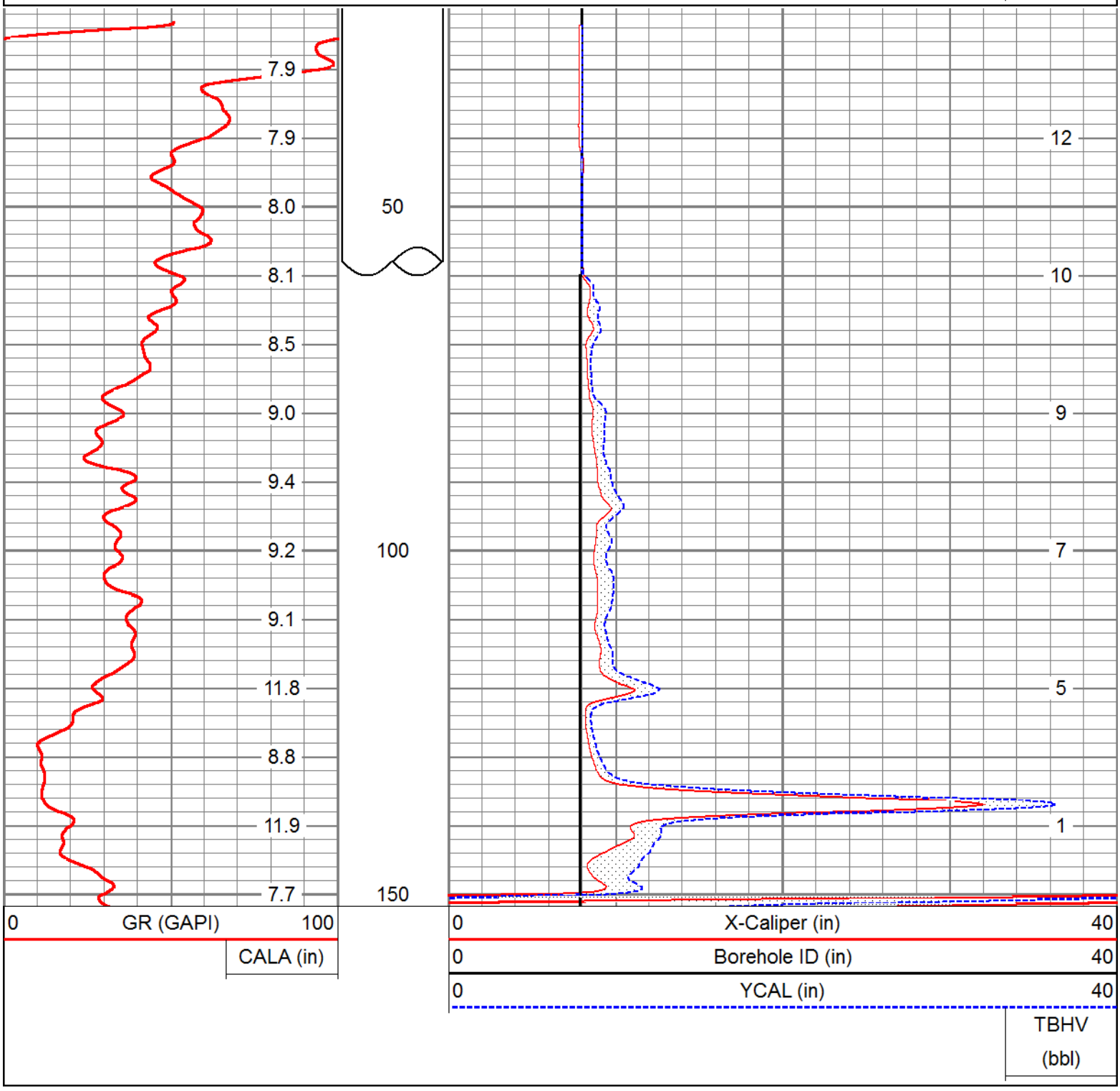




REPEAT PASS

Database File: fddnaples.db
Dataset Pathname: XYCRP
Presentation Format: xyc
Dataset Creation: Mon Oct 26 10:09:30 2015 by Calc Open-Cased 071220
Charted by: Depth in Feet scaled 1:240





Calibration Report

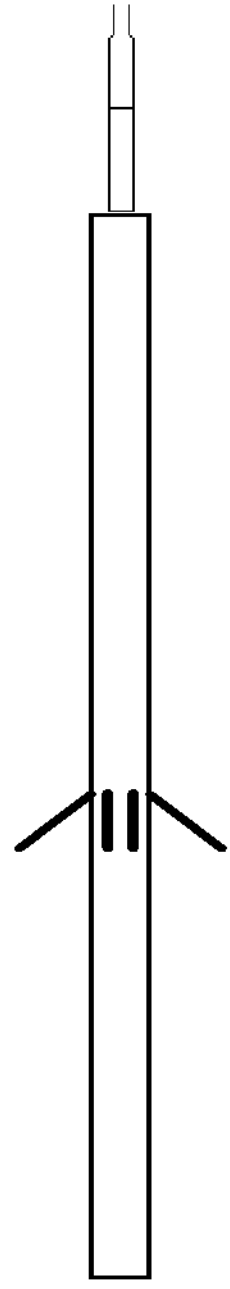
Database File: fddnaples.db
Dataset Pathname: XYCMP
Dataset Creation: Mon Oct 26 11:04:48 2015 by Log Open-Cased 071220

XY Caliper Calibration Report

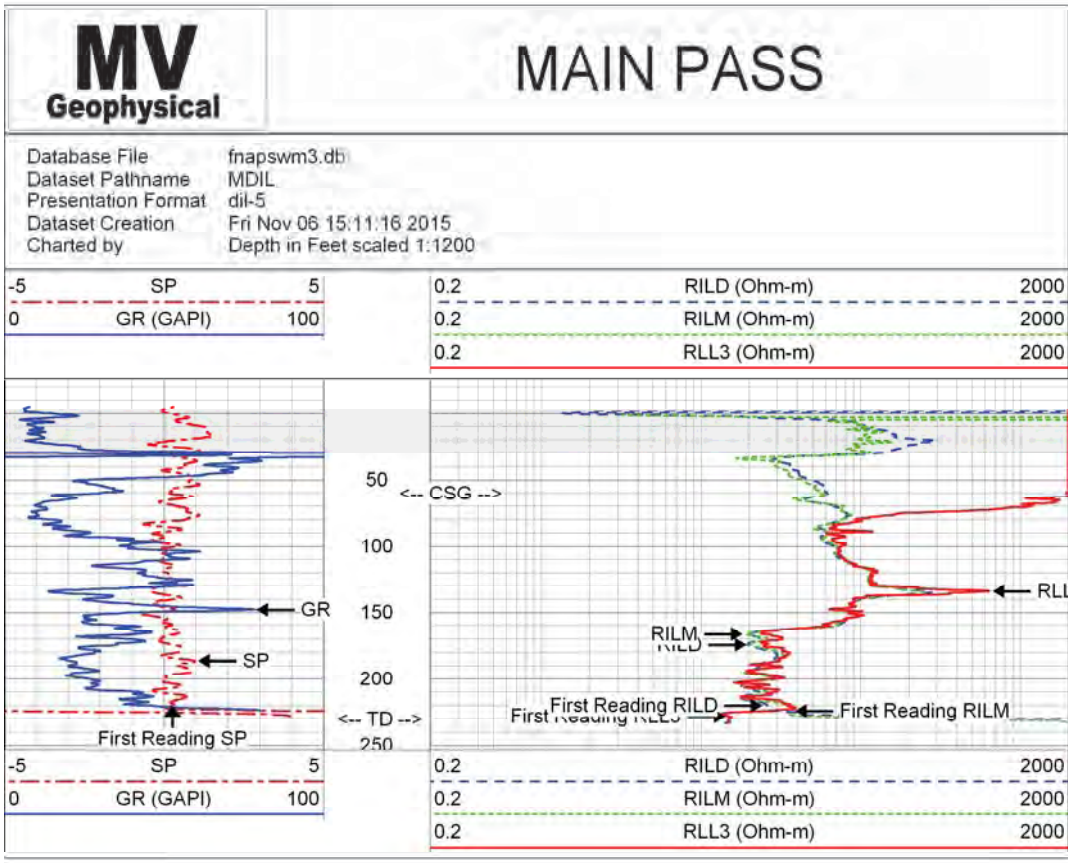
Serial Number/Model: Probe1-Probe
Performed: Mon Oct 26 10:59:52 2015

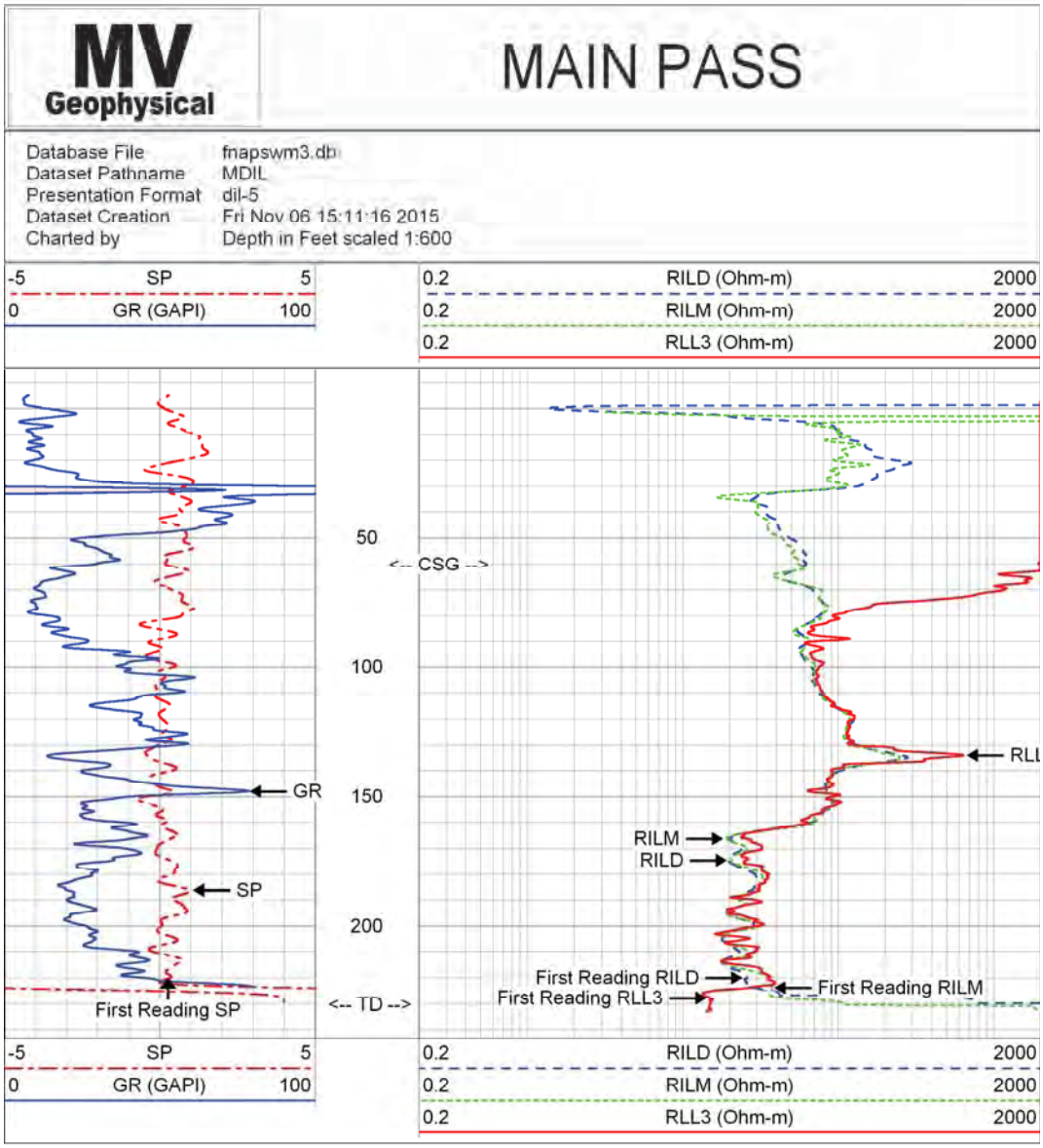
	Ring		X Caliper		Y Caliper	
1:	6	in	360.801	cps	375.791	cps

2:	8	in	371.1	cps	397.8	cps
3:	11.75	in	445.66	cps	454.907	cps
4:	20	in	580.122	cps	587.831	cps
5:	30	in	775.187	cps	764.006	cps
6:		in		cps		cps

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			CHD-SDSCHD (SDS) Cable Head	1.00	1.50	5.00
			XYC-Probe (Probe1) Probe _AWE-XY Caliper SM	5.17	3.50	99.00
XCAL	0.75					
YCAL	0.75					

Dataset:	fddnaples.db: field/well/run1/XYCMP
Total Length:	6.17 ft
Total Weight:	104.00 lb
O.D.	3.50 in


MV Geophysical
MAIN PASS
Database File fnapswm3.db
Dataset Pathname MDIL
Presentation Format dil-5
Dataset Creation Fri Nov 06 15:11:16 2015
Charted by Depth in Feet scaled 1:1200
-5 SP 5
0 GR (GAPI) 100
0.2 RILD (Ohm-m) 2000
0.2 RILM (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
50
<-- CSG -->
100
150
200
<-- TD -->
250
GR
SP
First Reading SP
RILM
First Reading RILD
First Reading RILM
-5 SP 5
0 GR (GAPI) 100
0.2 RILD (Ohm-m) 2000
0.2 RILM (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000


MV Geophysical
MAIN PASS
Database File fnapswm3.db
Dataset Pathname MDIL
Presentation Format dil-5
Dataset Creation Fri Nov 06 15:11:16 2015
Charted by Depth in Feet scaled 1:600
-5 SP 5
0 GR (GAPI) 100
0.2 RILD (Ohm-m) 2000
0.2 RILM (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
50
<-- CSG -->
100
150
200
<-- TD -->
GR
SP
First Reading SP
RILM
RILD
First Reading RILD
First Reading RLL3
First Reading RILM
-5 SP 5
0 GR (GAPI) 100
0.2 RILD (Ohm-m) 2000
0.2 RILM (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000

MV Geophysical

DUAL INDUCTION LL3 / SP LOG

Company	Florida Design Drilling Corp.
Well	SWM-3
Field	Naples
County	Collier
State	Florida
Country	USA
Location	API # :
	City of Naples
	7200 Trail Blvd, Naples, FL
	Johnson Engineering, Inc.
SEC	TWP RGE
Permanent Datum	G.L.
Log Measured From	G.L.
Drilling Measured From	G.L.
Elevation	K.B.
	D.F.
	G.L.
Other Services	XY/GR
	DIL/SP

Date	6-NOV-2015
Run Number	ONE
Depth Driller	230'
Depth Logger	230'
Bottom Logged Interval	228'
Top Log Interval	60'
Open Hole Size	7.875"
Type Fluid	MUD
Density / Viscosity	NA/NA
Max. Recorded Temp.	NA
Estimated Cement Top	SURFACE
Time Well Ready	14:00 11/6/2015
Time Logger on Bottom	14:15 11/6/2015
Equipment Number	MVGS-1
Location	Fort Myers
Recorded By	S.Miller/C.Miller
Witnessed By	T.Braxton (JE)

Borehole Record			
Run Number	Bit	From	To
ONE	7.875"	60'	230'

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	8" PVC	8" ID	SURFACE	60'
Prot. String				
Production String				
Liner				

Tubing Record			
	Size	Weight	From	To
Toby R. (FDD)				

Invoice No.	201516B
	2x/pdf/las
	fnapswm3.db
	* FIELD PRINT *

<<< Fold Here >>>

Comments

Rm=8.663 ohm-m @ 82.1 degF

MV Geophysical

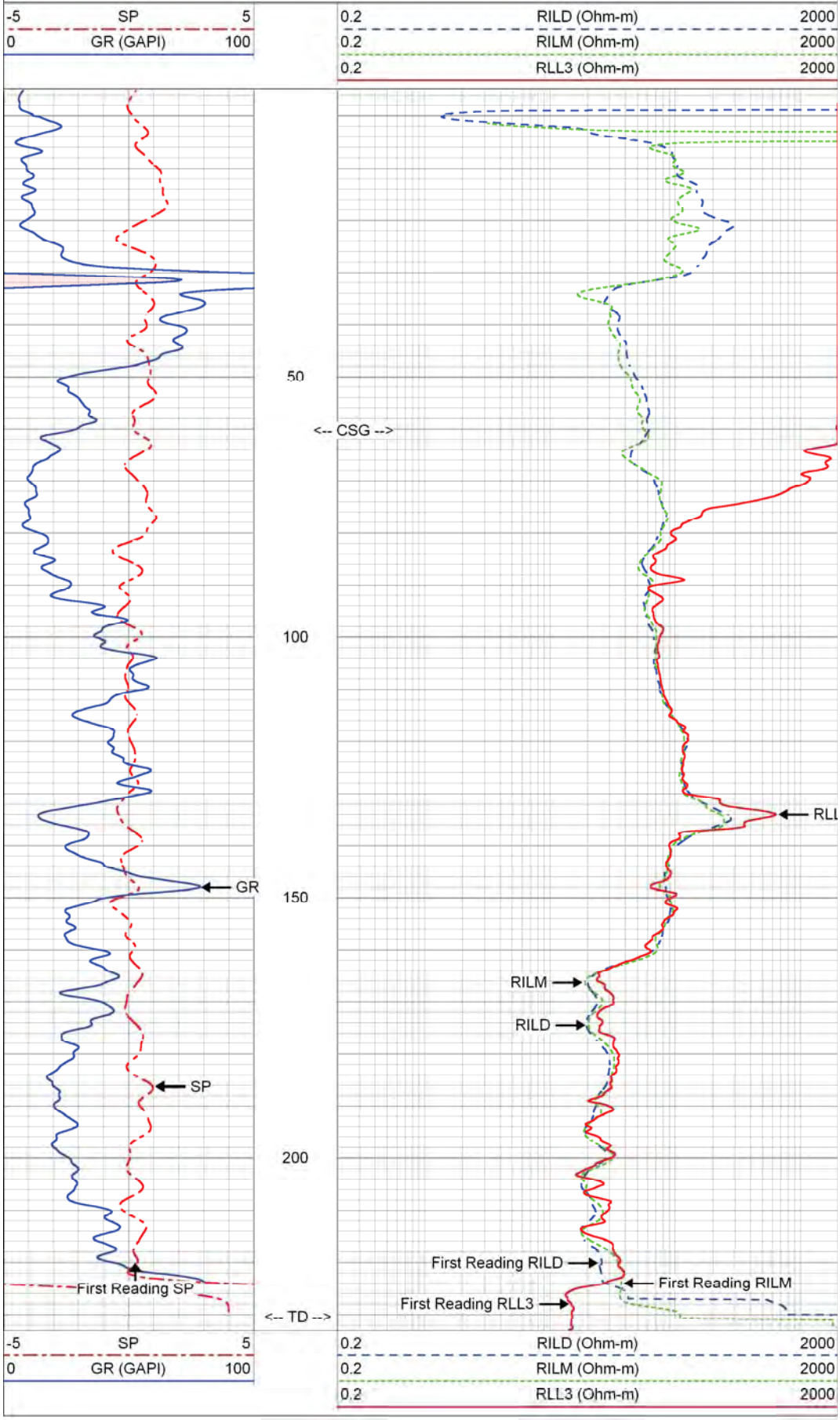
MAIN PASS

Database File	fnapswm3.db
Dataset Pathname	MDIL
Presentation Format	dil-5
Dataset Creation	Fri Nov 06 15:11:16 2015
Charted by	Depth in Feet scaled 1:1200

MV Geophysical

MAIN PASS

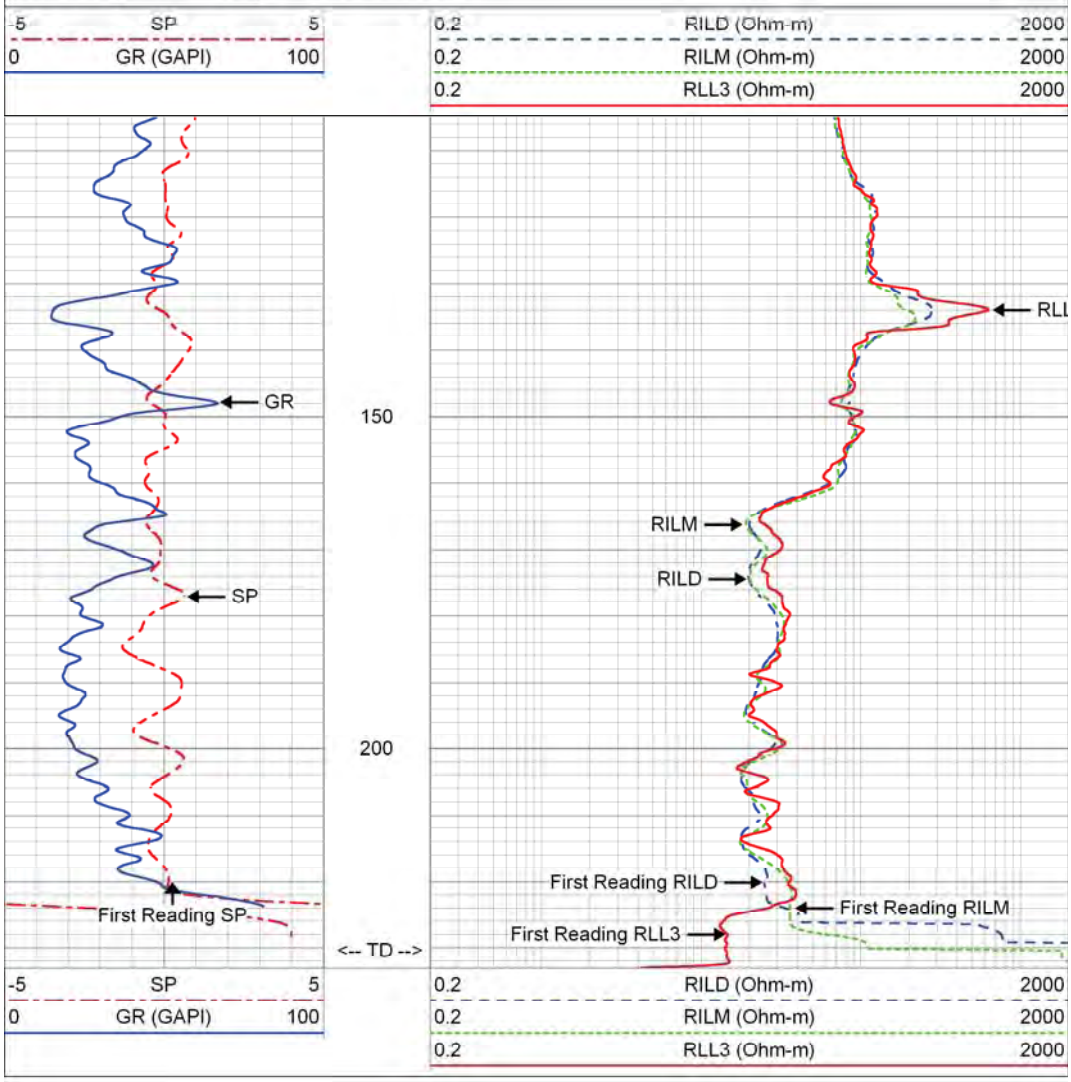
Database File	fnapswm3.db
Dataset Pathname	MDIL
Presentation Format	dil-5
Dataset Creation	Fri Nov 06 15:11:16 2015
Charted by	Depth in Feet scaled 1:240



REPEAT SECTION

MV Geophysical

Database File	fnapswm3.db
Dataset Pathname	RDIL
Presentation Format	dil-5
Dataset Creation	Fri Nov 06 15:07:44 2015
Charted by	Depth in Feet scaled 1:240



Calibration Report

Database File	fnapswm3.db
Dataset Pathname	pass2
Dataset Creation	Fri Nov 06 14:24:43 2015

Dual Induction Calibration Report

Serial-Model:	5390-R
Surface Cal Performed:	Tue Mar 24 17:35:03 2015
Downhole Cal Performed:	Tue Mar 24 17:37:23 2015
After Survey Verification Performed:	Tue Dec 16 11:57:45 2014

Surface Calibration

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.011	0.656	V	0.000	400.002	mmho/m	619.940	-6.652
Medium	0.022	0.823	V	0.000	464.000	mmho/m	579.469	-13.005
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.004	0.643	V	0.000	500.000	mmho/m	782.224	-2.798
Medium	0.006	0.745	V	0.000	500.000	mmho/m	676.404	-3.938

Downhole Calibration

	Readings			References			Results	
Internal:	Zero	Cal		Zero	Cal		m	b

Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Shallow	0.012	2.503	V	2.000	500.000	Ohm-m	199.928	-0.460

After Survey Verification

	Readings			Targets			Results	
Internal:	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	-43.158	78.288	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	-9.475	466.701	mmho/m	1.000	0.000
Shallow	0.000	0.000	Ohm-m	494.500	2.000	Ohm-m	1.000	0.000

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
SP	10.60		R (5390)	20.90	4.00	345.00
CILD	10.60					
CILM	6.80					
RLL3	1.70					

Dataset: fnapswm3.db: field/well/run1/pass2
Total length: 20.90 ft
Total weight: 345.00 lb
O.D.: 4.00 in

MV Geophysical

Company	Florida Design Drilling Corp.
Well	SWM-3
Field	Naples
County	Collier
State	Florida
Country	USA

MV Geophysical

X-Y CALIPER GAMMA RAY LOG

Field	Naples		
County	Collier		
State	Florida	Country USA	
Company	Florida Design Drilling Corp.		
Well	SWM-3		
Field	Naples		
County	Collier		
State	Florida	Country USA	
Location:	API #: City of Naples, 7200 Trail Blvd, Naples, FL, Johnson Engineering, Inc.		Other Services: XY/GR, DIL/SP
	SEC TWP RGE		
Permanent Datum	G.L.	Elevation	Elevation: K.B, D.F, G.L.
Log Measured From	G.L.		
Drilling Measured From	G.L.		

…mber	6-NOV-2015
…n	ONE
…riller	230'
…ogger	230'
…Logged Interval	230'
…Interval	SURFACE
…ole Size	7.875"
…uid	MUD
…/ Viscosity	NA/NA
…corded Temp.	NA
…ed Cement Top	SURFACE
…ell Ready	14:00 11/6/2015
…gger on Bottom	14:45 11/6/2015
…ent Number	MVGS-1
…n	Fort Myers
…ed By	S.Miller/C.Miller
…ed By	T.Braxton (JE) Toby R. (FDD)

Borehole Record			Tubing Record			
Bit	From	To	Size	Weight	From	To
7.875"	60'	230'				

…Record	Size	Wgt/Ft	Top	Bottom
…String	8" PVC	8" ID	SURFACE	60'
…ing				
…on String				
…No. 2015166	2x/pdf/las	fnapswm3.db	* FIELD PRINT *	

<<< Fold Here >>>

Comments

MAXIMUM ARM EXTENSION: 33"

FUTURE CASING SIZE: 4.5" OD

BOREHOLE VOLUMES IN CUBIC FEET

MV Geophysical

MAIN PASS

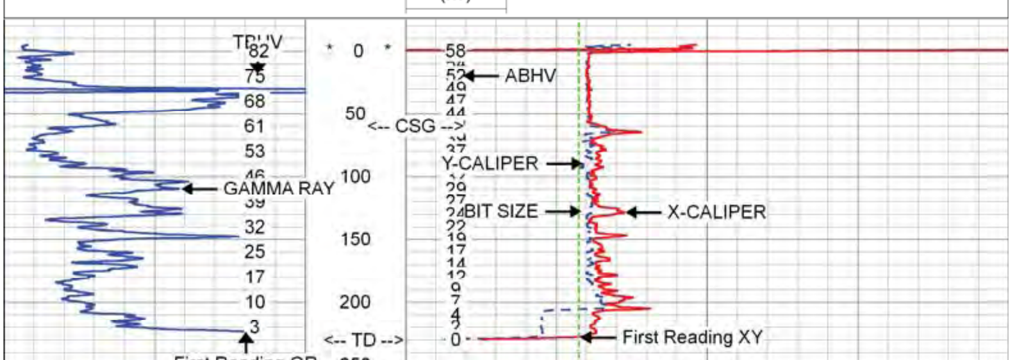
Database File	fnapswm3.db
Dataset Pathname	MXY
Presentation Format	xy515-5
Dataset Creation	Fri Nov 06 15:27:38 2015
Charted by	Depth in Feet scaled 1:1200

0 GAMMA RAY (GAPI) 100 | 5 Y-CALIPER (in) 15

TBHV (ft3) | 5 X-CALIPER (in) 15

5 BIT SIZE (in) 15

ABHV (ft3)



0 GAMMA RAY (GAPI) 100 | 5 Y-CALIPER (in) 15

TBHV (ft3) | 5 X-CALIPER (in) 15

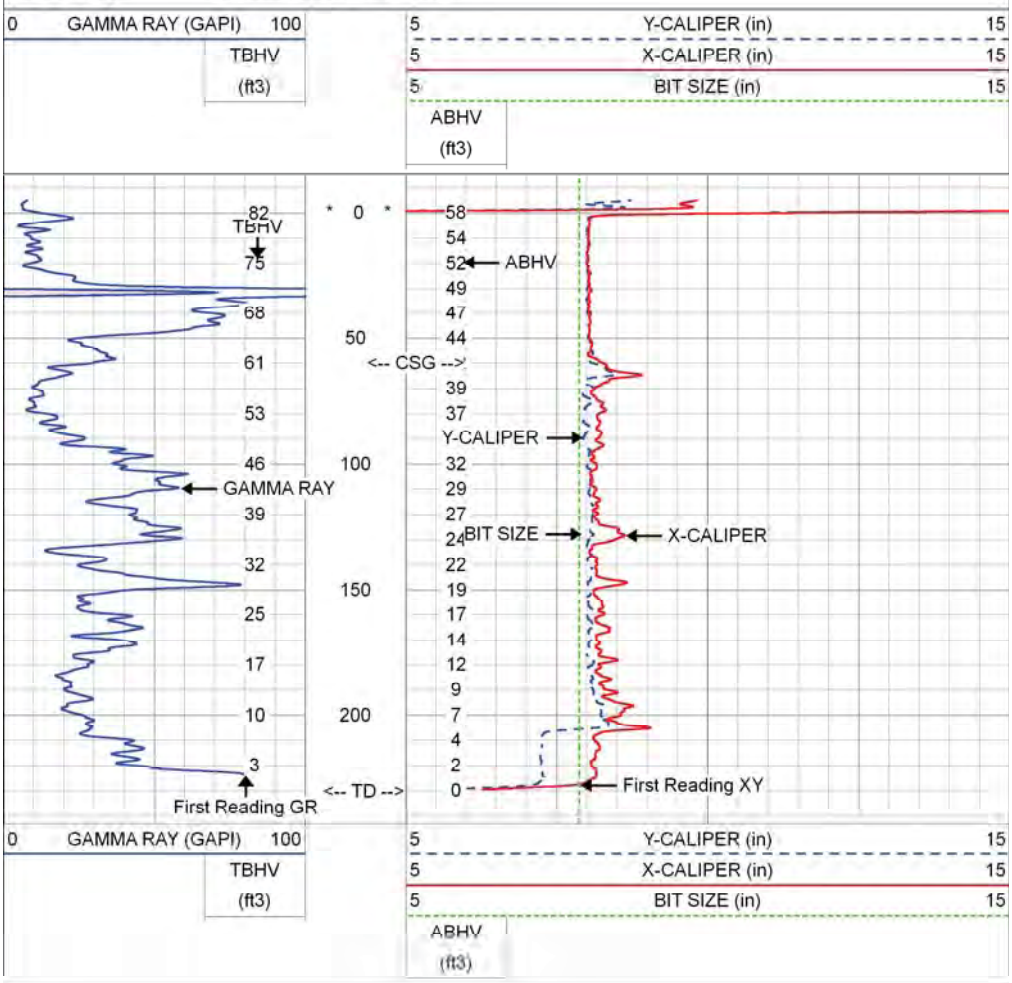
5 BIT SIZE (in) 15

ABHV (ft3)

MV Geophysical

MAIN PASS

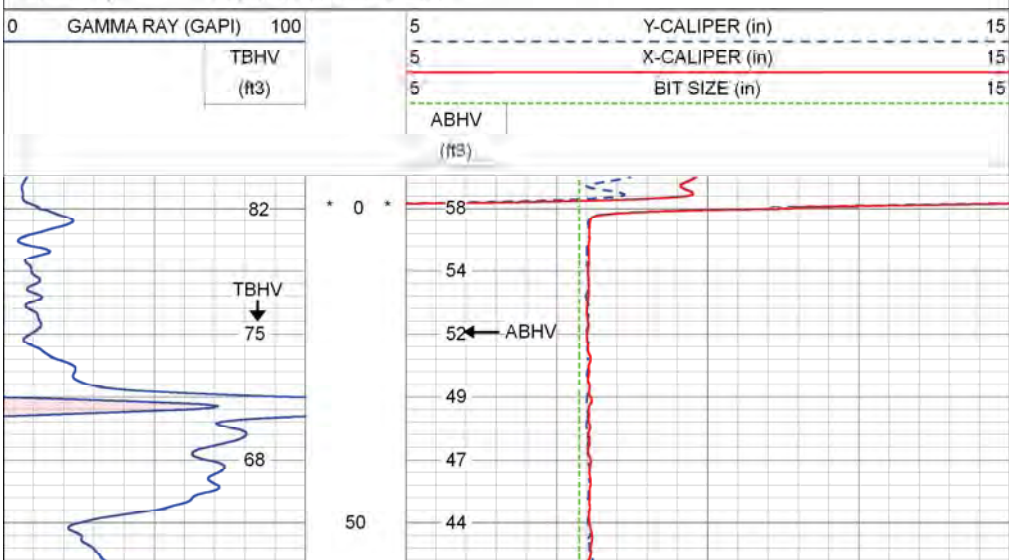
Database File	fnapswm3.db
Dataset Pathname	MXY
Presentation Format	xy515-5
Dataset Creation	Fri Nov 06 15:27:38 2015
Charted by	Depth in Feet scaled 1:600



MV Geophysical

MAIN PASS

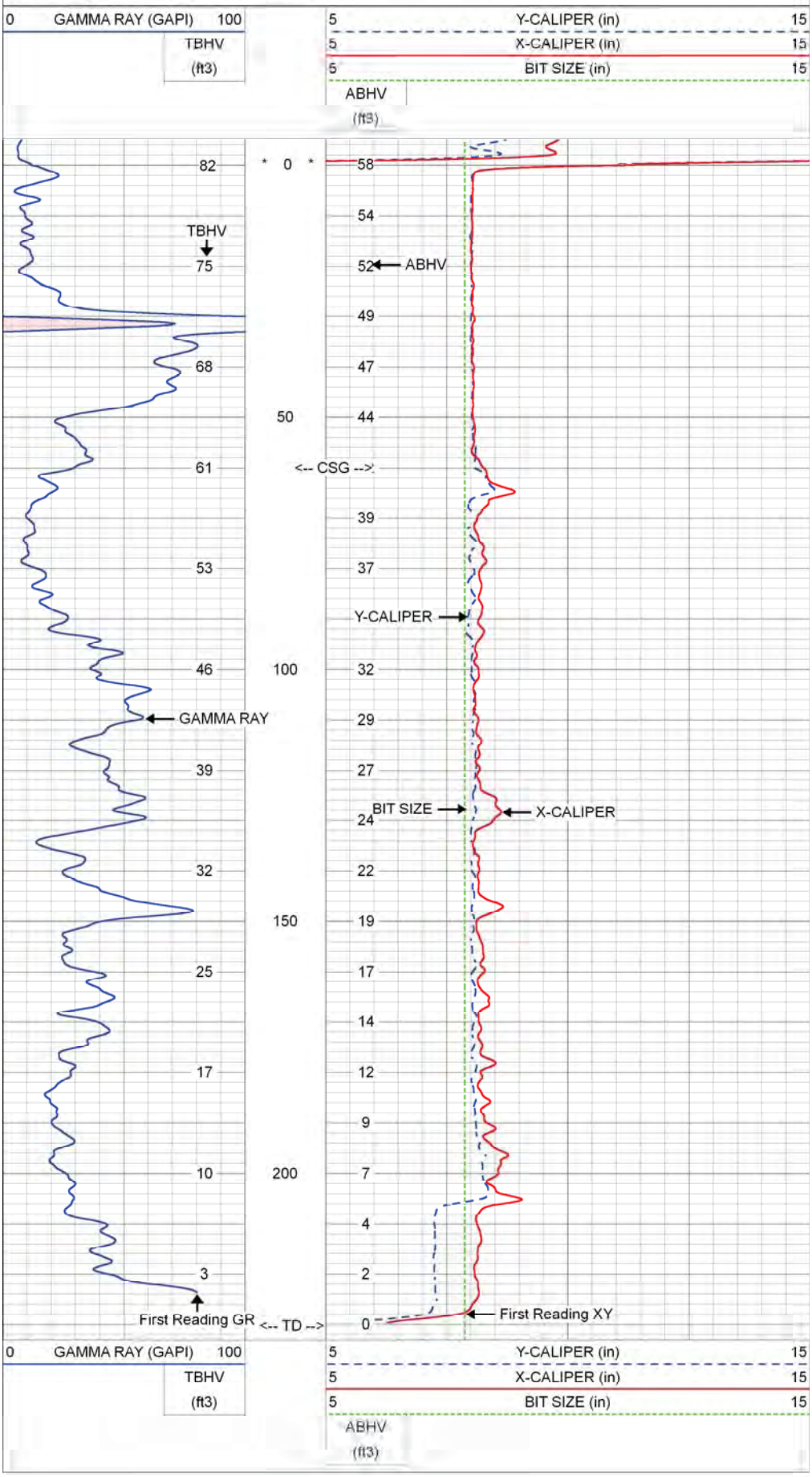
Database File	fnapswm3.db
Dataset Pathname	MXY
Presentation Format	xy515-5
Dataset Creation	Fri Nov 06 15:27:38 2015
Charted by	Depth in Feet scaled 1:240



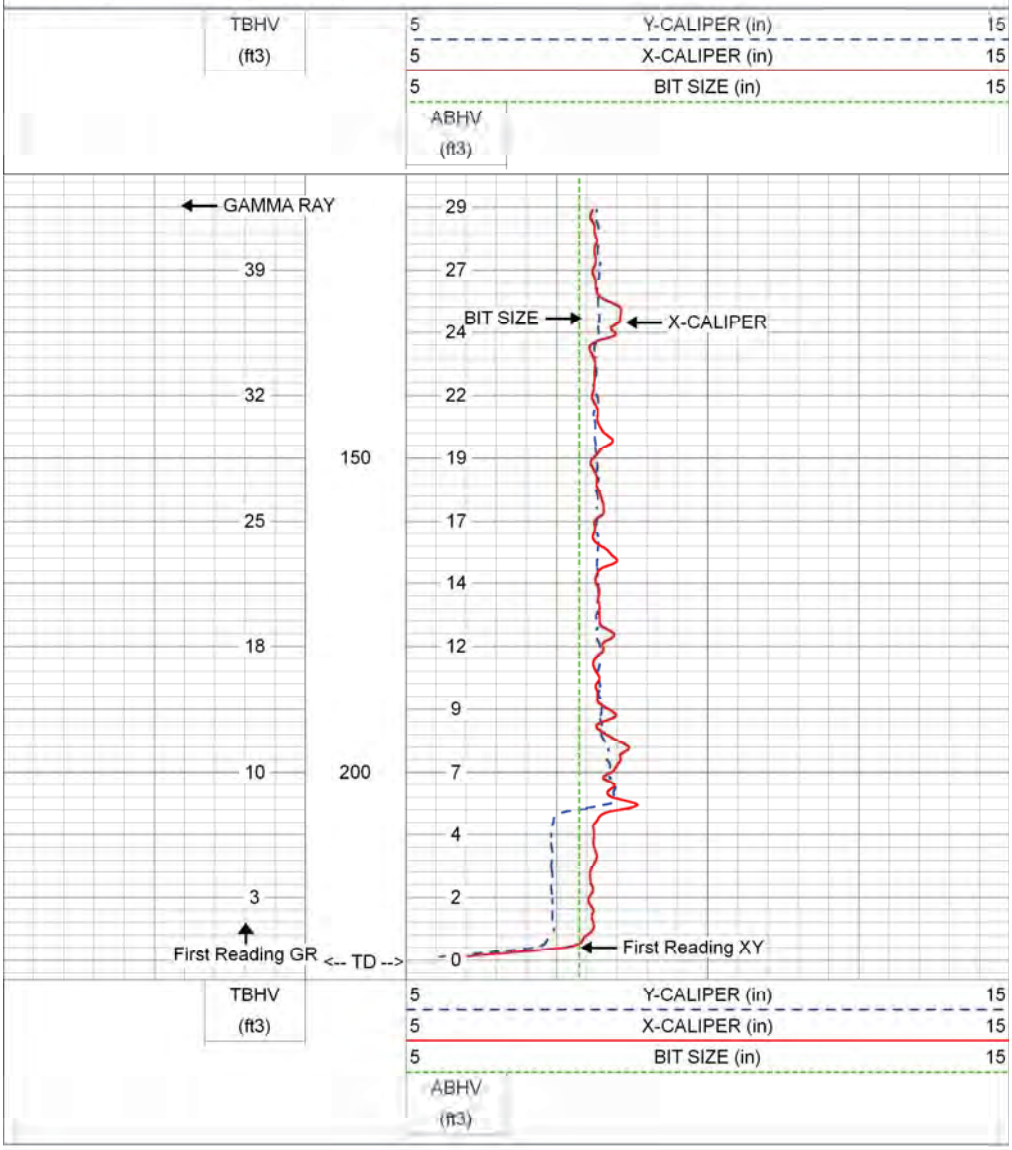
MV Geophysical

MAIN PASS

Database File	fnapswm3.db
Dataset Pathname	MXY
Presentation Format	xy515-5
Dataset Creation	Fri Nov 06 15:27:38 2015
Charted by	Depth in Feet scaled 1:240



Database File	fnapswm3.db
Dataset Pathname	RXY
Presentation Format	xy515-5
Dataset Creation	Fri Nov 06 15:29:30 2015
Charted by	Depth in Feet scaled 1:240



Calibration Report

Database File	fnapswm3.db
Dataset Pathname	pass4
Dataset Creation	Fri Nov 06 14:52:25 2015

XY Caliper Calibration Report

Serial Number:	01S		
Tool Model:	XYCS		
Performed:	Fri Nov 06 14:58:09 2015		
Small Ring:	8	in	
Large Ring:	33	in	
	X Caliper	Y Caliper	
Reading with Small Ring:	600	633.5	cps
Reading with Large Ring:	1136.7	1088.8	cps
Gain:	0.046581	0.0549089	
Offset:	-19.9486	-26.7848	

Gamma Ray Calibration Report

Serial Number:	01	
Tool Model:	GROH	
Performed:	Fri Nov 06 10:48:14 2015	
Calibrator Value:	120.0	GAPI
Background Reading:	14.2	cps
Calibrator Reading:	134.0	cps
Sensitivity:	1.0013	GAPI/cps

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb

Large Ring:	33	in	
	X Caliper	Y Caliper	
Reading with Small Ring:	600	633.5	cps
Reading with Large Ring:	1136.7	1088.8	cps
Gain:	0.046581	0.0549089	
Offset:	-19.9486	-26.7848	

Gamma Ray Calibration Report

Serial Number:	01	
Tool Model:	GROH	
Performed:	Fri Nov 06 10:48:14 2015	
Calibrator Value:	120.0	GAPI
Background Reading:	14.2	cps
Calibrator Reading:	134.0	cps
Sensitivity:	1.0013	GAPI/cps

Dataset:	fnapswm3.db: field/well/run1/pass4
Total length:	9.35 ft
Total weight:	150.00 lb
O.D.:	3.50 in

MV Geophysical

Company	Florida Design Drilling Corp.
Well	SWM-3
Field	Naples
County	Collier
State	Florida
Country	USA

APPENDIX D

Florida State Well Construction Completion Reports

STATE OF FLORIDA WELL COMPLETION REPORT

Southwest
Northwest
St. Johns River
South Florida
Suwannee River
DEP
Delegated Authority (If Applicable) City Of Naples

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Official Use Only

1.*Permit Number _____ *CUP/WUP Number 11-00017-W *DID Number _____ 62-524 Delineation No. _____

2.*Number of permitted wells constructed, repaired, or abandoned 1 *Number of permitted wells not constructed, repaired, or abandoned _____

3.*Owner's Name City Of Naples 4.*Completion Date 10/23/15 5. Florida Unique ID _____

6. Mooring Line Dr E
*Well Location - Address, Road Name or Number, City, ZIP

7.*County Collier *Section 34 Land Grant _____ *Township 48 *Range 25

8. Latitude 26°10'27.69"N Longitude 81°48'1.87"W

9. Data Obtained From: ☐ GPS ☒ Map ☐ Survey Datum: ____ NAD 27 ____ NAD 83 ____ WGS 84

10.*Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11.*Specify Intended Use(s) of Well(s)

- ☐ Domestic
- ☐ Bottled Water Supply
- ☐ Public Water Supply (Limited Use/DOH)
- ☐ Public Water Supply (Community or Non-Community/DEP)
- ☐ Class I Injection
- ☐ Landscape Irrigation
- ☐ Recreation Area Irrigation
- ☐ Agricultural Irrigation
- ☐ Livestock
- ☐ Nursery Irrigation
- ☐ Commercial/Industrial
- ☐ Golf Course Irrigation
- ☐ Site Investigations
- ☒ Monitoring
- ☐ Test
- ☐ Earth-Coupled Geothermal
- ☐ HVAC Supply
- ☐ HVAC Return

Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage

Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) _____

☐ Other (Describe) _____

12.*Drill Method ☐ Auger ☐ Cable Tool ☒ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic
☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13.*Measured Static Water Level _____ ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14.*Measuring Point (Describe) _____ Which is ____ ft. ____ Above ____ Below Land Surface *Flowing: ☐ Yes ☐ No

15.*Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16.*Total Well Depth 147 ft. Cased Depth 135 ft. *Open Hole: From ____ To ____ ft. *Screen: From 135 To 147 ft. Slot Size 20

17.*Abandonment: ☐ Other (Explain) _____

From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____

18.*Surface Casing Diameter and Depth:

Dia 8 in. From 0 ft. To 60 ft. No. of Bags 27 Seal Material (Check One): ☒ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____

19.*Primary Casing Diameter and Depth:

Dia 4 in. From 0 ft. To 135 ft. No. of Bags 27 Seal Material (Check One): ☒ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____

20.*Liner Casing Diameter and Depth:

Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____

21.*Telescope Casing Diameter and Depth:

Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other ____

22. Pump Type (If Known):
☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth _____ ft. Intake Depth _____ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
☐ Laboratory Test ☐ Field Test Kit

24. Water Well Contractor:
*Contractor Name Florida Design Drilling Corp *License Number 11349 E-mail Address contact@fldrilling.com

*Contractor's Signature _____ *Driller's Name (Print or Type) Noah Ringdahl
(I certify that the information provided in this report is accurate and true.)

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____
From____ ft.	To____ ft.	Color ____	Grain Size (F, M, C) ____	Material ____

Comments: ____________________

***Detailed Site Map of Well Location**

See attached

N

Path: L:\2012000\20012\9093-001 - City of Naples\Wells.mxd Date: 7/9/2015 Time: 4:14:41 PM User: kka

Mooring Line Drive East and Tamiami Trail (US 41)	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 1

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
06/11/15	20150110-001	00-00-00	1" = 1,500'	2

STATE OF FLORIDA WELL COMPLETION REPORT

Southwest
Northwest
St. Johns River
South Florida
Suwannee River
DEP
Delegated Authority (If Applicable) Collier County

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Official Use Only

1. *Permit Number PRWL2015103192 *CUP/WUP Number 11-00017-W *DID Number _____ 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 1 *Number of permitted wells not constructed, repaired, or abandoned _____

3. *Owner's Name City of Naples 4. *Completion Date 10/28/15 5. Florida Unique ID _____

6. 4624 Capri Drive
*Well Location - Address, Road Name or Number, City, ZIP

7. *County Collier *Section 15 Land Grant _____ *Township 49 *Range 25

8. Latitude 26° 12' 12.57" N Longitude 81° 47'49.05"W

9. Data Obtained From: ☐ GPS ☐ Map ☐ Survey Datum: _____ NAD 27 _____ NAD 83 _____ WGS 84

10. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11. *Specify Intended Use(s) of Well(s)

- ☐ Domestic
- ☐ Bottled Water Supply
- ☐ Public Water Supply (Limited Use/DOH)
- ☐ Public Water Supply (Community or Non-Community/DEP)
- ☐ Class I Injection
- ☐ Landscape Irrigation
- ☐ Recreation Area Irrigation
- ☐ Agricultural Irrigation
- ☐ Livestock
- ☐ Nursery Irrigation
- ☐ Commercial/Industrial
- ☐ Golf Course Irrigation
- ☐ Site Investigations
- ☑ Monitoring
- ☐ Test
- ☐ Earth-Coupled Geothermal
- ☐ HVAC Supply
- ☐ HVAC Return

Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage

Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) _____

☐ Other (Describe) _____

12. *Drill Method ☐ Auger ☐ Cable Tool ☒ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic
☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13. *Measured Static Water Level _____ ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. _____ Above _____ Below Land Surface *Flowing: ☐ Yes ☐ No

15. *Casing Material: ☐ Black Steel ☐ Galvanized ☐ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16. *Total Well Depth 185 ft. Cased Depth 170 ft. *Open Hole: From _____ To _____ ft. *Screen: From 170 To 185 ft. Slot Size 20

17. *Abandonment: ☐ Other (Explain) _____

From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____

18. *Surface Casing Diameter and Depth:

Dia 8 in. From 0 ft. To 60 ft. No. of Bags 25 Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

19. *Primary Casing Diameter and Depth:

Dia 4 in. From 0 ft. To 170 ft. No. of Bags 60 Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

20. *Liner Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

21. *Telescope Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

22. Pump Type (If Known):
☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth _____ ft. Intake Depth _____ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
☐ Laboratory Test ☐ Field Test Kit

24. Water Well Contractor:

*Contractor Name Florida Design Drilling Corp *License Number 11349 E-mail Address contact@fldrilling.com

*Contractor's Signature _____ *Driller's Name (Print or Type) noah ringdahl
(I certify that the information provided in this report is accurate and true.)

*Permit No. PRWL2015103192701

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From (ft.)	To (ft.)	Color	Grain Size (F, M, C)	Material

Comments:

***Detailed Site Map of Well Location**

See Attached "Monitoring well site 2"

N

Capri Drive and Granada Boulevard	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 2

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
06/11/15	20150110-001	00-00-00	1" = 1,500'	3

PERMIT NUMBER: PRWL2015103192701	APPLICATION NUMBER: PRWL20151031927	ISSUED:
JOB DESCRIPTION:	Construct 1 monitoring well 4624 Capri Dr	
JOB LOCATION:	4624 Capri DR	
LEGAL DESCRIPTION:	NAPLES TWIN LAKES BLK 5 LOT 10	
FOLIO #: 63403080004	SECTION-TOWNSHIP-RANGE: 15 - 49 - 25	
OWNER NAME:	CITY OF NAPLES	
CONTRACTOR:	Florida Design Drilling Corp	

SETBACKS:

FRONT:		REAR:		LEFT:		RIGHT:		SPECIAL:		FLOOD ZONE:	FZAH

DESCRIPTION	OUTCOME	COMMENTS
804 - Well		

OPEN CONDITIONS

> Please provide the Well Completion Report to Engineering Services Inspection Staff
> Elevation Certificate

NOTE: If you are unable to schedule your inspection, please contact the inspection desk at 252-2406.

NOISE ORDINANCE: Collier County Codes of Laws and Ordinances 54-92(f) Construction Sound. NOISE LIMITATIONS are in effect at all times.

Work permitted, RESIDENTIAL Areas – 6:30 AM to 7:00 PM Monday thru Saturday; NON-RESIDENTIAL Areas (more than 500 feet from Residential Area) 6:00AM to 8:00PM Monday thru Saturday.

No Work on Sundays or Holidays. RADIOS, LOUDSPEAKERS, ETC. – Must not disturb peace, quiet and comfort of neighboring inhabitants.

FREE CABLE LOCATIONS – Call 48 Hours prior to digging/FPL 434-1222/UTS 1-800-542-0088/PalmerCATV 783-0638 and all other applicable utilities.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING

STATE OF FLORIDA WELL COMPLETION REPORT

Southwest
Northwest
St. Johns River
South Florida
Suwannee River
DEP
Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Official Use Only

1. *Permit Number RWL201510324830 *CUP/WUP Number 11-00017-W *DID Number _____ 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 1 *Number of permitted wells not constructed, repaired, or abandoned _____

3. *Owner's Name City Of Naples 4. *Completion Date 11/23/15 5. Florida Unique ID _____

6. 7200 Trail Blvd
*Well Location - Address, Road Name or Number, City, ZIP

7. *County Collier *Section 34 Land Grant _____ *Township 48 *Range 25

8. Latitude 26 14'34.26" N Longitude 81 48'2.09"W

9. Data Obtained From: ☐ GPS ☒ Map ☐ Survey Datum: ____ NAD 27 ____ NAD 83 ____ WGS 84

10. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11. *Specify Intended Use(s) of Well(s)

- ☐ Domestic
- ☐ Bottled Water Supply
- ☐ Public Water Supply (Limited Use/DOH)
- ☐ Public Water Supply (Community or Non-Community/DEP)
- ☐ Class I Injection
- ☐ Landscape Irrigation
- ☐ Recreation Area Irrigation
- ☐ Agricultural Irrigation
- ☐ Livestock
- ☐ Nursery Irrigation
- ☐ Commercial/Industrial
- ☐ Golf Course Irrigation
- ☐ Site Investigations
- ☒ Monitoring
- ☐ Test
- ☐ Earth-Coupled Geothermal
- ☐ HVAC Supply
- ☐ HVAC Return

Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage

Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) _____

☐ Other (Describe) _____

12. *Drill Method ☐ Auger ☐ Cable Tool ☒ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic ☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13. *Measured Static Water Level _____ ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. _____ Above _____ Below Land Surface *Flowing: ☐ Yes ☐ No

15. *Casing Material: ☐ Black Steel ☐ Galvanized ☐ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16. *Total Well Depth _____ ft. Cased Depth _____ ft. *Open Hole: From _____ To _____ ft. *Screen: From 155 To 167 ft. Slot Size 20

17. *Abandonment: ☐ Other (Explain) _____

From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____
From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite Other _____

18. *Surface Casing Diameter and Depth:

Dia 8 in. From 0 ft. To 60 ft. No. of Bags 27 Seal Material (Check One): ☒ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

19. *Primary Casing Diameter and Depth:

Dia 4 in. From 0 ft. To 155 ft. No. of Bags 32 Seal Material (Check One): ☒ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

20. *Liner Casing Diameter and Depth:

Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia ____ in. From ____ ft. To ____ ft. No. of Bags ____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

22. Pump Type (If Known):
☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth _____ ft. Intake Depth _____ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
☐ Laboratory Test ☐ Field Test Kit

24. Water Well Contractor:

*Contractor Name Florida Design Drilling Corp *License Number 11349 E-mail Address contact@fldrilling.com

*Contractor's Signature _____ *Driller's Name (Print or Type) Noah Ringdahl
(I certify that the information provided in this report is accurate and true.)

*Permit No. PRWL 20151032 4830

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
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LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From_____ ft. To_____ ft. Color _____ Grain Size (F, M, C) _____ Material _____

Comments: _____

***Detailed Site Map of Well Location**

See attached "monitoring well site 3"

Trail Boulevard and Sandpine Drive	City of Naples Saltwater Monitoring Wells	JOHNSON ENGINEERING	2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Monitoring Well Site 3

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
05/11/15	20150110-001	00-00-00	1" = 1,500'	4

COLLIER COUNTY
BOARD OF COUNTY COMMISSIONERS

PERMIT

PERMIT #: PRWL2015103248301
PERMIT TYPE: WP
ISSUED: BY:
APPLIED DATE: 10-14-15 APPROVAL DATE: 10-14-15
MASTER #: COA:

JOB ADDRESS:
JOB DESCRIPTION: CONSTRUCTION 1 MONITORING WELL IN ROW INFRONT OF 7200 TRAIL BLVD
JOB PHONE:

SUBDIVISION #: BLOCK: LOT:
FLOOD MAP: ZONE: ELEVATION:
FOLIO #: SECTION-TOWNSHIP-RANGE: --

OWNER INFORMATION:

CONTRACTOR INFORMATION:
Florida Design Drilling Corp
7733 Hooper Road
West Palm Beach, FL 33411

CERTIFICATE #: LCC20150003848 PHONE:

FCC CODE:
CONSTRUCTION CODE: 0218
JOB VALUE: $0.00 TOTAL RES SQFT: TOTAL COMM SQFT:

SETBACKS FRONT: REAR: LEFT: RIGHT:
SEWER: WATER:
CONTACT NAME:
CONTACT PHONE:

Per Collier County Ordinance No. 2002-01, as it may be amended, all work must comply with all applicable laws, codes, ordinances, and any additional stipulations or conditions of this permit. This permit expires if work authorized by the permit is not commenced within six (6) months from the date of issuance of the permit. Additional fees for failing to obtain permits prior to the commencement of construction may be imposed. Permittee(s) further understands that any contractor that may be employed must be a licensed contractor and that the structure must not be used or occupied until a Certificate of Occupancy is issued.

NOTICE: PRIOR TO THE REMOVAL OF ASBESTOS PRODUCTS OR THE DEMOLITION OF A STRUCTURE, FEDERAL AND STATE LAWS REQUIRE THE PERMITTEE (EITHER THE OWNER OR CONTRACTOR) TO SUBMIT A NOTICE OF THE INTENDED WORK TO THE STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP). FOR MORE INFORMATION, CONTACT DEP AT (239) 344-5600.

In addition to the conditions of this permit, there may be additional restrictions applicable to this property that may be found in the public records of this county, and there may be additional permits required from other governmental entities such as water management districts, state agencies, or federal agencies.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

APPENDIX E

Video Logs (Transmittal Sent 12/22/2015)