Palm Beach County
Water Utilities Department

Eastern Hillsboro Canal - WTP #9
Aquifer Storage and Recovery Well
PBCWUD Project No. 98 – 66B

Well Construction Report and
Operational Testing Request

August 2003

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August 1, 2003

Mr. Joseph May, P.G.
UIC Program Manager
Florida Department of Environmental Protection
P.O. Box 15425
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SUBJECT: PBCWUD WTP No. 9 Aquifer Storage and Recovery System
Construction Report and Operational Testing Request
FDEP Permit No. 0172069-001-UC
PBCWUD Project No. 98-66B

Dear Mr. May:

Palm Beach County Water Utilities Department is pleased to submit three (3) copies of this Report detailing the construction and testing of the new Class V Aquifer Storage and Recovery (ASR) well system at the PBCWUD Water Treatment Plant No. 9, Eastern Hillsboro Canal Wellfield. The Report details the methods of construction and testing of the new ASR well and presents interpretations of the collected data. This Report is submitted in support of a request to proceed with operational (cycle) testing of the system.

The Operation and Maintenance Manual has been included with this submittal.

We trust that the information contained within these documents will be sufficient for the Department to provide PBCWUD with approval for cycle testing. Please review these reports and supply us with your comments regarding the request to proceed with cycle testing at your earliest convenience. If you have any questions or comments, please do not hesitate to contact us.

Very truly yours,
PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

Gary Dernlan, P.E.
Director, Water Utilities

cc: TAC Members
Leisha Pica, PBCWUD
Steve McGrew, PBCWUD
Larry Johnson, PBCWUD

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Section 1
Introduction

PURPOSE

The purpose of this report is to provide documentation of the design, construction and testing of a new Class V Group VII Aquifer Storage and Recovery (ASR) well system at the Eastern Hillsboro ASR site associated with Palm Beach County Water Utilities Department (PBCWUD) Water Treatment Plant (WTP) No. 9. The WTP is located in the southern most portion of Palm Beach County, Florida (Section 35, Township 47S, Range 41E). A project location map is presented on **Figure 1-1.**

This report provides support for a request to proceed with operational (cycle) testing of the new ASR well system. The subject well (Hillsboro ASR) was constructed in accordance with Construction Permit 0172069-001-UC issued by the Florida Department of Environmental Protection (FDEP). Copies of the construction permit obtained for this project are included in **Appendix A.** The ASR well system has been designed to recharge (inject) and recover (withdraw) up to 5.0 million gallons per day (mgd) of raw surficial aquifer water from the production wells located along the Hillsboro Canal within the WTP No. 9 service area. Additionally, the data contained within this report will aid in the South Florida Water Management District (SFWMD) regional ASR feasibility study.

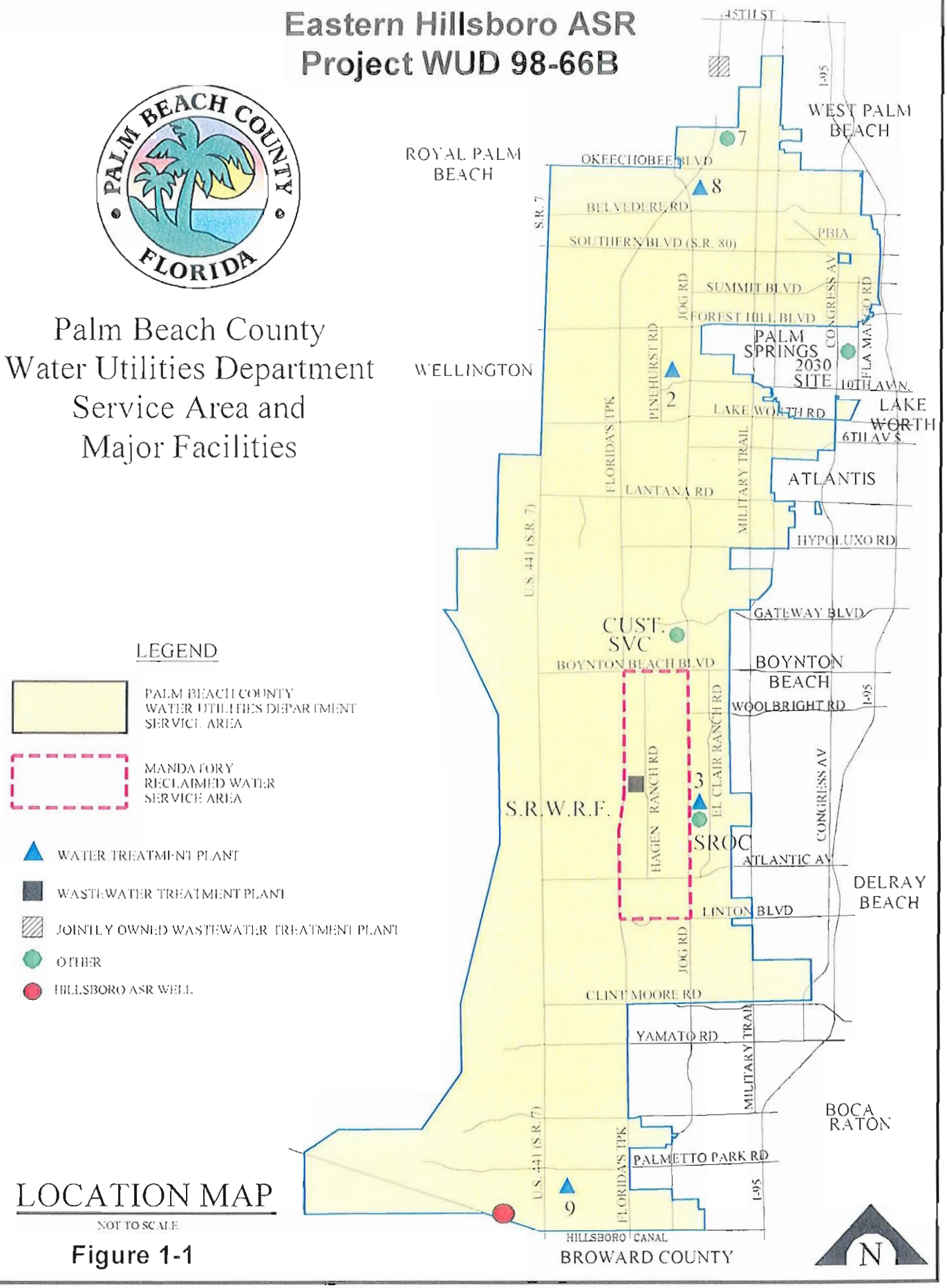
PROJECT DESCRIPTION

The PBCWUD WTP No. 9 is located at 22530 S.W. 65th Avenue, approximately 1 mile north of the southern Palm Beach County line, in Boca Raton. A site plan is presented on **Figure 1-2**. The WTP was purchased from Sandlefoot Cove Utilities Corporation in September 1972 and operated at its original lime softening capacity of 14 mgd. In February 1999, construction of a 22.88 mgd nanofiltration membrane softening WTP began. Completion of the new WTP is scheduled for December 2003. The lime softening portion of the WTP is currently being demolished. When construction and demolition is complete, the WTP will include a 4.12 mgd bypass and blend system resulting in 27 mgd total WTP output. Raw water is supplied to the WTP from 24 production wells having a total withdrawal capacity of 39.6 mgd from the surficial aquifer.

The ASR well system was constructed under a Cooperative Grant between PBCWUD and the SFWMD along the Hillsboro Canal, within the SFWMD canal right of way. Its purpose is to store excess surficial groundwater within the Floridan aquifer during periods of high rainfall and low demand. This stored water can then be recovered for

Eastern Hillsboro ASR
Project WUD 98-66B

Palm Beach County
Water Utilities Department
Service Area and
Major Facilities



LEGEND

- PALM BEACH COUNTY WATER UTILITIES DEPARTMENT SERVICE AREA
- MANDATORY RECLAIMED WATER SERVICE AREA
- WATER TREATMENT PLANT
- WASTEWATER TREATMENT PLANT
- JOINTLY OWNED WASTEWATER TREATMENT PLANT
- OTHER
- HILLSBORO ASR WELL

LOCATION MAP

NOT TO SCALE

Figure 1-1

use during periods of high demand and low rainfall to supplement the surficial aquifer withdrawals for subsequent treatment or maintain the water level in the Hillsboro Canal.

On March 22, 2001 the FDEP issued a construction permit for the construction of a Class V Group VII ASR well. These permits allowed for the construction of one 24-inch (outer) diameter ASR well and ancillary appurtenances, equipment and systems for the injection and recovery of raw water at a rate of 3,500 gallons per minute (gpm), or 5.0 mgd.

Sealed bids from contractors were received by PBCWUD. The Haskell Company of Jacksonville, Florida was the low bidder and was awarded the contract to construct the ASR well system with a bid of $2,773,680.00. Construction supervision and observation was performed by Palm Beach County Water Utilities Department and Montgomery Watson Harza. The Notice to Proceed was issued on March 26, 2001 and site mobilization began in late March 2001. Well drilling commenced on May 6, 2001 and construction was completed in June 2003.

Subsequent sections of this report presents the ASR well system construction and testing program. Information on the site hydrogeology and the results of the testing are also presented. A plan for cycle testing the new ASR well system is then presented. This plan will be implemented upon regulatory acceptance.

Section 2
ion and Testing Program

The ASR well system construction and testing program was developed to determine the hydrogeologic conditions at the site, to document construction of the wells, and to optimize performance of the system. In addition, the testing program fulfills the criteria established in the construction permits. Specifically, the construction and testing program was performed to demonstrate:

1. That the aquifer zone will accept injection and withdrawal of water at the design rate of 5.0 mgd.
2. That sufficient confinement exists above the injection zone to prevent upward movement (loss) of the stored water.
3. That the constructed well has mechanical integrity.

Site Development

The measurement points for all drilling and geophysical logging operations were surveyed to the National Geodetic Vertical Datum (NGVD) of 1929 prior to the onset of drilling activities for the ASR and Floridan Aquifer Monitor Well (FAMW) wells in accordance with Specific Condition 3.a. of the FDEP Construction Permit.

Drilling Program

The generalized drilling and testing sequence for the ASR well consisted of drilling a pilot borehole to the base of the surficial aquifer system. The pilot hole then was geophysically logged with a variety of tools, and subsequently reamed and logged for borehole size. Casings were installed in the pre-reamed borehole and cemented in place using sulfate-resistant Type II Portland neat cement (with bentonite gel added when necessary). Whenever cement was emplaced in stages, Cement Top Logs (temperature logs) were performed to verify the location of the top of the cement. This sequence was repeated for each consecutive casing of smaller diameter set concentrically within the previous casing. After setting and cementing the final casing, the open-hole was drilled/cleaned out and geophysically logged. Development and acid stimulation was then performed. Once completed, the well was pump tested and a final water sample was collected.

Lithologic Determination

Lithologic samples were collected at intervals of every 10 feet during the drilling operation. The lithologic samples were analyzed and described (using a microscope) for composition, color, texture, porosity, cementation, and secondary diagenetic fabrics. A set of samples was delivered to the SFWMD for subsequent delivery to the Florida State Geological Survey in Tallahassee.

Cores were also cut prior to pilot hole drilling in both the ASR well and the FAMW. Eighteen cores were cut in the FAMW well and three cores were cut in the ASR well. All cores were taken from the potential injection/monitoring zone to determine the geologic characteristics of the formation and to correlate and verify consistencies between the two wells. The data collected was used to determine the adequacy and total length of the injection/monitoring interval.

Geophysical Logs

At various stages during the construction, geophysical logs were performed. The uses and interpretations of each of the logs are described below:

Caliper Log: measures the diameter of the borehole. This log is useful in identifying washout zones, fractures and competency (mechanical strength) of the strata. It is also used for calculations of cement volumes and flow logging interpretations.

Gamma Ray Log: measures the natural gamma radiation produced by the rock, which is normally a function of the clay or phosphate content (in south Florida). It is used for depth correlation within and between wells, formation identification, and cement top verification.

Dual Induction/Spontaneous Potential (SP): measures the electrical properties of the formation. The resistivity of the formation is affected by lithology, porosity, and water quality. These logs are comprised of "shallow", "medium", and "deep"-penetrating sondes that investigate at various distances from the borehole into the formation.

Temperature Log: measures the temperature of the fluid filling the borehole or casing. It is also used to determine the elevation of emplaced cement during casing installation and provides information about the movement of fluids within drilled boreholes.

Flowmeter Log: measures the contribution of water from various sections of the drilled borehole. It is also useful in determining flow zones and confining units within the penetrated strata.

Fluid Resistivity Log: measures the electrical properties of the fluid within the borehole.

Borehole Televiewer Log: gives a 360-degree image of the internal surface of the borehole wall. It measures the amplitude and travel time of an ultra sonic acoustic signal reflected from the inner surface of the borehole wall. It is useful in identifying fractures and relative rock densities.

Borehole Compensated Sonic Log: measures the travel time and amplitude of an acoustic signal which travels through the formation. The measurements are affected by formation density, porosity, and fractures. Useful in determining formation porosity and fractures.

Cement Bond Log: measures the quality of cement behind the casing.

Geophysical logs were run on both the ASR well and the FAMW in the pilot borehole, the reamed borehole, and the open hole below the final casings. Geophysical logs were also performed in the cased hole of the ASR well and the FAMW following installation and cementing of the final casings.

Upon completion of each of the pilot borehole stages, the following geophysical logs were performed:

- Caliper
- Gamma ray
- Spontaneous Potential (SP)
- Dual Induction
- Borehole Compensated Sonic (below the surface casing)

Upon completion of each of the reamed borehole stages, the following geophysical log was conducted:

- Caliper

Following completion of the open hole interval below the final casing the following geophysical logs were conducted:

- Caliper
- Gamma ray
- Spontaneous Potential (SP)
- Dual Induction
- Borehole Televiewer
- Borehole Television (Video)
- Borehole Compensated Sonic
- Temperature (under pumping and non-pumping conditions)

- Flowmeter (under pumping and non-pumping conditions)
- Fluid Resistivity (under pumping and non-pumping conditions)

Following completion of each stage of cement in multi-stage cementing operations the following geophysical log was conducted:

- Cement Top (temperature)

Following completion of the final casing cementing in the ASR well the following geophysical log was conducted:

- Cement Bond

Drilling Methods

The FAMW was drilled first. The data collected during the drilling of the FAMW was subsequently used as a basis for construction of the ASR well and selection of the storage and monitoring intervals. The FAMW was drilled, in its entirety, using the mud rotary method. The ASR well was initially drilled using the mud rotary method to a depth penetrating the upper edge of the Floridan Aquifer. The drilling rig then was configured for reverse air drilling and the remainder of the well was drilled using this method.

Casings

Carbon steel and fiberglass casings were used in the construction of the ASR well and FAMW.

The two casings in the ASR well were centralized in the borehole using strap-type centralizers fastened at intervals along the pipe, at 0, 90, 180, and 270 degrees around the casing at each position. The 34-inch outer diameter surface casing and the 24-inch outer diameter final casing are constructed from carbon steel pipe, conforming to the standards of API 5L, Grade B. The 34-inch surface casing and the 24-inch final casing have a wall thickness of 0.375-inch and 0.5-inch respectively. Casing joints were welded.

The three casings in the FAMW were centralized in the borehole using strap-type centralizers fastened at intervals along the pipe, at 0, 90, 180, and 270 degrees around the casing at each position. The 24-inch outer diameter surface casing was constructed from 0.375-inch wall thickness carbon steel pipe, conforming to the standards of ASTM A53, Grade B. Casing joints were welded. The 14-inch outer diameter intermediate casing was constructed from 0.375-inch wall thickness carbon steel pipe, conforming to the standards of ASTM A53, Grade B. Casing joints were welded. The 6 5/8-inch

outer diameter monitoring casing was constructed of fiberglass casing having an average wall thickness of 0.5-inches. The casing joints were threaded together with o-ring seals.

The factory-beveled ends of the casings were arc welded by certified pipeline welders to standard pipeline certifications. Each weld consisted of 3 layers, with a primary "hot pass" layer and subsequent filler passes. Each welded pass was wire-brushed cleaned and inspected, prior to the next pass. The finished weld was allowed to cool for a period of approximately one hour before being immersed in the wellbore fluids. This procedure minimized the crystallization of the weld material, maximizing the strength and durability of the weld.

The factory threads of the fiberglass casing were cleaned with a wire brush, coated with a teflon enriched thread sealant, and screwed together according to the manufacturer's recommendations. The fiberglass well casing threaded joints contain an o-ring seal.

Cementing

The annulus between each successive casing was cemented from casing bottom to top using API Type II, Class B Portland neat cement.

The first cement stage of each casing, with the exception of the FAMW final casing, was pressure-grouted through a tremie pipe located inside the fluid-filled casing, near the bottom of the open hole. Subsequent stages were emplaced using one tremie pipe placed inside the annulus between the casing and the borehole. After each stage of cementing, the top of the cement was verified by a physical tag with the tremie pipe and by performance of a temperature log inside the casing. The logs were conducted approximately 8 to 24 hours after completion of each stage.

Construction Sequence - Floridan Aquifer Monitor Well (FAMW)

On April 25, 2001, 40 feet of 34-inch outside diameter (OD) carbon steel conductor casing was vibrated to 35 feet below pad level (bpl) to stabilize the surface sediments; 5 feet of casing remained above pad level. A 12 ¼-inch to 32-inch staged bit (center punch) was used to drill with mud rotary to just below the casing bottom at 36 feet bpl. This was done so that the pilot borehole and subsequent reamed borehole would be plumb and centered within the surface casing. The center punch was then removed from the borehole and a 12 ¼-inch pilot borehole was drilled to 240 feet bpl. Lithologic samples were collected at 10 foot intervals during pilot borehole drilling. Detailed lithologic descriptions are included in **Appendix B**.

After the pilot borehole was completed, the drilling fluid was circulated to remove cuttings and to prepare the borehole for geophysical logging. Geophysical logging (SP, caliper, resistivity, and gamma ray logs) was performed by MV Geophysical Logging, Inc., and are included in **Appendix C.**

Following geophysical logging, the borehole was then reamed with a 32-inch bit to 232 feet bpl. After circulating to remove all of the drill cuttings, the borehole was conditioned and the drilling tools were removed. Caliper logging was subsequently conducted on the borehole, followed by the installation of 220 feet of 24-inch OD steel surface casing. The casing mill certificates are provided in **Appendix D.** The beveled casing joint ends were welded together. Centralizers were welded to the casing beginning at 20 feet from the bottom of the casing and at 40 foot intervals thereafter to ensure more uniform grouting. The annular space between the borehole and the casing was pressure grouted on June 1, 2001 with 810 cubic feet of API Class B Portland neat cement in one stage. The cementing records are presented in **Appendix E.** The casing installation and grouting was supervised by PBCWUD. A summary of the FAMW construction details is shown in **Table 2-1.**

Upon curing of the cement, a 12 ¼-inch to 22 ½-inch center punch was used to drill to a depth of 245 feet bpl. The center punch was subsequently removed from the wellbore and a pilot borehole was advanced to 1,026 feet bpl where a relatively competent limestone unit was encountered. During pilot borehole drilling, deviation surveys were performed at approximately 60 foot intervals to verify alignment of the borehole. The deviation survey results are provided in **Appendix F.** Additionally, four conventional cores were cut during pilot borehole drilling at intervals between 940 feet and 1,026 feet bpl. Copies of the core descriptions and core analysis are provided in **Appendix G.** The borehole drilling fluid was circulated to remove cuttings and to condition the borehole for geophysical logging. Geophysical logging (SP, caliper, resistivity, and gamma ray logs) was then performed.

TABLE 2-1
FLORIDAN AQUIFER MONITORING WELL (FAMW)
SUMMARY OF CONSTRUCTION DETAILS

Casing Details				Cementing Details			
ID	Type	Diameter (inches)	Depth (feet)	Stage No.	Type	Volume (cubic feet)	Tag Depth (feet bpl)
Conductor	Steel	34	35	NA	Vibrated	NA	NA
Surface	Steel	24	220	1	Neat	810	0
Intermediate	Steel	14	1,005	1	Neat	810	464
				2	Neat	770	0
Final	Fiberglass	6 5/8	1,007	1	2% Bentonite	27	997
				2	Neat	24	975
				3	Neat	216	632
				4	Neat	378	66
				5	Neat	30	0

Following completion of geophysical logging, the pilot borehole was reamed to 1,016 feet bpl with a 22 ½-inch reamer assembly. After circulating to condition the borehole and remove all of the drill cuttings, the drilling tools were removed from the borehole. Caliper and borehole compensated sonic logging was subsequently conducted on the borehole, followed by the installation of 1,005 feet of 14-inch OD steel intermediate casing having a 0.375-inch wall thickness as specified. The beveled casing joint ends were welded together. Centralizers were welded to the casing to ensure more uniform grouting. The annular space between the borehole and the casing was grouted to land surface with 1,580 cubic feet of API Class B Portland neat cement in two stages. Following the first stage of cementing a physical tag using tremmie pipe in the annular space and a cement top log (temperature) was performed to determine the depth of the top of cement.

Following cementing, a 12 ¼-inch bit was used to advance the pilot borehole to 1,650 feet bpl. Deviation surveys were performed at 60 foot intervals during drilling as well as the collection of 14 additional conventional cores. A summary of the core analysis is provided in **Table 2-2**. Following completion of the pilot borehole, the drilling fluid was circulated and the borehole was conditioned for geophysical logging. Geophysical logging (SP, caliper, resistivity, borehole compensated sonic, and gamma ray logs) was then performed.

At the completion of geophysical logging, packer testing of the pilot borehole commenced. Three straddle packer tests and two single packer tests were performed to evaluate the hydrology of the formation and determine the injection/monitoring

TABLE 2-2
FLORIDAN AQUIFER MONITORING WELL (FAMW)
ANALYSIS SUMMARY OF SELECTED CORE SAMPLES

Sample Number	Depth (feet)	Pemeability (md)	Porosity (%)	Grain Density (gm/cc)	Moisture Content (%)	Bulk Density (gm/cc)	Vp (ft/s)	Vs (ft/s)	Bulk Modulus ($x10^6$ psi)	Young's Modulus ($x10^6$ psi)	Shear Modulus ($x10^6$ psi)	Poisson's Ratio	Unconfined Strength (psi)
1	1384.0 - 85.0	1594	41.9	2.72	4.1	1.58	6320	3911	0.42	0.78	0.33	0.19	845
2	1355.0 - 55.8	337	43.8	2.71	3.7	1.52	6673	4023	0.47	0.87	0.33	0.21	795
3	1304.3 - 05.0	747	37.4	2.73	3.7	1.71	6680	4272	0.47	0.97	0.42	0.15	1028
4	1165.5 - 66.2	12.6	42.1	2.74	7.7	1.59	7932	4567	0.75	1.12	0.45	0.25	409
5	1143.0 - 43.8		41.8	2.71	15.9	1.58	4977	2508	0.35	0.36	0.13	0.33	530
6	1117.0 - 17.5		41.8	2.71	16.1	1.58	5077	2463	0.38	0.35	0.13	0.35	530
7	1093.0 - 94.0	1545	42.7	2.71	14.4	1.55	4642	2269	0.31	0.29	0.11	0.34	500
8	1044.0 - 45.0	0.08	12.6	2.71	16.9	2.37	16937	9240	5.53	7.03	2.73	0.29	3873
9	1008.0 - 08.5	526	13.7	2.73	23.4	2.36	16454	9002	5.18	6.63	2.58	0.29	2745
10	981.0 - 82.0	1212	31.7	2.76	16.8	1.89	5038	2673	0.40	0.47	0.18	0.30	580
11	1306.0 - 07.0	168	40.6	2.71	4.8	1.61	6789	4122	0.51	0.89	0.37	0.21	800

interval. The packers were placed on depth, inflated with nitrogen to isolate the interval, the test pump installed, and the interval developed. Static water levels were obtained prior to the start of pumping. A 4-hour pumping test was then performed followed by a 3-hour recovery period. Prior to the end of the pumping test, water samples were collected and analyzed for the specified parameters. The packer test and water quality data is provided in **Appendix H**. **Table 2-3** provides a summary of the packer test data.

TABLE 2-3
FLORIDAN AQUIFER MONITORING WELL (FAMW)
SUMMARY OF PACKER TESTS

Test Number	Interval	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Chlorides (mg/L)	TDS (mg/L)
1	1,596.5 - 1,626.6	99.5	2.73	2,400	4,600
2	1,310 - 1,340	92.0	1.71	2,100	4,100
3	1,310 - 1,340	89.4	1.92	2,300	4,200
4	1,005 - 1,198	71.0	6.76	2,200	4,300
5	1,005 - 1,041	92.6	18.9	2,200	4,200

Note: Packer test number 3 was performed on the same interval as packer test number 2 following a 250 gallon acid stimulation.

Following packer testing the borehole was developed clean and geophysical logging (video, borehole televiewer, static and dynamic fluid resistivity, temperature, and flowmeter) was performed. Based on information provided from lithologic and geophysical logs, cores, and packer testing results, the casing setting depth of 1,007 feet bpl was selected for the final casing. On November 12, 2001 approval for the casing seat request, injection zone/monitoring interval, and plug back depth was received from the Florida Department of Environmental Protection (FDEP), Underground Injection Control Division.

Once plug back and final casing seat approval was received from the FDEP, the monitor well was plugged back to 1,232 feet bpl with 399 cubic feet of API Class B Portland neat cement in four stages.

At the completion of the plug back operations, the monitoring interval was developed clean and the step-rate and constant-rate pumping tests were performed. The pumping tests were completed prior to the setting of the 6 5/8-inch final casing (in the 14-inch intermediate casing) to accommodate a larger diameter pump (6-inch) and higher flow volumes. Between the step-rate pumping test and the constant-rate pumping test,

temperature, fluid resistivity, and flowmeter logging was conducted at free flowing and pumping conditions.

The step-rate pumping test was conducted on December 14, 2001 to assess well yield (specific capacity). The well was pumped at four different flow rates (steps) while water levels were monitored within the well. Pumping rates were maintained until the water levels in the FAMW well stabilized.

In order to conduct the step-rate test, a test pump was installed in the FAMW well. An 8-inch diameter discharge line leading to a 4-inch by 8-inch orifice manometer was used to calculate flow rates. Incremental pumping rates of approximately 308 gpm, 445 gpm, 703 gpm and 956 gpm were utilized for the step-rate pumping test. Prior to the step-rate pumping test, the static water level of the well was 30.45 feet above pad level. Water levels were measured in the well during each pumping rate until a near equilibrium drawdown within the well occurred. The well was pumped for a minimum of 1.0 hour at each respective pumping rate. The drawdown data was used in conjunction with the pumping rates to obtain specific capacity values for the well. The results of the step-rate pumping test are shown in **Table 2-4** and presented in **Appendix I.**

TABLE 2-4
FLORIDAN AQUIFER MONITOR WELL
SUMMARY OF STEP-RATE PUMPING TEST

Flow Rate (gpm)	Water Level (feet relative to pad level)	Drawdown (feet)	Specific Capacity (gpm/ft)
308	12.9	18.0	17.1
445	-6.3	37.5	11.9
703	-30.6	62.0	11.3
956	-48.4	80.0	11.9

On December 18, 2001 a 12-hour constant-rate pumping test was performed to assess well yield (specific capacity) and estimate aquifer transmissivity (T). Prior to the onset of pumping, the well was allowed to recover to static equilibrium. The static water level of the well was 31.45 feet above pad level before pumping began. An average pumping rate of 958 gpm was used for the constant-rate pumping test. At the completion of the pumping phase of the constant-rate pumping test, water samples were collected and analyzed for primary and secondary water quality parameters as well as minimum criteria. The results of this sampling episode are presented in **Appendix** J. The pump was then shut off and the water level was allowed to recover to static equilibrium state. Water levels were measured in the well during background,

pumping, and recovery stages of the pumping test. The drawdown data was used in conjunction with the pumping data to obtain a specific capacity value. Additionally, the recovery data was used in estimating the transmissivity of the aquifer. The results of the constant-rate pumping test are shown in **Table 2-5** and presented in **Appendix K.**

TABLE 2-5
FLORIDAN AQUIFER MONITOR WELL
SUMMARY OF CONSTANT-RATE PUMPING TEST

Flow Rate (gpm)	Water Level (feet relative to pad level)	Drawdown (feet)	Specific Capacity (gpm/ft)	Transmissivity (gpd/ft)
958	-49.6	81.0	11.85	74,541

At the completion of the pumping tests, the test pump was removed from the well, the well was killed, and the 6 5/8-inch fiberglass final casing was installed. A cement basket was installed on the bottom of the fiberglass casing and placed immediately below the base of the 14-inch intermediate casing. Cementing tremmie pipe was installed in the annular space to 1,002 feet bpl, just above the cement basket, and the cementing operations commenced. The cement basket failed during the initial stage of the cementing operation, allowing the cement to fall down the wellbore and bridge at 1,075 feet bpl. Sand was then placed in the well from the cement bridge to the bottom of the fiberglass casing at 1,007 feet bpl and the cementing operations resumed. The annular space between the 14-inch intermediate casing and the 6 5/8-inch final casing was cemented to land surface with 675 cubic feet of cement in 5 stages.

When the cement had cured, a packer was run to the base of the 6 5/8-inch fiberglass casing, inflated, and a pressure test was successfully performed at 150 psi. The pressure test data is presented in **Appendix L.** At the completion of the pressure test the packer was released and removed from the well. Clean-out operations utilizing the reverse air circulating method commenced following the packer removal. A 5-inch bit was used initially to clean the sand from the base of the 6 5/8-inch casing. Once clean, a 5-inch by 12-inch under reamer was used to remove the sand and cement bridge and re-drill the borehole to a depth of 1,225 feet bpl. Following clean-out, the well was developed and prepared for geophysical logging.

On April 19, 2002 a caliper log, static fluid resistivity, temperature, and flowmeter log, and final video log was performed. A copy of the video tape and survey description is included in **Appendix M.** The well was then chlorinated and shut in while the site work and vault structures were set in place.

Figure 2-1 shows the FAMW well schematic.

Construction Sequence –Floridan Aquifer Storage and Recovery (ASR) Well

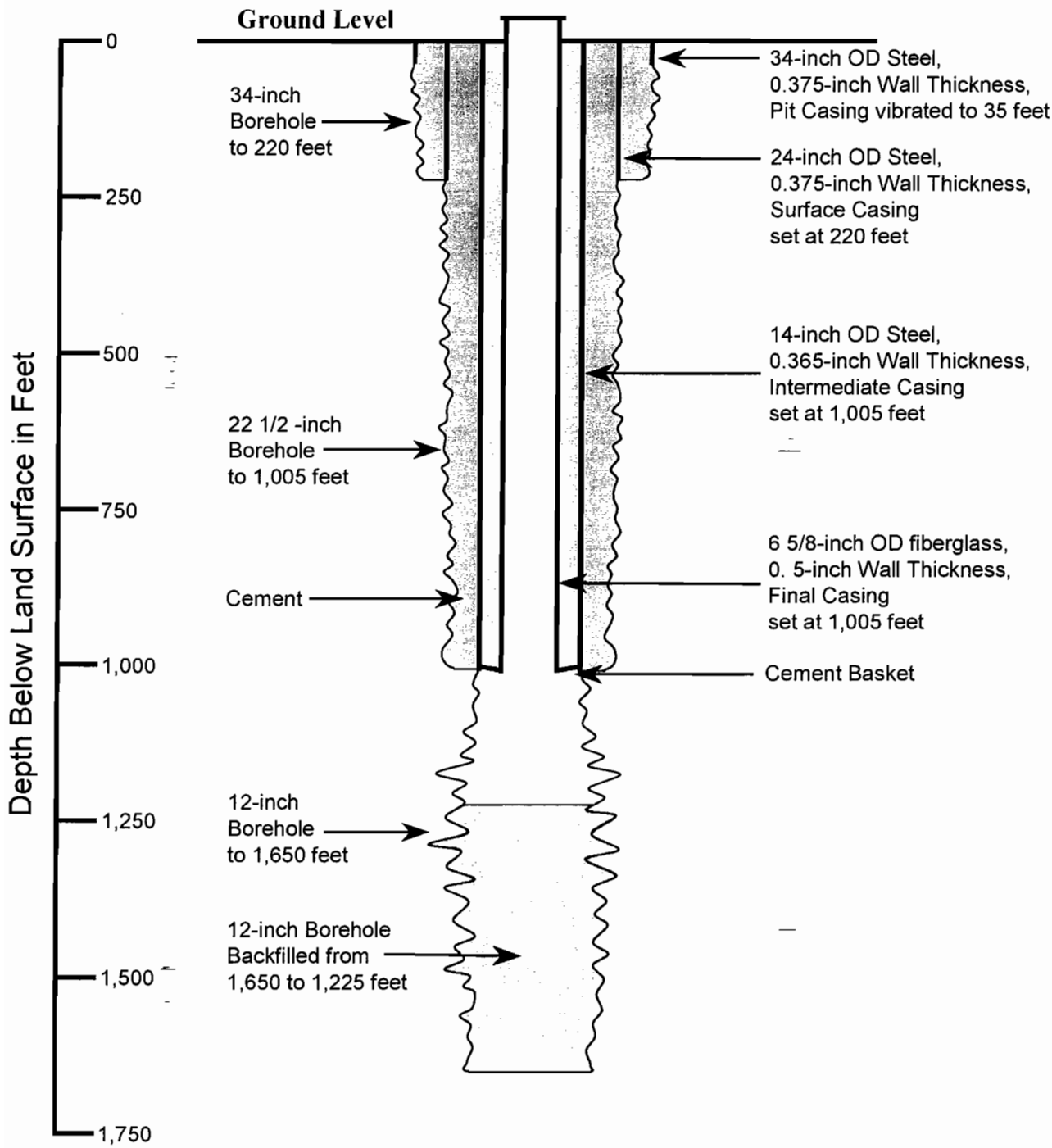
Prior to drilling, 40 feet of 48-inch OD carbon steel conductor casing was vibrated to 35 feet below land surface. Once in place, pilot hole drilling, utilizing the mud rotary method, was initiated on October 2, 2001. A 44-inch by 12 1/4-inch staged bit was used to clean the conductor casing to 40 feet bpl and center the initial pilot borehole in the casing. The center punch was removed from the borehole and a 12 ¼-inch bit was used to complete the pilot hole to 250 feet bpl. Lithologic samples were collected at 10 foot intervals during pilot borehole drilling operations.

Upon completion of the pilot borehole, the well was circulated clean of drill cuttings, conditioned, and the drill pipe and bit were removed from the borehole. Geophysical logging (caliper, SP, resistivity, gamma ray) was performed.

Following geophysical logging, the borehole was reamed with a 44-inch bit to 250 feet bpl. After circulating to remove all of the drill cuttings, the borehole was conditioned and the drilling tools were removed. Caliper logging was subsequently conducted on the borehole, followed by the installation of 240 feet of 34-inch OD steel surface casing. The beveled casing joint ends were welded together. Centralizers were welded to the casing beginning at 20 feet from the bottom of the casing and at 40 foot intervals thereafter to ensure more uniform grouting. The annular space between the borehole and the casing was pressure grouted on October 19, 2001 with 1,323 cubic feet of API Class B Portland neat cement in one stage. A summary of the ASR construction details is shown in **Table 2-6.**

TABLE 2-6
FLORIDAN AQUIFE STORAGE AND RECOVERY WELL
SUMMARY OF CONSTRUCTION DETAILS

Casing Details				Cementing Details			
ID	Type	Diameter (inches)	Depth (feet)	Stage No.	Type	Volume (cubic feet)	Tag Depth (feet bpl)
Conductor	Steel	48	35	NA	Vibrated	NA	NA
Surface	Steel	34	235	1	Neat	1323	0
Final	Steel	24	1,010	1	Neat	905	901
				2	Neat	729	424
				3	Neat	621	128
				4	6% Bentonite	176	36
				5	Neat	41	19.5
				6	Neat	41	3



EASTERN HILLSBORO CANAL - WTP #9
FLORIDAN AQUIFER MONITOR WELL CONSTRUCTION DIAGRAM
Figure 2-1

After completion of the 34-inch casing installation, construction resumed using a 32-inch by 12-inch staged bit to ensure proper alignment of the pilot borehole. Drilling continued through the grout plug at 223 feet bpl to a depth of 250 feet bpl where the staged bit was removed from the borehole and replaced with a 12-inch pilot hole drill bit. Drilling resumed and was continued to a depth of 971 feet bpl where conventional coring began. Three cores were collected between 971 feet bpl and 1,046 feet bpl to verify subsurface similarities between the FAMW and the ASR wells and conduct a more detailed analysis of the lithology of the upper confining zone and casing seat location. Mud rotary drilling then resumed to a depth of 1,050 feet bpl. After the borehole was circulated clear of drill cuttings and the drilling tools removed from the borehole, SP, caliper, resistivity, and gamma ray geophysical logs were conducted in the mudded borehole. Upon review of all available data, the casing setting depth of 1,010 feet bpl was selected.

The borehole was then reamed with a 32-inch drill bit to a depth of 1,028 feet bpl. The drilling fluid was circulated until clear of drill cuttings, the drilling tools removed from the borehole, and a caliper log was run on the mudded borehole in preparation for casing installation.

On December 7, 2001 installation of the 24-inch OD steel final casing was begun. The factory beveled ends were welded together and centralizers were installed. Following welding, while attempting to land the casing, the casing became differentially stuck 17 feet short of the casing setting depth of 1,010 feet bpl. The circulating system was connected to the cementing header and good circulation was achieved. Numerous attempts to free the casing were made with no success. On December 18, 2001 a vibratory hammer was attached to the top of the casing and the casing was vibrated free. While attempting to set the casing at 1,010 feet bpl, the vibratory hammer released the casing and the casing fell to the bottom of the borehole. The borehole fluids were removed from the borehole to expose the top of the casing, approximately 10 feet bpl. An additional section of 24-inch casing was welded to the top of the casing string and the casing was pulled off the bottom of the well. The additional section of casing was subsequently removed from the casing string and the casing became differentially stuck again. A 22 ½-inch bit was then run through the bottom of the casing to inspect the casing for damage and clean the casing bottom. No casing damage was observed. On January 16, 2002 the vibratory hammer was again used to free the casing. Once free, the circulating system was connected to the cementing header and the casing was reciprocated up and down 50 feet while circulating for 2 days. The casing remained free, set at the casing setting depth of 1,010 feet bpl, and cementing operations began. The annular space between the borehole and the casing was grouted with 2,472 cubic feet of API Class B Portland neat cement in four stage. A physical tag of the cement top and cement top logs (temperature logs) were run

following 8 to 24 hours of each cementing stage to identify the top of each stage of cementing.

Hydrostatic Pressure Test

In accordance with FDEP Specific Condition 6. a. 12) c) (3) of the construction permit, pressure testing at a minimum of 1.5 times the operational pressure was required for the final casing.

On February 4, 2002, following installation and cementing of the 24-inch OD final casing, the well was completely filled with water and the pressure test was performed against the cement plug in the base of the casing. The top of the casing remained sealed with the cementing header installed prior to the cementing operations. The well passed the required testing of 149 psi held for 1 hour with an allowable variance of +/- 5%. Dan Phelps, P.G., of the FDEP/UIC Section witnessed the pressure test. Subsequent to the test, to ensure that proper testing protocol was employed, FDEP personnel bled water from the well and monitored the resultant pressure drop. The pressure test certification, gauge calibration, and water volume calculations are contained in Appendix L.

Open Hole Drilling

Following the completion of the pressure test, the cementing header was removed from the well. A 12 1/4-inch by 22 ½-inch staged bit (center punch) was used to center the pilot borehole and clean the cement plug from the bottom of the casing to a depth of 1,028 feet bpl using the mud rotary method. Once the cement plug was removed from the bottom of the casing, the drilling tools were removed from the well and the 22 ½-inch bit was removed from the drill string. The drilling equipment was then configured for reverse-air drilling. A 12 1/4-inch diameter bit was placed at the bottom of the pilot borehole and the well and circulating system were cleaned of all drilling mud. On February 20, 2002 reverse-air drilling of the open hole section of the ASR well began. Drilling continued until the pilot borehole was completed to a total depth of 1,225 feet bpl. During drilling, at approximately every 30 feet, the well was allowed to flow under artesian pressure, without compressed air, so that a flow rate could be measured from the orifice weir and manometer tube. Additionally, the well was closed in (non-flowing) every 30 feet during drilling so that a static head level could be measured from a manometer tube attached directly to the wellhead. Water quality samples were also collected and analyzed for specific conductance, pH, and total dissolved solids. Water quality and well yield data are presented in **Table 2-7**.

TABLE 2-7
FLORIDAN AQUIFER STORAGE AND RECOVERY WELL
DRILLING WATER QUALITY DATA (FROM 1,010 TO 1,225 FEET BPL)

Sample Depth (feet bpl)	Specific Conductance (umhos/cm)	Temp. (degrees Centigrade)	TDS (mg/L)	pH	Flow Rate (gpm)
1068	8052	21.6	6658	7.52	380
1099	8155	21.2	6753	7.49	420
1130	8197	21.3	6795	7.47	410
1162	8260	21.6	6850	7.49	393
1194	5871	21.7	4701	7.54	463

Notes:
umhos/cm = micromhos per centimeter, determined by field conductivity meter
TDS = total dissolved solids, determined by field TDS meter
pH = determine by field pH meter
gpm = gallons per minute, calculated flow rate
feet bpl = feet below pad level

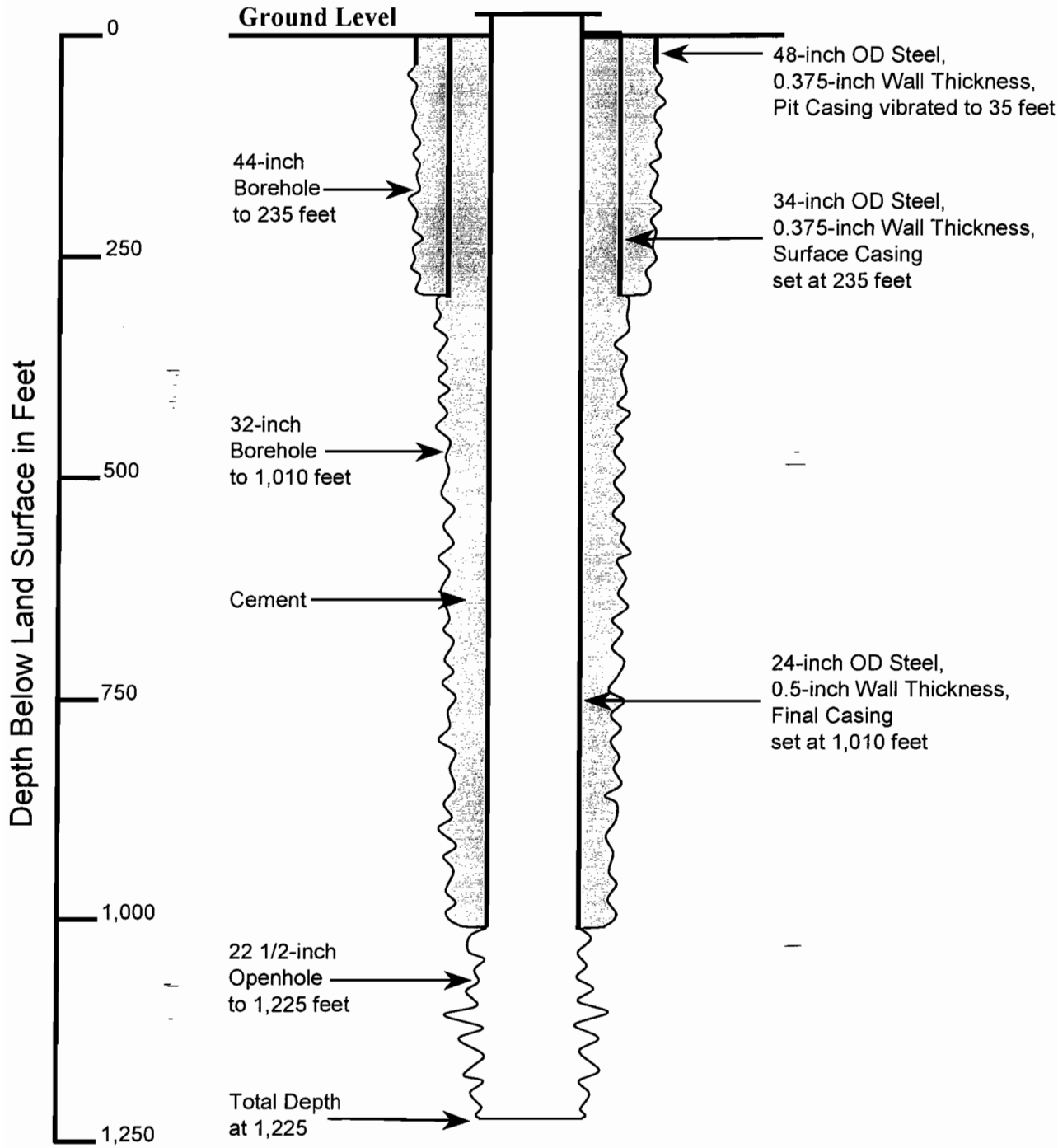
Once the open hole was completed, the well was air developed until the borehole was free of drill cuttings. The drilling tools were then removed from the borehole and on February 24, 2002 geophysical logging was conducted on the open hole during static and free flowing conditions. Dual induction, SP, caliper, flow, natural gamma ray, fluid resistivity, temperature, borehole televiewer and video logs were performed. Geophysical logs are contained in Appendix C and a copy of the video survey tape and the survey description is contained in Appendix M.

Following geophysical logging, a 22 ½-inch reamer assembly was used to ream the open hole section of the borehole from the base of the casing at 1,010 feet bpl to the total depth of the well at 1,225 feet bpl. The well was then air developed clean of all drill cuttings, the drilling tools removed from the well, and the well shut in.

The ASR well schematic is shown in **Figure 2-2**.

Step-Rate Pumping Test

On April 24, 2002, a step-rate pumping test was performed on the ASR well to assess well yield (specific capacity - pre-acid treatment). The well was pumped at various rates (steps) while water levels were monitored within the well. Pumping rates were maintained until the water levels in the ASR well stabilized.



EASTERN HILLSBORO CANAL - WTP #9
AQUIFER STORAGE & RECOVERY WELL CONSTRUCTION DIAGRAM
Figure 2-2

In order to conduct the step-rate pumping test, a test pump was installed in the ASR well. A 12-inch diameter discharge line leading to a 10-inch by 12-inch orifice manometer was used to calculate flow rates. Incremental pumping rates of approximately 1,400 gpm, 1,900 gpm, 2,900 gpm and 3,130 gpm were utilized for the step-rate pumping test. The static water level of the well was approximately 28 feet above land surface before testing began. Water levels were measured in the well during each pumping rate until a near equilibrium drawdown within the well occurred. The well was pumped for approximately one hour at each respective pumping rate. The drawdown data was used in conjunction with the pumping rates to obtain specific capacity values for the well. The results of the step-rate pumping test are shown in **Table 2-8.**

TABLE 2-8
FLORIDAN AQUIFER STORAGE AND RECOVERY WELL
SUMMARY OF STEP-RATE PUMPING TEST

Flow Rate (gpm)	Water Level (feet relative to ground level)	Drawdown (feet)	Specific Capacity (gpm/ft)
1,400	-12	40	35.0
1,940	-37	65	29.8
2,900	-91	119	24.4
3,130	-102	130	24.1

ASR Well Acidization

The ASR well was acidized in an effort to increase its specific capacity and to develop more defined flow zones. Prior to acidization, the specific capacity was estimated to be approximately 24.1 gpm/ft at a pumping rate of approximately 13000 gpm from data collected during the ASR step-rate pumping test. Following acidization the specific capacity increased to approximately 62.9 gpm/ft at a pumping rate of 3,400 gpm.

Acid treatment was performed by IWP using 6,000 gallons of 36 percent hydrochloric acid. The acid was pumped using HydroChem's bulk hauler pump at a rate of approximately 45 gpm through a temporary sealed wellhead assembly and 1,019 feet of 2 3/8-inch diameter tremmie. The temporary wellhead had a primary access port for the tremmie, a gas bleed port, a water injection port, and a pressure gage. During acid pumping, potable water was simultaneously pumped into the well at a rate of 15 gpm. The pressure gauge and pumping rates were continually monitored and the pressure at the wellhead did not exceed 40 psi.

Initially, 3,000 gallons of acid were pumped at 14:50 hours on April 25, 2002. Once the acid was in place, the well was shut in for approximately one hour to allow the acid to work on the formation walls. Acid injection was then continued with the remaining 3,000 gallons of acid being pumped. Once the acid was in place, approximately 10,000 gallons of fresh water was pumped into the well to push the acid into the formation. The well was then shut in and remained sealed and undisturbed for 24 hours.

Following the acid treatment, and prior to pump testing, the ASR well was pump developed to remove all solids and fine materials disturbed or created during acidization. A vertical turbine pump was then installed in the well. Pumping rates of approximately 3,400 gpm were used during pump development. A 10-inch by 12-inch orifice manometer was utilized to measure pump flow rates

Video Survey and Geophysical Logging

On Saturday, April 27, 2002, static and dynamic flowmeter, fluid resistivity, and temperature logging was performed. The final video log was also performed to inspect the inside of the casing, to inspect the cement at the base of the casing, and to inspect the effectiveness of the acid treatment. There were no internal flaws observed in any of the well casings or joints during the video logging, further confirming the internal mechanical integrity of the well.

Geophysical logs are contained in Appendix C and a copy of the video survey tape and the survey description is contained in Appendix M.

Constant-Rate Pumping Test

On April 29, 2002 a 24-hour constant-rate pumping test was performed to assess the effectiveness of the acidization, determine the increase in specific capacity, and to determine the transmissivity of the formation. During the initial two hours of the test the well was pumped at various rates (steps) while water levels were monitored in the well. The two one-hour steps were performed at rates approximately equal to those used during step-rate test to determine the increase in specific capacity.

In order to conduct the constant-rate pumping test, a test pump was reinstalled in the ASR well. A 12-inch diameter discharge line leading to a 10-inch by 12-inch orifice manometer was used to calculate flow rates. Incremental pumping rates of approximately 1,800 gpm, 3,000 gpm and 3,400 gpm were utilized for the pumping test. The static water level of the well was approximately 28 feet above land surface before testing began. Water levels were measured in the well during each pumping rate for approximately one hour then the rate was increased to the next pumping rate.

The final rate was continued for the remainder of the 24-hour testing period. The drawdown data was used in conjunction with the pumping rates to obtain specific capacity values for the ASR well. Transmisivity values were determined for various methods using AQTESOLV, a computer program for pump test analysis. The results of the constant-rate pumping test are shown in **Table 2-9.**

TABLE 2-9
FLORIDAN AQUIFER STORAGE AND RECOVERY WELL
SUMMARY OF CONSTANT-RATE PUMPING TEST

Flow Rate (gpm)	Water Level (feet relative to pad level)	Drawdown (feet)	Specific Capacity (gpm/ft)	Transmissivity (gpd/ft)
1,800	5	23	78.3	NA
3,000	-16	44	68.2	NA
3,400	-26	54	63.0	142,000

The effectiveness of the acid stimulation can be seen by examination of the pre and post acid stimulation specific capacity data. Prior to performing the acid stimulation the specific capacity of the ASR well ranged from 29.8 gpm/ft at 1,940 gpm to 24.1 gpm/ft at 3,130 gpm. Following the acid stimulation the specific capacity ranged from 78.3 gpm/ft at 1,800 gpm to 63.0 gpm/ft at 3,400 gpm. The increase in specific capacity corresponds to approximately 265 percent.

Final Water Sample

Following completion of the constant-rate pumping test, water samples were collected from the ASR well by laboratory personnel from Envirodyne, Inc. These samples were analyzed for primary and secondary drinking water standard constituents, as specified in the FDEP construction permit. The laboratory results for this sampling event are contained in Appendix J.

Cement Bond Log

A cement bond log (CBL) was run in the final casing of the ASR well to evaluate the strength and continuity of the cement to the casing and cement to formation bond as required under Special Condition 3.1.6) of the construction permit. This log detects potential voids in the grout sheath around the casing by measuring the acoustic properties of the cemented casing. Below are the details of the CBL results. Copies of these logs are contained in **Appendix C** of this report.

Cementing of the final casing string was completed on January 29, 2002. The upper section of the casing (surface to 128 feet bpl) remained un-cemented for log calibration purposes until the CBL was completed. The casing was cemented with neat cement.

A CBL was run on the ASR well on May 14, 2002. A range of amplitudes corresponding to several degrees of bonding was calculated using the Schlumberger CBL interpretation chart, as follows:

- Good bond (80% or better) - neat cement (3000 pound compressive strength): amplitudes of 3.1 millivolts or less
- Moderate to good bond (60% to 80%) - neat cement (3000 pound compressive strength): amplitudes of 3.1 to 6 millivolts

This range of CBL response should indicate an acceptable cement seal. The free pipe readings at the top of the casing where cement had not been applied were 30 to 35 millivolts. This CBL response range indicates a lack of cement behind the casing. Between 10 and 35 millivolts is a range of questionable cement bond, indicating the presence of cement but of relatively poor quality. Poor cement seal can be the result of channeling of cement during pumping, the formation of a microannulus when the pressure is released from the casing or simply a poor connection between cement and casing. In some cases, poor cement bond may indicate that a hydraulic flow path exists between cement and pipe, whereas in others no such path may exist even though the cement quality is poor.

The cement bond log showed good to moderate bonding over the intervals from 1,005 feet bpl, the total depth logged, to 615 feet bpl, from 512 feet bpl to 480 feet bpl, and 210 feet bpl to 128 feet bpl. Within these intervals there exists some localized spots of poor quality cement, however, they are small and isolated and do not appear to be detrimental to the hydraulic seal. Moderate to poor bonding is seen in the intervals from 615 feet bpl to 512 feet bpl and 480 feet bpl to 210 feet bpl. The cement bond log is typical of difficult cementing conditions, but does not indicate any failure of cement seal.

Surface Completion

After pump testing was completed, the test pump and temporary discharge piping were removed from the well. Two vaults were constructed at the ASR well site; the ASR well vault for the wellhead and associated piping and the venturi vault for the instrumentation, valves, and associated piping connecting the ASR well to the raw water pipeline along the Hillsboro Canal and the discharge piping to the Hillsboro Canal outfall structure. A wellhead schematic is presented on Figure 2-2. As-built

diagrams of the surface piping, instrumentation and valves are contained in **Appendix N** along with a Certification of Completion signed and sealed by the Project Engineer and Hydrogeologist. The new piping consists of ductile iron pipe for the injection and recovery pipeline and stainless steel appurtenances such as tees, reducers, and venturi meters. A 300-horsepower (hp), 1,800 revolutions per minute (rpm), 12-inch diameter stainless steel recovery pump was installed to a depth of 140 feet bpl inside the ASR well, to withdraw water from the well. Injection into the ASR well will occur within the annular space between the recovery pump and the 24-inch diameter final well casing.

Three vault structures were placed at the FAMW wellsite; the FAMW well vault, a lift station, and a valve vault. The FAMW well vault contains the wellhead and associated PVC piping that discharges sample water to the lift station. The lift station was installed as a receiving point for all vault sump pump discharges and flushing waters for sampling of the ASR and FAMW. The lift station subsequently pumps the waste water through the valve vault to the sanitary sewer on Sacco Drive by means of a pipeline constructed of C-900 PVC.

Section 3
Site Hydrogeology

The information collected during the construction and testing phase of the project was used to build a detailed stratigraphic and hydrogeologic profile of the site. This section presents the construction testing results and analyses with respect to site hydrogeologic interpretation.

REGIONAL GEOLOGIC SETTING

South Florida is underlain by Cenozoic age rocks to a depth of approximately 5,000 feet below land surface (bls). These sediments are comprised primarily of sand, limestone, clay and dolomite (Meyer, 1989). Palm Beach County lies in a relatively stable structural area and is represented by generally flat-lying sediments that accumulated in a quiet marginal-marine setting, similar to the modern-day Bahamas.

The ASR and FAMW wells penetrated sediments from land surface to depths of 1,225 feet bpl and 1,650 feet bpl respectively. Within these sediments are the surficial aquifer and the Floridan aquifer systems. A thick clay confining unit separates these two aquifer systems.

LOCAL GEOLOGY

The following discussion on the local geology at the PBCWUD's WTP No. 9 Hillsboro Canal Wellfield has been generalized concerning the depths of formational breaks and descriptions of the site specific sediments encountered. The formational breaks observed in the ASR well, located approximately 758 feet west of the FAMW, were found to be in the range of 5 to 15 feet shallower than those of the FAMW. Lithologic materials were very similar in both wells.

Plio-Pleistocene Series

During the drilling and testing of the ASR well and the FAMW, Plio-Pleistocene aged limestone, sand, sandstone, clay and shells were observed from land surface to a depth of approximately 210 feet bpl. These sediments are representative of the Pamlico Sand, Anastasia Formation and the Fort Thompson Formation. They were deposited from one to five million years ago. These sediments were light-gray colored, loosely cemented and contained abundant fossil shells and broken shell material. Porosity within these sediments was relatively high.

Miocene Series

The Plio-Pleistocene sediments unconformably overlay dense phosphatic clays and limey silts of the Hawthorn Group. The Hawthorn Group sediments extend from approximately 210 feet bpl to 992 feet bpl, equating to an approximate total thickness of 750 feet. The lowermost portion of the Hawthorn Group is composed of interbedded carbonate clay, phosphate sand, sandstone, and limestone and exhibits increased limestone content with depth. The phosphate content of these sediments causes the gamma ray log to record high gamma ray counts through this interval.

Oligocene Series

Lying below the Hawthorn Group sediments is the Oligocene-aged Suwannee Limestone, at a depth of 992 feet bpl. The Suwannee Limestone is comprised of white, pale orange and gray-colored fossiliferous packstones and wackestones. Numerous echnoids, corals, and foraminifera fossils are present within this interval. Secondary porosity in the form of solution vugs is present throughout the penetrated interval. The Suwannee Limestone is present to a depth of 1,064 feet bpl.

Eocene Series

At a depth of 1,064 feet bpl, lies the Avon Park Formation. This formation is distinguished by the appearance of a yellowish-brown to brown-colored dolomite interbedded with a pale orange-colored limestone. The limestone is characterized as medium hard, fossiliferous, with low to medium porosity. The dolomite is hard, crystalline, with good secondary porosity and medium to high permeability. This formation is present to the total drilled depth of the pilot borehole, which was 1,650 feet bpl in the FAMW.

Core Analyses

A total of twenty-one conventional cores were collected within the Hawthorn Group, Suwannee and Avon Park formations penetrated by the FAMW and the ASR wells. **Table 3-1** presents a summary of the cored intervals. The first eighteen cores were collected from the FAMW and the remaining three cores were collected from the ASR well. All of the cores were mainly composed of relatively "clean" limestones, although some contained small percentages of lime mud, clay, marl, and dolosilt. Detailed core descriptions are contained in Appendix G

TABLE 3-1
CORE SUMMARY

Core Number	Depth Interval (feet bpl)	Recovery Percent	Lithology
Floridan Aquifer Monitor Well (FAMW)			
1	940 - 964	2%	Limestone
2	980 - 995	27%	Limestone
3	995 - 1,005	40%	Limestone
4	1,006 - 1,026	20%	Limestone
5	1,040 - 1,065	30%	Limestone
6	1,065 - 1,090	0%	Limestone
7	1,090 - 1,115	24%	Limestone
8	1,115 - 1,140	24%	Limestone
9	1,140 - 1,165	32%	Limestone
10	1,165 - 1,190	12%	Limestone
11	1,190 - 1,215	4%	Limestone
12	1,215 - 1,240	2%	Limestone
13	1,300 - 1,325	76%	Limestone
14	1,326 - 1,351	12%	Limestone
15	1,351 - 1,376	56%	Limestone
16	1,376 - 1,401	40%	Limestone
17	1,500 - 1,520	70%	Limestone
18	1,600 - 1,625	40%	Limestone
Aquifer Storage and Recovery Well (ASR)			
1	971 - 996	20%	Limestone
2	996 - 1,021	12%	Limestone
3	1,021 - 1,046	28%	Limestone

HYDROGEOLOGY

Surficial Aquifer System

The surficial aquifer system is present to a depth of 210 feet bpl in the wellfield. Within the surficial aquifer system of Palm Beach County is the Gray Limestone/Biscayne Aquifer, which is the source of most of the drinking water in south Florida. The County's WTP No. 9 two Wellfields are completed within the Biscayne aquifer. Supply wells completed within this aquifer are typically pumped at flow rates in the range of 500 to 1,500 gpm in this area. Water within the surficial aquifer is fresh, with chloride concentrations of between 10 mg/L and 100 mg/L. The surficial aquifer system is an unconfined aquifer, recharged by rainfall and surface water lakes and canals.

Hawthorn Confining Unit

From 210 feet bpl to 992 feet bpl are low-permeability formations comprised of calcareous clays and silts that make up the Hawthorn Group. The Hawthorn sediments consist of dense olive gray clayey unlithified lime mud and fine to very fine quartz and phosphate sand and silt. Also present within the upper and lower reaches of the unit are beds of shell and sandy limestone. Fish (1988) estimated that the green clays contained within these formations exhibit a hydraulic conductivity of approximately 0.001 feet per day (equivalent to approximately 0.00000035 centimeters per second). This confining unit separates the surficial aquifer system from the Upper Floridan aquifer.

Upper Floridan Aquifer

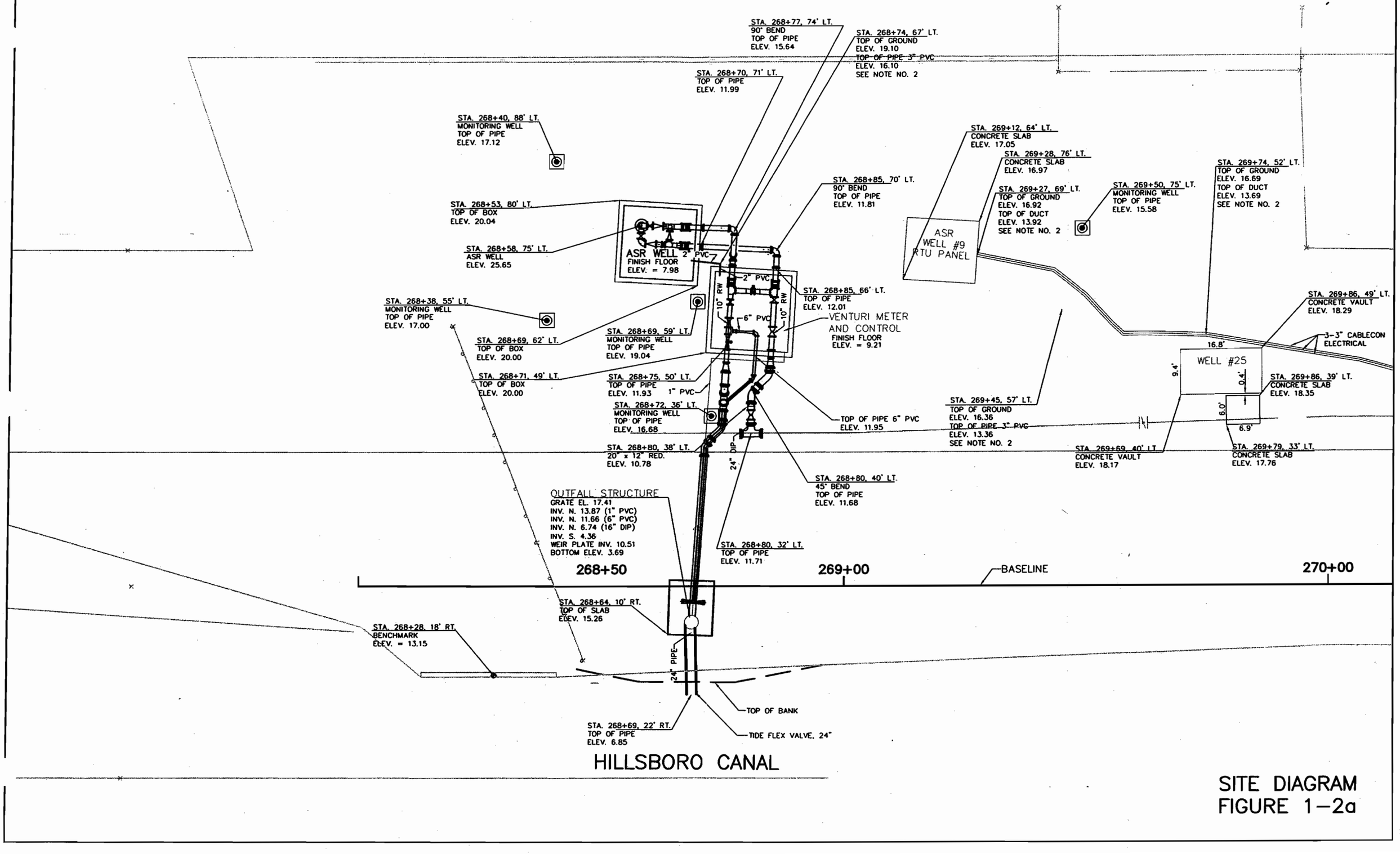
The upper Floridan aquifer extends from 992 feet bpl to the total depth penetrated by the wells (1,650 feet bpl for the FAMW). Within the upper Floridan aquifer a few thin highly permeable zones represent the transmissive portion of this formation and are known as inter-aquifer "flow zones". The remainder of the aquifer consists of low permeability limestone, which confine and separate the flow zones. Typically the larger, more regional flow zones occur at discontinuities which are depositional breaks between geologic formations. Local, smaller flow zones may be present and may not be regionally continuous. Because flow zones are semi-confined from each other by lower permeability strata, artesian pressures and water quality may vary. Water within this portion of the aquifer is brackish, with chloride concentrations of approximately 2,200 mg/L. The generalized geology and hydrology are illustrated in **Figure 3-1**.

Upper Floridan Aquifer Water Quality

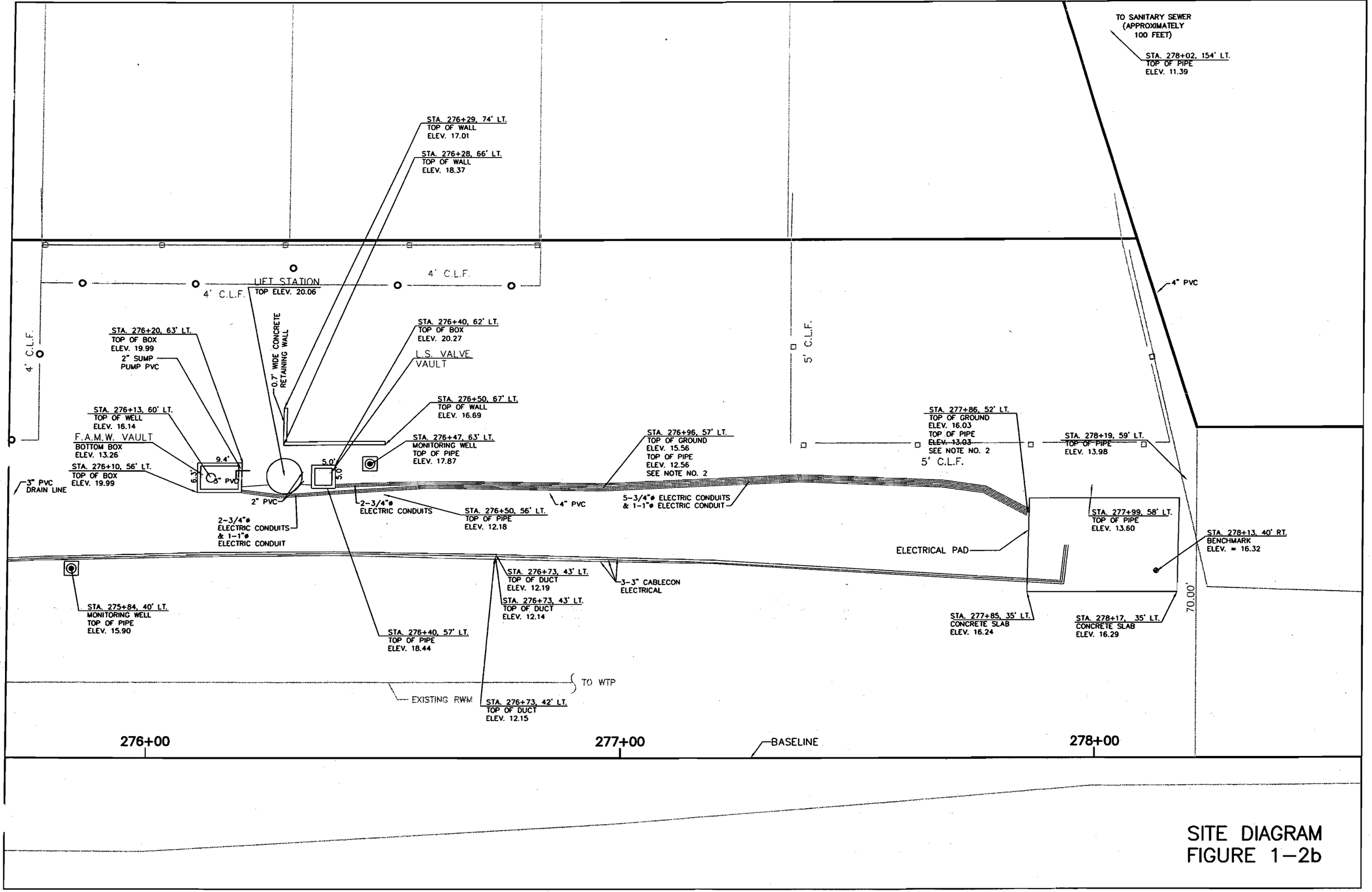
Flowing water samples were collected while pipe connections were made during reverse air drilling through the upper Floridan aquifer in the ASR well. These water samples were analyzed for pH, total dissolved solids, and conductivity in the field. The data collected from these analyses was discussed and shown in the previous section (Table 2-7). Water quality remained fairly consistent throughout the entire drilled interval of the pilot holes.

Flow Tests During Drilling

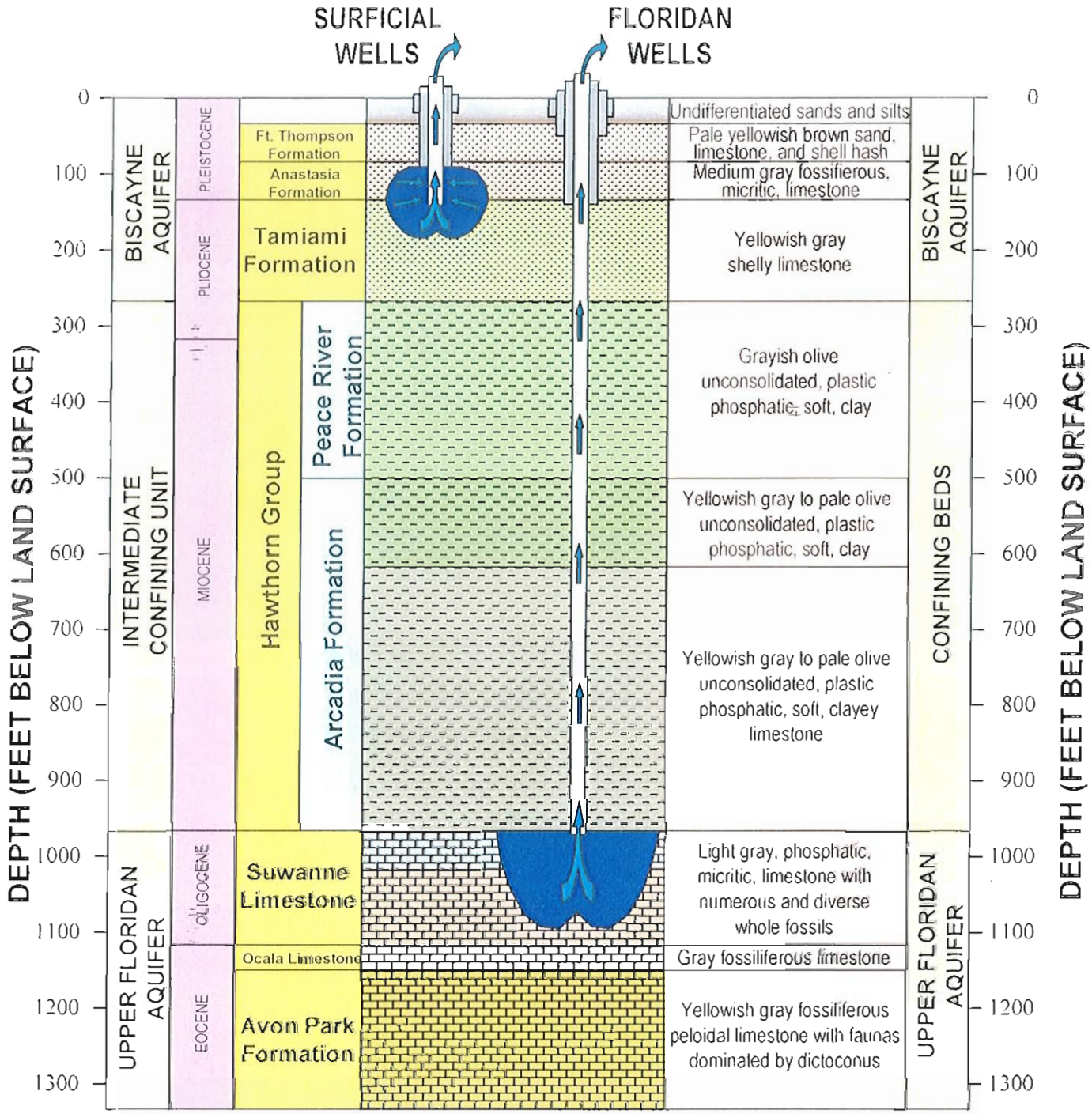
During reverse-air drilling of the ASR well, within the upper Floridan aquifer, flow tests were performed and water samples were collected. At intervals of 30 feet (drill pipe connections) water was allowed to discharge (flow) from the drill pipe, providing for analysis of the flow rates and water quality analysis. A summary of the data collected during these flow tests was presented in the previous section (Table 2-7).



SITE DIAGRAM
FIGURE 1–2a



SITE DIAGRAM
FIGURE 1–2b



EASTERN HILLSBORO CANAL - WTP #9
GENERALIZED GEOLOGY and HYDROLOGY
Figure 3-1

Generally, the flow rate was observed to increase as depth increased throughout the pilot borehole. Water quality was also observed to worsen as depth increased.

Well Development

Upon completion of the plug-back of the FAMW and open hole drilling in the ASR well, the open hole of each well was developed by air-lift surging and turbine pumping. During development, sand content was recorded. Development was terminated when the sand content decreased appreciably from the initial concentrations at the desired flow rate of approximately 3,500 gpm.

WATER QUALITY

Constant-Rate Pump Test Water Sample Analysis

Upon completion of the pumping portion of the constant-rate test in both the ASR and FAMW wells, a final construction water quality sample was collected. These water samples represents the open hole interval from 1,005 feet bpl to 1,225 feet bpl (the storage/monitor interval). The laboratory results indicated there were no exceedances of primary drinking water standards in water collected from the completed ASR storage interval and the FAMW monitoring interval. Analyses of selected cations and anions indicate the water in the upper Floridan aquifer is brackish. A summary of the laboratory results is presented in **Table 3-2**.

TABLE 3-2
FINAL CONSTRUCTION WATER QUALITY SUMMARY

Parameter	Units	FAMW Well Concentration	ASR Well Concentration	MDL
Chloride	mg/L	2,300	2,100	10
Total Dissolved Solids	mg/L	4,400	4,400	10
Conductivity (lab)	umhos/cm	8,200	8,300	--
Sulfate	mg/L	1,000	470	100
pH		7.6	7.6	0.01
Calcium Hardness	mg/L	320	350	5
Total Hardness	mg/L	819	803	10
Total Alkalinity	mg/L	140	150	1
Arsenic	mg/L	BDL	BDL	0.01
Iron	mg/L	0.1	0.077	0.01
Phosphate	mg/L	BDL	0.039	0.01
Sodium	mg/L	1,300	1,500	100

Section 4
Cycle Testing Plan

Upon FDEP and PBCHD approval, cycle testing of the ASR system will commence. Cycle testing will be conducted to evaluate the performance of the well during injection, storage and recovery, and to fulfill the requirements within the FDEP and PBCHD construction permits. It is anticipated that recharge and recovery rates will be at 3,500 gpm equivalent to 5.0 mgd. Cycle testing will include two cycles. The first cycle will be used to evaluate the system performance at the designed injection and recovery rates, to observe injection pressures, to build the fresh water "bubble", and to monitor the effects of injection and recovery on water quality. The second cycle will be used to continue "bubble" development and evaluate the effects of a simulated storage interval. **Table 4-1** summarizes the cycle testing plan.

TABLE 4-1
CYCLE TESTING PLAN

Cycle Number	Recharge Rate (gpm)	Recharge** Days	Recharge Volume (mg)	Storage Days	Recovery Volume (mg)
1	3500	90	453.6	Variable	*
2	3500	90	453.6	0	*

"*" Signifies that water will be recovered until chloride concentration exceeds 1,000 mg/L.

"**" Signifies that recharge amounts may vary based upon the months which the cycles occur.

Cycle Durations:

During the cycle testing, recovery efficiencies (recovery volume/recharge volume) will be calculated for each cycle. It is anticipated that recovery efficiencies will progressively increase throughout each of the cycles. Cycle 1 will consist of one 90-day recharge period (with variable storage time) to determine the injection rate/pressure relationship, establish a baseline effect of recharge water on the storage zone, and to observe the effects of storage on water quality and recovery efficiencies. The variable storage time for Cycle 1 will depend upon the water needs during the peak season. Peak season begins in March and runs through June. A 60-day storage period is anticipated, however, storage may be cut short due to supply and demand. Cycle 2 will consist of one 90-day recharge period with no storage period to further build the "bubble". These cycles will approximate the injection and storage periods which will be utilized during normal operations (presumably after a bubble of sufficient size has

been established to allow for continuous recovery for a period of a few months, as desired by the County).

Pressure Monitoring and Back Flushing:

During the first injection period, the injection rate/pressure relationship in the ASR well will be monitored closely to determine if any increase in pressure occurs. If, in the event that pressure increases, PBCWUD would like to reserve the right to halt injection, back flush to clean the system, then resume with injection. The back flushing operation may last up to three days.

Recovered Water Discharge Plan:

Following the injection and/or storage periods, recovery of the injected water will begin. The initial recovered water will be discharged through the outfall structure to the Hillsboro Canal. Discharge to the canal will continue until sand/silt levels reach a level acceptable to the nano-filtration plant. The discharged water will be monitored continually for conductivity, turbidity, and dissolved oxygen, prior to discharge from the outfall structure, to ensure that the NPDES Permit requirements will be met.

Monitoring Plan:

Total flow into (during injection) and out of (during recovery) the ASR well will be measured continually. Average maximum and minimum daily flows also will be recorded. Wellhead pressures will be monitored continuously, and the daily average, maximum and minimum injection pressures will be recorded. Cumulative total injected and recovered water also will be recorded.

During the cycle testing period, water quality monitoring will be conducted to determine the geochemical effects of injection, storage and recovery of the raw water (injectate) and in fulfillment of the FDEP and PBCHD construction permits. Conductivity and turbidity will be measured continually during both the injection and recovery phases of testing. A water quality analysis of the raw water injectate from WTP No. 9 is contained in **Appendix K.**

Table 4-2 presents a summary of the water sampling analyses and frequencies that will be performed during cycle testing. To reconcile differences between the frequencies specified within the PBCHD and FDEP permits, the shorter frequency listed in either permit was always selected for preparation of the table. Water samples will be collected from the sampling taps located along the wellhead piping. A minimum of three (3) well volumes of water will be evacuated from the well prior to sampling for the parameters during storage.

Reporting:

Upon completion of each cycle period, a technical memorandum will be prepared, summarizing the data collected during that cycle (a total of 2 memorandums will be prepared). Upon completion of all of the planned cycles, a final memorandum will be submitted to the PBCHD, the FDEP, and the SFWMD in support of operation of the system. The final memorandum will include recommendations for normal operation of the system. **Appendix L** has been reserved within this document so that all of the technical memorandums can be inserted into this binder during cycle testing.

TABLE 4-2
WATER QUALITY SAMPLING SCHEDULE

Parameter (units)	CYCLE TESTING AND NORMAL OPERATIONS											
	Daily			Weekly			Monthly			Annually		
	Injection	Storage	Recovery	Injection	Storage	Recovery	Injection	Storage	Recovery	Injection	Storage	Recovery
Conductivity (umho/cm)	A		A	FS	F	FS						
Turbidity (NTU)	A		A									
Chloride (mg/l)				AFS	F	AFS						
TDS (mg/l)				AFS	F	AFS						
TSS (mg/l)				A		A						
pH (standard units)				AFS	F	AFS						
Color (color units)				AFS	F	AFS						
Fecal Coliform (# of colonies/100 ml)				AFS	F	AFS						
Total Coliform (# of colonies/100 ml)				AFS	F	AFS						
Cryptosporidium (oocysts/100 ml)	*											
Giardia (cysts/100 ml)	*											
Enterococci (# of colonies/100 ml)	*											
Clostridium Perfringens (# of colonies/100 ml)	*											
Coliphage (pfu/100 ml)	*											
Total Iron (mg/l)				AF	F	AF						
Total Alkalinity (mg/l)				A		A						
Temperature				A		A						
Sulfate (mg/l)				A		A						
Sodium (mg/l)				A		A						
Ammonia (mg/l)				A		A						
Total Phosphorous (mg/l)				A		A						
Hydrogen Sulfide (mg/l)				A		A						
BOD (mg/l)				A		A						
COD (mg/l)				A		A						
Arsenic (mg/l)						A	AFS	F	FS			
Gross Alpha (pCi/l)							AFS	F	AFS			
Radium – 226 & 228 (pCi/l)							@	@	@			
Dissolved Oxygen (mg/l)							AFS	F	AFS			
Primary, Secondary and Minimum Criteria										A		

TDS = Total Dissolved Solids
TSS = Total Suspended Solids
mg/l = milligrams per liter
pCi/l = pico curries per liter
NTU = nephelometric turbidity units

Notes:
"A" signifies Aquifer Storage and Recovery Well (ASR-1)
"F" signifies Floridan Aquifer Monitor Well (FMW-1)
"S" signifies Monitor Well 9W-0069
"@" sampled for each well only if gross alpha exceeds 15 pCi/l
"*" analysis performed within 24 hours if recharge Total Coliform exceeds primary drinking water standard

Section 5
and Recommendations

Construction of the ASR well system at the Palm Beach County Water Utilities Department WTP No. 9 Hillsboro Canal Wellfield has been performed successfully. The scope of this project included constructing one Floridan Aquifer Storage and Recovery (ASR) Well to be used for raw surficial aquifer water injection/storage/recovery and blending, one Floridan Aquifer Monitoring Well (FAMW), and one Hillsboro Canal outfall structure. The following conclusions are made based on the results of drilling and testing conducted during well construction.

- This ASR system is now ready for cycle testing at the design rate of 5.0 mgd. The storage zone of the well is completed within a transmissive limestone of the Upper Floridan aquifer. The storage zone is confined beneath approximately 700 feet of low permeability clay and limestone.

- The ASR well was finished with a 24-inch open hole injection/storage interval between 1,010 feet and 1,225 feet bls. The final well casing consists of 24-inch carbon steel casing from land surface to a depth of 1,010 feet bls.

- The FAMW was completed with a 12-inch open hole monitoring interval between 1,007 feet and 1,225 feet bls. The final well casing is 6 5/8-inch fiberglass casing from land surface to 1,007 feet bls.

- The ASR well was acidized to increase its specific capacity of approximately 24 gpm/ft while pumping at a rate of 3,150 gpm. Following acid treatment, the specific capacity increased to 63 gpm/ft while pumping at a rate of 3,400 gpm. The well was expected to exhibit a specific capacity of between 30 to 40 gpm/ft at the design rate of 3,500 gpm, therefore the well's production has exceeded the preliminary expectations.

- Step drawdown testing was conducted on the ASR well prior to and following acid treatment to establish the effectiveness of the acidization. Specific capacity values increased approximately 200 percent following the acidization of the well.

- The water level was monitored in the FAMW during step drawdown testing. Data indicated an aquifer transmissivity value of 142,000 gpd/ft.

- Final dissolved chlorides in the ASR well are 2,100 mg/l and total dissolved solids are 4,400 mg/l. These are consistent with regional published data. There

were no exceedances of primary drinking water standards in water collected from the storage zone, as confirmed during two sampling events which took place 10 months apart, prior to operation of the ASR well.

- The surface equipment, including the vaults, the outfall structure, recovery pump, associated piping, instrumentation, and electrical controls, have all been installed. The ASR well and associated piping has received bacteriological clearance.

Palm Beach County Water Utilities Department is requesting initiation of cycle testing at the WTP No. 9 Hillsboro Canal ASR well system. The cycle testing plan will consist of two progressively longer periods of injection, storage, and recovery of raw surficial water from the ASR well. Water quality and flow information will be collected during the cycle testing period in support of the system construction permits. At the conclusion of cycle testing, a report detailing and interpreting the collected information will be prepared and submitted to the PBCHD and the FDEP, in support of an application to operate the system.

Construction Permits

FDEP Construction Permit

SIGNATURE TO STEVE K.
CC; LARRY, STEVE M.

Department of Environmental Protection

Jeb Bush
Governor

Southeast District
P.O. Box 15425
West Palm Beach, Florida 33416

David B. Struhs
Secretary

RECEIVED
MAR 23 2001
WATER UTILITIES DEPARTMENT
ADMINISTRATION

RECEIVED
MAR 26 2001
WATER UTILITIES
ENGINEERING

MAR 22 2001

NOTICE OF PERMIT

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

PALM BEACH COUNTY
UIC – Palm Beach County
File Number: 0172069 - 001

Mr. Gary D. Dernlan, P.E.,
Director of Utilities
Palm Beach County Water Utilities Department
2065 Prairie Road
West Palm Beach, Fl. 33406

Dear Mr. Dernlan:

Enclosed is Permit Number 0172069-001-UC, to construct one Class V Group 7 24-inch (OD) Aquifer Storage and Recovery Well, ASR-1, issued pursuant to Section(s) 403.087, Florida Statutes and Florida Administrative Codes 62-4, 62-520, 62-528, 62-550, 62-522, 62-600, 62-601 & 62-660.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Stop 35, 3900 Commonwealth Blvd., Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within thirty (30) days from the date this Notice is filed with the Clerk of the Department.

Should you have any questions, please contact Joe May, P.G. or Daniel C. Phelps, P.G., of this office, telephone (561) 681-6691 or (561) 681-6778, respectively.

Executed in West Palm Beach, Florida.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Melissa L. Meeker — 3/22/01
Melissa L. Meeker — Date
Director of District Management
Southeast District

MLM/LAH/JRM/DCP

Cc: Pyara Wilkhu, FDEP/SED
Steve Anderson, SFWMD
David Goldman, Kimberly-Horn and Associates, Inc,
Richard Deuerling, FDEP/Tal.
Tom Lefevre, PBCHU
Ron Reese, USGS/Mia.
Nancy Marsh USEPA/Atl.

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on MAR 22 2001 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to the §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

MAR 22 2001

Date

Department of Environmental Protection

Jeb Bush
Governor

Southeast District
P.O. Box 15425
West Palm Beach, Florida 33416

David B. Struhs
Secretary

PERMITTEE:
Mr. Gary D. Dernlan, P.E.,
Director of Utilities
Palm Beach County Water Utilities Department
2065 Prairie Road
West Palm Beach, Fl. 33406

PERMIT/CERTIFICATION NO: 0172069-001-UC
DATE OF ISSUE: MAR 2 2 2001
EXPIRATION DATE: MAR 2 1 2003
COUNTY: Palm Beach
LATITUDE/LONGITUDE: 26°20'30"W/80°13'23"N
PROJECT: The Eastern Hillsboro Canal
Class V Aquifer Storage and Recovery Well ASR-1

This permit is issued under the provisions of Chapter 403.087, Florida Statutes (FS), and Florida Administrative Code (FAC) Rules 62-3, 62-4, 62-520, 62-528 and 62-550. The above named permitee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TO CONSTRUCT: A Class V Group 7 24-inch (OD) Aquifer Storage and Recovery Well, ASR-1, with casing extending to a depth of approximately 1,080 feet below land surface (bls) and the borehole extending to a depth of approximately 1,200 feet (bls) and a 6 5/8-inch (OD) Floridan Aquifer monitor well, with casing extending to a depth of approximately 1,080 feet below land surface and the borehole extending to a depth of approximately 1,650 feet the lower portions of which after testing are intended to be cemented back to approximately 1,200 feet. Final depths will be determined during construction and field testing. The proposed injection fluid is raw water from the surficial aquifer. Injection and recovery flow rates are expected to be approximately 5 million gallons per day (gpd). No injection testing with "raw water" will be allowed until the applicant has been granted a Water Quality Criteria Exemption which allows the injection of such waters.

IN ACCORDANCE WITH: Application to Construct a Class V Group 7 Aquifer Storage and Recovery System received July 11, 2000, Request for Information (RFI) dated July 13, 2000, Response to RFI received July 17, 2000, Request for Information (RFI) dated August 15, 2000, RFI response received September 18, 2000, Request for Information (RFI) dated October 13, 2000, RFI responses received October 16 and 24, 2000, public notice of the Draft Permit published in the Palm Beach Post newspaper on December 22, 2000, consideration of public comment received as a result of the public meeting held on February 5, 2001 at 2:00 pm., and public notice of the Intent to Issue Permit published in the Palm Beach Post newspaper on March 2, 2001.

LOCATED AT: 22438 Southwest 7th Street Boca Raton, Florida.

TO SERVE: To provide raw water feed to the Palm Beach County Plant 9 Membrane Softening Water Treatment Plant

SUBJECT TO: General Conditions 1-24 and Specific Conditions 1-10.

PERMITTEE:
Mr. Gary D. Dernlan, P.E.,
Director of Utilities
Palm Beach County Water Utilities Department
PROJECT: The Eastern Hillsboro Canal
Class V Aquifer Storage and Recovery

PERMIT/CERTIFICATION NO: 0172069-001-UC
DATE OF ISSUE: MAR 22 2001
EXPIRATION DATE: MAR 1 2003
COUNTY: Palm Beach
LATITUDE/LONGITUDE: 26°20'30"W/80°13'23"N

GENERAL CONDITIONS:

The following General Conditions are referenced in Florida Administrative Code Rule 62-528.307.

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are "permit conditions" and are binding and enforceable pursuant to Section 403.141, F.S.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action.

3. As provided in Subsection 403.087(7), F.S., the issuance of this permit does not convey any vested rights or exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. This permit conveys no title to land, water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permitee from liability for harm to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefrom; nor does it allow the permitee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permitee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permitee to achieve compliance with the conditions of this permit, or are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permitee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

   a. Have access to and copy any records that must be kept under conditions of this permit;

   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time will depend on the nature of the concern being investigated.

GENERAL CONDITIONS:

8. If, for any reason, the permitee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permitee shall immediately provide the Department with the following information:

   a. A description of and cause of noncompliance; and

   b. The period of noncompliance, including dates and times; or, if not corrected the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent the recurrence of the noncompliance. The permitee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permitee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permitee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permitee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-528.350, F.A.C. The permitee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permitee shall comply with the following;

   a. Upon request, the permitee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records shall be extended automatically unless the Department determines that the records are no longer required.

   b. The permitee shall hold at the facility or other location designated by this permit records of all monitoring information (including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

   c. Records of monitoring information shall include:

      1) the date, exact place, and time of sampling or measurements;
      2) the person responsible for performing the sampling or measurements;
      3) the dates analyses were performed;
      4) the person responsible for performing the analyses;
      5) the analytical techniques or methods used;

6) the results of such analyses.

d. The permitee shall furnish to the Department, within the time requested in writing, any information which the Department requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

e. If the permitee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

14. All applications, reports, or information required by the Department shall be certified as being true, accurate, and complete.

15. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

16. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

17. It shall not be a defense for a permitee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

18. The permitee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

19. This permit may be modified, revoked and reissued, or terminated for cause, as provided in 40 C.F.R. Sections 144.39(a), 144.40(a), and 144.41 (1998). The filing of a request by the permitee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

20. The permitee shall retain all records of all monitoring information concerning the nature and composition of injected fluid until five years after completion of any plugging and abandonment procedures specified under Rule 62-528.435, F.A.C. The permitee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permitee elects to continue retention of the records.

21. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C. All reports shall contain the certification required in Rule 62-528.340(4), F.A.C.

22. The permitee shall notify the Department as soon as possible of any planned physical alterations or additions to the permitted facility. In addition, prior approval is required for activities described in Rule 62-528.410(1)(h).

23. The permitee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity which may result in noncompliance with permit requirements.

GENERAL CONDITIONS:

24. The permitee shall report any noncompliance which may endanger health or the environment including:

    a. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or

    b. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water. Any information shall be provided orally within 24 hours from the time the permitee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permitee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

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SPECIFIC CONDITIONS:

1. **General Requirements**

   a. The permitee shall be subject to all requirements and regulations of Palm Beach County and the South Florida Water Management District regarding the construction, testing and operation of this ASR Well System.

   b. Hurricane Preparedness - Upon the issuance of a "Hurricane Watch" by the National Weather Service, the preparations to be made include but are not limited to the following:

      1) Secure all on-site salt, chemicals, and other stockpiled additive materials to prevent surface and/or groundwater contamination.

      2) Properly secure drilling equipment and rig(s) to prevent damage to well(s) and any on-site treatment process equipment as well as public property.

   c. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

2. **Quality Assurance/Quality Control Requirements**

   a. Pursuant to Rule 62-528.440(5)(b), F.A.C., the Professional Engineer(s) of Record shall certify all documents related to the completion of the ASR well system as an ASR facility. The Department shall be notified immediately of any change of the Engineer(s) of Record.

   b. In accordance with Section 492, Florida Statutes, all documents prepared for the geological/hydrogeological evaluation of the ASR well system shall be signed and sealed by a Florida Licensed Professional Geologist or qualified Florida Licensed Professional Engineer.

   c. Continuous on-site supervision by qualified personnel (engineer and/or geologist) is required during all geophysical logging operations, coring, packer testing, casing installation and cementing operations.

3. **Construction and Testing Requirements**

   a. The measurement points for drilling and logging operations shall be surveyed and referenced to the National Geodetic Vertical Datum (NGVD) of 1983 prior to the onset of drilling activities for Aquifer Storage and Recovery well system (ASR-1) and its Floridan aquifer monitor well (FAMW-1).

   b. No drilling operations shall begin without an approved disposal site for drilling fluids, cuttings, or waste. It shall be the permittee's responsibility to obtain the necessary approval(s) for disposal prior to the start of construction.

   c. The Department shall be notified within forty-eight (48) hours after work has commenced.

SPECIFIC CONDITIONS:

d. Six (6) permanent surficial aquifer wells identified as Pad Monitor Wells (PMWs) shall be located on the south, east, and west sides of the ASR and FAMW well drilling pads respectively. Each PMW shall be identified by PMW number, drilling pad and the PMW's location respective to the drilling pad it monitors.

1) These monitor wells shall be sampled and analyzed prior to the onset of drilling for chlorides (mg/L), temperature adjusted specific conductance (umho/cm), total dissolved solids (TDS, mg/L) and water level (relative to NGVD). Initial analyses must be submitted prior to the initiation of work on the Class I injection well.

2) These monitor wells are to be retained in service, sampled weekly for the above parameters during the construction and operational testing phases and quarterly once an operation permit is granted. A summary sheet from the FDEP Southeast District is attached for your use when reporting the above information.

3) If located in a traffic area the well heads must be protected by a traffic bearing enclosure and cover. Individual covers must be specifically marked to identify the well and its purpose. A copy of the FDEP Southeast District Summary Sheet is attached for your use when reporting the above information.

4) These monitor wells shall be sampled forty-eight (48) hours prior to any maintenance, testing (including mechanical integrity testing) or repairs to the system which represent an increased potential for accidental discharge to the surficial aquifer. The results of these analyses shall be submitted to the Department within thirty (30) days of the completion of the activity.

e. Waters spilled during construction, modification or testing of the Aquifer Storage and Recovery well system (ASR-1) and its Floridan aquifer monitor well (FAMW-1) shall be contained and properly disposed.

f. Department approval and UIC-TAC review is required prior to the following stages of construction:

1) Contract documents and spud dates

2) Selection of the Floridan aquifer monitor well (FAMW-1) and ASR-1 well final casing seats

3) Selection of the Floridan aquifer monitor well (FAMW-1) monitoring interval

4) Selection of the ASR-1 well's injection interval

5) Plugging back pilot hole in the Floridan aquifer monitor well (FAMW-1) to the base of storage zone

6) Method(s) of flow control during recharge of the ASR well system during operation and operational testing

g. Blow-out preventers shall be installed on the wells prior to penetration of the Floridan Aquifer.

h. The Department shall be notified within 48 hours after work has commenced.

i. The geophysical logging program, during drilling of the Floridan Aquifer Monitor Well (FAMW-1), to determine the final casing depth shall include the following logs to be run on the open borehole through the Hawthorn Group to approximately 1080 feet below land surface (bls): caliper, natural gamma ray, spontaneous potential and dual induction. These logs shall be interpreted for stratigraphic correlation, identification of the top and base of the Hawthorn Group confining unit, and to establish a mechanically secure casing setting depth.

SPECIFIC CONDITIONS:

j. All casing seat requests shall be accompanied by technical justification, including but not limited to, geophysical logs with interpretations, and water quality data.

k. The submittal for the request for approval to plug back the pilot hole to modify the monitoring zone in FAMW-1 and thus delineate the intended injection zone in ASR-1, shall include:

1) withdrawal test data and interpretations
2) water quality reports
3) geophysical log interpretations including flow analysis
4) identification of storage zone boundaries and characteristics
5) demonstration of confinement and evaluation of potential for upconing of poorer quality water

l. The geophysical logging program, during drilling of the ASR well, shall at a minimum, include:

1) Pilot hole to approximately 220 feet below land surface (bls):
Caliper
Natural gamma
Spontaneous potential
Long and short normal electric

2) Reamed hole to approximately 200 feet bls:
Caliper

3) Cased hole to approximately 200 feet bls:
Gamma ray log, if needed

4) Pilot hole to the top of the Floridan Aquifer at approximately 1,080 feet bls:
Caliper
Natural gamma
Spontaneous potential
Dual induction
Borehole compensated sonic with VDL display. (Upon review of the geophysical data obtained from the Floridan Aquifer Monitor Well the permitee may request Department approval to delete this log.)

5) Reamed hole to the top of the Floridan Aquifer at approximately 1,080 feet bls:
Caliper

6) Cased hole to the top of the Floridan Aquifer at approximately 1080 feet bls:
Cement bond log
Casing pressure test (for assurance of mechanical integrity)

7) 12.25-inch open hole below the final casing to approximately 1200 feet bls:
Caliper
Natural gamma
Dual induction
Spontaneous potential
Borehole compensated sonic with VDL display
Temperature (shut-in and while pumping)
Electric (long and short normal)
Digital borehole televiewer
Video
Flowmeter (static and dynamic)
Fluid resistivity (static and dynamic)

SPECIFIC CONDITIONS:

8) Completed well
   Caliper
   Fluid Resistivity ((static and dynamic)
   Flowmeter (under flowing conditions)
   Video
   Temperature

9) Temperature logs shall be run after all cement stages that are completed without positive return at the surface in order to identify the top of the cement.

m. Packer and/or interval testing and interpretation in the storage zone shall be performed to determine water quality characteristics (chloride, TDS conductivity, temperature and pH) and to provide a better definition of the quantitative characteristics (permeability values) of the zone. **Data obtained from the testing of the ASR well will be used to define water quality characteristics for the site.** A five (5) gallon sample of formation fluid shall be collected at the end of the all packer and/or interval tests for which a background sample unaffected by injection can be obtained and has not already been acquired. Samples should be labeled as to well number, depth, type of sample and shipped to Dr. James Cowart, Department of Geology, Florida State University, Tallahassee, FL 32304.

o. Pressure gages and flow meters shall be installed on the ASR well prior to initiating ASR activities at the site.

p. No drilling operations shall begin without an approved disposal site for drilling fluids, cuttings, or waste. It shall be the permittee's responsibility to obtain the necessary approval(s) for disposal prior to the start of construction.

q. TAC meetings are scheduled on the 2nd and 4th Tuesday of each month subject to a five working day prior notice and timely receipt of critical data by all TAC members. Emergency meetings may be arranged when justified, to avoid undue construction delays.

4. Reporting Requirements

a. All reports and surveys required by this permit shall be submitted concurrently to all the members of the Technical Advisory Committee (TAC). The TAC shall consist of representatives from these agencies:

Department of Environmental Protection, West Palm Beach and Tallahassee
United States Environmental Protection Agency, Region IV, Atlanta
United States Geological Survey, Miami
South Florida Water Management District, West Palm Beach
Palm Beach County Health Department

b. The Department and other applicable agencies must be notified immediately of any unusual events occurring during construction activities (e.g. on-site spills, artesian flows, large volumes of circulation losses, etc.). A written report describing the incident shall also be given to the Department within 72 hours of the start of the event. In addition, a final written report shall be sent to the Department within two weeks of the event. The final report shall contain a complete description of the occurrence, discuss its cause(s) and the steps being taken to reduce, eliminate, and prevent recurrence of the event and all other information deemed necessary by the Department.

c. A drilling and construction schedule shall be submitted to the Department and TAC prior to site preparation for construction of the ASR well system.

SPECIFIC CONDITIONS:

d. Weekly progress reports shall be submitted throughout the construction and cycle testing periods, and shall include at a minimum the following information:

1) A cover letter summary of the daily engineer report, driller's log and a projection for activities in the next reporting period.

3) Daily engineers report and driller's log with detailed descriptions of all drilling progress, cementing, testing, logging, and casing installation activities.

4) Lithologic and geophysical logs, hydrogeologic/specific capacity results, and water quality test results.

5) Well development records.

6) Interpretations included with all test results, logs and well development activities submitted under Items 2), 3) and 4) above.

7) Detailed description of any unusual construction-related events that occur during the reporting period.

8) Weekly water quality analysis and water levels for the pad monitor wells for each of the individual well pads, ASR and FAMW respectively, immediately before, during, and immediately subsequent to activities occurring on those individual pads which might constitute a risk of discharge to the ground surface.

9) Current status and progress of cycle testing

e. Per Rules 62-528.420(4)(c) and 62-528.605(2), F.A.C., the final selection of a casing seat for the final casings of Monitor Well FAMW-1 and ASR-1, the specific monitoring interval (zone) for FAMW-1 and the injection interval for ASR-1 must be approved by the Department. In order to obtain these approvals, the permitee shall submit request(s) to the Department. The request(s) shall be submitted concurrently to all members of the UIC-TAC and the USEPA, Region IV, Atlanta. These requests submitted in accordance with S.C. 3.f.2), 3), 4), and 5) shall be accompanied by technical justification.

1) To the extent appropriate, the casing seat requests should address the following items:

a) Lithologic and geophysical logs with interpretations, as the interpretations relate to the casing seat.
b) Water quality data.
c) Identification of confining unit(s), including hydrogeologic data and interpretations.
d) Identification of monitoring zone.
e) Casing depth evaluation (mechanically secure formation, potential for grout seal).

2) The monitoring interval and injection interval requests for the Aquifer Monitor Well FAMW-1, and ASR-1 submitted in accordance with S.C.3.f. 3) and 4), shall contain the following:

a) Identification of confining unit(s).
b) Water quality of proposed zone.
c) Transmissivity or specific capacity of proposed zone.

f. An interpretation of all test results and geophysical logs must be provided with all submittals.

PERMITTEE:
Mr. Gary D. Dernlan, P.E.,
Director of Utilities
Palm Beach County Water Utilities Department
PROJECT: The Eastern Hillsboro Canal
Class V Aquifer Storage and Recovery

PERMIT/CERTIFICATION NO: 0172069-001-UC
DATE OF ISSUE: MAR 2 2001
EXPIRATION DATE: MAR 1 2003
COUNTY: Palm Beach
LATITUDE/LONGITUDE: 26°20'30"W/80°13'23"N

SPECIFIC CONDITIONS:

g. Upon completion of analysis of cores and sample cuttings, the permitee shall contact the Underground Injection Control Section of the Department of Environmental Protection in Tallahassee to arrange their transfer to the Florida State Geologic Survey.

h. Upon completion of construction and the cycle testing phase of operational testing, a final report shall be submitted to the Department the UIC-TAC and EPA. The report shall include, but not be limited to, all information and data collected under Rules 62-528.605, 62-528.615, and 62-528.635, FAC, with appropriate interpretations. To the extent possible, the report should include:

1) The transmissivity test data for the storage zone, with evaluation.
2) Evaluation of the maximum ASR capacity within safe pressure limits
3) Detailed results and analysis of cycle testing
4) Operation and maintenance manual
5) Record (as-built) drawings, of the ASR well, surface equipment, instrumentation and appurtenances, sealed by the Engineer of Record
6) Summary of all water quality, water level and well performance data collected, with conclusions and recommendations
7) Well locations surveyed relative to permanent reference points by a Florida registered land surveyor, and located on a site plan by latitude and longitude.
8) Factory (mill) certificates for all casing pipe.
9) Evaluation of confinement and potential for upconing of poorer quality water.

i. In the event the ASR-1 well must be plugged and abandoned, the permitee shall obtain an FDEP permit, as required by Rule 62-528.645, FAC., see S.C. 8 below.

j. An interpretation of all test results must be submitted with all submittals.

5. Operational Testing Requirements

a. Operational testing shall not commence without written authorization from the Department. No injection testing with "raw water" will be allowed until the applicant has been granted a Water Quality Criteria Exemption which allows the injection of such waters.

b. Prior to operational testing, the permitee shall comply with the requirements of Rule 62-528.450(3)(a),(b), and (c), F.A.C.

c. Prior to operational testing approval, the following items must be submitted (with the request for operational testing approval) for Department approval and UIC-TAC and EPA review:

1) Draft operation and maintenance manual (revised to address changes associated with injectate source), including a description of water hammer control.

2) Lithologic and geophysical logs, hydrogeologic/specific capacity results, and water quality test results for Floridan Aquifer Monitor Well FAMW-1 and Surficial Monitor Well (9W-0069) with interpretations.

3) Planned injection and recovery flow rates, based on data collected during the construction and testing phases.

PERMITTEE:
Mr. Gary D. Dernlan, P.E.,
Director of Utilities
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SPECIFIC CONDITIONS:

4) Detailed cycle testing plan including the number of cycles, duration of cycles and total volumes injected and recovered [may be referenced to previous submission if no changes].

5) Results of the short term injection test with interpretation of the data. The ASR well shall first be tested for integrity of construction followed by a short term injection test of the ASR well of such duration as to allow for the prediction of operating pressure. The test results shall include a calculation or determination of fracture pressure of the injection formation [per Rule 62-528.410(6)(b)3., F.A.C.]. The injection test shall be conducted for a minimum of twenty-four (24) hours at a rate no less than the maximum rate at which the well is to be permitted. Pressure/water level data from the injection zone and both monitor zones shall be recorded continuously for at least twenty-four (24) hours before the test and at least twelve (12) hours following the test. The following data shall be recorded, analyzed, and reported for the duration of the injection test, i.e., all data should encompass the entire background, injection and recovery periods:

   a) injection flow rate (Well ASR-1, in MGD)
   b) injection pressure (Well ASR-1, in psig)
   c) injection zone pressure with no flow (shut-in pressure in psig)
   d) monitor well pressure (FAMW-1) and Surficial Monitor Well (9W-0069)
   e) barometric pressure

6) A description of the actual injection procedure including the anticipated maximum pressure and flow rates (injection and recovery) at which the well will be operated.

7) Background water quality results from the monitor zones of Floridan Aquifer Monitor Well FAMW-1 and Surficial Monitor Well (9W-0069) for primary and secondary drinking water standards (62-550, F.A.C.) and minimum criteria parameters (62-520, F.A.C.), as attached.

8) Water quality results of the injectate, sampled within six months of submission of the request for operational testing, for primary, and secondary standards and minimum criteria, as attached; and in addition, dissolved oxygen and total trihalomethanes.

9) Certification of completion of well construction for Floridan Aquifer Monitor Well FAMW-1.

10) Surface equipment (including piping, pressure gauges and flow meters, and all appurtenances) completion certified by the Engineer of Record, or certification of interim completion for the purposes of testing.

11) Signed and sealed record (as-built) engineering drawings of all well construction, subsurface and surface equipment (including FAMW-1), and appurtenances.

12) Calibration certificates for all pressure gauges and flow meters.

13) Other data obtained during well construction needed by the Department to evaluate whether the well will operate in compliance with Department Rules. [Rules 62-528.450(3)(a)3.i. and 62-528.605(2), F.A.C.]

14) Information pertaining to the sampling pump and associated tubing, installed to collect samples for analysis of microbial parameters, as approved by the PBCHD, including:

   a) As-built drawing(s) of the sampling pump and associated tubing,

SPECIFIC CONDITIONS:

b) Evaluation – based on the as-built information – of the minimum transit time for fluid to travel from the bottom of the sample tube to the ASR well sampling point (at land surface), and
c) Comparison of the minimum sampling tube transit time to the minimum transit time for water to travel from the bottom of the sample tube to the bottom of the ASR well's final casing. This comparison may be analogous to that submitted prior to permit issuance, but shall incorporate the as-built information as well as updated flow rate information from the injection test.
d) Methodology for measuring sampling tube flow rate.

d. Prior to operational testing approval, Department or Department delegated local program potable water construction permits must be issued, and construction must be completed and certified by the Engineer of Record, for all surface piping and appurtenances upstream of the ASR well-head, including, if determined appropriate, the piping and appurtenances associated with the fluid to be injected. Bacteriological clearances must be performed prior to operational testing of the ASR well system.

e. Pressure gauges and flow meters must be installed on the ASR well prior to initiating ASR activities at the site.

f. Prior to the authorization of operational testing by the Department, the County will contact the Underground Injection Control Section of the Department, Southeast District, to arrange a site inspection. The inspection will determine if all equipment necessary to operate and monitor the ASR well in compliance with the permit and Department rules has been installed. During the inspection, reporting requirements shall be reviewed. No injection, to include operational testing, shall be allowed without prior approval.

g. Prior to operational testing, the following items must be submitted for TAC review and Department approval:

1) a draft operation and maintenance manual with emergency procedures
2) borehole television survey of the ASR well and the final casing of the well
3) lithologic and geophysical logs with interpretations
4) certification of mechanical integrity and interpreted test data
5) aquifer test data, analysis and interpretation
6) detailed cycle testing plan including the number of cycles and duration of cycles
7) background water quality results from the storage zone for primary and secondary drinking water standards (62-550, FAC) and minimum criteria parameters (62-520 FAC), as attached
8) water quality results of the injectate for primary, and secondary standards and minimum criteria, excluding asbestos, acrylamide, epichlorohydrin and the primary pesticide scan, including dissolved oxygen and total trihalomethanes
9) surface equipment completion certification or certification of interim completion for the purposes of testing
10) signed and sealed As-built engineering drawings of all subsurface, surface equipment and appurtenances

h. The permitee shall calibrate all pressure gages, flowmeters, chart recorders, and other related equipment associated with the ASR well system on a semi-annual basis. The permitee shall maintain all monitoring equipment and shall ensure that the monitoring equipment is calibrated and in proper operating condition at all times. Laboratory equipment, methods, and quality control will follow EPA guidelines as expressed in Standard Methods for the Examination of water and Wastewater. The pressure gages, flow meter, and chart records shall be calibrated using standard engineering methods.

6. Operational Testing Conditions

a. Upon receipt of written authorization from the Department [S.C. 5.a.], the operational testing of the ASR well system shall be subject to the following conditions:

1) A qualified representative of the Engineer of Record shall be present for the start-up operations.

2) The Department shall be notified in writing of the date of commencement operations.

3) The progress of the operational testing for the system shall be reviewed during a meeting scheduled within one month of completion of the last planned cycle. A report evaluating the system's progress must be submitted to the Department, each member of the UIC-TAC, and EPA at least two (2) weeks prior to the scheduled meeting. The Department may require additional meeting(s) should water quality or other regulatory issues arise during cycle testing. The conditions for the operational testing period may be modified by the Department at each of the UIC-TAC review intervals.

4) Flows to the ASR well shall be monitored and controlled at all times to ensure the maximum injection rate does not exceed that rate at which the well was tested.

5) Any failure of the ASR system monitoring and recording equipment for a period of more than forty-eight (48) hours shall be reported within twenty-four (24) hours to the Department. A written report describing the incident shall also be given to the Department within five (5) days of the start of the event. The final report shall contain a complete description of the occurrence, a discussion of its cause(s) and the steps being taken to reduce, eliminate, and prevent recurrence of the event, and all other information deemed necessary by the Department.

6) The ASR system shall be monitored in accordance with Rules 62-528.425(1)(g)1.,2.,3., and 5., F.A.C.; and Rule 62-528.430(2)(b), F.A.C. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

7) The following data shall be collected and reported to the Department in Monthly Operating Reports (MORs):

a) ASR well performance:

(1) Flow rate parameters:
(a) average daily flow rate to/from ASR well (MGD)
(b) daily peak hour flow rate to/from ASR well (MGD)
(c) monthly maximum peak hour flow to and from ASR well (MGD)
(d) monthly average of the daily flow rates (MGD) to and from ASR well (MGD))

(2) Volume parameters:
(a) total daily flow to/from ASR well (MG)
(b) monthly maximum of daily flow volumes to and from ASR well (MG)
(c) cumulative total volume injected and recovered from the well (MG)

(3) Pressure parameters:
(a) daily average injection pressure at the ASR well (psig)
(b) daily maximum sustained injection pressure at the ASR well (psig)
(c) monthly average injection pressure at ASR well (psig)
(d) monthly maximum sustained injection pressure at ASR well (psig)

SPECIFIC CONDITIONS:

b) Chemical characteristics of the injectate:

Pursuant to Rules 62-528.425(1)(a) and 62-528.605(2), F.A.C., an injectate analysis (24-hour composite sample when applicable — grab sample for VOC parameters) for primary and secondary drinking water standards (Chapter 62-550, F.A.C.) and minimum criteria, see attached list, shall be submitted annually (sampled in February and submitted on or before April 30). The fluid injected shall meet the primary and secondary drinking water standards contained in Chapter 62-550, F.A.C., and the minimum criteria contained in Chapter 62-520, F.A.C., at all times, unless such accidence is otherwise authorized by statute or Department rule and approved by the Department. The permitee shall submit all water quality data required for community drinking water systems as a part of the monthly operation report (MOR).

c) During operational testing for the ASR Well ASR-1, the following chemical characteristics shall be monitored during each injection, storage (monitor wells only) and recovery cycle, in accordance with the parameters and frequency listed below:

(1) Weekly sampling (ASR-1, FAMW-1 and the Surficial Monitor Well (9W-0069)):

(a) total dissolved solids (TDS, total filterable residue) (mg/L)
(b) chloride (mg/L)
(c) specific conductance (temperature compensated, umho/cm)
(d) pH (standard units)
(e) color (color units)
(f) microbial indicators:
  i. total coliform (# of colonies/100 ml)
  ii. fecal coliform MF (# of colonies/100 ml)

(2) Weekly sampling (ASR-1 only):

(a) turbidity (Ntu)
(b) total suspended solids, TSS (mg/L)

(3) If the primary drinking water standard for total coliform is exceeded in the ASR injection fluid, then the injectate shall be sampled within twenty-four (24) hours from the time the permitee becomes aware of the accidence, for the following microbial indicators:

(a) total coliform (# of colonies/100 ml)
(b) fecal coliform MF (# of colonies/100 ml)
(c) cryptosporidium (oocysts/L)
(d) giardia (cysts/L)
(e) enterococci (# of colonies/100 ml)
(f) clostridium perfringens (# of colonies/100 ml)
(g) coliphage (pfu/100 ml)

SPECIFIC CONDITIONS:

(4) Monthly sampling during each injection, storage (FAMW-1 only) and recovery cycle (ASR-1, FAMW-1 and the Surficial Monitor Well (9W-0069)) for the following radionuclides and related parameters:

(a) Chemical characteristics monthly:

i. arsenic
ii. gross alpha, pCi/L
iii. dissolved oxygen; mg/L

(b) Per the discretionary provisions of 62-520.440 FAC, if sampling for gross alpha particle activity, shows a response of 15 picoCuries per liter or greater — monthly sampling for the following chemical characteristics shall be implemented until a full 3 months of data shows that gross alpha has declined to below the threshold value:

i. radium 226 (pCi/L)
ii. radium 228 (pCi/L)

Samples shall be collected according to the frequency specified above during cycle testing until the Department authorizes a reduction in sampling frequency to a proposed alternative frequency. A request for reduction in sampling frequency and/or elimination of specific individual parameters shall be accompanied by a minimum of six (6) months of cycle testing data accompanied by technical justification and interpretations. The request shall be submitted to the Department, UIC-TAC and USEPA for review and Department approval.

The MORs shall indicate monthly averages for all parameters sampled daily or weekly.

d) The Department may require the monitoring of additional parameters, and/or a more frequent monitoring of parameters, if water quality monitoring of the Floridan aquifer, surficial aquifer or the injection fluid indicates any of the following:

(1) quality of the injectate is deteriorating, as determined by the Department
(2) results of the sampling indicate significant differences in water quality during consecutive sampling events, as determined by the Department
(3) a source of contamination to the ASR storage zone is discovered that was not addressed in the permit.

e) Monitor zone potentiometric surface or water table height relative to NGVD (feet of head) or pressure (psig) referenced to NGVD (FAMW-1 and the Surficial Monitor Well (9W-0069)):

(1) daily maximum sustained pressure or water level
(2) daily minimum sustained pressure or water level
(3) daily average pressure or water level
(4) monthly maximum sustained pressure or water level
(5) monthly minimum sustained pressure or water level
(6) monthly average pressure or water level

f) Sampling tube flow rate, to be reported for each sampling event using the sampling tube (installed to collect samples for analysis of microbial parameters). A minimum of three (3) sampling tube volumes of fluid shall be evacuated from the sampling tube prior to sampling for the microbial parameters.

SPECIFIC CONDITIONS:

8) A minimum of three (3) well volumes of fluid shall be evacuated from the monitor system prior to sampling for the chemical parameters listed above. All samples shall be analyzed by a state-certified laboratory. Sufficient purging shall have occurred when either of the following have occurred:

   a) pH, specific conductivity and temperature when sampled, upon purging the third or subsequent well volume, each vary less than 5% from that sampled upon purging the previous well volume; or

   b) upon purging the fifth well volume.

9) All samples shall be analyzed by a State-certified laboratory and sampled and analyzed according to the requirements of Rule 62-160, F.A.C.

10) All ASR well system data submissions including MORs shall be clearly identified on each page with facility name, I.D. Number, permit number, operator's name, license number, daytime phone number, date of sampling/recording, and type of data. Monitor zones shall be identified by well and depth interval. The lead plant operator or higher official must sign and date each submittal. An approved summary sheet from the FDEP Southeast District Underground Injection Control (UIC) Section is attached.

11) ASR well system monitoring devices:

   a) Pursuant to Rules 62-528.425(1)(b) and 62-528.605(2), F.A.C., the ASR system shall be monitored by continuous indicating, recording and totalizing devices to monitor effluent flow rate and volume, and continuous indicating and recording devices to monitor injection pressure and monitor zone pressure (or water level, as appropriate; all zones). All indicating, recording and totalizing devices associated with the ASR well system shall be maintained in good operating condition and calibrated annually at a minimum. Laboratory equipment, methods, and quality control will follow United States Environmental Protection Agency (USEPA) guidelines as expressed in Standard Methods for the Examination of Water and Wastewater. The pressure gauges, flow meter, and chart records shall be calibrated using standard engineering methods.

   b) Pursuant to Rule 62-600.540(4), F.A.C., the surface equipment shall be such that manual backup capability to monitor flow and pressure shall be provided for systems utilizing automatic and continuous recording equipment.

12) Mechanical Integrity:

   a) The pressure at the wellhead shall be monitored and controlled at all times to ensure the maximum pressure on the final casing does not exceed., 66 percent (%) of the mechanical integrity test pressure.

   b) The permitee shall demonstrate mechanical integrity at least once every five years during the life of the ASR well. In the event operational or other data indicate a possible loss of integrity in the ASR well, the mechanical integrity and other testing may be required at less than a five year interval. The mechanical integrity testing (MIT) program shall include: TV survey, pressure test, and temperature log. A plan describing the mechanical integrity procedures shall be submitted to Underground Injection Control - Technical Advisory Committee (UIC-TAC) and to the Department for approval 6 months prior to the MIT due date. Per Rules 62-528.430(2)(b)2.a. and 62-528.605(2), F.A.C., the final report for the demonstration of mechanical integrity for the ASR well shall be submitted within three (3) months of the completion date for mechanical integrity testing. The final report shall address all tests noted above (including procedures followed, interpretations and results), and shall also include a tabular presentation/graphical evaluation of monitoring well data.

   c) Mechanical integrity testing:

      (1) The Department shall be notified at least seventy-two (72) hours prior to all testing for mechanical integrity.

(2) All testing for mechanical integrity must be initiated during normal business hours, Monday through Friday.

(3) The pressure test for the final casing will be accepted if tested with a fluid-filled casing at 1.5 times the expected operating pressure with a test tolerance of 5%. Verification of pressure gage calibration must be provided with the test reports.

d) Injection is prohibited until the permitee affirmatively demonstrates that the well has mechanical integrity. Prior to operational testing the permitee shall establish, and thereafter maintain the mechanical integrity of the well at all times.

e) If the Department determines that the ASR well lacks mechanical integrity, written notice shall be given to the permitee.

f) Within 48 hours of receiving written notice that the well lacks mechanical integrity, unless the Department requires immediate cessation of injection, the permitee shall cease injection into the well unless the Department allows continued injection pursuant to subparagraph g) below.

g) The Department shall allow the permitee to continue operation of a well that lacks mechanical integrity if the permitee has made a satisfactory demonstration that fluid movement between underground sources of drinking water is not occurring.

b. No fluids shall be injected without prior written authorization from the Department.

c. The only source of injectate shall be water meeting all Primary and Secondary drinking water quality standards and minimum criteria parameters unless otherwise exempted. All parameters which are not exempted under a water quality criteria exemption, variance or waiver, as appropriate, shall meet the appropriate standard at all times.

d. For wells ASR-1, FAMW-1 and the Surficial Monitor Well (9W-0069), if any of the conditions below occur because of injection at the County of Palm Beach ASR Well System, injection into the ASR well shall cease until a water quality criteria exemption, variance or waiver that addresses any additional parameters exceeding water quality standards, or an aquifer exemption pursuant to Rule 62-528.300(3), F.A.C., as appropriate, has been obtained:

1) The MCL is exceeded for any parameter contained in the primary drinking water standards (62-550, F.A.C.) as attached.

2) The MCL, or natural background level (if greater than the MCL), is exceeded for any parameter contained in the secondary drinking water standards (62-550, F.A.C.) or the minimum criteria parameters (62-520, F.A.C.) as attached.

e. The Department may require the monitoring of additional parameters if water quality monitoring of the FAMW-1, the Surficial Monitor Well (9W-0069) or the injection fluid indicates any of the following:

1) The quality of the injectate is deteriorating
2) The results of the sampling indicate significant differences in water quality during consecutive sampling events
3) A source of contamination to the ASR storage zone is discovered that was not addressed in the permit

7. Surface Equipment

a. Equipment shall be kept free of contamination with independent discharges and no interconnections with The integrity of the monitor zone sampling systems shall be maintained at all times. Sampling lines and any other lines. Sampling lines shall be clearly and unambiguously identified by monitoring zone at the point at which samples are drawn. All reasonable and prudent precautions shall be taken to ensure that samples are properly identified by monitor zone and that samples obtained are representative of those zones.

PERMITTEE:
Mr. Gary D. Dernlan, P.E.,
Director of Utilities
Palm Beach County Water Utilities Department
PROJECT: The Eastern Hillsboro Canal
Class V Aquifer Storage and Recovery

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DATE OF ISSUE: MAR 2 2 2001
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COUNTY: Palm Beach
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SPECIFIC CONDITIONS:

b. The surface equipment for the ASR well system must maintain compliance with Department rules for water hammer control, screening, access for logging and testing, and reliability and flexibility in the event of damage to the well and piping. Additionally a regular program of exercising the valves integral to the well head shall be instituted on a quarterly basis.

c. The ASR and monitoring wells' surface equipment and piping shall be kept free of corrosion at all times.

8. Plugging and Abandonment

a. The permitee shall unconditionally obligate themselves to plug and abandon ASR Well ASR-1, and Monitor Wells FAMW-1 (with the appropriate Department permit) should the well or wells become a threat to the waters of the State, if the wells are no longer used, or if the wells are no longer usable for their intended purpose, per Rules 62-528.460(1) and 62-528.605(2), F.A.C.

b. In the event the ASR well must be plugged and abandoned, the permitee shall obtain an FDEP permit, as required by Rule 62-528.645, F.A.C.

9. Signatories and Certification

a. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.

b. In accordance with Rule 62-528.340(4), F.A.C., all reports shall contain the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

10. Permit Renewal and Application for Operating Permit

Operational testing of this ASR well shall cease upon expiration of this permit unless a request for an Operation Permit for the ASR-1 well has been submitted at least 60 days prior to the expiration of this permit, or such an Operation Permit has been issued by the Department, or a timely renewal application (Rules 62-4.090, F.A.C. and 62-528.307(2)(a), F.A.C.) for a Construction Permit has been submitted to the Department or renewal of this Construction Permit has been accomplished.

Issued this 22nd **day of** March **, 2001**

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Melissa L. Meeker
Director of District Management
Southeast Florida District

MLM/LAH/JRM/DCP DCP

NPDES Discharge Permit

cc: Steve M.
Vincent M.

Department of Environmental Protection

Jeb Bush
Governor

Southeast District
P.O. Box 15425
West Palm Beach, Florida 33416

David B. Struhs
Secretary

RECEIVED
APR 26 2001
WATER UTILITIES DEPARTMENT
ADMINISTRATION

Also Copy to:
Jim S.
Hector R.

SK 4/30/2001

APR 25 2001

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL #7000 0600 0024 1599 3598
RETURN RECEIPT REQUESTED

Mr. Gary Dernlan, Director
Palm Beach County Water Utilities Dept.
2065 Prairie Road
West Palm Beach, Florida 33406

Palm Beach County
IW – Eastern Hillsboro Canal ASR
NPDES

RECEIVED
APR 27 2001
REGULATORY
COMPLIANCE

NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number FL0267538 for construction/operation of the Eastern Hillsboro Canal ASR surface water discharge system, issued pursuant to Section(s) Florida Statute Section 408.0855, Florida Administrative Code (FAC) 62-620, FAC 62-4.

Any party to this order (permit) has the right to seek judicial review of the permit under section 120.68 of the Florida Statutes, by the filing of a Notice of Appeal under rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this notice is filed with the Clerk of the Department.

Executed in West Palm Beach, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Melissa L. Meeker — 4/25/01
Melissa L. Meeker — Date
Director of District Management

MLM/LAH/tp

Copies furnished to:
Todd Brown, DEP/WPB
Renee Mathews, P.E., Mathews Consulting, Inc.
Palm Beach County ERM
Palm Beach County Public Health Unit
South Florida Water Management District

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF DRAFT PERMIT and all copies were mailed by certified mail before the close of business on APR 2 5 2001 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to s.120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

4/25/01
Date

Department of Environmental Protection

Jeb Bush
Governor

Southeast District
P.O. Box 15425
West Palm Beach, Florida 33416

David B. Struhs
Secretary

APR 2 5 2001

STATE OF FLORIDA
WASTEWATER FACILITY PERMIT

PERMITTEE:	Palm Beach County Water Utilities Dept. 2065 Prairie Road West Palm Beach, Florida 33406	**PERMIT NUMBER:** **ISSUANCE DATE:** **EXPIRATION DATE:**	FL0267538 APR 2 5 2001 APR 2 4 2006

RESPONSIBLE AUTHORITY: Gary Dernlan, Director of Utilities

NPDES

FACILITY/PROJECT: Eastern Hillsboro Canal ASR System – Surface Water Discharge
Palm Beach County

LAT/LONG: 26°19'58"N/80°13'24"W

This permit is issued under the provisions of Chapter 403, Florida Statutes, and constitutes authorization to discharge to waters of the state under the National Pollutant Discharge Elimination System (NPDES). The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

PROJECT, TREATMENT AND DISPOSAL FACILITIES:

Palm Beach County Water Utilities Water Treatment Plant 9 aquifer storage and recovery (ASR) system discharge of Floridan Aquifer water during construction (Phase I), and recovered (stored) water during the operational phase (Phase II).

Phase I Discharge: Water from the reverse air well drilling procedures and pump tests will be discharged to the Hillsboro Canal, a Class III surface water (fresh), after settling in an 8,000 gallon steel circulation tank. Construction activities are expected to take approximately nine months. Mixing zones of 150 meters for turbidity and dissolved oxygen (DO), and 800 meters for specific conductance are authorized during the construction/testing phase.

Phase II Discharge: During the operational phase of the project, discharges to the Hillsboro Canal are expected to occur during the dry season for 3 days per week, at a flow rate of 5 MGD. The discharge will consist of surficial aquifer water taken from the water treatment plant raw water supply wells that has been stored in the ASR well during the wet season. A control system for turbidity and specific conductance will terminate the discharge in order to maintain surface water and ground water standards.

The Phase II discharge outfall structure (D001) will be located approximately at latitude 26°19'58"N and longitude 80°13'24"W, in the Hillsboro Canal. The outfall will be a submerged 20-inch diameter reinforced concrete pipe. The structure will be equipped with an eductor system designed to mix a sidestream of canal water (400 gpm) and approximately 115 gpm of air into the discharge in order to maintain a minimum of 5.0 mg/L DO.

IN ACCORDANCE WITH:

The application for permit to discharge non-process wastewater to surface waters on DEP Forms 62-620.910(1) and 62-620.910(7), received on November 14, 2000; additional information received February 13 2000; and also subject to the limitations, monitoring requirements and other conditions set forth in this permit.

I. Effluent Limitations and Monitoring Requirements

A. Surface Water Discharges

1. During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge water from Outfall D001. Such discharge shall be limited and monitored by the permittee as specified below. If end-of-pipe or mixing zone limits are exceeded, the discharge shall be discontinued immediately until such time as adequate treatment or dilution can be provided.

Phase I (Well Drilling and Testing):

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Avg.	Daily Max.	Other (specify)	Frequency	Sample Type	Sample Point
Flow (MGD)	Report	Report	N/A	Daily	Pump log or meter	See I.A.5. below
Specific Conductance (umhos/cm)	Report	See I.A.6.	N/A	See I.A.9.	In-situ	See I.A.5. and 6.
Chloride (mg/L)	Report	See I.A.6.	N/A	See I.A.9.	In-situ	See I.A.6.
Turbidity (NTU)	Report	See I.A.7.	N/A	See I.A.9.	In-situ	See I.A.5. and 7.
pH, field (s.u.)	Report	N/A	See I.A.4.	See I.A.9.	In-situ	See I.A.5. Below
Dissolved Oxygen (mg/L)	Report	N/A	See I.A.8.	See I.A.9.	In-situ	See I.A.5. and 8.

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Phase II (ASR Well Operational):

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Avg.	Daily Max.	Other (specify)	Frequency	Sample Type	Sample Point
Flow (MGD)	Report	Report	N/A	Continuous	Pump log or meter	See I.A.5.
Specific Conductance (umhos/cm)	Report	See I.A.10.	N/A	Continuous	In-situ	See I.A.5.
Chloride (mg/L)	Report	250	N/A	See I.A.10.	See I.A.10.	See I.A.5.
Turbidity (NTU)	Report	29	N/A	Continuous	In-situ	See I.A.5.
pH, field (s.u.)	Report	N/A	See I.A.4.	Weekly	In-situ	See I.A.5.
Dissolved Oxygen (mg/L)	Report	N/A	5.0 mo avg 4.0 daily min	Daily	In-situ	See I.A.5.
Total Dissolved Solids (mg/L)	N/A	500	N/A	Monthly	Grab	See I.A.5.
Sodium (mg/L)	N/A	160	N/A	Monthly	Grab	See I.A.5.
Fecal Coliform (#/100 mL)	N/A	200	N/A	Monthly	Grab	See I.A.5.
Total Coliform (#/100 mL)	N/A	1000	N/A	Monthly	Grab	See I.A.5.
Total Nitrogen (as N) (mg/L)	Report	Report	N/A.	Monthly	Grab	See I.A.5.
Total Ammonia (as N) (mg/L)	Report	Report	N/A	Monthly	Grab	See I.A.5.
Total Phosphorus (as P) (mg/L)	Report	Report	N/A	Monthly	Grab	See I.A.5.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.
3. The discharge shall not cause a visible sheen on the receiving water.
4. The pH shall not be less than 6.0 standard units, nor greater than 8.5 standard units.
5. Unless specified elsewhere in the permit, samples taken in compliance with the monitoring requirements specified in I.A.1. shall be taken at the nearest accessible point after final treatment but prior to the actual discharge with the receiving water. Mixing zone samples, if necessary, shall be taken at mid-depth of the canal.
6. Phase I Mixing Zone for Specific Conductance and Chloride Limit:

   (a) If there is sufficient flow in the canal, a mixing zone of 800 meters in the Hillsboro Canal downstream of Outfall D001 for Specific Conductance is allowed (Monitoring Site SWD-1). If there is no flow in the canal, compliance with a mixing zone shall be verified 400 meters on either side of the outfall. At the edge of the mixing zone the Specific Conductance shall not exceed 50% of background or 1275 umhos/cm, whichever is greatest.

   (b) The discharge shall also be controlled such that the canal water is maintained in compliance with the ground water standard for chloride, which is 250 mg/L. A correlation shall be provided between specific conductance and chloride, which will be used in the field to determine when chloride

concentrations in the canal approach the standard. The chloride standard shall be achieved at the edge of the mixing zone.

7. Phase I Mixing Zone for Turbidity:

   (a) Prior to the discharge, the ambient background turbidity shall be measured and recorded in the canal at mid-depth near the point of discharge. If the turbidity of the discharge at the end-of-pipe is less than 29 NTU over the background value, no mixing zone is necessary. If the end-of-pipe turbidity value is greater than 29 NTU over background, a mixing zone is authorized.

   (b) If there is sufficient flow in the canal, a mixing zone of 150 meters in the Hillsboro Canal downstream of Outfall D001 for turbidity is allowed. If there is no flow in the canal, compliance with a mixing zone for turbidity shall be verified 75 meters on either side of the outfall. At the edge of the mixing zone the turbidity shall not exceed 29 NTU over the background value.

8. Phase I Mixing Zone for Dissolved Oxygen:

   (a) The end-of-pipe limit for DO shall be a minimum of 1.5 mg/L.

   (b) If the DO of the discharge water is greater than 4.0 mg/L, no mixing zone is necessary. If the DO of the discharge is less than 4.0 mg/L a mixing zone is authorized.

   (c) If there is sufficient flow in the canal, a mixing zone of 150 meters in the Hillsboro Canal downstream of Outfall D001 for DO is allowed. If there is no flow in the canal, compliance with the mixing zone for DO shall be verified 75 meters on either side of the outfall. At the edge of the mixing zone the DO shall not be less than 4.0 mg/L, or less than or equal to ambient background.

9. During Phase I, the effluent shall be sampled every 2 hours for three consecutive samples each day a discharge occurs. Mixing zones samples, if necessary, shall also be sampled at the edge of the mixing zone every 2 hours for three consecutive samples.

10. Prior to commencement of Phase II discharges, the permittee shall submit an operating protocol to the Department which will outline and describe the procedures and the control system to be used that will effectively shut down the discharge before the standards for specific conductance, chloride, TDS, or turbidity are exceeded. The standard for specific conductance is no greater than 50% above background (canal) or 1275 umhos/cm, whichever is greatest. The standard for chloride and TDS will be assumed to be the ground water criteria of 250 mg/L and 500 mg/L respectively, and may be correlated to a set-point for conductance as programmed in the control system. The standard for turbidity shall be 29 NTU. Phase II operational discharges are not allowed until approval of the protocol is received from the Department.

11. In addition to the monitoring parameters given in I.A. for Phase II operation, the permittee shall sample the discharge for the primary and secondary drinking water standards. The initial sample shall be taken within 7 days after the initial discharge, and annually thereafter, by grab sample.

12. To minimize erosion and turbidity, and to increase the DO level, during Phase I, the permittee shall use a splash pad and turbidity screen at the point of discharge into the canal.

B. Other Methods of Disposal or Recycling

1. There shall be no discharge of wastewater from this facility to ground or surface waters, except as authorized by this permit.

C. Other Limitations and Monitoring and Reporting Requirements

1. Field testing, quality control procedures and all record keeping shall be in accordance with Chapter 62-160, F.A.C.

2. Monitoring results obtained for each calendar month shall be summarized for that month and reported on a Discharge Monitoring Report (DMR), Form 62-620.910(10), postmarked no later than the 28th day of the month following the completed calendar month. For example, data for January shall be submitted by February 28. New DMRs to report Phase II discharges shall be issued to the permittee when the Department approves of the operating protocol (see Condition I.A.10.). Signed copies of the DMR shall be submitted to the Florida Department of Environmental Protection at the address specified below:

   Florida Department of Environmental Protection
   Wastewater Facilities Regulation Section, Mail Station 3551
   Twin Towers Office Building
   2600 Blair Stone Road
   Tallahassee, Florida 32399-2400

   If no discharge occurs during the reporting period, sampling requirements of this permit do not apply, and the "No Discharge" box shall be checked on the DMR form. If, during the term period of this permit, the facility permanently ceases to discharge, the Department shall be notified immediately upon cessation of discharge. Such notification shall be in writing.

3. Unless specified otherwise in this permit, all reports and notifications required by this permit, including twenty-four hour notifications, shall be submitted to or reported to, as appropriate, the Southeast District Office of the Department at the address specified below:

   Florida Department of Environmental Protection
   Southeast District Office Office
   P.O. Box 15425
   West Palm Beach, Florida 33416
   Attn: Industrial Waste Section
   Telephone Number: (561)681-6600
   Facsimile Number: (561)681-6760

4. The permittee shall provide safe access points for obtaining representative samples which are required by this permit.
5. The permittee shall ensure that all laboratory analytical data submitted to the department as required by this permit is from a laboratory which has a currently valid and Department-approved Comprehensive Quality Assurance Plan (ComQAP), or a ComQAP pending approval, for all parameters being reported as required by Chapter 62-160, Florida Administrative Code.
6. If there is no discharge from the facility on a day scheduled for sampling, the sample shall be collected on the day of the next discharge.
7. Any bypass of the treatment facility which is not included in the monitoring specified I.A.1., or I.B., is to be monitored for flow and all other required parameters. For parameters other than flow, at least one grab sample of effluent, collected prior to discharge to the canal, per day shall be monitored. Daily flow shall be monitored or estimated, as appropriate, to obtain reasonable data. All monitoring results shall be reported on the appropriate DMR form.

II. Operation and Maintenance Requirements

A. Operation of Treatment and Disposal Facilities

1. The permittee shall ensure that the operation of this facility is as described in the application and supporting documents.

2. During Phase I, fines and sediment shall be removed from the settling tanks on a daily basis or as often as necessary so that the effluent limit for Turbidity is not exceeded. If the Turbidity limit is exceeded during the course of daily operations, the operation shall be shut down until corrective action is taken to resolve the problem.
3. Disposal of fines or silt from the settling tanks shall be in accordance with Department rules at approved sites or facilities.

B. Record keeping Requirements:

The permittee shall maintain the following records on the site of the permitted facility or SFWMD headquarters, and make them available for inspection:

1. Records of all compliance monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, including, if applicable, a copy of the laboratory certification showing the certification number of the laboratory, for at least three years from the date the sample or measurement was taken;
2. Copies of all reports, other than those required in items 1. and 6. of this section, required by the permit for at least three years from the date the report was prepared, unless otherwise specified by Department rule;
3. Records of all data, including reports and documents used to complete the application for the permit for at least three years from the date the application was filed, unless otherwise specified by Department rule;
4. A copy of the current permit;
5. A copy of any required record drawings;
6. Copies of the logs and schedules showing facility operations and equipment maintenance for three years from the date on the logs or schedule.

III. Other Specific Conditions

A. Specific Conditions Applicable to all permits

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Florida Department of Environmental Protection, Southeast District office, are made a part hereof.
2. If significant historical or archaeological artifacts are discovered at any time within the project site, the permittee shall immediately notify the District Office and the Bureau of Historic Preservation, Division of Archives, History and Records Management, R.A. Gray Building, Tallahassee, Florida 32301.
3. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) Florida Statutes, applicable portions of reports to be submitted under this permit, shall be signed and sealed by the professional(s) who prepared them.
4. This permit satisfies Industrial Wastewater program permitting requirements only and does not authorize operation of this facility prior to obtaining any other permits required by local, state or federal agencies.

B. Duty to Reapply

1. The permittee shall submit an application to renew this permit at least 180 days before the expiration date of this permit.
2. The permittee shall apply on the appropriate form listed in Rule 62-620.910, F.A.C., and in the manner established in Rules 62-620.400 through 62-620.460, F.A.C., including submittal of the appropriate processing fee set forth in Rule 62-4.050, F.A.C.
3. An application filed in accordance with subsections 1. and 2. of this part shall be considered timely and sufficient. When an application for renewal of a permit is timely and sufficient, the existing permit shall not expire until the Department has taken final action on the application for renewal or until the last day for seeking judicial review of the agency order or a later date fixed by order of the reviewing court.

4. The late submittal of a renewal application shall be considered timely and sufficient for the purpose of extending the effectiveness of the expiring permit only if it is submitted and made complete before the expiration date.

IV. General Conditions

The following General Conditions are referenced in Florida Administrative Code Rule 62-620.610.

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Chapter 403, Florida Statutes. Any permit noncompliance constitutes a violation of Chapter 403, Florida Statutes, and is grounds for enforcement action, permit termination, permit revocation and reissuance, or permit revision.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviations from the approved drawings, exhibits, specifications or conditions of this permit constitutes grounds for revocation and enforcement action by the Department.
3. As provided in Subsection 403.087(6), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor authorize any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit or authorization that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted source; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The permittee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
6. If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee shall apply for and obtain a new permit.
7. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control, and related appurtenances, that are installed and used by the permittee to achieve compliance with the conditions of this permit. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to maintain or achieve compliance with the conditions of the permit.
8. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
9. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, including an authorized representative of the Department and authorized EPA personnel, when applicable, upon presentation of credentials or other documents as may be required by law, and at reasonable times, depending upon the nature of the concern being investigated, to

a. Enter upon the permittee's premises where a regulated facility, system, or activity is located or conducted, or where records shall be kept under the conditions of this permit;
b. Have access to and copy any records that shall be kept under the conditions of this permit;
c. Inspect the facilities, equipment, practices, or operations regulated or required under this permit; and
d. Sample or monitor any substances or parameters at any location necessary to assure compliance with this permit or Department rules.

10. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except as such use is proscribed by Section 403.111, Florida Statutes, or Rule 62-620..302, Florida Administrative Code. Such evidence shall only be used to the extent that it is consistent with the Florida Rules of Civil Procedure and applicable evidentiary rules.

11. When requested by the Department, the permittee shall within a reasonable time provide any information required by law which is needed to determine whether there is cause for revising, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also provide to the Department upon request copies of records required by this permit to be kept. If the permittee becomes aware of relevant facts that were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be promptly submitted or corrections promptly reported to the Department.

12. Unless specifically stated otherwise in Department rules, the permittee, in accepting this permit, agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

13. The permittee, in accepting this permit, agrees to pay the applicable regulatory program and surveillance fee in accordance with Rule 62-5.052, F.A.C.

14. This permit is transferable only upon Department approval in accordance with Rule 62-620.340, F.A.C. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

15. The permittee shall give the Department written notice at least 60 days before inactivation or abandonment of a wastewater facility and shall specify what steps will be taken to safeguard public health and safety during and following inactivation or abandonment.

16. The permittee shall apply for a revision to the Department permit in accordance with Rules 62-620.300, 62.420 or 62.620.450, F.A.C., as applicable, at least 90 days before construction of any planned substantial modifications to the permitted facility is to commence or with Rule 62-620.300 for minor modifications to the permitted facility. A revised permit shall be obtained before construction begins except as provided in Rule 62-620.300, F.A.C.

17. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The permittee shall be responsible for any and all damages which may result from the changes and may be subject to enforcement action by the Department for penalties or revocation of this permit. The notice shall include the following information:
    a. A description of the anticipated noncompliance;
    b. The period of the anticipated noncompliance, including dates and times; and
    c. Steps being taken to prevent future occurrence of the noncompliance.

18. Sampling and monitoring data shall be collected and analyzed in accordance with Rule 62-4.246, Chapter 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate.

    a. Monitoring results shall be reported at the intervals specified elsewhere in this permit and shall be reported on a Discharge Monitoring Report (DMR), DEP Form 62-620.910(10).

b. If the permittee monitors any contaminate more frequently than required by the permit, using Department approved test procedures, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
c. Calculations for all limitations which require averaging of measurements shall use an arithmetic mean unless otherwise specified in this permit.
d. Any laboratory test required by this permit for domestic wastewater facilities shall be performed by a laboratory that has been certified by the Department of Health and Rehabilitative Services (DHRS) under Chapter 10D41, F.A.C., to perform the test. In domestic wastewater facilities, on-site tests for dissolved oxygen, pH, and total chlorine residual shall be performed by a laboratory certified to test for those parameters or under the direction of an operator certified under Chapter 61E12-41, F.A.C.
e. Under Chapter 62-160, F.A.C., sample collection shall be performed by following the protocols outlined in "DER Standard Operating Procedures for Laboratory Operations and Sample Collection Activities" (DER-QA-001/92). Alternatively, sample collection may be performed by an organization who has an approved Comprehensive Quality Assurance Plan (CompQAP) on file with the Department. The CompQAP shall be approved for collection of samples from the required matrices and for the required tests.

19. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule detailed elsewhere in this permit shall be submitted no later than 14 days following each schedule date.

20. The permittee shall report to the Department any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

a. The following shall be included as information which must be reported within 24 hours under this condition:

1. Any unanticipated bypass which causes any reclaimed water or the effluent to exceed any permit limitation or results in an unpermitted discharge,
2. Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,
3. Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and
4. Any unauthorized discharge to surface or ground waters.

b. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department shall waive the written report.

21. The permittee shall report all instances of noncompliance not reported under Conditions IV. A. 18. and 19. of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Condition IV. A. 20. of this permit.

22. Bypass Provisions.

a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:

(1). Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and

(2). There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3). The permittee submitted notices as required under Condition IV. A. 22. b. of this permit.

b. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Condition IV. A. 20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.

c. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Condition IV. A. 22. a. through 3. of this permit.

d. A. permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Condition IV. A. 22. a. through c. of this permit.

23. Upset Provisions

a. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:

(1). An upset occurred and that the permittee can identify the cause(s) of the upset;

(2). The permitted facility was at the time being properly operated;

(3). The permittee submitted notice of the upset as required in Condition IV. A. 20. of this permit; and

(4). The permittee complied with any remedial measures required under Condition IV. A. 5. of this permit.

b. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

c. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.

Issued this 25th day of April, 2001

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Melissa L. Meeker
Director of District Management
Southeast District Office

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT

WHEN CO' 'TED MAIL THIS REPORT TO: Department of Environmental Protec tail Station 3551, 2600 Blair Stone Rd., Tallahassee, Florida 32399-2400

PERMITTE. ME: Palm Beach County Water Utilities Dept
MAILING ADDRESS: 2065 Prarie Road
West Palm Beach, FL 33406
Attention: Gary Dernlan, Director
FACILITY: Eastern Hillsboro Canal ASR System
LOCATION: Approximately 7,000 ft west of US 441 in Hillsboro Canal
COUNTY: Palm Beach

PERMIT NUMBER: FL0267538
MONITORING PERIOD--From: To:
LIMIT: Final Report: Monthly
CLASS SIZE: Industrial/Minor
FACILITY ID: FL0267538 GROUP: IW
DISCHARGE POINT NUMBER: D001
Phase I Discharge NO DISCHARGE: ☐

Please read instructions before completing this form.

Parameter		Quantity or Loading			Quality or Concentration				No. Ex.	Frequency of Analysis	Sample Type
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow (Effluent)	Sample Measurement				******	******	******	******			
Storet No. 50050 1 Mon. Site No. EFF-1	Permit Requirement	Report Mo. Avg.	Report Daily Max.	MGD	******	******	******	******		Daily	Pump Log or Meter
Specific Conductance (Measured Effluent Concentration)	Sample Measurement	******	******	******	******						
Storet No. 00095 1 Mon. Site No. EFF-1	Permit Requirement	******	******	******	******	Report Mo. Avg.	Report Daily Max.	umhos/cm		3/day	In-Situ
Specific Conductance (Edge of Mixing Zone Concentration)	Sample Measurement	******	******	******	******						
Storet No. 00095 6 Mon. Site No. SWD-1	Permit Requirement	******	******	******	******	Report Mo. Avg.	Report Daily Max.	umhos/cm		3/day	In-Situ
Specific Conductance (Background Concentration)	Sample Measurement	******	******	******	******						
Storet No. 00095 P Mon. Site No. SWB-1 (see footnotes below)	Permit Requirement	******	******	******	******	Report Mo. Avg.	Report Daily Max.	umhos/cm		3/day	In-Situ
Specific Conductance (Calculated Mixing Zone Limit)	Sample Measurement	******	******	******	******	******					
Storet No. 00095 Q Mon. Site No. (N/A) (see footnotes below)	Permit Requirement	******	******	******	******	******	Report Daily Max.	umhos/cm		3/day	Calculate
Specific Conductance (Calculated difference)	Sample Measurement	******	******	******	******	******					
Storet No. 00095 R Mon. Site No. SWD-1 (see footnotes below)	Permit Requirement	******	******	******	******	******	0.0 Daily Max.	umhos/cm		3/day	Calculate

Footnotes: P = Background concentration measured upstream of outfall. Q = Calculated mixing zone limit, =(1.5)X(Background) or 1275, whichever is greatest.
R = Difference of Edge of Mixing Zone concentration minus calculated limit (Q), positive value indicates exceedence.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name/Title of Principal Executive Officer or Authorized Agent (Type or Print)	Signature of Principal Executive Officer or Authorized Agent	Telephone No. (include area code)	Date (yy/mm/dd)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here):

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT

WHEN COMPLETED MAIL THIS REPORT TO: **Department of Environmental Protection, Mail Station 3551, 2600 Blair Stone Rd., Tallahassee, Florida 32399-2400**

PERMITTEE NAME: Palm Beach County Water Utilities Dept
MAILING ADDRESS: 2065 Prarie Road
West Palm Beach, FL 33406
Attention: Gary Dernlan, Director
FACILITY: Eastern Hillsboro Canal ASR System
LOCATION: Approximately 7,000 ft west of US 441 in Hillsboro Canal
COUNTY: Palm Beach

PERMIT NUMBER: FL0267538
MONITORING PERIOD--From: To:
LIMIT: Final Report: Monthly
CLASS SIZE: Industrial/Minor
FACILITY ID: FL0267538 GROUP: IW
DISCHARGE POINT NUMBER: D001
Phase I Discharge NO DISCHARGE: ☐

Please read instructions before completing this form.

Parameter		Quantity or Loading			Quality or Concentration				No. Ex.	Frequency of Analysis	Sample Type
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Turbidity (Effluent) Storet No. 00070 1 Mon. Site No. EFF-1	Sample Measurement	******	******	******	******						
	Permit Requirement	******	******	******	******	Report Mo. Avg.	Report Daily Max.	NTU		3/day	In-Situ
Turbidity (Background Concentration) Storet No. 00070 5 Mon. Site No. SWB-1	Sample Measurement	******	******	******	******						
	Permit Requirement	******	******	******	******	Report Mo. Avg.	Report Daily Max.	NTU		3/day	In-Situ
Turbidity (Calculated Limit) Storet No. 00070 Q Mon. Site No. (N/A) (see footnotes below)	Sample Measurement	******	******	******	******	******					
	Permit Requirement	******	******	******	******	******	Report Daily Max.	NTU		3/day	Calculated
Turbidity (Calculated Difference) Storet No. 00070 R Mon. Site No. EFF-1 (see footnotes below)	Sample Measurement	******	******	******	******	******					
	Permit Requirement	******	******	******	******	******	0.0 Daily Max.	NTU		3/day	Calculated

Footnotes: Q = Calculated discharge limit, 29 NTU + background NTU. R = Difference of effluent value (end-of-pipe) minus calculated limit (Q), positive value indicates exceedence.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name/Title of Principal Executive Officer or Authorized Agent (Type or Print)	Signature of Principal Executive Officer or Authorized Agent	Telephone No. (include area code)	Date (yy/mm/dd)

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PERMIT NUMBER: FL0267538
MONITORING PERIOD--From: To:
LIMIT: Final Report: Monthly
CLASS SIZE: Industrial/Minor
FACILITY ID: FL0267538 GROUP: IW
DISCHARGE POINT NUMBER: D001
Phase I Discharge NO DISCHARGE: ☐

Please read instructions before completing this form.

Parameter		Quantity or Loading			Quality or Concentration				No. Ex.	Frequency of Analysis	Sample Type
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Dissolved Oxygen (Effluent) Storet No. 00300 1 Mon. Site No. EFF-1	Sample Measurement	******	******	******			******				
	Permit Requirement	******	******	******	1.5 Daily Min.	Report Mo. Avg.	******	mg/L		3/day	In-Situ
Dissolved Oxygen (Background Concentration) Storet No. 00300 5 Mon. Site No. SWB-1	Sample Measurement	******	******	******			******				
	Permit Requirement	******	******	******	Report Daily Min.	Report Mo. Avg.	******	mg/L		3/day	In-Situ
Dissolved Oxygen (Edge of Mixing Zone) Storet No. 00300 6 Mon. Site No. SWD-1	Sample Measurement	******	******	******			******				
	Permit Requirement	******	******	******	Report Daily Min.	Report Mo. Avg.	******	mg/L		3/day	In-Situ
pH (Field) (Effluent) Storet No. 00400 1 Mon. Site No. EFF-1	Sample Measurement	******	******	******							
	Permit Requirement	******	******	******	6.0 Daily Min.	Report Mo. Avg.	8.5 Daily Max.	s.u.		3/day	In-Situ
Chloride (Edge of Mixing Zone) Storet No. 1 Mon. Site No. SWD-1	Sample Measurement	******	******	******	******						
	Permit Requirement	******	******	******	******	Report Mo. Avg.	250 Daily Max.	mg/L		3/day	Calculated
	Sample Measurement										
	Permit Requirement										

Footnote:

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name/Title of Principal Executive Officer or Authorized Agent (Type or Print)	Signature of Principal Executive Officer or Authorized Agent	Telephone No. (include area code)	Date (yy/mm/dd)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here):

DISCHARGE MONITORING REPORT

IMPORTANT: Please make copies of the blank forms for future report submittals. The Department will not routinely send you blank forms.

One report shall be completed and submitted for each discharge point, outfall, or testing site listed in the permit. Use additional sheets if necessary. Mail to Department of Environmental Protection at the address shown on th page of report.

If "no discharge" occurs during the monitoring period, enter an "X" in the "NO DISCHARGE" box in the upper right corner.

Permittee Name/Address: Complete the name as shown on the face of the permit. Complete the mailing address. Place a note beside the mailing address if the address has changed within the past month.
Facility/Location: Complete the name of the facility and the address or location of the facility.
Permit Number: This is the number of the permit issued to the permittee which contains the monitoring requirements in this report.
Monitoring Period: This is the period that the data on this report represents.
Limit: This is blank if the data represents interim limits on a facility under construction. If the data represents final limits achieved after construction, the word FINAL will be here.
Class Size/Group: The facility classification is either major or minor and the group is either industrial or domestic.
Facility ID: This is the identification number of the facility which was assigned by the Department at the time the facility was constructed.
Discharge Point Number: This is the number in the permit assigned to the outfall, discharge point, or test site from which this data was collected. Complete one of these reports for each outfall or discharge point from your fac
Parameter: This is the variable or substance which must be monitored.
Sample Measurement: The data which was collected and analyzed.
Permit Requirement: The limit from the permit for that parameter and measurement.
Quantity or Loading: The amount or mass of the parameter discharged during the reporting period in **Average** quantity discharged during the reporting period after adding each day of discharge, **Maximum** quantity discharg the day with the highest amount, and the **Unit** of measurement (lbs, g, tons, etc.)
Quality or Concentration: The concentration of the parameter discharged during the reporting period in **Minimum** concentration during the reporting period, **Average** of all the measurements for the parameter during the repo period, **Maximum** or highest concentration discharged during the reporting period, and the **Unit** of measurement (mg/L, ug/L, etc.)
No. Ex.: The number of sample measurements during the sampling period that exceeded the maximum (minimum or 7-day average, as appropriate) permit requirement for each parameter. If none, enter zero.
Frequency of Analysis: The number of times the measurement is required to be made by the permit and the number of times the measurement was made.
Sample Type: The type of sample (grab, composite, continuous) required to be taken by the permit and the type that was taken.
Certificate, Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the **telephone number** where the official may be reached in the there are questions concerning this report. **Date** when the report is signed.
Comment and Explanation: Use this area to explain any exceedances, any upset or by-pass events, or other items which require explanation.

GROUNDWATER MONITORING REPORT

This part is applicable only to groundwater monitoring wells. Type or print in ink the required data. All samples shall be collected and analyzed in accordance with Chapter 62-160, F.A.C. Laboratory reports shall be kept on f the location indicated in your permit and made available for inspection upon request by the Department.

Facility ID: This is the identification number of the facility assigned by the Department.
Test Site ID: This is the identification number of the sampling site listed in your permit.
Month/Year: This is the period during which the data on this report was collected and analyzed. If the period is greater than one month, indicate beginning month to ending month.
Well Type: Indicate if the well being sampled is background, intermediate, compliance, or other. If other, explain in the comment section.
Well Name: The name of the monitoring well as given in the permit.
Date Sample Obtained: This is the date the sample was taken.
Ground Water Class: This is the classification of the ground water under Chapter 62-522, F.A.C.
Parameter: Analyze the parameters the permit requires. List any additional parameters from the permit which are not pre-listed here. If there are any parameters listed here which are not required by your permit, enter NR o line.
Storet Code: Enter the Storet Code associated with the parameter.
Sampling Method: Describe the sampling method used.
Samples Filtered: Indicate whether the sample obtained was filtered (Y) or unfiltered (N).
Preservatives Added: State what preservatives were added to the sample.
Analysis Method: Indicate the analytical method used. Record the number from Chapter 62-160 or Chapter 62-601, F.A.C., or from other sources.
Analysis Result/Units: Record the results of the analysis. If the result was below the minimum detection limit, indicate that. Enter the units associated with the results of the analysis.
Detection Limits/Units: Record the detection limits and the units associated with them.
Comments and Explanations: Use this space to make any comments on or explanations of results which are unexpected.

PBC Health Department Permit

FLORIDA DEPARTMENT OF HEALTH

10-08-B
Permits

Jeb Bush
Governor

Robert G. Brooks, M.D.
Secretary

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

NOTICE OF PERMIT ISSUANCE

In the Matter of an Application for Permit by:

Gary D. Dernlan, P.E.
Director of Utilities
Palm Beach County Water Utilities
2065 Prairie Road
West Palm Beach, FL 33416

FILE NO.: 138308-091-WC

PROJECT: Water Treatment Plant #9
Wellhead for ASR Well at Hillsboro Canal

Enclosed is Permit Number 138380-091-WC, issued to Gary D. Dernlan, P.E., Director of Utilities, Palm Beach County Water Utilities, to construct a wellhead, issued pursuant to Chapter 403, Florida Statutes (F.S.).

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in this Office, Division of Environmental Health & Engineering, Palm Beach County Health Department, 901 Evernia Street, West Palm Beach, Florida, 33401. Petitions filed by the permit applicant and the parties listed below must be filed within fourteen (14) days of receipt of this permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

a. The name, address and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed;

b. A statement of how and when each petitioner received notice of the Health Department's action or proposed action;

c. A statement of how each petitioner's substantial interests are affected by the Health Department's action or proposed action;

d. A statement of the material facts disputed by Petitioner, if any;

e. A statement of facts which petitioner contends warrant reversal or modification of the Health Department's action or proposed action;

f. A statement of which rules or statutes petitioner contends require reversal or modification of the Health Department's action or proposed action; and

g. A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Health Department to take with respect to the action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Health Department's final action may be different from the position taken by it in this permit. Persons whose substantial interests will be affected by any decision of the Health Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within fourteen (14) days of receipt of this notice, in this Office, Division of Environmental Health & Engineering, at the above address of the Palm Beach County Health Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S. and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 62-5.207, Florida Administrative Code (F.A.C.).

This permit is final and effective on the date filed with Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 62-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section l20.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.ll0, Florida Rules of Appellate Procedure, with this Office, Division of Environmental Health & Engineering, Palm Beach County Health Department, 901 Evernia Street, West Palm Beach, Florida 33401; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within thirty (30) days from the date the Final Order is filed with the Clerk of the Department.

Executed in West Palm Beach, Florida, This 19th Day of MARCH, 2001

STATE OF FLORIDA
PALM BEACH COUNTY HEALTH DEPARTMENT

Umesh Asrani, P.E., Assistant Director
Environmental Health & Engineering
90l Evernia Street
West Palm Beach, FL 3340l
(561) 355-3070

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE was mailed to the applicant by certified mail and to all listed persons before the close of business on March 19, 2001.

Palm Beach County Health Department
Environmental Health and Engineering
Plan Review and Permit Section
APPROVED

Clerk Stamp

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52(11.), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) 3-19-01 (Date)

cc: Utility: Same as Applicant
Engineer-of-Record: Lyle D. Munce, P.E.
Florida DEP: Iradj Dolatshahi

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities
Palm Beach County Water Utilities
2065 Prairie Road
West Palm Beach, FL 33416

ID No.: 450-1047
Permit/Certification: 138308-091-WC
Date of Issue: March ~~19,~~ 2001
Expiration Date: March 18, 2006
County: Palm Beach
Utility: Palm Beach County System #9
Latitude/Longitude: 26°19'58"N/80°13'24"W
Section/Township/Range: 35/47/41
Project: Water Treatment Plant #9 - Wellhead for ASR Well at Hillsboro Canal

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 62-550, 62-555 & 62-560. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Construct: An aquifer storage and recovery (ASR) system consisting of one wellhead and associated piping, venturi meters, controls, and instrumentation; one submersible turbine recovery pump rated for 3500 gpm at 215 feet TDH; one well vault equipped with dual sump pumps; and automatic sampling and monitoring equipment for turbidity, dissolved oxygen, and conductivity. The ASR well is connected to an existing sixteen inch (16") raw water line supplied by surficial aquifer well numbers 21 through 25. During storage operations these wells will supply raw water for storage in the Floridan Aquifer. During recovery operations the ASR well will supply up to 5 MGD of recovered water either to the raw water main feeding Water Treatment Plant No. 9 or to the Hillsborough Canal via an outlet structure.

In Accordance With: Application Form DEP 62-555.910(1) and engineers specifications and plan sheets G1 through G7, CG1, C1 through C3, GS1, GS2, S1, S2, GM1, GM2, M1, M2, E1 through E7, and I-1 through I-3 received November 6, 2000, engineering report received November 29, 2000, and letter from engineer received December 20, 2000.

Located: Approximately 1.25 miles west of State Road 7 on the north bank of the Hillsboro Canal in unincorporated Palm Beach County, Florida.

To Serve: Palm Beach County System Number 9 service area.

Subject To: General Conditions 1 - 17 and Specific Conditions 1 – 15.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161, 403.727, or 403.859 through 403.061, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agent, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability from harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefor caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department Rules.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

   a. having access to and copying any records that must be kept under the conditions of the permit;

   b. inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

   c. sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

   a. a description of and cause of noncompliance; and

   b. the period on noncompliance , including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the recurrence of the noncompliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes of department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

GENERAL CONDITIONS:

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 62-4.12 and 62-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

    ( ) Determination of Best Available Control Technology (BACT)

    ( ) Determination of Prevention of Significant Deterioration (PSD)

    ( ) Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

    ( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

    a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

    b. The permittee shall retain at the facility, or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit and records of all data used to complete the application for this permit. The time period of retention shall be at least three (3) years from the date on the sample, measurement, report or application unless otherwise specified by department rule.

    c. Records of monitoring information shall include:
        -the date, exact place, the time of sampling or measurements;
        -the person responsible for performing the sampling or measurements;
        -the date(s) analyses were performed;
        -the person responsible for performing the analyses;
        -the analytical techniques or methods used; and
        -the results of such analyses.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

GENERAL CONDITIONS:

15. When requested by the department, the permittee shall, within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

16. In the case of an underground injection control permit, the following permit conditions also shall apply:

    a. All reports or information required by the Department shall be certified as being true, accurate and complete.

    b. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

    c. Notification of any noncompliance which may endanger health or the environment shall be reported verbally to the Department within twenty four (24) hours and again within seventy two (72) hours and a final written report provided within two (2) weeks.

        1. The verbal reports shall contain any monitoring or other information which indicate that any contaminant may endanger an underground source of drinking water and any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

        2. The written submission shall contain a description of and a discussion of the cause of the noncompliance and if it has not been corrected, the anticipated time the noncompliance is expected to continue, the steps being taken to reduce, eliminate and prevent recurrence of the noncompliance and all information required by Rule 62-28.230(4)(b), F.A.C.

    d. The Department shall be notified at least one hundred eighty (180) days before conversion or abandonment of an injection well, unless abandonment within a lesser period of time is necessary to protect waters of the state.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

GENERAL CONDITIONS:

17. The following conditions also shall apply to a hazardous waste facility permit.

a. The following reports shall be submitted to the Department:

1. Manifest discrepancy report. If a significant discrepancy in a manifest is discovered, the permittee shall attempt to rectify the discrepancy. If not resolved within fifteen (15) days after the waste is received, the permittee shall immediately submit a letter report, including a copy of the manifest, to the Department.

2. Unmanifested waste report. The permittee shall submit an unmanifested waste report to the Department within fifteen (15) days of receipt of unmanifested waste.

3. Biennial report. A biennial report covering facility activities during the previous calendar year shall be submitted by March 1 of each even numbered year pursuant to Chapter 62-730, F.A.C.

b. Notification of any noncompliance which may endanger health or the environment, including the release of any hazardous waste that may endanger public drinking water supplies or the occurrence of a fire or explosion from the facility which could threaten the environment or human health outside the facility, shall be reported verbally to the department within twenty four (24) hours and a written report shall be provided within five (5) days. The verbal report shall include the name, address, ID number and telephone number of the facility, its owner or operator, the name and quantity of materials involved, the extent of any injuries, an assessment of actual or potential hazards and the estimated quantity and disposition of recovered material. The written submission shall contain:

1. A description and cause of the noncompliance.

2. If not corrected, the expected time of correction and the steps being taken to reduce, eliminate and prevent recurrence of the noncompliance.

c. Reports of compliance or noncompliance with, or any progress reports on, requirements in any compliance schedule shall be submitted no later than fourteen (14) days after each schedule date.

d. All reports or information required by the Department by a hazardous waste permittee shall be signed by a person authorized to sign a permit application.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

SPECIFIC CONDITIONS:

1. The permittee shall retain a Florida registered professional engineer as the engineer of record for this project. Upon completion of construction the engineer of record, or the system's professional engineer who was responsible for overseeing construction, shall submit certification of complete conformity to the plans and specifications as approved. Certification to such inspection on DEP Form 62-555.900(9) along with one (1) set of record drawings shall be provided to the Palm Beach County Health Department (PBCHD) prior to release for use. Drawings are to be at the same scale and in the same sequence as those submitted and approved for permit. Deviations from the original permitted drawings are to be highlighted and/or noted for PBCHD review. A written release for use shall be obtained from the PBCHD prior to placing the newly constructed facilities into operation.

2. Satisfactory bacteriological results for clearance of the wellhead and associated raw water piping shall be two (2) consecutive daily samples with results indicating an absence of coliform.

3. The well shall be cleaned, disinfected and bacteriologically cleared in accordance with Chapter 62-555.315(3), Florida Administrative Code (F.A.C.). Prior to sampling for bacteriological clearance, the well shall be thoroughly pumped until no trace of the disinfecting agent can be found. Daily samples for twenty (20) or more consecutive work-days shall be collected after pumping the well for 20 to 30 minutes at the rated capacity of the permanent pump. The samples shall be handled in accordance with acceptable methods as stated in "Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989".

4. The bacteriological clearance data, copy of the well driller's completion report including actual well yield and drawdown, a detailed drawing of the well construction, and a copy of the UIC operational testing approval from Florida D.E.P. shall be submitted to the PBCHD, with the engineer's certification and a release for use shall be obtained prior to placing the well into service.

5. Coatings and chemicals that are contained in coatings which are applied to a surface in contact with drinking water, or are otherwise on equipment that comes in contact with the water and additives and chemicals used to treat water shall be certified as being in conformance with American National Standards Institute (ANSI) and NSF Standard 60-2000 by an entity certified by ANSI. Water systems components which come in contact with drinking water shall be certified as being in conformance with ANSI/NSF Standard 61-1999a, Drinking Water System Components, by an entity certified by ANSI.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: March 19, 2001
Expiration Date: March 18, 2006

SPECIFIC CONDITIONS:

6. Before the start of the first test cycle, the native water from the Aquifer Storage and Recovery (ASR) well shall be analyzed at least twice for primary standards, ammonia as N, total phosphorus as P, BOD, COD, secondary standards, and unregulated organic contaminants with results submitted to PBCHD. The analysis shall be conducted during the wet and dry seasons with samples taken a minimum of three months apart to determine seasonal variations in water quality within the Floridan Aquifer. The initial set of samples may be taken from the Floridan Aquifer Monitor Well (FAMW) provided that the final samples are taken simultaneously from both the FAMW and ASR well. Should the results indicate significant differences between the water quality in the ASR well and the FAMW additional testing shall be required by PBCHD. The applicant shall notify PBCHD at least five days prior to the start of the first test cycle.

7. Analyze for two (2) years the recovery stream; continuously for conductivity and turbidity; weekly for chloride, alkalinity, pH, temperature, color, iron, sulfate, sodium, ammonia as N, total phosphorus as P, TDS, BOD, COD, and hydrogen sulfide; and monthly for total coliform. After two years PBCHD will evaluate the data and decide what testing may be necessary (both frequency and parameters) beyond that point.

8. Analyze for two (2) years the recharge stream; continuously for conductivity and turbidity; weekly for chloride, alkalinity, pH, temperature, color, iron, sulfate, sodium, ammonia as N, total phosphorus as P, TDS, BOD, and hydrogen sulfide; and monthly for total coliform.

9. A monthly operating report for the ASR well shall be submitted to the PBCHD by the 15th of the month for the preceding month. The report shall include daily pumpages (injection and recovery) and analytical test results for all required parameters to be monitored. The routine submittal of this report shall begin with the cycle testing demonstration project.

10. Transmissivity data, based on pump test information, shall be submitted to the PBCHD on an annual basis.

11. Prior to construction, all required permits or approvals must be obtained for all aspects of the project from the appropriate agencies. Prior to release for operational testing this installation must receive a DEP water quality exemption for color.

12. The entire recovery stream from the ASR well shall be pumped to the head of the membrane softening plant and be fully treated along with the raw water from Biscayne Aquifer wells number 9W-17 through 9W-25 prior to use as potable water.

13. For new or replacement wells placed in areas of existing sanitary sewers, the sewers in Wellfield Protection Zones One and Two, as defined by Palm Beach County Environmental Resources Management must be pressure tested at each point, grouted, and sealed with proof of testing provided to PBCHD prior to release for service.

PERMITTEE:

Gary D. Dernlan, P.E.
Director of Utilities

ID No.: 450-1047
Permit/Certification No.: 138308-091-WC
Date of Issue: MAR 19 2001
Expiration Date: MAR 18 2006

SPECIFIC CONDITIONS:

14. Prior to injection of raw water into the ASR well, the water from the surficial aquifer supply wells (9W-21 through 9W-25) shall be tested to determine if these wells are Under the Direct Influence (UDI) of surface waters. Testing shall be in accordance with the "EPA Consensus Method for Determining Groundwater Under the Direct Influence Using Microscopic Particulate Analysis" and performed under "worst case" conditions by an approved laboratory. Testing protocol must be approved by the UDI Section of the Department of Health Drinking water Program (telephone 850-922-6978) in Tallahassee prior to testing.

15. This permit only covers the specific items addressed in the applicant's permit application package. Other existing system components were not reviewed for compliance with current standards and issuance of this permit does not certify that those components meet current standards.

ISSUED THIS 19TH DAY OF MARCH, 2001

PALM BEACH COUNTY HEALTH DEPARTMENT
STATE OF FLORIDA

Jean Marie Malecki, MD, MPH, FACPM
Director, Palm Beach County Health Department

SFWMD Right of Way Permit

cc: Paul F., Frank F., Vincent M.
Eng WTP#9

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

F
98-66
WRO 98-51
1010 F.R.

Dear Permittee:

Subject: Issuance of Right of Way Occupancy Permit

Enclosed please find the Right of Way Occupancy Permit authorized by the District's Governing Board issued pursuant to application for permit.

Your attention is directed to review the terms, Limiting Conditions, Special Conditions and drawings contained in the Right of Way Occupancy Permit.

Should you object to the terms, Limiting or Special Conditions, please refer to the enclosed "Notice of Rights" which addresses the procedures to be followed should you desire a public hearing or other review of the agency action.

Please note that you must notify the District of any objections in accordance with the procedures set forth in the "Notice of Rights". If an objection is not filed as specified in the "Notice of Rights", prior to construction of the authorized facilities or uses, in addition to waiving important legal administrative rights, such will infer to District staff that you concur with the District's actions.

Please contact this office should you have any questions or require assistance on this matter.

I HEREBY CERTIFY that a "Notice of Rights" has been furnished by Certified U.S. Mail to the Permittee.

Laura A. Lythgoe

Laura A. Lythgoe
Right of Way Division
Water Resource Operations

/ss
Enclosures

NOTICE OF RIGHTS

Section 120.569(1), Fla. Stat. (1997), requires that "each notice shall inform the recipient of any administrative hearing or judicial review that is available under this section, s. 120.57, or s. 120.68; shall indicate the procedure which must be followed to obtain the hearing or judicial review, and shall state the time limits which apply." Please note that this Notice of Rights is not intended to provide legal advice. Not all the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

Petition for Administrative Proceedings

1. A person whose substantial interests are affected by the South Florida Water Management District's (SFWMD) action has the right to request an administrative hearing on that action. The affected person may request either a formal or an informal hearing, as set forth below. A point of entry into administrative proceedings is governed by Rules 28-106.111 and 40E-1.511, Fla. Admin. Code, (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109), as set forth below. Petitions are deemed filed upon receipt of the original documents by the SFWMD Clerk.

a. Formal Administrative Hearing: If a genuine issue(s) of material fact is in dispute, the affected person seeking a formal hearing on a SFWMD decision which does or may determine their substantial interests shall file a petition for hearing pursuant to Sections 120.569 and 120.57(1), Fla. Stat. or for mediation pursuant to Section 120.573, Fla. Stat. within 21 days, except as provided in subsections c. and d. below, of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-106.201(2), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

b. Informal Administrative Hearing: If there are no issues of material fact in dispute, the affected person seeking an informal hearing on a SFWMD decision which does or may determine their substantial interests shall file a petition for hearing pursuant to Sections 120.569 and 120.57(2), Fla. Stat. or for mediation pursuant to Section 120.573, Fla. Stat. within 21 days, except as provided in subsections c. and d. below, of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-106.301(2), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

c. Administrative Complaint and Order: If a Respondent objects to a SFWMD Administrative Complaint and Order, pursuant to Section 373.119, Fla. Stat. (1997), the person named in the Administrative Complaint and Order may file a petition for a hearing no later than 14 days after the date such order is served. Petitions must substantially comply with the requirements of either subsection a. or b. above.

d. State Lands Environmental Resource Permit: Pursuant to Section 373.427, Fla. Stat., and Rule 40E-1.511(3), Fla. Admin. Code (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109(2)(c)), a petition objecting to the SFWMD's agency action regarding consolidated applications for Environmental Resource Permits and Use of Sovereign Submerged Lands (SLERPs), must be filed within 14 days of the notice of consolidated intent to grant or deny the SLERP. Petitions must substantially comply with the requirements of either subsection a. or b. above.

e. Emergency Authorization and Order: A person whose substantial interests are affected by a SFWMD Emergency Authorization and Order, has a right to file a petition under Sections 120.569, 120.57(1), and 120.57(2), Fla. Stat., as provided in subsections a. and b. above. However, the person, or the agent of the person responsible for causing or contributing to the emergency conditions shall take whatever action necessary to cause immediate compliance with the terms of the Emergency Authorization and Order.

f. Order for Emergency Action: A person whose substantial interests are affected by a SFWMD Order for Emergency Action has a right to file a petition pursuant to Rules 28-107.005 and 40E-1.611, Fla. Admin. Code, copies of which are attached to this Notice of Rights, and Section 373.119(3), Fla. Stat., for a hearing on the Order. Any subsequent agency action or proposed agency action to initiate a formal revocation proceeding shall be separately noticed pursuant to section g. below.

g. Permit Suspension, Revocation, Annulment, and Withdrawal: If the SFWMD issues an administrative complaint to suspend, revoke, annul, or withdraw a permit, the permittee may request a hearing to be conducted in accordance with Sections 120.569 and 120.57, Fla. Stat., within 21 days of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-107.004(3), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

2. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the SFWMD's final action may be different from the position taken by it previously. Persons whose substantial interests may be affected by any such final decision of the SFWMD shall have, pursuant to Rule 40E-1.511(2), Fla. Admin. Code (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109(2)(c)), an additional 21 days from the date of receipt of notice of said decision to

request an administrative hearing. However, the scope of the administrative hearing shall be limited to the substantial deviation.

3. Pursuant to Rule 40E-1.511(4), Fla. Admin. Code, substantially affected persons entitled to a hearing pursuant to Section 120.57(1), Fla. Stat., may waive their right to such a hearing and request an informal hearing before the Governing Board pursuant to Section 120.57(2), Fla. Stat., which may be granted at the option of the Governing Board.

4. Pursuant to Rule 28-106.111(3), Fla. Admin. Code, persons may file with the SFWMD a request for extension of time for filing a petition. The SFWMD, for good cause shown, may grant the extension. The request for extension must contain a certificate that the petitioner has consulted with all other parties, if any, concerning the extension and that the SFWMD and all other parties agree to the extension.

CIRCUIT COURT

5. Pursuant to Section 373.617, Fla. Stat., any substantially affected person who claims that final agency action of the SFWMD relating to permit decisions constitutes an unconstitutional taking of property without just compensation may seek judicial review of the action in circuit court by filing a civil action in the circuit court in the judicial circuit in which the affected property is located within 90 days of the rendering of the SFWMD's final agency action.

6. Pursuant to Section 403.412, Fla. Stat., any citizen of Florida may bring an action for injunctive relief against the SFWMD to compel the SFWMD to enforce the laws of Chapter 373, Fla. Stat., and Title 40E, Fla. Admin. Code. The complaining party must file with the SFWMD Clerk a verified complaint setting forth the facts upon which the complaint is based and the manner in which the complaining party is affected. If the SFWMD does not take appropriate action on the complaint within 30 days of receipt, the complaining party may then file a civil suit for injunctive relief in the 15th Judicial Circuit in and for Palm Beach County or circuit court in the county where the cause of action allegedly occurred.

7. Pursuant to Section 373.433, Fla. Stat., a private citizen of Florida may file suit in circuit court to require the abatement of any stormwater management system, dam, impoundment, reservoir, appurtenant work or works that violate the provisions of Chapter 373, Fla. Stat.

DISTRICT COURT OF APPEAL

8. Pursuant to Section 120.68, Fla. Stat., a party who is adversely affected by final SFWMD action may seek judicial review of the SFWMD's final decision by filing a notice of appeal pursuant to Florida Rule of Appellate Procedure 9.110 in the Fourth District Court of Appeal or in the appellate district where a party resides and filing a second copy of the notice with the SFWMD Clerk within 30 days of rendering of the final SFWMD action.

LAND AND WATER ADJUDICATORY COMMISSION

9. A party to a "proceeding below" may seek review by the Land and Water Adjudicatory Commission (LAWAC) of SFWMD's final agency action to determine if such action is consistent with the provisions and purposes of Chapter 373, Fla. Stat. Pursuant to Section 373.114, Fla. Stat., and Rules 42-2.013 and 42-2.0132, Fla. Admin. Code, a request for review of (a) an order or rule of the SFWMD must be filed with LAWAC within 20 days after rendition of the order or adoption of the rule sought to be reviewed; (b) an order of the Department of Environmental Protection (DEP) requiring amendment or repeal of a SFWMD rule must be filed with LAWAC within 30 days of rendition of the DEP's order, and (c) a SFWMD order entered pursuant to a formal administrative hearing under Section 120.57(1), Fla. Stat., must be filed no later than 20 days after rendition of the SFWMD's final order. Simultaneous with filing, a copy of the request for review must be served on the DEP Secretary, any person named in the SFWMD or DEP final order, and all parties to the proceeding below. A copy of Rule 42-2.013, Fla. Admin. Code is attached to this Notice of Rights.

PRIVATE PROPERTY RIGHTS PROTECTION ACT

10. A property owner who alleges a specific action of the SFWMD has inordinately burdened an existing use of the real property, or a vested right to a specific use of the real property, may file a claim in the circuit court where the real property is located within 1 year of the SFWMD action pursuant to the procedures set forth in Subsection 70.001(4)(a), Fla. Stat.

LAND USE AND ENVIRONMENTAL DISPUTE RESOLUTION

11. A property owner who alleges that a SFWMD development order (as that term is defined in Section 70.51(2)(a), Fla. Stat. to include permits) or SFWMD enforcement action is unreasonable, or unfairly burdens the use of the real property, may file a request for relief with the SFWMD within 30 days of receipt of the SFWMD's order or notice of agency action pursuant to the procedures set forth in Subsections 70.51(4) and (6), Fla. Stat.

MEDIATION

12. A person whose substantial interests are, or may be, affected by the SFWMD's action may choose mediation as an alternative remedy under Section 120.573, Fla. Stat. Pursuant to Rule 28-106.111(2), Fla. Admin. Code, the petition for mediation shall be filed within 21 days of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Choosing mediation will not adversely affect the right to an administrative hearing if mediation does not result in settlement.

Pursuant to Rule 28-106.402, Fla. Admin. Code, the contents of the petition for mediation shall contain the following information:

(1) the name, address, and telephone number of the person requesting mediation and that person's representative, if any;

(2) a statement of the preliminary agency :tion;

(3) an explanation of how the person's substantial interests will be affected by the agency determination; and

(4) a statement of relief sought.

As provided in Section 120.573, Fla. Stat. (1997), the timely agreement of all the parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57, Fla. Stat., for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within 60 days of the execution of the agreement. If mediation results in settlement of the dispute, the SFWMD must enter a final order incorporating the agreement of the parties. Persons whose substantial interest will be affected by such a modified agency decision have a right to petition for hearing within 21 days of receipt of the final order in accordance with the requirements of Sections 120.569 and 120.57, Fla. Stat., and SFWMD Rule 28-106.201(2), Fla. Admin. Code. If mediation terminates without settlement of the dispute, the SFWMD shall notify all parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Fla. Stat., remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action.

ARIANCES AND WAIVERS

13. A person who is subject to regulation pursuant to a SFWMD rule and believes the application of that rule will create a substantial hardship or will violate principles of fairness (as those terms are defined in Subsection 120.542(2), Fla. Stat.) and can demonstrate that the purpose of the underlying statute will be or has been achieved by other means, may file a petition with the SFWMD Clerk requesting a variance from or waiver of the SFWMD rule. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have concerning the SFWMD's action. Pursuant to Rule 28-104.002(2), Fla. Admin. Code, the petition must include the following information:

(a) the caption shall read:
Petition for (Variance from) or (Waiver of) Rule (Citation)

(b) The name, address, telephone number and any facsimile number of the petitioner;

(c) The name, address telephone number and any facsimile number of the attorney or qualified representative of the petitioner, (if any);

(d) the applicable rule or portion of the rule;

(e) the citation to the statue the rule is implementing;

(f) the type of action requested;

(g) the specific facts that demonstrate a substantial hardship or violation of principals of fairness that would justify a waiver or variance for the petitioner;

(h) the reason why the variance or the waiver requested would serve the purposes of the underlying statute; and

(i) a statement of whether the variance or waiver is permanent or temporary, If the variance or waiver is temporary, the petition shall include the dates indicating the duration of the requested variance or waiver.

A person requesting an emergency variance from or waiver of a SFWMD rule must clearly so state in the caption of the petition. In addition to the requirements of Section 120.542(5), Fla. Stat. pursuant to Rule 28-104.004(2), Fla. Admin. Code, the petition must also include:

a) the specific facts that make the situation an emergency; and

b) the specific facts to show that the petitioner will suffer immediate adverse effect unless the variance or waiver is issued by the SFWMD more expeditiously than the applicable timeframes set forth in Section 120.542, Fla. Stat.

WAIVER OF RIGHTS

14. Failure to observe the relevant time frames prescribed above will constitute a waiver of such right.

28-106.201 INITIATION OF PROCEEDINGS (INVOLVING DISPUTED ISSUES OF MATERIAL FACT)

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding, and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and

(f) A demand for relief.

28-106.301 INITIATION OF PROCEEDINGS (NOT INVOLVING DISPUTED ISSUES OF MATERIAL FACT)

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of

the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding, and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and

(e) A demand for relief.

40E-1.521 INITIATION OF FORMAL PROCEEDINGS

(1) Initiation of formal proceedings under Section 120.57(1) shall comply with the procedures set forth in rule 28-106.201, F.A.C.

(2) If a valid petition is filed, with the consent of all parties Board action on the petition pursuant to Section 120.57(1)(b) shall be waived.

(3) When a valid petition for administrative hearing has been filed, pursuant to Section 120.569, F.S., the Board action shall defer consideration of the matter pending the completion of the administrative hearing and the submittal of a recommended order, and any exceptions to that order.

28-107.004 SUSPENSION, REVOCATION, ANNULMENT, OR WITHDRAWAL

(3) Requests for hearing filed in accordance with this rule shall include:

(a) The name and address of the party making the request, for purposes of service;

(b) A statement that the party is requesting a hearing involving disputed issues of material fact, or a hearing not involving disputed issues of material fact; and

(c) A reference to the notice, order to show cause, administrative complaint, or other communication that the party has received from the agency.

42-2.013 REQUEST FOR REVIEW PURSUANT TO SECTION 373.114 OR 373.217

(1) In any proceeding arising under Chapter 373, F.S., review by the Florida Land and Water Adjudicatory Commission may be initiated by the Department or a party by filing a request for such review with the Secretary of the Commission and serving a copy on any person named in the rule or order, and on all parties to the proceeding which resulted in the order sought to be reviewed. A certificate of service showing completion of service as required by this subsection shall be a requirement for a determination of sufficiency under Rule 42-2.0132. Failure to file the request with the Commission within the time period provided in Rule 42-2.0132 shall result in dismissal of the request for review.

(2) The request for review shall identify the rule or order requested to be reviewed, the proceeding in which the rule or order was entered and the nature of the rule or order. A copy of the rule or order sought to be reviewed shall be attached. The request for review shall state with particularity:

(a) How the order or rule conflicts with the requirements, provisions and purposes of Chapter 373, F.S., or rules duly adopted thereunder;

(b) How the rule or order sought to be reviewed affects the interests of the party seeking review;

(c) The oral or written statement, sworn or unsworn, which was submitted to the agency concerning the matter to be reviewed and the date and location of the statement, if the individual or entity requesting the review has not participated in a proceeding previously instituted pursuant to Chapter 120, F.S., on the order for which review is sought;

(d) If review of an order is being sought, whether and how the activity authorized by the order would substantially affect natural resources of statewide or regional significance, or whether the order raises issues of policy, statutory interpretation, or rule interpretation that have regional or statewide significance from a standpoint of agency precedent, and all the factual bases in the record which the petitioner claims support such determination(s); and

(e) The action requested to be taken by the Commission as a result of the review, whether to rescind or modify the order, or remand the proceeding to the water management district for further action, or to require the water management district to initiate rulemaking to adopt, amend or repeal a rule.

28-107.005 EMERGENCY ACTION

(1) If the agency finds that immediate serious danger to the public health, safety, or welfare requires emergency action, the agency shall summarily suspend, limit, or restrict a license.

(2) the 14-day notice requirement of Section 120.569(2)(b), F. S., does not apply and shall not be construed to prevent a hearing at the earliest time practicable upon request of an aggrieved party.

(3) Unless otherwise provided by law, within 20 days after emergency action taken pursuant to paragraph (1) of this rule, the agency shall initiate a formal suspension or revocation proceeding in compliance with Sections 120.569, 120.57. and 120.60, F.S.

40E-1.611 EMERGENCY ACTION

(1) An emergency exists when immediate action is necessary to protect public health, safety or welfare; the health of animals, fish or aquatic life; the works of the District; a public water supply, or recreational, commercial, industrial, agricultural or other reasonable uses of land and water resources.

(2) The Executive Director may employ the resources of the District to take whatever remedial action necessary to alleviate the emergency condition without the issuance of an emergency order, or in the event an emergency order has been issued, after the expiration of the requisite time for compliance with that order.

SFWMD STANDARD PERMIT NO. 11178

(NON-ASSIGNABLE)

Rev: 9/99

DATE ISSUED: OCTOBER 14, 1999

AUTHORIZING: NINE (9) SURFICIAL AQUIFER WATER SUPPLY WELLS WITH WELL VAULTS, RAW WATER TRANSMISSION MAIN, ELECTRICAL CONDUITS WITH CONDUCTORS, TWO (2) MASTER CONTROL PANELS WITH ASSOCIATED UTILITY TRANSFORMERS, TWO (2) RADIO ANTENNAS AND TEMPORARY INSTALLATION OF 2-72" CMP CULVERTS WITHIN THE NORTH RIGHT OF WAY OF THE HILLSBORO CANAL BEGINNING AT S.R. 7 WESTERLY APPROXIMATELY 2 MILES. (STATION 327+00 - 259+00).

LOCATED IN: PALM BEACH COUNTY, SECTION 35/36 TOWNSHIP 47S RANGE 41E

ISSUED TO: PALM BEACH COUNTY WATER UTILITIES DEPARTMENT
POST OFFICE BOX 16097
WEST PALM BEACH, FL 33416

ATTENTION: GARY DERNLAN, DIRECTOR OF UTILITIES

This permit is issued pursuant to Application No. 99-0622-1 dated JUNE 22, 1999 and permittee's agreement to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of the work or structure involved in the Permit. Said application, including all plans and specifications attached thereto, is by reference made a part hereof. The permittee, by acceptance of this permit, hereby agrees that he/she shall promptly comply with all orders of the District and shall alter, repair or remove his/her use solely at his/her expense in a timely fashion. Permittee shall comply with all laws and rules administered by the District. This permit does not convey to permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit is issued by the District as a revocable license to use or occupy District works or lands. It does not create any right or entitlement, either legal or equitable, to the continued use of the District works or lands. Since this permit conveys no right to the continued use of the District works or lands, the District is under no obligation to transfer this permit to any subsequent party. By acceptance of this permit, the permittee expressly acknowledges that the permittee bears all risk of loss as a result of revocation of this permit.

WORK PROPOSED MUST BE COMPLETED ON OR BEFORE OCTOBER 31, 2001. Otherwise, this permit is void and all rights thereunder are automatically canceled unless permittee applies for, in writing, a request for extension to the construction period and such request is received by the District on or before the expiration date and such request is granted, in writing, by the District.

SPECIAL CONDITIONS (SPECIFIC PROJECT CONDITIONS) AND LIMITING CONDITIONS ON ATTACHED SHEETS ARE A PART OF THIS DOCUMENT.

FILED WITH THE CLERK OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ON October 27, 1999
BY Patricia A. Moon
Deputy Clerk

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD
BY: [signature]
Assistant Secretary
Acting in absence of Secretary

Return Receipt Requested/Certified No. Z 286 142 365

C: MAGGIE URUCINITZ
FORT LAUDERDALE FIELD STATION
(954) 452-4814, EXTENSION 4823

40E-6.381 LIMITING CONDITIONS

The District's authorization to utilize lands and other works constitutes a revocable license (including both notice general permits and standard permits). In consideration for receipt of that license, permittee shall agree to be bound by the following standard limiting conditions, which shall be included within all permits issued pursuant to this chapter:

(1) All structures on District works or lands constructed by permittee shall remain the property of permittee, who shall be solely responsible for ensuring that such structures and other uses remain in good and safe condition. Permittees are advised that other federal, state and local safety standards may govern the occupancy and use of the District's lands and works. The District assumes no duty with regard to ensuring that such uses are so maintained and assumes no liability with regard to injuries caused to others by any such failure.

(2) Permittee solely acknowledges and accepts the duty and all associated responsibilities to incorporate safety features, which meet applicable engineering practice and accepted industry standards, into the design, construction, operation and continued maintenance of the permitted facilities/authorized use. This duty shall include, but not be limited to, permittee's consideration of the District's regulation and potential fluctuation, without notice, of water levels in canals and works, as well as the permittee's consideration of upgrades and modifications to the permitted facilities/authorized use which may be necessary to meet any future changes to applicable engineering practice and accepted industry standards. Permittee acknowledges that the District's review and issuance of this permit, including, but not limited to, any field inspections performed by the District, does not in any way consider or ensure that the permitted facilities/authorized use is planned, designed, engineered, constructed, or will be operated, maintained or modified so as to meet applicable engineering practice and accepted industry standards, or otherwise provide any safety protections. Permittee further acknowledges that any inquiries, discussions, or representations, whether verbal or written, by or with any District staff or representative during the permit review and issuance process, including, but not limited to, any field inspections, shall not in any way be relied upon by permittee as the District's assumption of any duty to incorporate safety features, as set forth above, and shall also not be relied upon by permittee in order to meet permittee's duty to incorporate safety features, as set forth above.

(3) Permittee agrees to abide by all of the terms and conditions of this permit, including any representations made on the permit application and related documents. This permit shall be subject to the requirements of Chapter 373, F.S., and Chapter 40E-6, F.A.C., including all subsequent rule and criteria revisions. Permittee agrees to pay all removal and restoration costs, investigative costs, court costs and reasonable attorney's fees, including appeals, resulting from any action taken by the District to obtain compliance with the conditions of the permit or removal of the permitted use. If District legal action is taken by staff counsel, "reasonable attorney's fees" is understood to mean the fair market value of the services provided, based upon what a private attorney would charge.

(4) This permit does not create any vested rights, and except for governmental entities and utilities, is revocable at will upon reasonable prior written notice. Permittee bears all risk of loss as to monies expended in furtherance of the permitted use. Upon revocation, the permittee shall promptly modify, relocate or remove the permitted use and properly restore the right of way to the District's satisfaction. In the event of failure to so comply within the specified time, the District may remove the permitted use and permittee shall be responsible for all removal and restoration costs.

(5) This permit does not convey any property rights nor any rights or privileges other than those specified herein and this permit shall not, in any way, be construed as an abandonment or any other such impairment or disposition of the District's property rights. The District approves the permitted use only to the extent of its interest in the works of the District. Permittee shall obtain all other necessary federal, state, local, special district and private authorizations prior to the start of any construction or alteration authorized by the permit. Permittee shall comply with any more stringent conditions or provisions which may be set forth in other required permits or other authorizations. The District, however, assumes no duty to ensure that any such authorizations have been obtained or to protect the legal rights of the underlying fee owner, in those instances where the District owns less than fee.

(6) Unless specifically prohibited or limited by statute, Permittee agrees to indemnify, defend and save the District (which used herein includes the District and its past, present and future employees, agents, representatives, officers and Governing Board members and any of their successors and assigns) from and against any and all lawsuits, actions, claims, demands, losses, expenses, costs, attorneys fees (including but not limited to the fair market value of the District's inhouse attorneys' fees based upon private attorneys' fees/rates), judgments and liabilities which arise from or may be related to the ownership, construction, maintenance or operation of the permitted use or the possession, utilization, maintenance, occupancy or ingress and egress of the District's right of way which arise directly or indirectly and/or are caused in whole or in part by the acts, omissions or negligence of the District or of third parties. Permittee agrees to provide legal counsel acceptable to the District if requested for the defense of any such claims.

(7) The District does not waive sovereign immunity in any respect.

(8) The permittee shall not engage in any activity regarding the permitted use which interferes with the construction, alteration, maintenance or operation of the works of the District, including:

(a) discharge of debris or aquatic weeds into the works of the District;

(b) causing erosion or shoaling within the works of the District;

(c) planting trees or shrubs or erecting structures which limit or prohibit access by District equipment and vehicles, except as may be authorized by the permit.

Permittee shall be responsible for any costs incurred by the District resulting from any such interference, as set forth in (a), (b), and (c), above;

(d) leaving construction or other debris on the District's right of way or waterway;

(e) damaging District berms and levees:

(a) the removal of District owned spoil material;

(b) removal of or damage to District locks, gates, and fencing;

(c) opening of District rights of way to unauthorized vehicular access; or

(d) running or allowing livestock on the District's right of way.

(9) The District is not responsible for any personal injury or property damage which may directly or indirectly result from the use of water from the District's canal or any activities which may include use or contact with water from the District's canal, since the District periodically sprays its canals for aquatic weed control purposes and uses substances which may be harmful to human health or plant life.

(10) Permittee shall allow the District to inspect the permitted use at any reasonable time.

(11) Permittee shall allow, without charge or any interference, the District, its employees, agents, and contractors, to utilize the permitted facilities before, during and after construction for the purpose of conducting the District's, routine and emergency, canal operation, maintenance, and construction activities. To the extent there is any conflicting use, the District's use shall have priority over the permittee's use.

(12) This permit is a non-exclusive revocable license. Permittee shall not interfere with any other existing or future permitted uses or facilities authorized by the District.

(13) The District has the right to change, regulate, limit, schedule, or suspend discharges into, or withdrawals from, works of the District in accordance with criteria established by the Big Cypress Basin, the District, or the U. S. Army Corps of Engineers for the works of the District.

(14) If the use involves the construction of facilities for a non exempt water withdrawal or surface water discharge, the applicant must apply for and obtain a water use or surface water management permit before or concurrently with any activities which may be conducted pursuant to the right of way occupancy permit.

(15) The District shall notify the local ad valorem taxing authority of the lands affected by the permitted use, where the permittee owns the underlying fee and derives a substantial benefit from the permitted use. The taxing authority may reinstate such lands on the tax roll. Failure to pay all taxes in a timely manner shall result in permit revocation. Such permit revocation shall not alleviate the responsibility of the permittee to pay all taxes due and payable.

(16) Permittee shall provide prior written notice to their successors in title of the permit and its terms and conditions.

(17) Permittee shall record a Notice of Permit through filing the appropriate notice agreed to by the District in the public records of the county or counties where the project is located and by providing the District with proof of filing or through an equivalent procedure. All costs associated with this requirement shall be the responsibility of the permittee. Governmental entities and utilities are not subject to this provision.

(18) This permit is contingent upon compliance with the recording of the Notice of Permit. Failure to provide proof of the recording of the Notice of Permit will result in the permit becoming invalid on its own terms, the removal of any existing facilities within the right of way, restoration of the right of way to the District's satisfaction, at the permittee's expense, and the possible assessment of civil penalties.

(19) Permittee shall be responsible for the repair or replacement of any existing facilities located within the District's right of way which are damaged as a result of the installation or maintenance of the authorized facility.

(20) All obligations under the terms of this permit authorization and any subsequent modifications hereto shall be joint and several as to all owners.

(21) It is the responsibility of the permittee to make prospective bidders aware of the terms and conditions of this permit. It shall be the responsibility of the permittee's contractors to understand the terms and conditions of this permit and govern themselves accordingly.

(22) It is the responsibility of the permittee to bring to the attention of the District any conflict in the permit authorization or permit conditions in order that they may be resolved prior to the start of construction. In resolving such conflicts the District's determination will be final.

Specific Authority 373.044, 373.113 F.S. Law Implemented Chapters 373.085(1), 373.086, 373.103, 373.109, 373.129, 373.1395, 373.603, 373.609, 373.613 F.S. History—New 9-3-81, Amended 5-30-82, 12-29-86, 12-24-91, 9-15-99 Formerly 16K-5.01(2), 16K-5.02(2), 16K-5.03(2), 16K-5.04(4), 16K-5.05, 40E-6.381.

PERMIT NUMBER 11178
OCTOBER 14, 1999

SPECIAL CONDITIONS ARE AS FOLLOWS:

1. PRIOR TO COMMENCEMENT OF CONSTRUCTION OR UTILIZATION OF THE DISTRICT'S RIGHT OF WAY, THE PERMITTEE IS REQUIRED TO CONTACT THE DISTRICT'S FIELD REPRESENTATIVE LISTED ON THE FACE OF THIS PERMIT AND SCHEDULE A PRE-CONSTRUCTION MEETING. PERMITTEE SHALL PREPARE AND PRESENT AT THE PRE-CONSTRUCTION MEETING:

   A. A LIST OF 24 HOUR CONTACT PERSONNEL. THE LIST SHALL INCLUDE THE CONTRACTOR AND DESIGNER, THEIR TITLES AND TELEPHONE NUMBERS FOR OFFICE, MOBILE, BEEPER, HOME OR LOCAL RESIDENCE.
   B. A WRITTEN INVENTORY OF THE TYPE OF VEHICLES, CONSTRUCTION EQUIPMENT, OTHER MACHINERY AND MATERIALS WHICH WILL BE LOCATED WITHIN THE DISTRICT'S RIGHT OF WAY DURING ALL PHASES OF THE PROJECT.
   C. WRITTEN PROCEDURES FOR THE CLEARING OF ALL CONSTRUCTION MATERIALS, MACHINERY, EQUIPMENT AND VEHICLES FROM THE CANAL AND THE AREA IMMEDIATELY ADJACENT TO THE CANAL WITHIN 24 HOURS NOTICE FROM THE DISTRICT.
   D. A LIST CONTAINING THE NAMES AND CONTACT NUMBERS OF THE INDIVIDUALS RESPONSIBLE FOR THE VARIOUS OPERATIONS INVOLVED IN THE CLEAR PROCEDURES.

2. THE AUTHORIZED BURIED FACILITIES LOCATED WITHIN THE DISTRICT'S RIGHT OF WAY MUST PROVIDE A MINIMUM OF 2' OF COVER BELOW THE EXISTING GROUND ELEVATION. VAULTS AND MANHOLES, ETC., IF APPLICABLE, SHALL BE INSTALLED SO THE TOP OF THE FACILITY IS SET FLUSH WITH EXISTING GROUND AND IN SUCH A MANNER SO AS TO WITHSTAND THE WEIGHT OF THE DISTRICT'S HEAVY MAINTENANCE EQUIPMENT AND VEHICLES.

3. THE PERMITTEE SHALL BACKFILL THE TRENCH IN 6" COMPACTED LIFTS.

4. PERMANENT LINE MARKERS PLACED WITHIN THE DISTRICT'S RIGHT OF WAY SHALL BE SET FLUSH WITH EXISTING GROUND AT LOCATIONS DETERMINED BY THE DISTRICT'S AREA FIELD REPRESENTATIVE.

5. WITHIN THIRTY (30) DAYS OF COMPLETION OF INSTALLATION OF THE AUTHORIZED FACILITY, THE PERMITTEE SHALL PROVIDE THE DISTRICT WITH AS-BUILT DRAWINGS SIGNED AND SEALED BY A FLORIDA PROFESSIONAL ENGINEER.

PERMIT NUMBER 11178
OCTOBER 14, 1999

SPECIAL CONDITIONS ARE AS FOLLOWS:

6. PERMITTEE SHALL CONTACT MR. PHIL VALLIER, REGIONAL OPERATION AND MAINTENANCE DIRECTOR OF THE DISTRICT'S FT. FIELD STATION (954) 452-4814, EXT. 4820 OR MR. MIKE MASSA, ASSISTANT REGIONAL OPERATION AND MAINTENANCE DIRECTOR OF THE DISTRICT'S FT. LAUDERDALE FIELD STATION (954) 452-4814, EXT. 4821 TO ADDRESS THE SCHEDULING OF THE INSTALLATION/REMOVAL OF THE 72" CMP'S LOCATED AT APPROXIMATE STATION 303+00 – 303+12 AND TO DISCUSS THE POSSIBLE PERMANENT INSTALLATION OF ONE OR BOTH OF THE 72" CMP'S. SHOULD INSTALLATION OF THE CULVERTS RESULT IN UPSTREAM FLOODING OR OTHER ADVERSE IMPACTS THE DISTRICT RETAINS THE RIGHT TO ORDER THE REMOVAL OF THE CULVERTS AT ANY TIME DURING THE PERMITTEE'S CONSTRUCTION ACTIVITY.

7. PERMITTEE SHALL PRIOR TO WELL PUMPING, PROVIDE TO THIS OFFICE CERTIFIED CROSS-SECTIONS OF THE EXISTING CANAL CHANNEL AT THE POINT OF WELL TEST WATER DISCHARGE SITES. CERTIFIED CROSS-SECTIONS OF THE CANAL SHALL BE TAKEN AT THE CENTERLINE OF THE PROPOSED WORK AND AT LOCATIONS SPECIFIED BY THE DISTRICT. CROSS-SECTIONS SHALL BE TAKEN PERPENDICULAR TO THE CENTERLINE OF THE CHANNEL AND SOUNDINGS TAKEN AT A MAXIMUM OF 10 FOOT INTERVALS, FROM TOP OF BANK TO TOP OF BANK AND TIED INTO THE CANAL RIGHTS OF WAY LINES.

8. THE CROSS-SECTIONS MUST BE PLOTTED ON STANDARD 10 X 10 CROSS-SECTION PAPER OR A SIMILAR CAD DRAWING, INCLUDE THE DISTRICT'S RIGHTS OF WAY LINES AND NORTH ARROW. MEAN SEA LEVEL (MSL) OR NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929) WILL BE USED AS DATUM AND ENGLISH OR A COMBINATION OF ENGLISH AND EQUIVALENT METRIC UNITS OR MEASURE EMPLOYED. THE EXISTING CROSS-SECTIONAL AREA BELOW THE DESIGN WATER SURFACE SHALL BE ACCURATELY CALCULATED BY THE APPLICANT AND PRINTED ON OR ADJACENT TO EACH CROSS-SECTION.

9. PERMITTEE SHALL ALSO SUBMIT WITHIN THIRTY (30) DAYS AFTER PUMP TESTING IS COMPLETE, POST-PUMPING CERTIFIED CANAL CROSS-SECTIONS IN THE VICINITY OF THE TEST WATER DISCHARGE SITES. IF ANY SHOALING HAS OCCURRED IT WILL BE THE PERMITTEE'S RESPONSIBILITY TO REMOVE SHOALING WITHIN THIRTY (30) DAYS AFTER NOTIFICATION BY THE DISTRICT.

10. PERMITTEE AND/OR ITS CONTRACTOR SHALL MAINTAIN DISTRICT ACCESS AT ALL TIMES ALONG THE NORTH RIGHT OF WAY OF THE HILLSBORO CANAL WITHIN THE PROJECT LIMITS. IF DISTRICT ACCESS IS TO BE IMPEDED OR ALTERED AT ANY TIME, IT WILL BE NECESSARY FOR THE PERMITTEE AND/OR ITS CONTRACTOR TO RECEIVE PRIOR WRITTEN APPROVAL FROM THIS DISTRICT.

PERMIT NUMBER 11178
OCTOBER 14, 1999

SPECIAL CONDITIONS ARE AS FOLLOWS:

11. IN THIS REGARD, IT WILL BE NECESSARY FOR THE PERMITTEE AND/OR ITS' CONTRACTOR TO PROVIDE A DETAILED SCHEDULE OF EVENTS OUTLINING WHAT ACTIVITIES WILL IMPEDE DISTRICT ACCESS AND FOR WHAT PERIOD OF TIME DISTRICT ACCESS WOULD BE BLOCKED.

12. PERMITTEE IS HEREBY NOTIFIED THAT SUCH REQUEST MAY NOT BE GRANTED BY THE DISTRICT, IF SUCH CLOSURE INTERFERES WITH THE DISTRICT'S OPERATION AND MAINTENANCE ACTIVITIES. PLEASE CONTACT MS. MAGGIE URUCINITZ REGARDING ANY ACCESS RESTRICTIONS.

13. PRIOR TO DRILLING AND LAYOUT OF MUD PITS, PERMITTEE AND/OR ITS CONTRACTOR SHALL SUBMIT DRAWINGS TO THIS OFFICE DEPICTING THE PROPOSED WORK PLANS FOR EACH SITE FOR APPROVAL. THE PROPOSED MUD PIT LOCATIONS MUST BE LOCATED A MINIMUM OF 40 FEET FROM THE TOP OF THE CANAL BANK.

14. PERMITTEE AND/OR ITS CONTRACTOR SHALL REMOVE ALL MUD AND CUTTINGS FROM THE DISTRICT'S RIGHT OF WAY AND DISPOSE OF SAME AT AN APPROVED DISPOSAL SITE ONCE DRILLING OPERATIONS ARE COMPLETE. MUD PITS WILL BE RESTORED BY BACKFILLING, COMPACTING AND SEEDING OR SODDING TO THE SATISFACTION OF THE DISTRICT. ADJACENT AREAS IMPACTED BY THE OPERATION OF DRILLING EQUIPMENT OR LAYING PIPING OR CABLES SHALL LIKEWISE BE RESTORED TO THE DISTRICT'S SATISFACTION.

15. PERMITTEE AND/OR ITS CONTRACTOR IS AUTHORIZED TO DISCHARGE WATER ONLY FOR WELL DEVELOPMENT AND START-UP PUMPING AND THEN ONLY BY MEANS OF PIPING TO THE DISCHARGE POINT. NO OVERLAND FLOWS ARE AUTHORIZED. THIS OPERATION SHALL BE APPROVED FOR A SHORT TERM PERIOD ONLY. SHOULD ABOVE-GRADE PIPING BE NECESSARY FOR DISCHARGE PUMPING (GREATER THAN 24 HOURS), IT WILL BE NECESSARY TO CONTACT MS. MAGGIE URUCINITZ FOR PRIOR TO PUMPING ACTIVITIES.

16. PERMITTEE AND/OR ITS CONTRACTOR SHALL SUBMIT TO THIS DISTRICT FOR REVIEW AND APPROVAL, A VEGETATION IMPACT PLAN WHICH IDENTIFIES THOSE SPECIES (NATIVE AND EXOTIC) THAT WILL BE IMPACTED BY CONSTRUCTION OF THE PROJECT, AND AN ACCOMPANYING MITIGATION PLAN TO OFFSET THE LOSS OR RELOCATION OF NATIVE SPECIES.

17. PERMITTEE AND/OR ITS CONTRACTOR SHALL COORDINATE THE PROPOSED PROJECT WITH THE PERSONNEL OF THE DISTRICT'S FT. LAUDERDALE FIELD STATION CONCERNING CONSTRUCTION LAYOUT, ACCESS AND MINIMIZING ENCROACHMENTS INTO THE DISTRICT'S RIGHT OF WAY. PLEASE CONTACT MS. MAGGIE URUCINITZ, AT (954) 452-4814, EXTENSION 4823 TO SCHEDULE A SITE MEETING.

PERMIT NUMBER 11178
OCTOBER 14, 1999

SPECIAL CONDITIONS ARE AS FOLLOWS:

18. PERMITTEE IS REMINDED THAT BY UTILIZING A LAYOUT THAT IS NOT IMMEDIATELY ADJACENT TO THE DISTRICT RIGHT OF WAY LINE THAT IT ASSUMES A GREATER RISK OF RELOCATION OF ITS FACILITIES IF FUTURE WIDENING OR OTHER IMPROVEMENT TO THE HILLSBORO CANAL IS NEEDED. ANY NECESSARY RELOCATIONS SHALL BE AT THE PERMITTEE'S SOLE EXPENSE AND SHALL BE PROMPTLY ACCOMPLISHED UPON NOTIFICATION BY THE DISTRICT.

19. ALL PERMANENT PIPING AND CABLING WITHIN THE DISTRICT'S RIGHT OF WAY SHALL HAVE A MINIMUM BURIAL DEPTH OF 2'.

20. PERMITTEE SHALL DESIGNATE A CONTACT PERSON TO WHICH ANY NEIGHBOR INQUIRIES AND COMPLAINTS CAN BE REFERRED.

21. NO VEHICULAR MAINTENANCE/REPAIR ACTIVITIES OR SUBSTANCES OR PATS ASSOCIATED WITH THE REPAIR OR MAINTENANCE OF VEHICLES/EQUIPMENT WILL TAKE PLACE, BE USED, STORED OR DISCARDED WITHIN THE RIGHT OF WAY NOR SHALL THE DISTRICT'S RIGHT OF WAY BE USED FOR STORAGE OR PARKING OF EQUIPMENT, ASSOCIATED MACHINERY OR CONSTRUCTION TRAILERS, UNLESS PRIOR WRITTEN AUTHORIZATION IS GRANTED BY THE DISTRICT.

22. PERMITTEE IS RESPONSIBLE FOR PROVIDING AND UTILIZING ACCEPTABLE DUST CONTROL MEASURES DURING THE DURATION OF THIS PERMIT.

23. THE PERMITTEE IS PUT ON NOTICE THAT THE DISTRICT HAS NO CONTROL OVER THE SALE OR TRANSFER OF REAL OR PERSONAL PROPERTY. THEREFORE, IT IS THE SOLE OBLIGATION OF A PERMITTEE TO DISCLOSE THE EXISTENCE OF A RIGHT OF WAY OCCUPANCY PERMIT, ITS TERMS AND CONDITIONS TO PROSPECTIVE PURCHASERS. UPON CONVEYANCE OF THE PROPERTY, THE NEW OWNER MUST SUBMIT A WRITTEN REQUEST THAT THE DISTRICT TRANSFER THE PERMIT INTO HIS/HER NAME(S).

24. THE PERMITTEE SHALL HAVE A COPY OF THIS PERMIT AVAILABLE ON-SITE DURING INSTALLATION.

END

Post Office Box 24680 • West Palm Beach, Florida 33416-4680
Telephone (407) 686-8800 • Florida WATS Line: 1-800-432-2045

Form #0122
Rev. 4/93
(RC-1)

APPLICATION NUMBER 99-0622.
(DO NOT WRITE IN THIS BLO

Application to the South Florida Water Management District For Authority to Utilize Works or Land of the District

—To Be Accompanied by 3 Copies of a Drawing of the Proposal—

SECTION 1

Applicant's Name Palm Beach County Water Utilities Department

Applicant's Address P.O. Box 16097, West Palm Beach, FL 33416-6097

Applicant's Telephone Numbers 641-3429 (Day) N/A (Evenin

Name of Person Filing Application Gary Dernlan, Director of Utilities

Address of Person Filing Application P.O. Box 16097, West Palm Beach, FL 33416-6097

Telephone Numbers of Person Filing Application 641-3429 (Day) N/A (Evenin

SECTION 2

LOCATION OF PROJECT:

Work or Land Involved Hillsboro Canal County Palm Beach

Section(s) 35 and 36 Township(s) 47 South, Range(s) 41 Ea

Lot N/A Block N/A Subdivision N/A

SECTION 3

DESCRIPTION OF PROJECT:

- ☐ Boat Dock
- ☐ Utility Line Installation
- ☐ CATV Line Installation
- ☐ Beautification
- ☒ Other (Describe Fully) Nine (9) surficial aquifer water supply wells with well vaults, raw water transmission mains, electrical conduits with conductors, and electrical/ instrumentation control panels.
- ☐ Domestic Irrigation Line
- ☐ Other Water Withdrawal Connection
- ☐ Drainage Connection

Anticipated Start Date if Other than Date of Approval 9/15/99

Anticipated Completion Date 12/31/00

SECTION 4

In compliance with provisions of Chapter 373, Florida Statutes and Chapter 40E-6, Florida Administrative Code, application is hereby made for an occupancy permit i accordance with support drawings, data and incidental information filed with this application and made a part of this application. I hereby certify that all informatic contained in or made a part hereof is true and correct to the best of my knowledge, and acknowledge that any permit issued shall require that the permitted use b constructed and operated in accordance with such information. I further certify that I have read the "Standard Limiting Conditions" appearing on the reverse side ar understand that said conditions will be incorporated within any permit issued pursuant to this application, unless expressly waived by the Governing Board. I furth acknowledge that the Governing Board may incorporate additional special conditions as may be necessary in the best interest of the District.

Palm Beach County Water Utilities Dept.
Applicant's Name (Print or Type)

Owner's Signature
Gary Dernlan, Director of Utilities

Date

Gary Dernlan, Director of Utilities
Agent's Name (Print or Type)

I Hereby Certify that I am an Authorized Agent for the Owner

Date

40E-6.381 LIMITING CONDITIONS

The District's authorization to utilize lands and other works constitutes a revocable license (including both notice general permits and standard permits). In consideration for receipt of that license, permittee shall agree to be bound by the following standard limiting conditions, which shall be included within all permits issued pursuant to this chapter:

(1) All structures on District works or lands constructed by permittee shall remain the property of permittee, who shall be solely responsible for ensuring that such structures and other uses remain in good and safe condition. Permittees are advised that other federal, state and local safety standards may govern the occupancy and use of the District's lands and works. The District assumes no duty with regard to ensuring that such uses are so maintained and assumes no liability with regard to injuries caused to others by any such failure.

(2) Permittee solely acknowledges and accepts the duty and all associated responsibilities to incorporate safety features, which meet applicable engineering practice and accepted industry standards, into the design, construction, operation and continued maintenance of the permitted facilities/authorized use. This duty shall include, but not be limited to, permittee's consideration of the District's regulation and potential fluctuation, without notice, of water levels in canals and works, as well as the permittee's consideration of upgrades and modifications to the permitted facilities/authorized use which may be necessary to meet any future changes to applicable engineering practice and accepted industry standards. Permittee acknowledges that the District's review and issuance of this permit, including, but not limited to, any field inspections performed by the District, does not in any way consider or ensure that the permitted facilities/authorized use is planned, designed, engineered, constructed, or will be operated, maintained or modified so as to meet applicable engineering practice and accepted industry standards, or otherwise provide any safety protections. Permittee further acknowledges that any inquiries, discussions, or representations, whether verbal or written, by or with any District staff or representative during the permit review and issuance process, including, but not limited to, any field inspections, shall not in any way be relied upon by permittee as the District's assumption of any duty to incorporate safety features, as set forth above, and shall also not be relied upon by permittee in order to meet permittee's duty to incorporate safety features, as set forth above.

(3) Permittee agrees to abide by all of the terms and conditions of this permit, including any representations made on the permit application and related documents. This permit shall be subject to the requirements of Chapter 373, F.S., and Chapter 40E-6, F.A.C., including all subsequent rule and criteria revisions. Permittee agrees to pay all removal and restoration costs, investigative costs, court costs and reasonable attorney's fees, including appeals, resulting from any action taken by the District to obtain compliance with the conditions of the permit or removal of the permitted use. If District legal action is taken by staff counsel, "reasonable attorney's fees" is understood to mean the fair market value of the services provided, based upon what a private attorney would charge.

(4) This permit does not create any vested rights, and except for governmental entities and utilities, is revocable at will upon reasonable prior written notice. Permittee bears all risk of loss as to monies expended in furtherance of the permitted use. Upon revocation, the permittee shall promptly modify, relocate or remove the permitted use and properly restore the right of way to the District's satisfaction. In the event of failure to so comply within the specified time, the District may remove the permitted use and permittee shall be responsible for all removal and restoration costs.

(5) This permit does not convey any property rights nor any rights or privileges other than those specified herein and this permit shall not, in any way, be construed as an abandonment or any other such impairment or disposition of the District's property rights. The District approves the permitted use only to the extent of its interest in the works of the District. Permittee shall obtain all other necessary federal, state, local, special district and private authorizations prior to the start of any construction or alteration authorized by the permit. Permittee shall comply with any more stringent conditions or provisions which may be set forth in other required permits or other authorizations. The District, however, assumes no duty to ensure that any such authorizations have been obtained or to protect the legal rights of the underlying fee owner, in those instances where the District owns less than fee.

(6) Unless specifically prohibited or limited by statute, Permittee agrees to indemnify, defend and save the District (which used herein includes the District and its past, present and future employees, agents, representatives, officers and Governing Board members and any of their successors and assigns) from and against any and all lawsuits, actions, claims, demands, losses, expenses, costs, attorneys fees (including but not limited to the fair market value of the District's inhouse attorneys' fees based upon private attorneys' fees/rates), judgments and liabilities which arise from or may be related to the ownership, construction, maintenance or operation of the permitted use or the possession, utilization, maintenance, occupancy or ingress and egress of the District's right of way which arise directly or indirectly and/or are caused in whole or in part by the acts, omissions or negligence of the District or of third parties. Permittee agrees to provide legal counsel acceptable to the District if requested for the defense of any such claims.

(7) The District does not waive sovereign immunity in any respect.

(8) The permittee shall not engage in any activity regarding the permitted use which interferes with the construction, alteration, maintenance or operation of the works of the District, including:

(a) discharge of debris or aquatic weeds into the works of the District;

(b) causing erosion or shoaling within the works of the District;

(c) planting trees or shrubs or erecting structures which limit or prohibit access by District equipment and vehicles, except as may be authorized by the permit.

Permittee shall be responsible for any costs incurred by the District resulting from any such interference, as set forth in (a), (b), and (c), above;

(d) leaving construction or other debris on the District's right of way or waterway;

(e) damaging District berms and levees;

(a) the removal of District owned spoil material;

(b) removal of or damage to District locks, gates and fencing.

(c) opening of District rights of way to unauthorized vehicular access; or

(d) running or allowing livestock on the District's right of way.

(9) The District is not responsible for any personal injury or property damage which may directly or indirectly result from the use of water from the District's canal or any activities which may include use or contact with water from the District's canal, since the District periodically sprays its canals for aquatic weed control purposes and uses substances which may be harmful to human health or plant life.

(10) Permittee shall allow the District to inspect the permitted use at any reasonable time.

(11) Permittee shall allow, without charge or any interference, the District, its employees, agents, and contractors, to utilize the permitted facilities before, during and after construction for the purpose of conducting the District's, routine and emergency, canal operation, maintenance, and construction activities. To the extent there is any conflicting use, the District's use shall have priority over the permittee's use.

(12) This permit is a non-exclusive revocable license. Permittee shall not interfere with any other existing or future permitted uses or facilities authorized by the District.

(13) The District has the right to change, regulate, limit, schedule, or suspend discharges into, or withdrawals from, works of the District in accordance with criteria established by the Big Cypress Basin, the District, or the U. S. Army Corps of Engineers for the works of the District.

(14) If the use involves the construction of facilities for a non exempt water withdrawal or surface water discharge, the applicant must apply for and obtain a water use or surface water management permit before or concurrently with any activities which may be conducted pursuant to the right of way occupancy permit.

(15) The District shall notify the local ad valorem taxing authority of the lands affected by the permitted use, where the permittee owns the underlying fee and derives a substantial benefit from the permitted use. The taxing authority may reinstate such lands on the tax roll. Failure to pay all taxes in a timely manner shall result in permit revocation. Such permit revocation shall not alleviate the responsibility of the permittee to pay all taxes due and payable.

(16) Permittee shall provide prior written notice to their successors in title of the permit and its terms and conditions.

(17) Permittee shall record a Notice of Permit through filing the appropriate notice agreed to by the District in the public records of the county or counties where the project is located and by providing the District with proof of filing or through an equivalent procedure. All costs associated with this requirement shall be the responsibility of the permittee. Governmental entities and utilities are not subject to this provision.

(18) This permit is contingent upon compliance with the recording of the Notice of Permit. Failure to provide proof of the recording of the Notice of Permit will result in the permit becoming invalid on its own terms, the removal of any existing facilities within the right of way, restoration of the right of way to the District's satisfaction, at the permittee's expense, and the possible assessment of civil penalties.

(19) Permittee shall be responsible for the repair or replacement of any existing facilities located within the District's right of way which are damaged as a result of the installation or maintenance of the authorized facility.

(20) All obligations under the terms of this permit authorization and any subsequent modifications hereto shall be joint and several as to all owners.

(21) It is the responsibility of the permittee to make prospective bidders aware of the terms and conditions of this permit. It shall be the responsibility of the permittee's contractors to understand the terms and conditions of this permit and govern themselves accordingly.

(22) It is the responsibility of the permittee to bring to the attention of the District any conflict in the permit authorization or permit conditions in order that they may be resolved prior to the start of construction. In resolving such conflicts the District's determination will be final.

Specific Authority 373.044, 373.113 F.S. Law Implemented Chapters 373.085(1), 373.086, 373.103, 373.109, 373.129, 373.1395, 373.603, 373.609, 373.613 F.S. History—New 9-3-81, Amended 5-30-82, 12-29-86, 12-24-91, 9-15-99 Formerly 16K-5.01(2), 16K-5.02(2), 16K-5.03(2), 16K-5.04(4), 16K-5.05, 40E-6.381.

Water Utilities Department
Engineering
P.O. Box 16097
West Palm Beach, FL 33416-6097
(561) 641-3429
FAX: (561) 641-3447
http://www.co.palm-beach.fl.us

June 21, 199

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Construction and Land Management Dept.
Right-of-Way Division
P.O. Box 24680
West Palm Beach, FL 33416-4680

Re: Application for SFWMD
Right of Way Occupancy Permit
(WUD Project No. 98-66)

To Whom It May Concern:

The attached permit application and fee is for the proposed installation of nine (9) surficial aquifer water supply wells within the north right-of-way of the Hillsboro Canal, together with associated well vaults, raw water transmission mains, control panels, power supply conduit and conductors, and control conduit and conductors. The following generally describes the improvements proposed for installation and addresses other issues of concern relative to construction and long-term maintenance of the proposed improvements.

INDIVIDUAL WELL SITES:

Nine (9) production wells are proposed as shown on the attached drawing. Each well shall include the following:

Inner casing diameter: 16"
Outer casing diameter: 30"
Estimated cased depth: 80' - 100'
Estimated screened depth: 30' - 40'
Estimated total depth: 110' - 140'
Capacity per well: 1,050 gpm
Well site dimensions: 40' x 30'
Well vault dimensions: 12' x 8'
Electrical disconnect switch
Electrical and instrumentation junction boxes
By-pass/flush piping with splash pad and guard posts

RAW WATER TRANSMISSION PIPING:

A raw water transmission main will be installed parallel to the Hillsboro Canal right of way. A 10-inch ductile iron pipe will extend from each well vault and connect each well to the raw water transmission main. An 8-inch ductile iron pipe will extend above ground immediately adjacent to the well vault to permit flushing of each well on an as needed basis.

The burial depth of all raw water transmission piping will be 3.5 feet or greater. The diameter of the transmission piping will vary from 24-inches at the western most wells to 36-inches at the State Road 7 right-of-way. The main will be constructed of either ductile iron pipe (DIP) or prestressed concrete cylinder pipe (PCCP) and will be installed in a manner that will not limit or adversely affect the District's normal use and maintenance of the right of way. At approximate Station 335+40 the raw water transmission main departs the SFWMD right-of-way and continues northward within the State Road 7 right-of-way.

A subaqueous pipe crossing will be made at the existing drainage tributary that connects to the Hillsboro Canal at Station 303+00, approximately 3,300 feet west of State Road 7. The crossing will have a minimum of 3 feet of cover below the existing bottom elevation of the drainage ditch.

POWER SUPPLY:

A master control panel (MCP) will be situated at each of the following three (3) locations:

1. Within the District right-of-way immediately adjacent to the west right-of-way of State Road 7. This MCP will supply power and control conductors to proposed wells 17, 18, 19 and 20.

2. Within the SFWMD right-of-way immediately adjacent to the east line of the FPL overhead power line corridor. This MCP will supply power and control conductors to proposed wells 21, 22 and 23.

3. Within the SFWMD right-of-way immediately adjacent to the west line of the FPL overhead power line corridor. This MCP will supply power and control conductors to proposed wells 24, 25 and the future ASR well that is proposed west of well 25.

The site of each master control panel will include the following:

Motor starters for well pumps and sump pumps
Instrumentation/control sub-panel with master RTU
Concrete electrical pads with guard posts
FPL pad mounted electrical transformer
FPL high voltage power feed to each transformer from existing FPL overhead power lines.

Florida Power and Light (FPL) electrical service will be provided from existing overhead power lines at each of the three locations. The four proposed well sites located east of the drainage tributary at Station 303+00 will be supplied with electrical power from the FPL overhead power lines on State Road 7. The five proposed well sites and the future ASR well situated west of the drainage tributary at Station 303+00 will be supplied with electrical power from the existing overhead power lines in the FPL power line corridor.

A power service drop to an electrical transformer will be made at each of the three MCP locations described above. Underground conduits routed from each MCP will deliver power to each well vault. Underground conduits supply power to the submersible well pump motors, well vault sump pump motors, and well control sub-panels.

ELECTRICAL AND CONTROL CONDUITS:

A network of direct burial PVC conduits varying in size from 2" to 4" will be installed parallel to the Hillsboro Canal right of way. The conduits will be constructed 6-8 feet north of the proposed raw water transmission main and will have a burial depth of not less than 30-inches. The conduits will be used to route 480 volt electrical conductors for power supply to both well pumps and sump pumps, as well as low voltage 4-20ma instrumentation conductors for operational control and monitoring of each well. The conduits and conductors will be run from the three master control panels to each well site.

MISCELLANEOUS IMPROVEMENTS:

Passive Beautification:

No native landscaping or screening is proposed around the perimeter of each well site at this time. Areas disturbed around each well site and along the raw water transmission main route will be restored with sod or seed and mulch using native bahia grass.

Irrigation Lines and Sprinkler Systems:

No irrigation lines or sprinkler systems are proposed at the well sites at this time.

Fences and Gates:

The well sites are not proposed to be fenced. The three electrical control panels will have a lockable stainless steel outer housing to prevent public access and protective concrete bollards surrounding the concrete foundation slab of each control panel. Each well vault will have a traffic-rated aluminum access hatch. The access hatches will be lockable to prevent public access.

CONSTRUCTION ISSUES:

Adjacent property owners will be notified of the proposed work by regular mail as part of a public outreach program by PBCWUD. Attached is a draft copy of a letter to be sent to the property owners prior to commencing with construction.

Well Drilling:

Prolonged drilling is not anticipated. Each well will require approximately 10 days of drilling time for installation of the 30" outer surface casing, 16" inner well casing, associated pilot boreholes, and cement grout seal. This is based on a 10-hour work day (from 8:00 AM to 6:00 PM). Weather permitting, all drilling activity is expected to be complete in 3-4 months.

All wells will be drilled by the reverse air method. A copy of the construction details and technical specifications for drilling and testing of the wells is attached hereto for informational purposes.

Disposal of Water During Drilling:

Water produced during drilling will be directed to temporary mud pits within the Hillsboro Canal right-of-way immediately adjacent to each well site. The mud pits will provide for settlement of drilling mud and percolation of water produced during drilling into the ground on the canal bank. The mud pits will be filled in and the areas disturbed during drilling restored to original condition.

Disposal of Water From Well Development and Testing:

Water produced during air-lift development, pump surging development, constant rate pump testing, and step-rate pump testing of each well will be discharged directly into the Hillsboro Canal. Temporary above ground piping will be installed to direct the water into the canal. Care will be taken to ensure that the discharge will not cause runoff on the canal side-slope. Any significant accumulation of formation sand from well development will be excavated from the canal prior to completion of construction. Upon completion of well development and pump testing the temporary piping will be removed.

ACCESS TO SFWMD R.O.W.:

PBCWUD was previously issued a Key Permit for access to the District's right of way (SFWMD Key Permit No. 1240). The keys are for official use only and will not be used for recreational purposes.

Access to the Hillsboro Canal right-of-way during construction will be from State Road 7. Heavy construction equipment, including but not limited to drill rigs, backhoes, front-end loaders, and dump trucks will be utilized to construct the project. Temporary corrugated metal pipe (CMP) culverts will be installed in the drainage ditch at approximate Station 303+00 to provide the construction equipment with unrestricted access to the well sites situated west of the ditch. Two culverts, each 72" in diameter, will be installed to maintain drainage flow to the Hillsboro Canal. Upon completion of the raw water main and

well construction, the culverts will be removed and the ditch excavated to the original cross section that existed prior to construction, or to an alternate cross section if specifically requested by the SFWMD.

MAINTENANCE AND TESTING ISSUES:

Well Testing During Construction (by the Drilling Contractor):

1. Collection of geologic formation samples at 5-foot intervals and at all changes in formation for the purpose of preparing lithologic log descriptions of the subsurface geologic conditions encountered.

2. Collection of a pilot hole water sample from the estimated total depth of each proposed well. Samples will be analyzed for primary and secondary drinking water standards.

3. Geophysical logging of each pilot hole including caliper, natural gamma ray, spontaneous potential and normal resistivity logs.

4. Perform a 4-hour step-drawdown test on each well at pumping rates varying between 500 and 2,000 gpm

5. Perform an 8-hour constant rate pumping test on each well at 1,500 gpm.

6. Collection of a water sample from the completed well for analysis of primary and secondary drinking water standards as required by the Palm Beach County Public Health Unit (PBCPHU). A screening for the presence or absence of dioxin will also be performed as required by the Palm Beach County Department of Environmental Resources Management (PBCDERM).

7. Collection of two water samples per day over ten consecutive days for bacteriological clearance as required by the Palm Beach County Public Health Unit (PBCPHU).

Routine Well Testing After Construction (by PBCWUD):

1. Annual water sample collection for primary and secondary drinking water analysis as required by the Palm Beach County Public Health Unit (PBCPHU).

2. Monthly testing for pumped well drawdown and specific capacity.

3. Periodic water sample collection on an as needed basis for bacteriological analysis.

All routine well testing and sample collection will be performed by PBCWUD personnel. Vehicles used for such testing will be no larger than a ½-ton four-wheel drive pick-up truck.

Periodic Well Maintenance (by PBCWUD):

Periodic maintenance performed on an as needed basis includes removal and replacement of submersible well pumps, removal and replacement of well vault sump pumps, removal and replacement of well column pipe, repair of electrical and control panels, repair and calibration of miscellaneous wellhead instruments, air-lift development, etc. This routine periodic maintenance will be performed by County personnel.

Most of the periodic well maintenance items require specialized vehicles and equipment such as boom trucks, air compressors, etc.

Special Well Maintenance and Rehabilitation:

Maintenance and rehabilitation procedures performed approximately every five (5) years include acidization, high-level disinfection, and pressure jetting. This work is typically performed by a specialty well rehabilitation company under contract with Palm Beach County.

Many of the special well maintenance and rehabilitation procedures described herein require specialized vehicles and equipment such as boom trucks, water trucks, drilling rigs, etc.

Well Abandonment (if necessary):

The production wells are intended to remain in perpetuity. If at any time it is determined that the wells must be abandoned, such abandonment shall be performed in accordance with SFWMD rules and Chapter 40E-3.531 F.A.C. This includes removal of the well vault and all other above ground improvements, removal of the upper six feet of both inner and outer casing, and filling of the remaining casing with cement grout. Areas disturbed will be restored to original condition or better by placement of compacted fill to match the surrounding grade, and placement of seed and mulch for soil stabilization and erosion control.

EXISTING PERMITTED IMPROVEMENTS TO REMAIN:

Four deep monitor wells installed under SFWMD Permit No. 10895 will remain. The monitor wells will be used to measure groundwater drawdown during pump testing of individual and multiple production wells. The data obtained will be used for hydrogeologic modeling purposes.

FUTURE AQUIFER STORAGE AND RECOVERY (ASR) WELL:

An agreement between Palm Beach County and SFWMD for the construction and testing of a raw groundwater ASR system was recently approved by the Board of County Commissioners on May 18, 1999. Formal approval by the SFWMD Governing Board will occur in the near future.

Up to five of the nine proposed new surficial aquifer production wells to be constructed along the Hillsboro Canal will be made available as a source of raw water supply to the ASR well. The remaining four surficial aquifer wells will be dedicated for the supply of raw water to the County's Water Treatment Plant #9.

A preliminary site for the ASR well is indicated on Sheet 2 of the drawings and is shown to be approximately 100 feet west of proposed surficial aquifer well 9W-25. The final location of the ASR well may be different than that shown on the drawings due to design requirements or other issues of concern relative to siting of the well. A separate right-of-way occupancy permit application will be submitted to the District in the future for the proposed ASR well. The application will also address one or two upper floridan aquifer

monitoring wells, and necessary wellhead and surface equipment required for operation of the ASR system.

Enclosed are one (1) original signed Application for Authority to Utilize Works or Land of the District, one original and two copies of this letter (9 pages) with attachments, three (3) copies of design drawings for the water supply well installations (as prepared by Montgomery Watson), three (3) sets of design drawings showing the proposed raw water transmission main (as prepared by PBCWUD), and three (3) copies of the technical specifications for installation of the water supply wells (as prepared by Montgomery Watson). All of the improvements are to be constructed within the north right-of-way of the Hillsboro Canal west of State Road 7.

Also enclosed is a check in the amount of $1,550.00 for the SFWMD permit application fee. Due to the extent, magnitude, and permanent nature of the proposed facilities, it is assumed that the application and fee is for an Individual Major Project pursuant to SFWMD Permit Information Manual, Volume V.

If you have any questions or require additional information, please call the undersigned at (561) 434-5356.

Sincerely,

Paul D. Feldman

Paul Feldman, P.E.
WUD Engineering Division
6/17/99

PF/dw
Enclosure(s)
cc: C. Lawton McCall, PBCWUD
Eugenia Carey, PBCWUD
Fred Rapach, PBCWUD
Bill Cocke, PBCWUD
Tom Traina, P.E. (MW/L.W.)
Mark Abbott, P.G. (MW/TPA)

DRAFT

August ___, 1999

PROPERTY OWNER NAME
MAILING ADDRESS
CITY, STATE, ZIP

Dear Property Owner:

Over the next year, the Palm Beach County Water Utilities Department (PBCWUD) will be constructing an important water resources development project within the north right-of-way of the Hillsboro Canal west of State Road 7. The project involves the construction of nine (9) water supply wells, water transmission mains, and underground power lines. These wells are needed to supply water to a new water treatment plant that PBCWUD is constructing east of State Road 7 at our existing plant site within the Sandalfoot Cove development.

Construction of the nine wells and underground power lines is scheduled to begin in early September. After completion of the wells, the water transmission main will be constructed. Please note that one of the water supply wells may be located in the area behind your property, within the Hillsboro Canal right-of-way owned by the South Florida Water Management District. To minimize the visual impact of the wells, they will be situated inside a concrete vault. Only the top 2-3 inches of the vault will be visible above ground.

Altogether, construction is expected to take 12-15 months to complete. During that time, there will be periods when well drilling and construction equipment will be working in the canal right-of-way directly behind your house. Please note that the project is designed to not require the removal or relocation of any existing fences or sheds that some residents have built within the canal right-of-way. However, please understand that the removal of some trees is unavoidable and will be necessary to construct the project.

We appreciate your patience and understanding while this work is performed. If you have any questions or would like to speak to someone about the project, please call the undersigned at 561-434-5356.

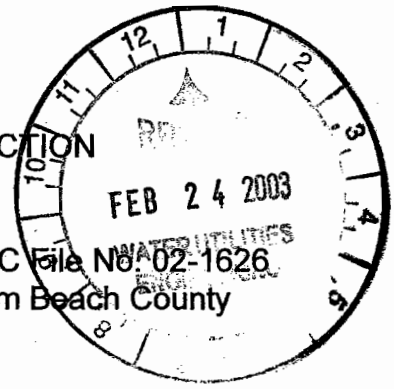
Sincerely,

Paul Feldman, P.E.
Water Utilities Department
Engineering Division

PF/dw
cc: C. Lawton McCall

FDEP WQCE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION



In the Matter of a	)	OGC File No. 02-1626
Petition for Water Quality	)	Palm Beach County
Criteria Exemption,	)	
	)	
Palm Beach County Water	)	
Utilities Department - Water	)	
Treatment Plant No. 9	)	

FINAL ORDER

On July 31, 2000, the Department received a petition from the applicant, the Palm Beach County Water Utilities Department, for the exemption for an installation discharging into Class G-II ground water pursuant to rule 62-520.500 of the Florida Administrative Code. The Palm Beach County Water Utilities Department requested exemption from the ground water standards contained in rule 62-520.420(1) of the Florida Administrative Code. Specifically, the petition requested exemption from the secondary drinking water standard for color, which is incorporated as a ground water standard. The exemption request for color is 75 color units and the maximum contaminant level (MCL) for color contained in the secondary drinking water standards is 15 color units. As a secondary drinking water standard, the standards are aesthetically based and do not pose a health threat at the requested levels. The installation is the Palm Beach County Water Treatment Plant No. 9 (WTP-9) Eastern Hillsboro Canal aquifer storage and recovery (ASR) facility, ASR-1, which is located at 22478 Southwest 7th Street, Boca Raton, Palm Beach County, Florida. After reviewing the petition, the Department has concluded that the requirements and criteria set forth

in rule 62-520.500 of the Florida Administrative Code have been satisfied. A copy of the Department's Intent to Grant is attached as Exhibit I.

The letter with the Notice of Intent, notified Petitioner of the Department's proposed agency action and advised it of the right to a hearing pursuant to sections 120.569 and 120.57 of the Florida Statutes. On November 29, 2002, notice was given in the newspaper *The Palm Beach Post*, printed in West Palm Beach, Florida, and on December 27, 2002, notice was published in the *Florida Administrative Weekly*, and on the Department of Environmental Protection Internet site at *http://www.dep.state.fl.us* under Official Notices for the Ground Water Program Area, informing the public of the Department's intended action and offering an opportunity for hearing pursuant to sections 120.569 and 120.57 of the Florida Statutes. A copy of these notices are attached as Exhibits II and III, respectively.

The petitioner and interested parties having been advised of their rights under chapter 120 of the Florida Statutes, and having failed or declined to file a petition pursuant to sections 120.569 and 120.57 of the Florida Statutes are hereby deemed to have waived those rights.

IT IS THEREFORE ORDERED that the petition of Palm Beach County Water Utilities Department, requesting exemption from the drinking water standards for color set forth in rule 62-550.320 of the Florida Administrative Code for the ground waters specified herein is hereby GRANTED, subject to the following conditions:

(a) The exemption is granted for the duration of the Palm Beach County's ASR Class V ASR-1 well construction permit number 072069-001-UC, or any subsequent construction permit issued for this well. Future exemptions must be

petitioned for by the applicant in conjunction with an operation permit for this well or any additional ASR wells at this site.

(b) The exemption provides relief only for the color standard contained in rule 62-550.320 of the Florida Administrative Code, as referenced in rule 62-520.420 of the Florida Administrative Code. All other ground water quality standards, including the primary drinking water standards contained in rule 62-550.310 of the Florida Administrative Code, and the minimum criteria contained in rule 62-520.400 of the Florida Administrative Code, apply to this ASR project.

(c) The permittee shall monitor water quality in accordance with the specific conditions of construction permit number 072069-001-UC, or any subsequent construction permit for this well.

(d) If any of the conditions in 1 and 2 below occurs because of injection at the Eastern Hillsboro Canal Aquifer Storage and Recovery facility, injection into the ASR well shall cease until a water quality criteria exemption that addresses any additional parameters exceeding water quality standards, or an aquifer exemption pursuant to rule 62-528.300(3) of the Florida Administrative Code, as appropriate, has been obtained.

1. Surficial Aquifer Monitor Well (Well 9W-0069)
    a. The MCL is exceeded for any parameter contained in the primary drinking water standards; or
    b. The MCL or natural background level (whichever is poorer) is exceeded for any parameter contained in the secondary drinking water standards or minimum criteria.

2. Storage Zone Monitor Well

   a. The MCL is exceeded for any parameter contained in the primary drinking water standards; or

   b. The MCL or natural background level (whichever is poorer) is exceeded for any parameter contained in the secondary drinking water standards or minimum criteria except color; or

   c. Color exceeds the approved alternative level of 75 color units.

(e) The permittee shall use the data obtained during operation of ASR-1 to reassess the distance from the ASR well that the color standard would be exceeded. Based on the reassessment, the permittee shall determine if additional monitoring is necessary to protect underground sources of drinking water prior to obtaining a renewal of the construction permit or obtaining an operation permit.

This exemption, unless otherwise ordered, shall be valid for the duration of Palm Beach County Water Utilities Department's ASR Class V Eastern Hillsboro Canal ASR-1 well construction permit and subsequent construction permits for this facility that may be necessary to complete operational testing. Additionally, the applicant must petition the Department for exemptions in conjunction with an operation permit for any injection project at this site.

A party to this order has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee,

Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department

DONE AND ENTERED this 17 day of Feb 2003 in Tallahassee, Florida.

David B. Struhs
Secretary
State of Florida Department
of Environmental Protection
The Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000
Telephone (850) 245-2011

Copies furnished to:

Melissa Meeker, DEP/WPB
Richard Drew
Linda Horne, P.G., DEP/WPB
Richard Deuerling, P.G.
Joe May, P.G., DEP/WPB
Cynthia Christen
Nancy Marsh, EPA/Atlanta
George Heuler, P.G.
Stephen McGrew, P.E., PBC Water Utilities Department/WPB ✓

Exhibit I

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of a Petition for Water Quality Criteria Exemption,	)	OGC File No. 02-1626 Palm Beach County
Palm Beach County Water Utilities Department - Water Treatment Plant No. 9	)	

INTENT TO GRANT

The Department of Environmental Protection gives notice of its intent to grant a water quality criteria exemption to the Palm Beach County Water Utilities Department, Mr. Gary Dernlan, P.E., Director of Water Utilities, P. O. Box 16097, West Palm Beach, Florida 33416-6097, for the proposed project as detailed in the petition specified above. The Department is issuing this Intent to Grant for the reasons stated below.

On July 31, 2000, the Department received a petition from the applicant, the Palm Beach County Water Utilities Department, for the exemption for an installation discharging into Class G-II ground water pursuant to rule 62-520.500 of the Florida Administrative Code. The Palm Beach County Water Utilities Department requested exemption from the ground water standards contained in rule 62-520.420(1) of the Florida Administrative Code. Specifically, the petition requested exemption from the secondary drinking water standard for color, which is incorporated as a ground water standard. The exemption request for color is 75 color units and the maximum contaminant level (MCL) for color contained in the secondary drinking water standards is 15 color units. As a secondary drinking water standard, the standards are aesthetically based and do not pose a health threat at the requested levels. The

installation is the Palm Beach County Water Treatment Plant No. 9 (WTP-9) Eastern Hillsboro Canal aquifer storage and recovery (ASR) facility, ASR-1, which is located at 22478 Southwest 7th Street, Boca Raton, Palm Beach County, Florida. The water to be used for this ASR project is untreated ground water from the surficial aquifer, which is required under the construction and testing permit to meet all primary and secondary drinking water standards, and minimum criteria. The receiving aquifer is upper Floridan aquifer.

The Department also has permitting jurisdiction under Chapter 403 of the Florida Statutes. The project is not exempt from permitting procedures. The Department has determined that in addition to the exemption, a construction permit is required for the ASR-1 facility.

The Department has reviewed the above petition for exemption under the requirements of rule 62-520.500 of the Florida Administrative Code, and hereby gives notice of its intent to grant the exemption to Palm Beach County for its aquifer storage and recovery facility, ASR-1, based on the following findings:

(1) Granting this exemption is clearly in the public interest.

Storing excess water of good quality by ASR projects for future use meets the public demand for a reliable supply of water at a reasonable cost, while not adversely affecting the environment. The water to be used for this ASR operation has a total dissolved solids concentration (TDS) of approximately 400 to 635 mg/L. The secondary drinking water standard for TDS is 500 mg/L. The receiving aquifer has a TDS concentration of approximately 3,000 to 6,000 mg/L. Color will be removed by the treatment process necessary to render this water potable. The injected fluid will have a

lower concentration of TDS than the ground water in the injection zone. It meets all of the primary drinking water standards and color will be removed by the treatment process. Storing excess water of good quality using ASR technology for future use meets the public demand for a reliable supply of water at a reasonable cost, while not adversely affecting the environment.

(2) Compliance with presently specified criteria is unnecessary for the protection of present and future potable water supplies.

Water from the upper Floridan aquifer in this area is not presently being used. The ground water in the storage zone of the upper Floridan aquifer is classified as Class G-II ground water (TDS concentration of less than 10,000 mg/L), but is not potable without significant treatment. Desalination of water from the upper Floridan aquifer, in the vicinity of the proposed project, would be necessary to render this water suitable for a potable supply. Desalination is usually accomplished by reverse osmosis. Color is completely removed and is not likely to adversely impact the treatability of water from this aquifer. Color is removed in the normal treatment process for potable drinking water.

3) Granting the exemption will not interfere with existing uses or the designated use of the waters or of contiguous water.

The water from the surficial aquifer that is proposed for injection is currently being used as a drinking water source after treatment for Palm Beach County. The untreated ground water to be injected is of better quality with respect to total dissolved solids than the ground water in the upper Floridan aquifer. No wells penetrate the upper Floridan aquifer within the one-mile area of review around this facility, therefore

the existing use of the water should not be affected. There should be no impact on the quality of the contiguous water above the ASR storage zone (surficial aquifer) from this ASR operation. These aquifers are separated from the ASR storage zone by confining rocks of the Hawthorn Group, which provides approximately 550 feet of confinement between the upper Floridan aquifer and the base of the surficial aquifer. The injected water meets all of the primary drinking water standards.

(4) The economic, environmental, and social costs of compliance with existing criteria outweigh the economic, environmental, and social benefits of compliance.

Compliance with the criteria would mean that the water from the surficial aquifer would have to be treated before being injected. The total capital cost for treating the water so that color would be within the secondary drinking water standards is estimated to be approximately $15.3 million, compared with $2.7 million for the raw ground water ASR system proposed. There also would be operation and maintenance costs and energy costs associated with treating the water. The stored water (even with the presence of color) should improve both the quality and yield of water in this zone. The economic, environmental, and social costs of compliance with the criteria, including the energy costs associated with treating and pumping this water, are far greater than the economic, environmental, and social benefits. The benefits are a reliable supply of water at a reasonable cost, while not adversely affecting the environment. This is especially relevant because the receiving ground water is not currently used for a potable supply, and its future potable use will require appropriate treatment technology regardless of any increase in color from the ASR well.

(5) An adequate monitoring program approved by the Department has been established to ascertain the location of the stored water, to detect any leakage of the stored water to other aquifers or surface waters, and to detect any adverse effect on underground geologic formations or waters.

The monitoring program has been designed to meet the requirements set forth in rule 62-528.615 of the Florida Administrative Code. Two monitoring wells will be constructed, one within the ASR storage zone, and another in the surficial aquifer overlying the upper Floridan aquifer ASR storage zone. The ASR zone monitoring well will be located approximately 800 feet west of the ASR well, while the surficial aquifer monitoring well overlying the storage zone will be located 18 feet from the ASR well. Monitoring will include recharge water quality, recovered water quality, quality of water in the overlying surficial aquifer, and effects of the storage plume on the ambient water quality and geologic formation within the storage zone aquifer. These monitoring data will be reported and reviewed on a monthly basis.

(6) The exemption will not present a danger to the public health, safety, or welfare.

The recharge water is untreated ground water from the surficial aquifer that meets all primary drinking water standards. Color is regulated as a secondary drinking water standard. Secondary drinking water standards, by definition, are aesthetically based. Exceedance of these secondary drinking water standards should have no adverse effects upon the health or safety of persons or on the upper Floridan or surficial aquifer systems. The proposed ASR operations will immediately improve public health, safety, and welfare by providing a reliable water source of suitable quality, at relatively low cost, to meet projected public demands.

If water from the upper Floridan aquifer in the vicinity of this ASR facility were to be used for potable water supply in the future, an advanced form of water treatment, such as reverse osmosis, would be required because of the elevated TDS and chloride levels. This method of water treatment would also remove the slightly elevated color and iron concentrations.

The Department intends to grant these exemptions subject to the following conditions:

(a) The exemption is granted for the duration of the Palm Beach County's ASR Class V ASR-1 well construction permit number 072069-001-UC, or any subsequent construction permit issued for this well. Future exemptions must be petitioned for by the applicant in conjunction with an operation permit for this well or any additional ASR wells at this site.

(b) The exemption provides relief only for the color standard contained in rule 62-550.320 of the Florida Administrative Code, as referenced in rule 62-520.420 of the Florida Administrative Code. All other ground water quality standards, including the primary drinking water standards contained in rule 62-550.310 of the Florida Administrative Code, and the minimum criteria contained in rule 62-520.400 of the Florida Administrative Code, apply to this ASR project.

(c) The permittee shall monitor water quality in accordance with the specific conditions of construction permit number 072069-001-UC, or any subsequent construction permit for this well.

(d) If any of the conditions in 1 and 2 below occurs because of injection at the Eastern Hillsboro Canal Aquifer Storage and Recovery facility, injection into the

ASR well shall cease until a water quality criteria exemption that addresses any additional parameters exceeding water quality standards, or an aquifer exemption pursuant to rule 62-528.300(3) of the Florida Administrative Code, as appropriate, has been obtained.

1. Surficial Aquifer Monitor Well (Well 9W-0069)
   a. The MCL is exceeded for any parameter contained in the primary drinking water standards; or
   b. The MCL or natural background level (whichever is poorer) is exceeded for any parameter contained in the secondary drinking water standards or minimum criteria.
2. Storage Zone Monitor Well
   a. The MCL is exceeded for any parameter contained in the primary drinking water standards; or
   b. The MCL or natural background level (whichever is poorer) is exceeded for any parameter contained in the secondary drinking water standards or minimum criteria except color; or
   c. Color exceeds the approved alternative level of 75 color units.

(e) The permittee shall use the data obtained during operation of ASR-1 to reassess the distance from the ASR well that the color standard would be exceeded. Based on the reassessment, the permittee shall determine if additional monitoring is necessary to protect underground sources of drinking water prior to obtaining a renewal of the construction permit or obtaining an operation permit.

Pursuant to section 403.815 of the Florida Statutes, and DEP rule 62-110.106(7) of the Florida Administrative Code, you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Grant the Water Quality Criteria Exemption. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of sections 50.0ll and 50.03l of the Florida Statutes, in the county where the activity is to take place. The applicant shall provide an original copy of the proof of publication to Mr. Richard Deuerling of the Department, at 2600 Blair Stone Road, Twin Towers Office Building, Mail Station 3530, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the exemption.

The Department will issue the exemption with the attached conditions unless a timely petition for an administrative hearing is filed under sections 120.569 and 120.57 of the Florida Statutes before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the Department's proposed exemption decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35,

Tallahassee, Florida 32399-3000. Petitions filed by the exemption applicant or any of the parties listed below must be filed within 21 days of receipt of this written notice.

Petitions filed by any other persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 21 days of publication of the public notice or receipt of the written notice, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication. The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will only be at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

(a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the Department case or identification number and the county in which the subject matter or activity is located;

(b) A statement of when and how each petitioner received notice of the Department action;

(c) A statement of how each petitioner's substantial interests are affected by the Department action;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A statement of facts that the petitioner contends warrant reversal or modification of the Department action;

(f) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and

(g) Demand for relief (sought by the petitioner, stating precisely the action that the petitioner wants the Department to take).

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise contain the same information as set forth above, as required by rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the petitions have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available for this proceeding.

This intent to grant constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7) of the Florida Statutes, which may require remand for an administrative hearing, the applicant has the right to seek judicial review of it under

section 120.68 of the Florida Statutes, by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

DONE AND ENTERED this 18th day of November 2002 in Tallahassee, Florida.

for David B. Struhs
Secretary
State of Florida Department
of Environmental Protection
The Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000
Telephone (850) 245-2011

Copies furnished to:

Melissa Meeker, DEP/WPB
Richard Drew
Linda Horne, P.G., DEP/WPB
Richard Deuerling, P.G.
Joe May, P.G., DEP/WPB
Cynthia Christen
Nancy Marsh, EPA/Atlanta
George Heuler, P.G.
Stephen McGrew, P.E., PBC Water Utilities Department/WPB

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO GRANT WATER QUALITY CRITERIA EXEMPTION

The Department of Environmental Protection gives notice of its intent to grant a water quality criteria exemption for the aesthetically based secondary drinking water standard for color (standard 15 color units, exemption limit 75 color units) to the Palm Beach County Water Utilities Department, Mr. Gary Dernlan, Director of Water Utilities. The water quality criteria exemption is for the Eastern Hillsboro Canal raw ground water aquifer storage and recovery (ASR) project at the Palm Beach County Water Treatment Plant No. 9. The exemption is granted for the duration of the Eastern Hillsboro Canal raw ground water ASR-1 Class V well construction permit. Future exemptions must be petitioned for by the applicant in conjunction with a construction or operation permit for any ASR project at this site. The ASR facility is located at 22478 Southwest 7th Street, Boca Raton, Palm Beach County, Florida.

A person whose substantial interests are affected by the Department's proposed exemption decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. The petitioner must mail a copy of the petition to the applicant Mr. Gary Dernlan, Director of Water Utilities, P. O. Box 16097, West Palm Beach, Florida 33416-6097, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and

120.57 of the Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will only be at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

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Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the petitions have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available for this proceeding.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Tallahassee Office, 2600 Blair Stone Road, Room 212E, Tallahassee, Florida 32399-2400.

Exhibit II

THE PALM BEACH POST

Published Daily and Sunday
West Palm Beach, Palm Beach County, Florida

PROOF OF PUBLICATION

STATE OF FLORIDA
COUNTY OF PALM BEACH

Before the undersigned authority personally appeared **Tracey Diglio,** who on oath says that she is **Telephone Sales Supervisor** of The Palm Beach Post, a daily and Sunday newspaper published at West Palm Beach in Palm Beach County, Florida; that the attached copy of advertising, being a **Notice** in the matter **Intent to Grant Water Quality Criteria Exemption** was published in said newspaper in the issues of **November 29, 2002.**

Affiant further says that the said The Post is a newspaper published at West Palm Beach, in said Palm Beach County, Florida, and that the said newspaper has heretofore been continuously published in said Palm Beach County, Florida, daily and Sunday and has been entered as second class mail matter at the post office in West Palm Beach, in said Palm Beach County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she/he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Tracey Diglio

Sworn to and subscribed before this 29th day of November, A.D. 2002

Personally known XX or Produced Identification _____
Type of Identification Produced _____

NOTARY PUBLIC STATE OF FLORIDA
KAREN M McLINTON
MY COMMISSION # CC 979669
EXPIRES: Nov 15, 2004
1-800-3-NOTARY FL Notary Service & Bonding, Inc.

NO. 6792149
STATE OF FLORIDA
DEPARTMENT
OF ENVIRONMENTAL
PROTECTION
NOTICE OF INTENT
TO GRANT
WATER QUALITY
CRITERIA EXEMPTION

The Department of Environmental Protection gives notice of its intent to grant a water quality criteria exemption for the aesthetically based secondary drinking water standard for color (standard 15 color units, exemption limit 75 color units) to the Palm Beach County Water Utilities Department, Mr. Gary Dernian, Director of Water Utilities. The water quality criteria exemption is for the Eastern Hillsboro Canal raw ground water aquifer storage and recovery (ASR) project at the Palm Beach County Water Treatment Plant No. 9. The exemption is granted for the duration of the Eastern Hillsboro Canal raw ground water ASR-1 Class V well construction permit. Future exemptions must be petitioned for by the applicant in conjunction with a construction or operation permit for any ASR project at this site. The ASR facility is located at 22478 Southwest 7th Street, Boca Raton, Palm Beach County, Florida.

A person whose substantial interests are affected by the Department's proposed exemption decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. The petitioner must mail a copy of the petition to the applicant Mr. Gary Dernian, Director of Water Utilities, P.O. Box 16097, West Palm Beach, Florida 33416-6097, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will only be at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

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Mediation is not available for this proceeding.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Tallahassee Office, 2600 Blair Stone Road, Room 212E, Tallahassee, Florida 32399-2400.

PUB: The Palm Beach Post
November 29, 2002

CERTIFICATE OF NEED
RECEIPT OF EXPEDITED APPLICATIONS

The Agency For Health Care Administration received the following Certificate of Need applications for expedited review:

County: Highlands Service District: 6
Facility/Project: The Palms of Sebring
Applicant: Sebring Senior Care, LLC
Project Description: Transfer combined CON Nos. 9275 and 9352 for 60 community SNF beds

CERTIFICATE OF NEED
EXEMPTIONS

The Agency For Health Care Administration authorized the following exemptions pursuant to Section 408.036(3), Florida Statutes:

County: Walton District: 1
ID #: 0200027 Decision: A Issue Date: 12/11/2002
Facility/Project: Sacred Heart Hospital on the Emerald Coast
Applicant: Sacred Heart Hospital of Pensacola, Inc.
Project Description: Establish an adult inpatient diagnostic cardiac catheterization program
Proposed Project Cost: $3,8000,000

County: Orange District: 7
ID #: 0200028 Decision: A Issue Date: 12/13/2002
Facility/Project: Lakeside Alternatives
Applicant: Lakeside Alternatives, Inc.
Project Description: Delicense 94 acute care beds
Proposed Project Cost: $1,000

DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Department of Environmental Protection gives notice of its intent to grant a water quality exemption (OGC Case Number 02-1626) to the Palm Beach County Water Utilities Department. The water quality exemption is to allow the Eastern Hillsboro Canal aquifer storage and recovery project to exceed the secondary drinking water standard for color.

The full text of this notice is published on the Internet at the Department of Environmental Protection's home page at http://www.dep.state.fl.us/ under the link or button titled "Official Notices," under program area "ground water."

For information concerning this intent to grant, contact: Richard Deuerling, (850)245-8653.

DEPARTMENT OF HEALTH

On December 16, 2002, John O. Agwunobi, M.D., M.B.A., Secretary of the Department of Health, issued an Order of Emergency Suspension with regard to the license of Barry H. Lubin, M.D., license number ME 25789. This Emergency Suspension Order was predicated upon the Secretary's findings of an immediate and serious danger to the public health, safety and welfare pursuant to Sections 456.073(8) and 120.60(6), Florida Statutes. The Secretary determined that this summary procedure was fair under the circumstances, in that there was no other method available to adequately protect the public.

FISH AND WILDLIFE CONSERVATION COMMISSION

AVAILABILITY OF DRAFT MANAGEMENT PLAN

The Florida Fish and Wildlife Conservation Commission at its May 2002 meeting determined that reclassifying the Panama City crayfish (Procambarus [Leconticambarus] econfinae) from species of special concern status to threatened status was warranted, and directed the development of a management plan. A draft management plan for Panama City crayfish has been prepared, and the Commission is now requesting written comments regarding conservation recommendations and expected economic and social impacts of implementing the management plan.

Copies of the draft management plan are available at www.wildflorida.org/crayfish or from Dr. Brad Gruver, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Written comments should be addressed to the above address, and will be accepted until 5:00 p.m., February 10, 2003.

Notice of Availability
of Biological Status Report for the Florida Manatee

The Florida Fish and Wildlife Conservation (FWC) announces the availability of the Final Biological Status Report for the Florida manatee. The Report was prepared in response to a Petition to re-evaluate the status of the Florida manatee (Trichechus manatus latirostris). The manatee is currently classified as Endangered at both the state and the federal levels. The Report recommends, based on the State of Florida's criteria for listing, that the Florida manatee be listed as "Threatened." The FWC status assessment does not affect the federal listing of the manatee as Endangered.

A copy of the FWC Report is available on the Commission's Marine Research Institute website http://www.floridamarine.org or a hard copy may be obtained from the Institute's Endangered and Threatened Species Section, 100 Eighth Avenue, S. E., St. Petersburg, Florida 33701, (727)896-8626, or manatee_review@fwc.state.fl.us, upon payment of copying costs.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

S. Shields
Clerk

02-21-03
Date

Lithologic Descriptions

ASR Well

Palm Beach County Water Utilities

Date: October 2, 2001

PROJECT: HILLSBORO ASR - WUD Project No. 98-66B

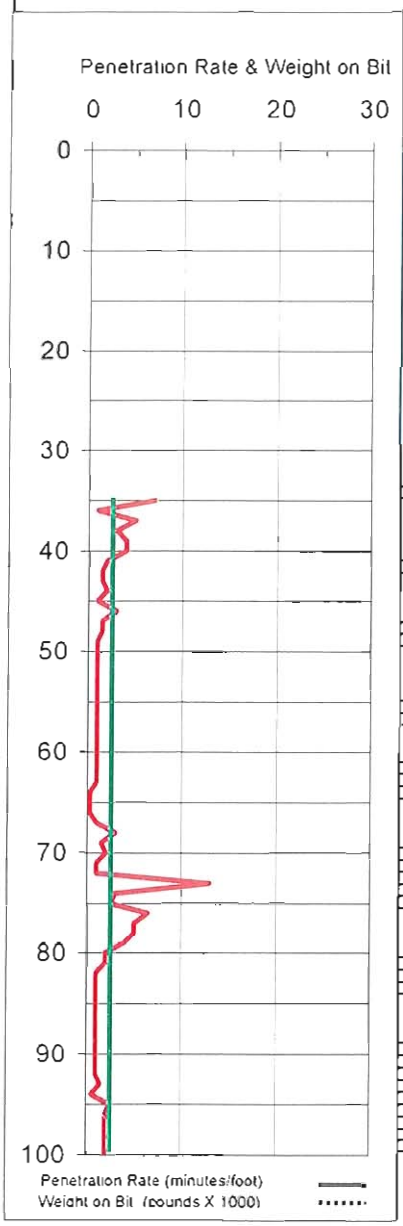
WELL: ASR-1

KEY TO LITHOLOGIC COLUMN

--SAND --LIMESTONE --CLAY

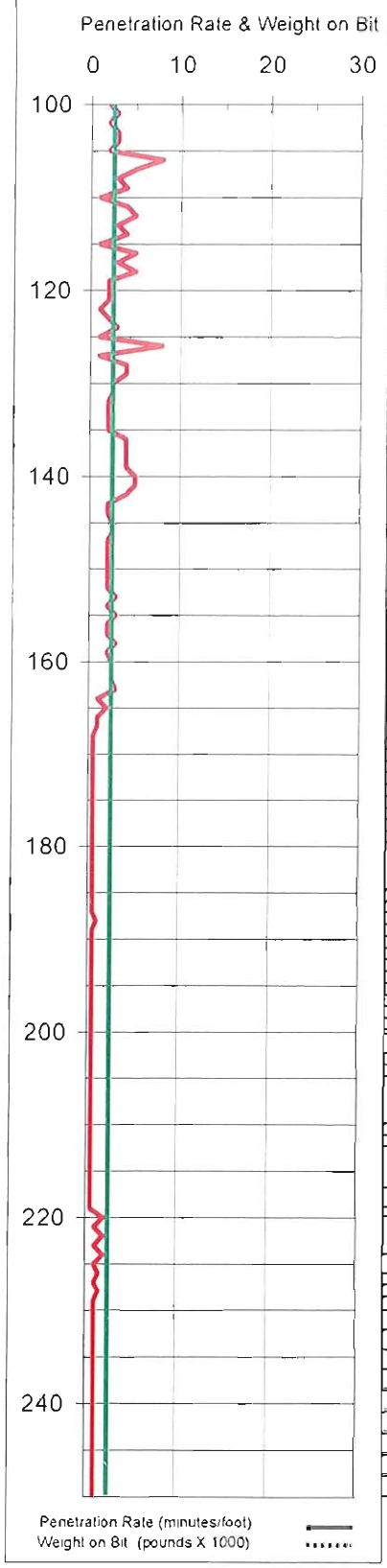
--SHELL --DOLOMITE --SILT

--CHERT --CALCITE



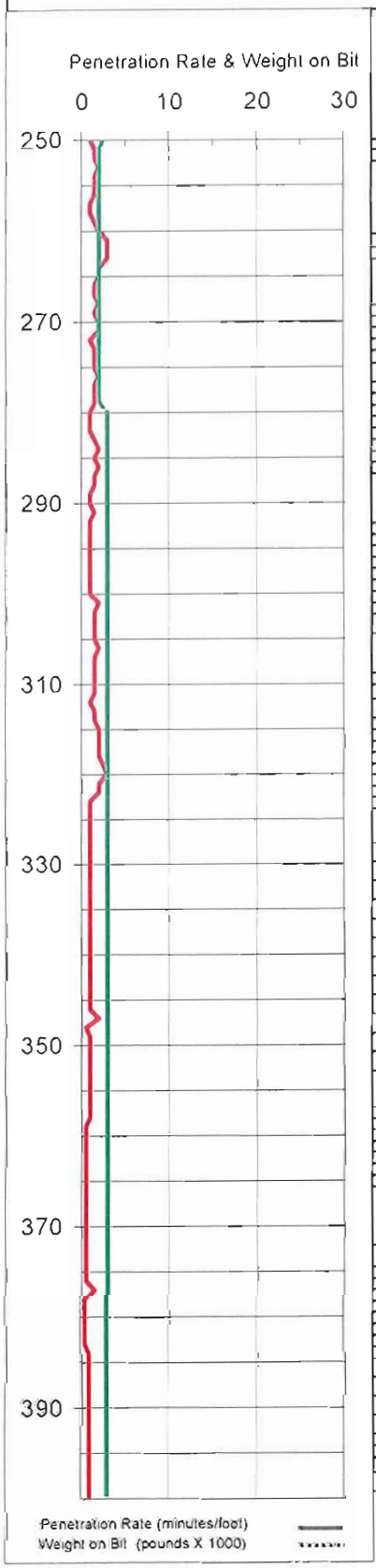
LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	0	SAND 100%: Color – very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2). Grains - fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar Sand is mostly clean Cement/Matrix – none. Porosity – high. Permeability – high. Hardness – unconsolidated.
	30	LIMESTONE 20%: Color – medium gray (N5) to pale yellowish brown (10YR 6/2). Grains – fine grained, well rounded. Texture – crystalline, clear to tan rhombs, massive. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – hard. SHELL 70%: Color - very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
	40	
	70	LIMESTONE 50%: Color – medium gray (N5) to pale yellowish brown (10YR 6/2). Grains – fine grained, well rounded. Texture – crystalline, clear to tan rhombs, massive. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – hard. SHELL 50%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
	100	LIMESTONE 70%: Color – medium gray (N5). Grains – fine grained, well rounded. Texture – crystalline, clear to tan rhombs, massive. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – hard. SHELL 30%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).

WELL: ASR-1 Page: 2

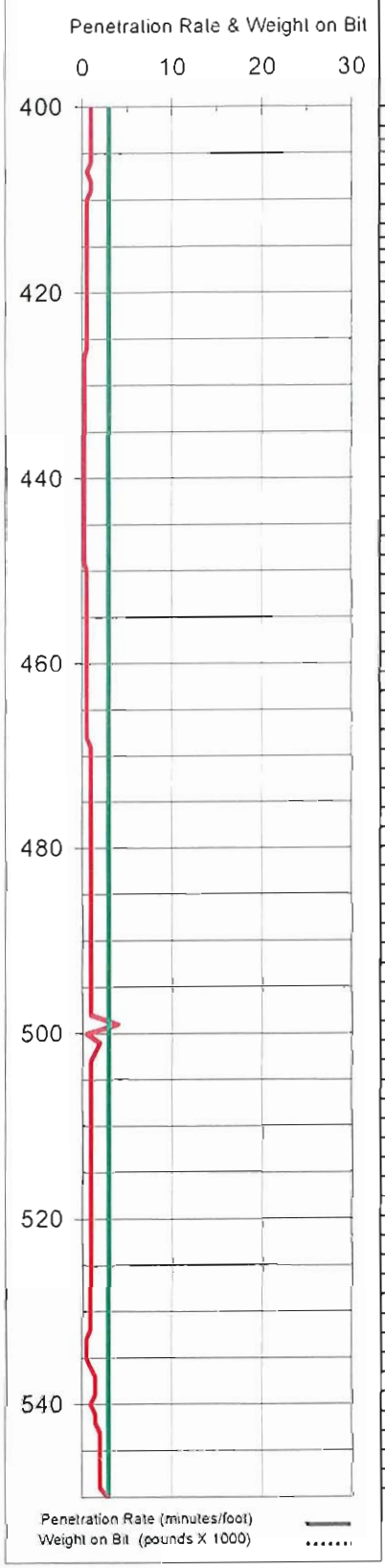


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	100	LIMESTONE 80%: Color – medium gray (N5) to yellowish gray (5Y 8/1). Grains – very fine to fine grained, well rounded. Texture – packstone to grainstone, clear to tan rhombs, massive Cement/Matrix – slight calcite spar Porosity – moderate. Permeability – moderate. Hardness – hard. SHELL 20%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
	200	LIMESTONE 70%: As above (100 – 200). SHELL 20%: As above (100 – 200). CLAY 10%: Color – olive gray (5Y 3/2). Texture – unconsolidated terrigenous clay/mud. Grains – silt to clay sized. Cement/Matrix – none. Porosity – low. Permeability – low Hardness – soft.
	210	LIMESTONE 25%: As above (200 – 210). SHELL 25%: As above (200 – 210).
	230	CLAY 50%: As above (200 – 210).
	250	CLAY 100%: Color – light olive gray (5Y 5/2). Texture – unconsolidated clay/mud, plastic. Grains – silt to clay sized carbonate. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – soft.

WELL: ASR-1

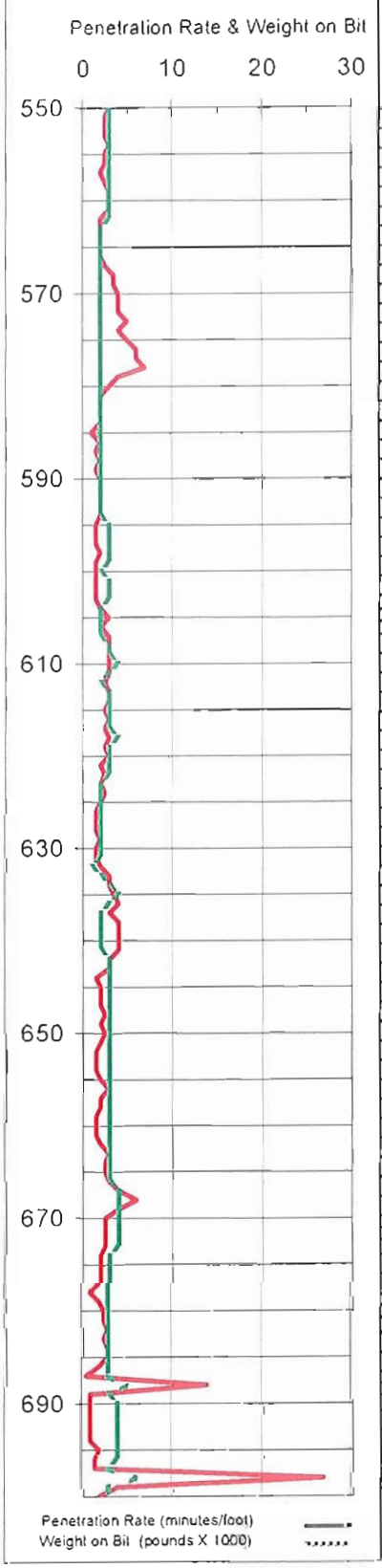


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	250	LIMESTONE 20%: Color – light gray (N7) Grains – very fine to fine grained, well rounded Texture - packstone to grainstone, clear to tan rhombs, massive Cement/Matrix – slight calcite spar Porosity – moderate Permeability – moderate. Hardness – hard. SHELL 80%: Color – light brown (5YR 6/4) to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
	260	LIMESTONE 50%: As above (250 – 260). SHELL 30%: As above (250 – 260). CLAY 20%: Color – grayish olive (10Y 4/2). Texture – unconsolidated clay/mud, plastic Grains – silt to clay sized carbonate. Cement/Matrix – none. Porosity – low Permeability – low. Hardness – soft
	310	LIMESTONE 40%: As above (260 – 310). SHELL 20%: As above (260 – 310). CLAY 40%: As above (260 – 310).
	390	LIMESTONE 40%: As above (310 – 390).



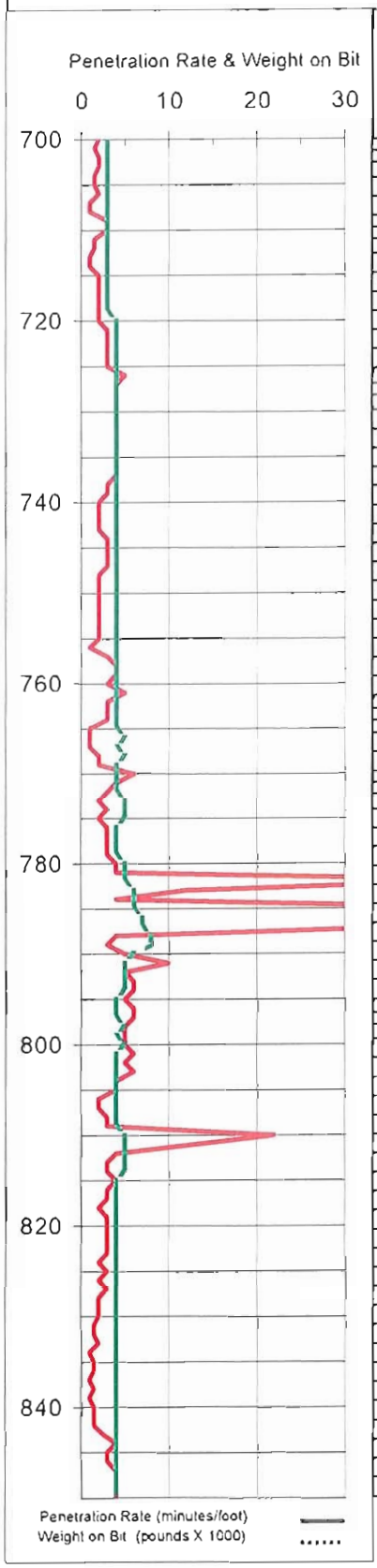
LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
		CLAY 60%: As above (310 – 390).
	410	
		LIMESTONE 10%: As above (390 – 410). CLAY 90%: As above (390 – 410).
	420	
		CLAY 100%: Color – olive gray (5Y 3/2) Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate. Cement/Matrix – none Porosity – low Permeability – low Hardness – soft.
	510	
		CLAY 100%: Color – yellowish gray (5Y 7/2) to pale olive (10Y 6/2) Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate Cement/Matrix – none.Porosity – low. Permeability – low. Accessories - phosphate nodules present. Hardness – soft.

WELL: ASR-1

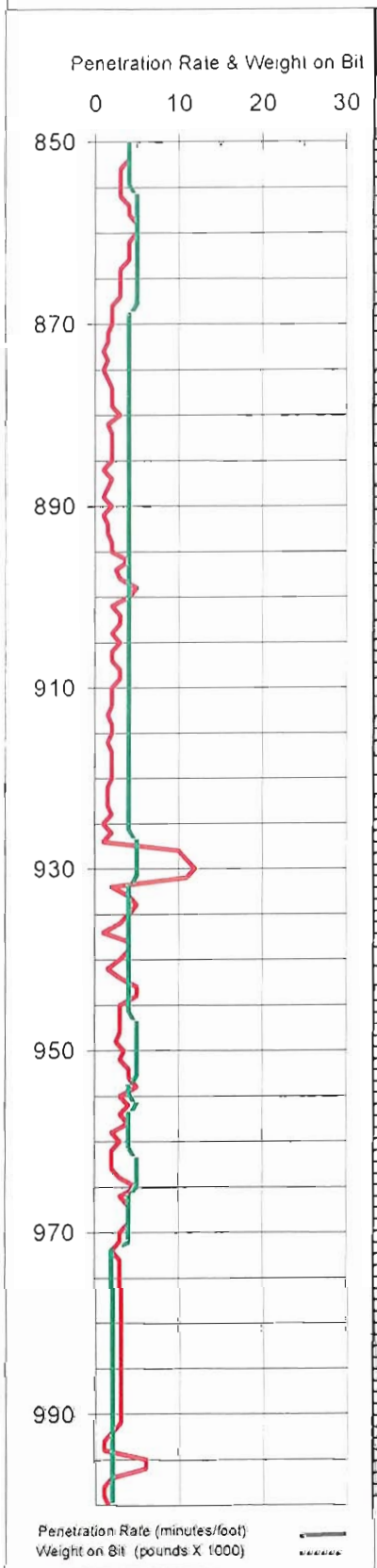


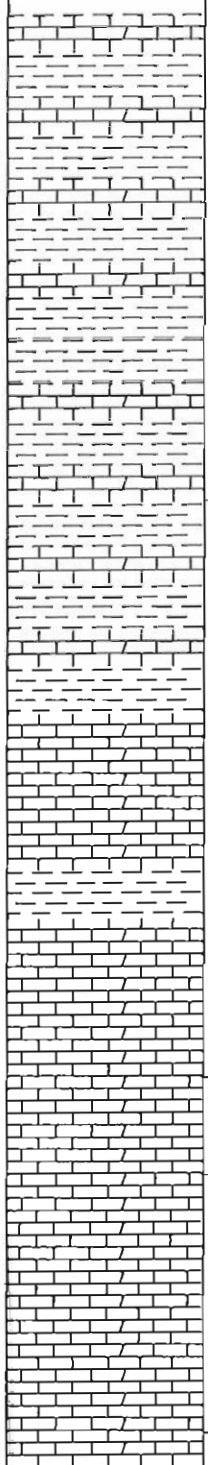
LITHOLOGY

DEPTH	LITHOLOGIC DESCRIPTION
600	
	CLAY 80%: As above (510 – 600). LIMESTONE 20%: Color – yellowish gray (5Y 7/2). Texture – packstone, clear to tan rhombs, massive Grains – microcrystalline to very fine grained, well rounded. Cement/Matrix – calcite spar abundant. Porosity – low. Permeability – low. Hardness – moderate.
610	
	CLAY 100%: Color – yellowish gray (5Y 7/2) Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate. Cement/Matrix – none. Porosity – low Permeability – low. Accessories – phosphate nodules present. Hardness – soft.
660	
	CLAY 80%: As above (610 – 660). LIMESTONE 20%: Color – yellowish gray (5Y 7/2) to very pale orange (10YR 8/2) Texture – packstone, highly recrystalized. Grains – microcrystalline to very fine grained Cement/Matrix – none Porosity – low. Permeability – low. Hardness – hard.

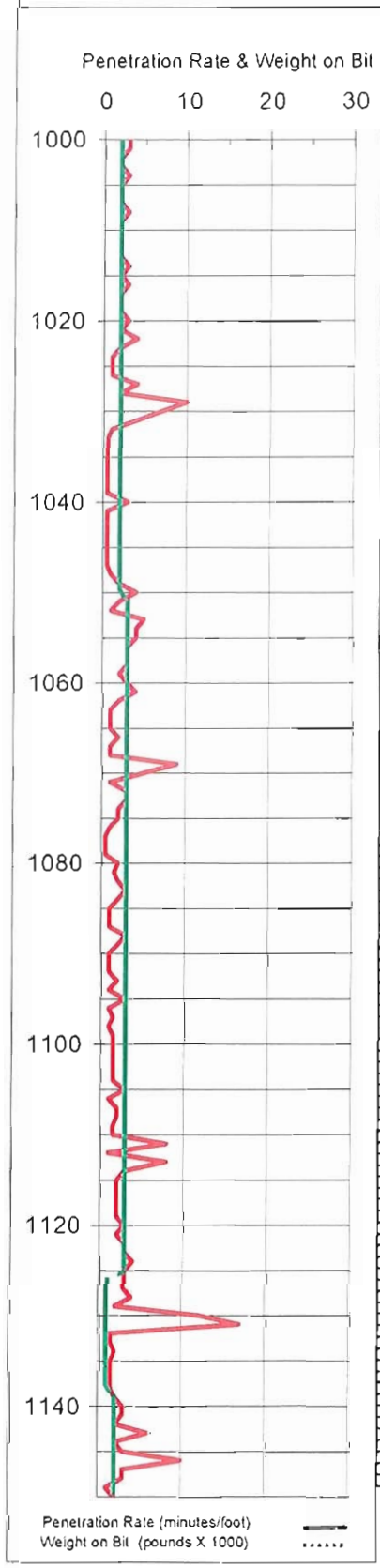


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	710	
		CLAY 95%: As above (660 – 710). LIMESTONE 5%: As above (660 – 710).
	800	
		CLAY 100%: As above (710 –800).

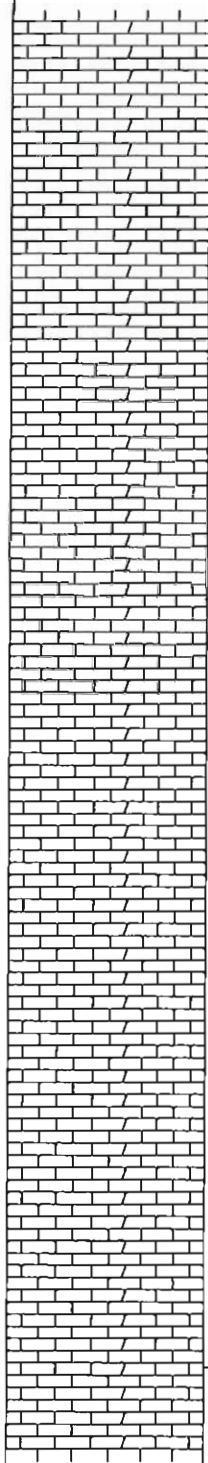




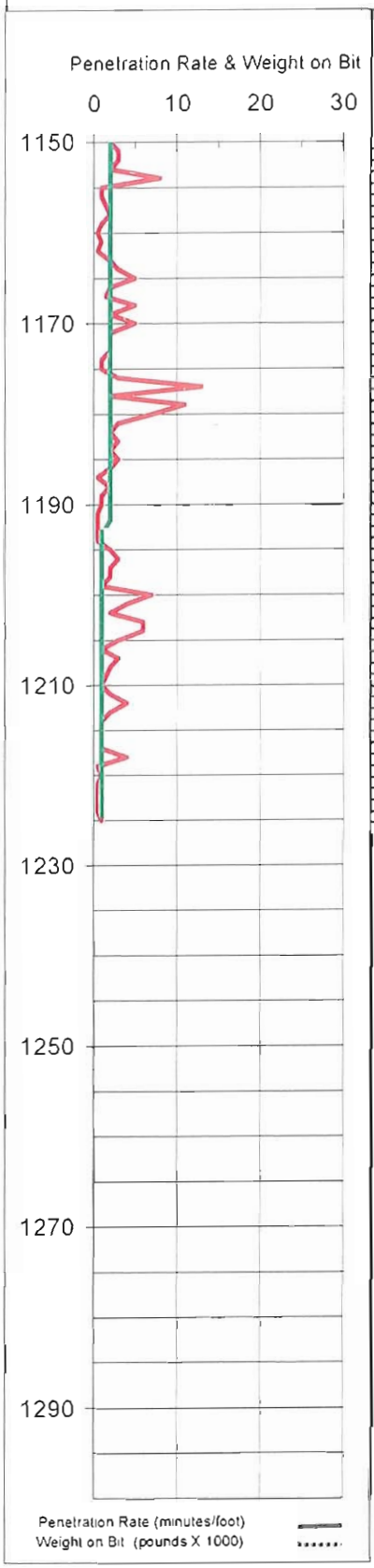
DEPTH	LITHOLOGIC DESCRIPTION
900	
960	CLAY 70%: As above (800 – 900) LIMESTONE 30%: Color – yellowish gray (5Y 7/2). Texture – packstone, clear to tan rhombs, massive. Grains – microcrystalline to very fine grained, well rounded. Cement/Matrix – calcite spar abundant. Porosity – low Permeability – low. Hardness – moderate.
970	CLAY 100%: As above (900 – 960).
996	LIMESTONE 100% (from core 971-976): Color – olive gray (5Y 4/1) to light olive gray (5Y 5/2). Texture – phosphatic wackestone to packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix – carbonate. Porosity – high (35%), intergranular. Permeability – high. Hardness – hard. Fossils – pelecypods, gastropods, foraminifera, corals, some agetized mollusks.



LITHOLOGY



DEPTH	LITHOLOGIC DESCRIPTION
	LIMESTONE 100% (from core 996-999.5): Color – medium gray (N5) to light olive gray (5Y 6/1). Texture – phosphatic wackestone to packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix – micrite. Porosity – high (30%),
1021	intergranular and modic Permeability – moderate. Hardness – hard. Fossils – pelecypods, gastropods, foraminifera, corals, mollusks, fossil recry
	LIMESTONE 100% (from core 1021-1028): Color – light gray (N7). Texture –wackestone to packstone, well indurated, massive. Grains –micritic with fossil recrystallization, phosphate specs, microcrystalline to very fine sand sized. Cement/Matrix – micrite. Porosity – moderate (15%), modic.
1046	Permeability – low to moderate. Hardness – hard. Fossils – pelecypods, gastropods, mollusks.
	LIMESTONE 100%: Color – light olive gray (5Y 5/2). Texture – wackestone to packstone,
1060	well indurated. Grains – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. Cement/Matrix – micrite. Porosity – moderate (15%), moldic. Permeability – moderate. Hardness – hard. Fossils – pelecypods, gastropods, mollusks.
	LIMESTONE 100%: Color – pale yellowish brown (10YR 6/2) Texture – packstone poorly lithified, poor to moderately indurated, friable. Grains – microcrystalline to very coarse sand sized, some recrystallization. Cement/Matrix – micrite. Porosity – moderate (20%), intergranular and moldic Permeability – moderate. Hardness – moderate. Fossils – echnoids, foraminifera, cones, spines, bryozoans
1140	
	LIMESTONE 100%: Color – very pale orange (10YR 8/2). Texture – mudstone to wackestone



LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	1160	(chalky) poorly lithified, poor to moderately indurated. Grains – clay to very fine sand sized. Cement/Matrix – micrite. Porosity – low (10%), intergranular and moldic. Permeability – low. Hardness – soft. Fossils – foraminifera, cones, spines.
	1180	LIMESTONE 100%: As above (1060 – 1140).
	1225	LIMESTONE 100%: As above (1140 – 1160).

LITHOLOGIC DESCRIPTION

Well:	Aquifer Storage and Recovery Well
Total Depth:	1,225 feet
County:	Palm Beach
Location:	Hillsboro Canal
Owner:	Palm Beach County Water Utilities Department
Driller:	Integrity Well and Pump
Date Drilled:	October 2, 2001 through XXX, 2002

HYDROLOGIC UNITS

0 to 230 feet	Surficial Aquifer
230 to 1,005 feet	Upper Confining Unit – Hawthorn Group
1,005 to 1,225	Upper Floridan Aquifer

DEPTH	DESCRIPTION
0'-30'	**SAND 100%:** **Color** – very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2). **Grains** – fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar. Sand is mostly clean. **Cement/Matrix** – none. **Porosity** – high. **Permeability** – high. **Hardness** – unconsolidated.
30'-40'	**LIMESTONE 30%:** **Color** – medium gray (N5) to pale yellowish brown (10YR 6/2). **Grains** – fine grained, well rounded. **Texture** – crystalline, clear to tan rhombs, massive. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard. **SHELL 70%:** **Color** – very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
40'-70'	**LIMESTONE 50%:** **Color** – medium gray (N5) to pale yellowish brown (10YR 6/2). **Grains** – fine grained, well rounded. **Texture** – crystalline, clear to tan rhombs, massive. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard. **SHELL 50%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).

DEPTH	DESCRIPTION
70'-100'	**LIMESTONE 70%:** **Color** – medium gray (N5). **Grains** – fine grained, well rounded. **Texture** – crystalline, clear to tan rhombs, massive. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard. **SHELL 30%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
100'-200'	**LIMESTONE 80%:** **Color** – medium gray (N5) to yellowish gray (5Y 8/1). **Grains** – very fine to fine grained, well rounded. **Texture** – packstone to grainstone, clear to tan rhombs, massive. **Cement/Matrix** – slight calcite spar. **Porosity** – moderate. **Permeability** – moderate. **Hardness** – hard. **SHELL 20%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
200'-210'	**LIMESTONE 70%:** As above (100 – 200). **SHELL 20%:** As above (100 – 200). **CLAY 10%:** **Color** – olive gray (5Y 3/2). **Texture** – unconsolidated terrigenous clay/mud. **Grains** – silt to clay sized. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.
210'-230	**LIMESTONE 25%:** As above (200 – 210). **SHELL 25%:** As above (200 – 210). **CLAY 50%:** As above (200 – 210).
230'-250'	**CLAY 100%:** **Color** – light olive gray (5Y 5/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – silt to clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.

DEPTH	DESCRIPTION
250'-260'	Sample contaminated with cement cuttings from the surface casing cement job. **LIMESTONE 20%:** **Color** – light gray (N7). **Grains** – very fine to fine grained, well rounded. **Texture** – packstone to grainstone, clear to tan rhombs, massive. **Cement/Matrix** – slight calcite spar. **Porosity** – moderate. **Permeability** – moderate. **Hardness** – hard. **SHELL 80%:** **Color** – light brown (5YR 6/4) to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
260'-310'	Sample contaminated with cement cuttings from the surface casing cement job. **LIMESTONE 50%:** As above (250 – 260). **SHELL 30%:** As above (250 – 260). **CLAY 20%:** **Color** – grayish olive (10Y 4/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – silt to clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.
310'-390'	Sample contaminated with cement cuttings from the surface casing cement job. **LIMESTONE 40%:** As above (260 – 310). **SHELL 20%:** As above (260 – 310). **CLAY 40%:** As above (260 – 310).
390'-410'	**LIMESTONE 40%:** As above (310 – 390). **CLAY 60%:** As above (310 – 390).
410'-420'	**LIMESTONE 10%:** As above (390 – 410). **CLAY 90%:** As above (390 – 410).

DEPTH	DESCRIPTION
420'-510'	**CLAY 100%:** **Color** – olive gray (5Y 3/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.
510'-600'	**CLAY 100%:** **Color** – yellowish gray (5Y 7/2) to pale olive (10Y 6/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Accessories** – phosphate nodules present. **Hardness** – soft.
600'-610'	**CLAY 80%:** **As Above (510 – 600).** **LIMESTONE 20%:** **Color** – yellowish gray (5Y 7/2). **Texture** – packstone, clear to tan rhombs, massive. **Grains** – microcrystalline to very fine grained, well rounded. **Cement/Matrix** – calcite spar abundant. **Porosity** – low. **Permeability** – low. **Hardness** – moderate.
610'-660'	**CLAY 100%:** **Color** – yellowish gray (5Y 7/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Accessories** – phosphate nodules present. **Hardness** – soft.
660'-710'	**CLAY 80%:** As above (610 – 660). **LIMESTONE 20%:** **Color** – yellowish gray (5Y 7/2) to very pale orange (10YR 8/2). **Texture** – packstone, highly recrystalized. **Grains** – microcrystalline to very fine grained. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard.
710'-800'	**CLAY 95%:** As above (660 – 710). **LIMESTONE 5%:** As above (660 – 710).
800'-900'	**CLAY 100%:** As above (710 – 800).

DEPTH	DESCRIPTION
900'-960'	**CLAY 70%:** As above (800 – 900). **LIMESTONE 30%:** **Color** – yellowish gray (5Y 7/2). **Texture** – packstone, clear to tan rhombs, massive. **Grains** – microcrystalline to very fine grained, well rounded. **Cement/Matrix** – calcite spar abundant. **Porosity** – low. **Permeability** – low. **Hardness** – moderate.
960'-970'	**CLAY 100%:** As above (900 – 960).
971'-996'	NO CUTTINGS. Core depth from 971' – 996'. **LIMESTONE 100% (from core 971-976):** **Color** – olive gray (5Y 4/1) to light olive gray (5Y 5/2). **Texture** – phosphatic wackestone to packstone, moderate induration. **Grains** – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. **Cement/Matrix** – carbonate. **Porosity** – high (35%), intergranular. **Permeability** – high. **Hardness** – hard. **Fossils** – pelecypods, gastropods, foraminifera, corals, some agetized mollusks.
996'-1021'	NO CUTTINGS. Core depth from 996' – 1,021'. **LIMESTONE 100% (from core 996-999.5):** **Color** – medium gray (N5) to light olive gray (5Y 6/1). **Texture** – phosphatic wackestone to packstone, moderate induration. **Grains** – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – high (30%), intergranular and modic. **Permeability** – moderate. **Hardness** – hard. **Fossils** – pelecypods, gastropods, foraminifera, corals, mollusks, fossil recrystallization spary calcite.
1021'-1046	NO CUTTINGS. Core depth from 1,021' – 1,046'. **LIMESTONE 100% (from core 1021-1028):** **Color** – light gray (N7). **Texture** –wackestone to packstone, well indurated, massive. **Grains** –micritic with fossil recrystalization, phosphate specs, microcrystalline to very fine sand sized. **Cement/Matrix** – micrite. **Porosity** – moderate (15%), modic. **Permeability** – low to moderate. **Hardness** – hard. **Fossils** – pelecypods, gastropods, mollusks.
1050'-1060'	**LIMESTONE 100%:** **Color** – light olive gray (5Y 5/2). **Texture** – wackestone to packstone, well indurated. **Grains** – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. **Cement/Matrix** – micrite. **Porosity** – moderate (15%), moldic. **Permeability** – moderate. **Hardness** – hard. **Fossils** – pelecypods, gastropods, mollusks.

DEPTH	DESCRIPTION
1060'-1140'	**LIMESTONE 100%:** **Color** – pale yellowish brown (10YR 6/2). **Texture** – packstone poorly lithified, poor to moderately indurated, friable. **Grains** – microcrystalline to very coarse sand sized, some recrystallization. **Cement/Matrix** – micrite. **Porosity** – moderate (20%), intergranular and moldic. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – echnoids, foraminifera, cones, spines, bryozoans.
1140'-1160'	**LIMESTONE 100%:** **Color** – very pale orange (10YR 8/2). **Texture** – mudstone to wackestone (chalky) poorly lithified, poor to moderately indurated. **Grains** – clay to very fine sand sized. **Cement/Matrix** – micrite. **Porosity** – low (10%), intergranular and moldic. **Permeability** – low. **Hardness** – soft. **Fossils** – foraminifera, cones, spines.
1160'-1180'	**LIMESTONE 100%:** As above (1060 – 1140).
1180'-1225'	**LIMESTONE 100%:** As above (1140 – 1160).

FAMW

Date: August 21, 2001

Palm Beach County Water Utilities

PROJECT: HILLSBORO ASR - WUD Project No. 98-66B

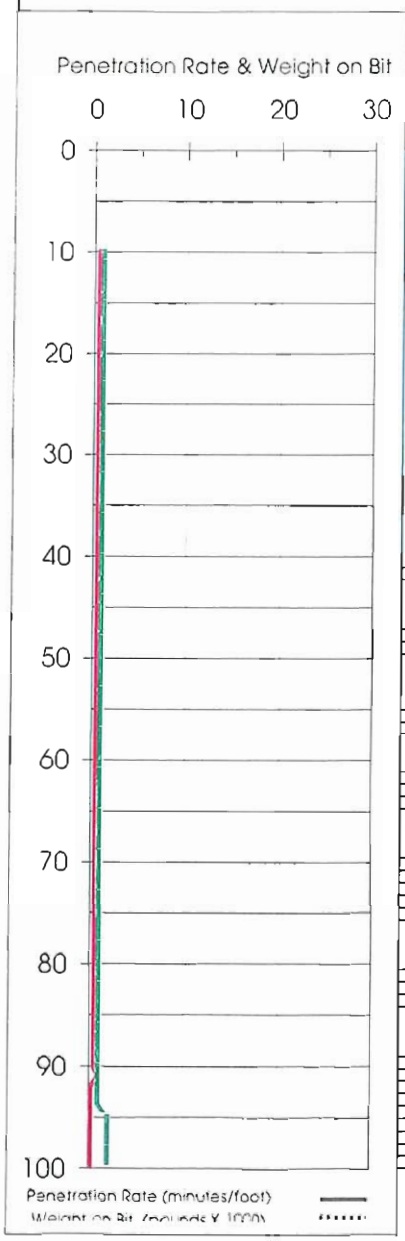
WELL: FAMW-1

KEY TO LITHOLOGIC COLUMN

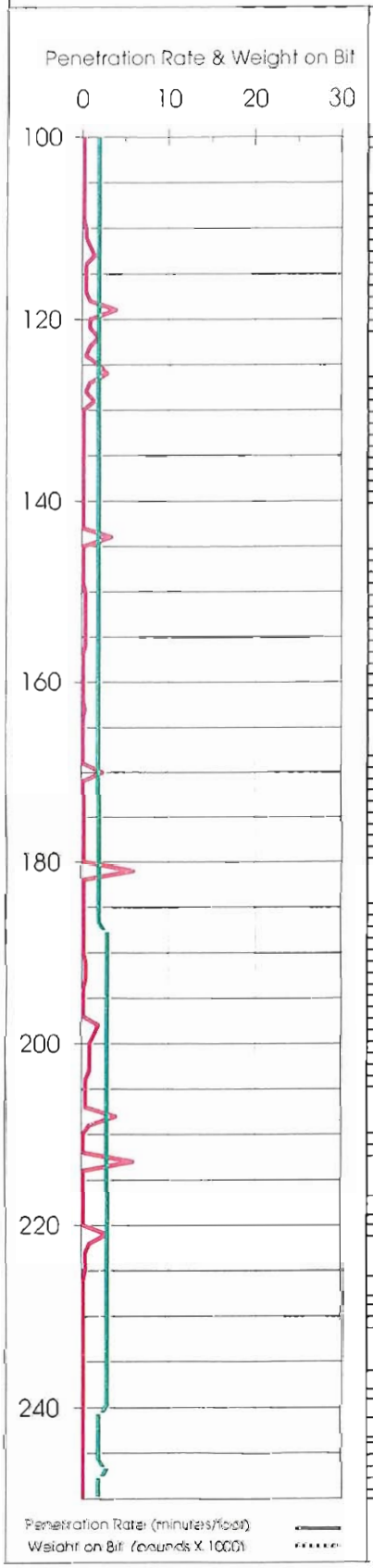
--SAND --LIMESTONE --CLAY

--SHELL --DOLOMITE --SILT

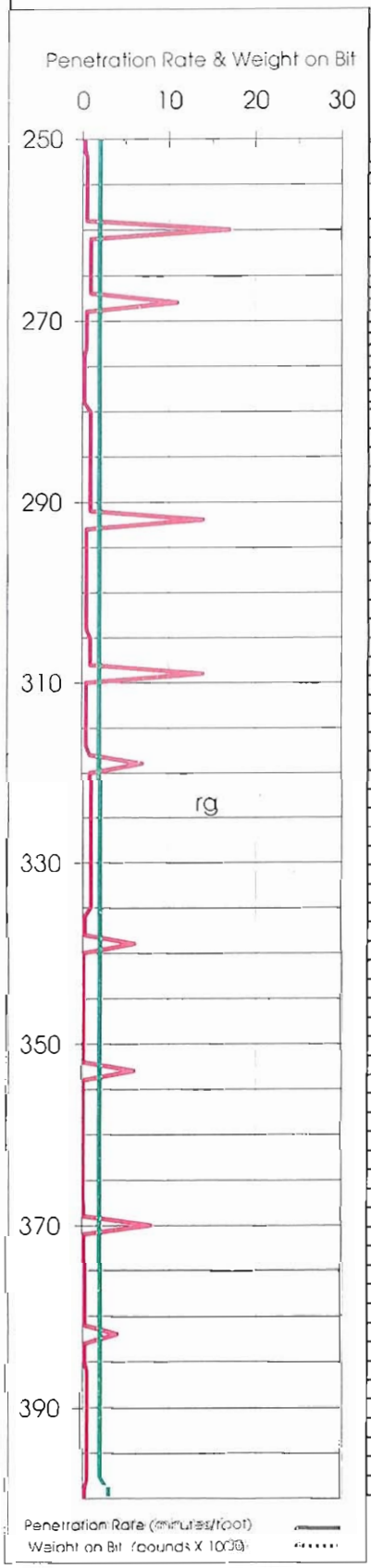
--CHERT --CALCITE

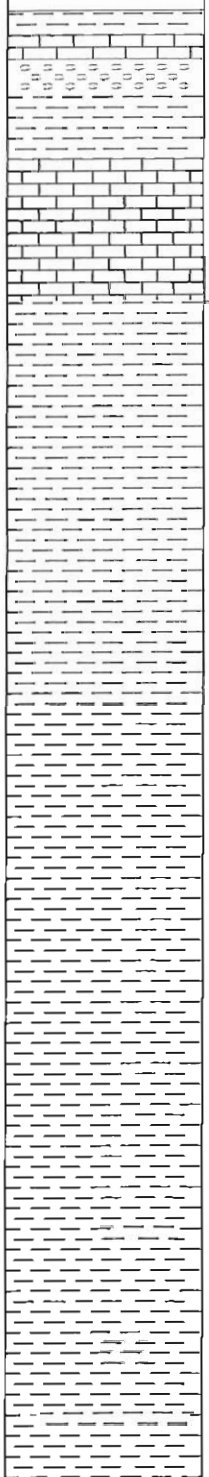


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	0	SAND 100%: Color – very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2). Grains - fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar. Sand is mostly clean. Cement/Matrix – none. Porosity – high. Permeability – high. Hardness – unconsolidated.
	30	SAND 80%: Color - pale yellowish brown (10YR 6/2). Grains - fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar. Sand is mostly clean. Cement/Matrix – none. Porosity – high. Permeability – high. Hardness – soft and unconsolidated.
	40	SHELL 20%: Color - very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
		LIMESTONE 35%: Color - pale yellowish brown (10YR 6/2). Grains – very fine grained, well rounded. Texture – boundstone to crystalline, clear tan rhombs cemented with slight amounts of calcite spar cement (white). Cement/Matrix – calcite spar. Porosity – moderate. Permeability – moderate. Hardness – moderate to friable.
	70	SHELL 65%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
		LIMESTONE 60%: Color – medium gray (N5). Grains – very fine grained, well rounded. Texture – crystalline, clear to tan rhombs, massive. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – hard.
	90	SHELL 40%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).

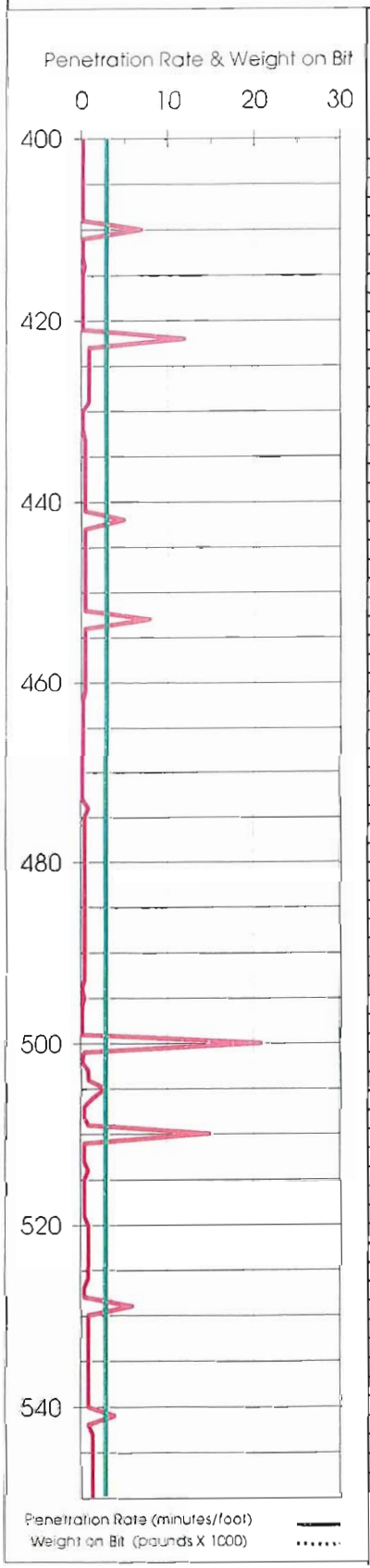


DEPTH	LITHOLOGIC DESCRIPTION
	LIMESTONE 95%: As above (70 to 90). SHELL 5%: As above (70 to 90).
120	LIMESTONE 75%: Color – medium gray (N5) to yellowish gray (5Y 8/1). Grains – very fine to fine grained, well rounded. Texture – packstone to grainstone, clear to tan rhombs, massive. Cement/Matrix – slight calcite spar. Porosity – moderate. Permeability – moderate Hardness – hard. SHELL 25%: Color – white to very pale orange (10YR 8/2). Grains – fragmented, broken, and angular (hash).
210	
	LIMESTONE 50%: As above (120 – 210). SHELL 25%: As above (120 – 210). CLAY 25%:
230	Color – dark yellowish brown (10YR 4/2). Texture – unconsolidated terrigenous clay/mud. Grains – silt to clay sized. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – soft.



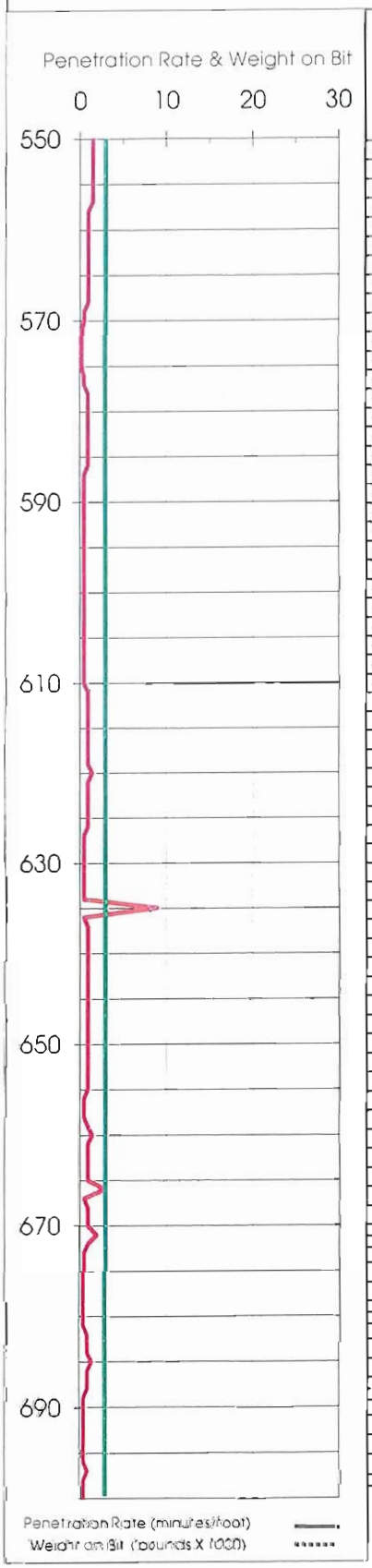


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
		LIMESTONE 50%: As above (210 – 230). SHELL 10%: As above (210 – 230). CLAY 40%: As above (210 – 230).
	280	
		CLAY 100%: Color – grayish olive (10Y 4/2) to olive gray (5Y 3/2). Texture – unconsolidated clay/mud. plastic. Grains – silt to clay sized carbonate. Cement/Matrix – none. Porosity – low Permeability – low. Hardness – soft.

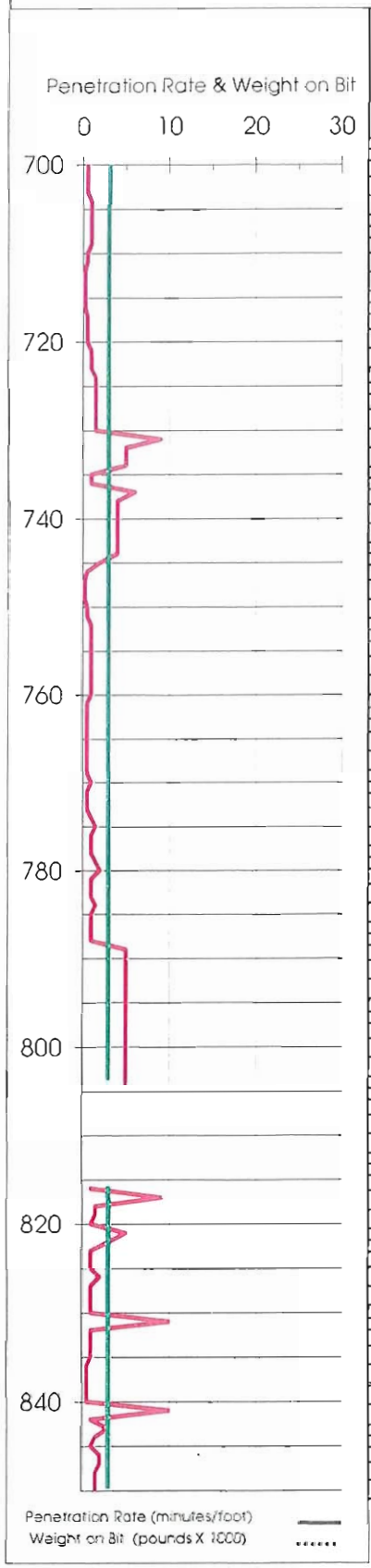


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	520	CLAY 100%: Color – yellowish gray (5Y 7/2) to pale olive (10Y 6/2). Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate. Cement/Matrix – none. Porosity – low. Permeability – low. Accessories – phosphate nodules, more abundant with depth to 580 feet then the sequence repeats. Hardness – soft.

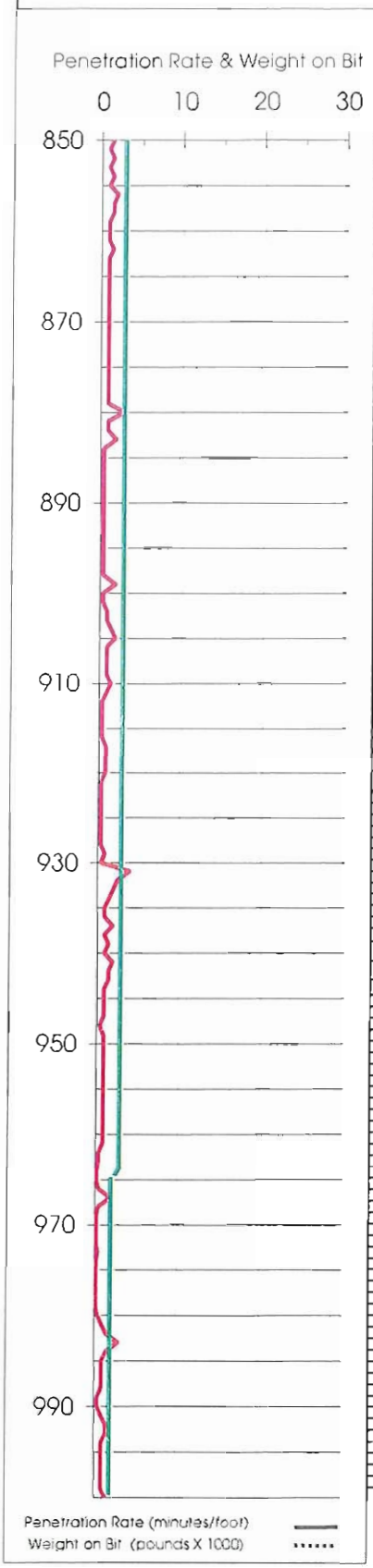
WELL: FAMW-1

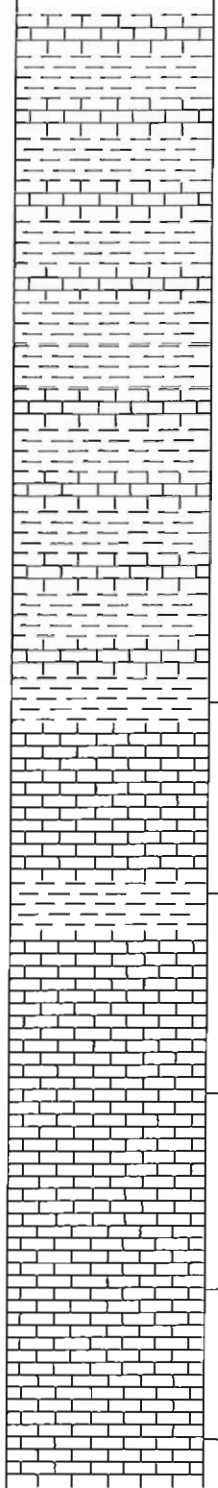


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	670	CLAY 60%: Color – yellowish gray (5Y 7/2) to pale olive (10Y 6/2). Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate. Cement/Matrix – none. Porosity – low Permeability – low. Accessories – phosphate nodules present. Hardness – soft. LIMESTONE 40%: Color – yellowish gray (5Y 8/1). Texture – packstone, clear to tan rhombs, massive. Grains – microcrystalline to very fine grained, well rounded. Cement/Matrix – calcite spar abundant. Porosity – low. Permeability – low. Hardness – moderate.

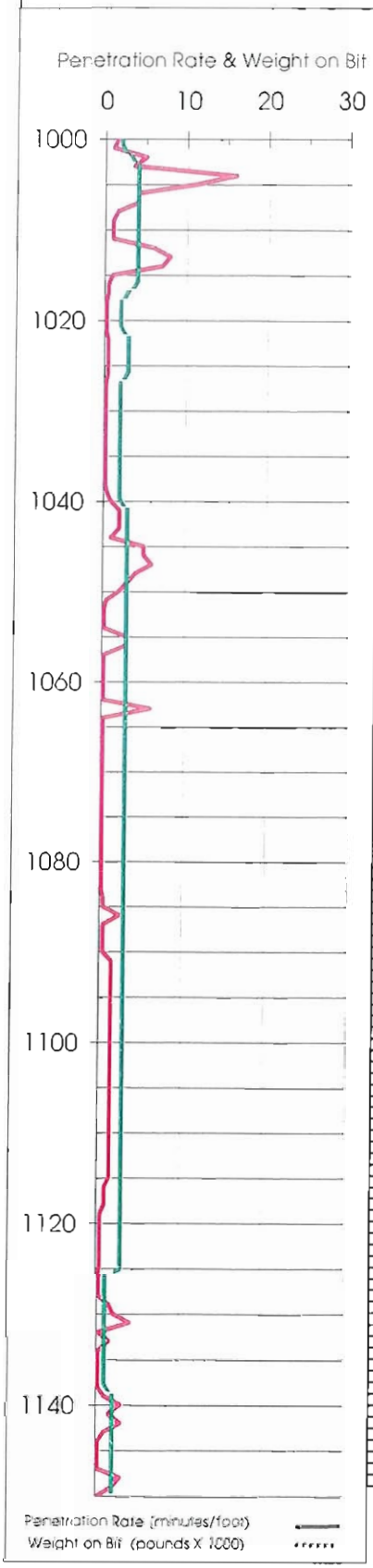


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	820	CLAY 80%: Color – yellowish gray (5Y 7/2). Texture – unconsolidated clay/mud, plastic. Grains – clay sized carbonate. Cement/Matrix – none. Porosity – low. Permeability – low. Accessories – phosphate nodules present Hardness – soft. LIMESTONE 20%: As above (670 – 820).

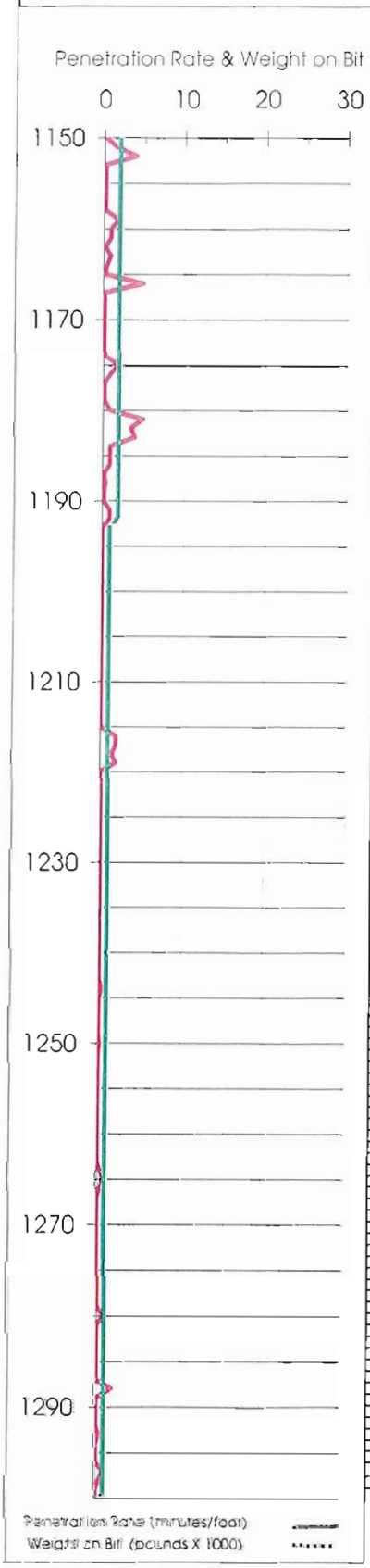




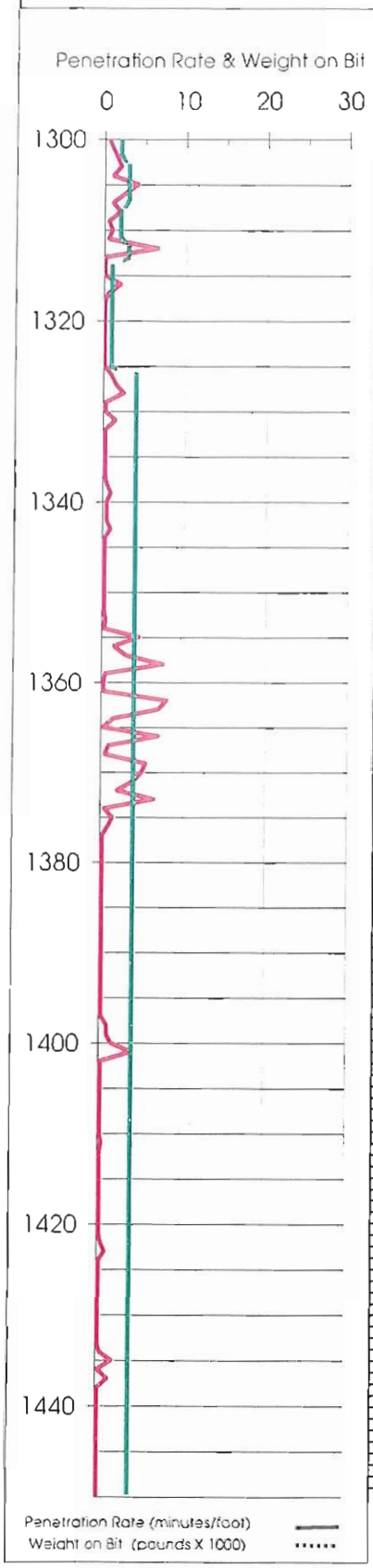
DEPTH	LITHOLOGIC DESCRIPTION
920	LIMESTONE 80%: Color – yellowish gray (5Y 7/2) to very pale orange (10YR 8/2). Texture – packstone, highly recrystalized. Grains – microcrystalline to very fine grained. Cement/Matrix – none. Porosity – low. Permeability – low. Hardness – hard. CLAY 20%: As above (820 – 920).
940	LIMESTONE 100% (from core 940-940.5): Color – light olive gray (5Y 5/2). Texture – packstone, moderate to well indurated. Grains – siliciclastic, biogenic, micritic, microcrystalline to pebble sized. Cement/Matrix – carbonate. Porosity – low to moderate (15%). Permeability – low. Hardness – hard. Fossils – mollusks, bryozoans.
960	LIMESTONE 100%: Color – pale olive (10Y 6/2). Texture – wackestone to packstone, moderate to well indurated. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to pebble sized. Cement/Matrix – carbonate. Porosity – low to moderate (15%), intergranular and moldic with minor vugs. Permeability – low. Hardness – hard. Fossils – mollusks and bryozoans fragments.
980	LIMESTONE 100% (from core 980-984): Color – dark gray (N3) to very pale orange (10YR 8/2). Texture – phosphatic wackestone to packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. Cement/Matrix – carbonate. Porosity – moderate to high (35%), intergranular. Permeability – high. Hardness – hard. Fossils – pelecypods, foraminifera, corals, some agetized mollusks.
995	

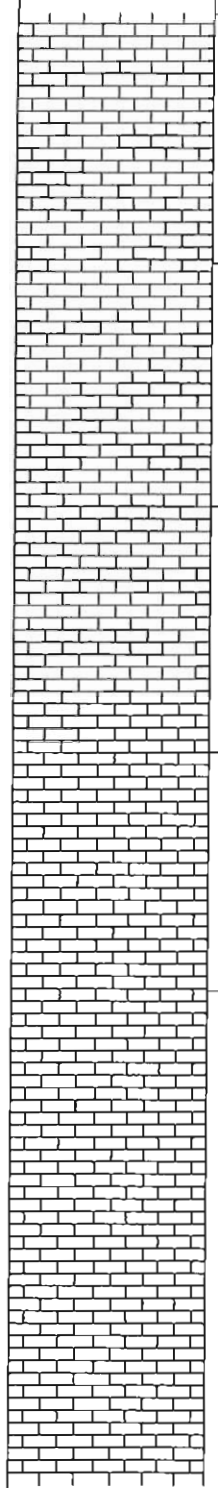


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	1005	LIMESTONE 100% (from core 995-999): Color – very light gray (N8) to medium gray (N5). Texture – phosphatic packstone, moderate induration. Grains – siliciclastic, biogenic, micritic, phosphate, fossil recrystalization, sparry calcite. Cement/Matrix – micrite. Porosity – moderate to high (30%), intergranular and moldic. Permeability – moderate. Hardness – moderate, slightly friable. Fossils – pelecypods, gastropods, skeletal fragments, dugong rib.
	1040	LIMESTONE 100% (from core 1006-1010): Color – very light gray (N8). Texture – wackestone to packstone, well indurated. Grains – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. Cement/Matrix – micrite. Porosity – moderate (15%), moldic. Permeability – low to moderate. Hardness – hard. Fossils – pelecypods, gastropods, mollusks (turitella).
	1065	LIMESTONE 100% (from core 1040-1048): Color – light gray (N7). Texture – wackestone to packstone, well indurated. Grains – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. Cement/Matrix – micrite. Porosity – moderate (15%), moldic. Permeability – low to moderate. Hardness – hard. Fossils – pelecypods, gastropods, mollusks (turitella).
	1115	LIMESTONE 100% (from core 1090-1096): Color – very pale orange (10YR 8/2) to yellowish gray (5Y 8/1). Texture – packstone, poor to moderately indurated, friable. Grains – fine to very coarse sand sized, phosphate, some recrystalization. Cement/Matrix – micrite. Porosity – moderate (15%), intergranular and moldic. Permeability – low to moderate. Hardness – moderate. Fossils – echinoids, foraminifera, cones, spines, bryozoans.
	1140	LIMESTONE 100% (from core 1115-1121): Color – very pale orange (10YR 8/2). Texture – packstone with well lithified mudstone interclasts, poor to moderately indurated. Grains – micrite, biogenic, fine to very coarse sand sized. Cement/Matrix – micrite. Porosity – high (30%), intergranular, vugs, and moldic. Permeability – high. Hardness – moderate. Fossils – echinoids, mollusks.
		LIMESTONE 100% (from core 1140-1148): Color – white (N9) to very pale orange (10YR 8/2). Texture – mudstone to wackestone (chalky) poorly lithified, poor to moderately indurated. Grains – clay to very fine sand sized. Cement/Matrix – micrite. Porosity – low (5%), intergranular and moldic. Permeability – low. Hardness – soft. Fossils – few foraminifera.

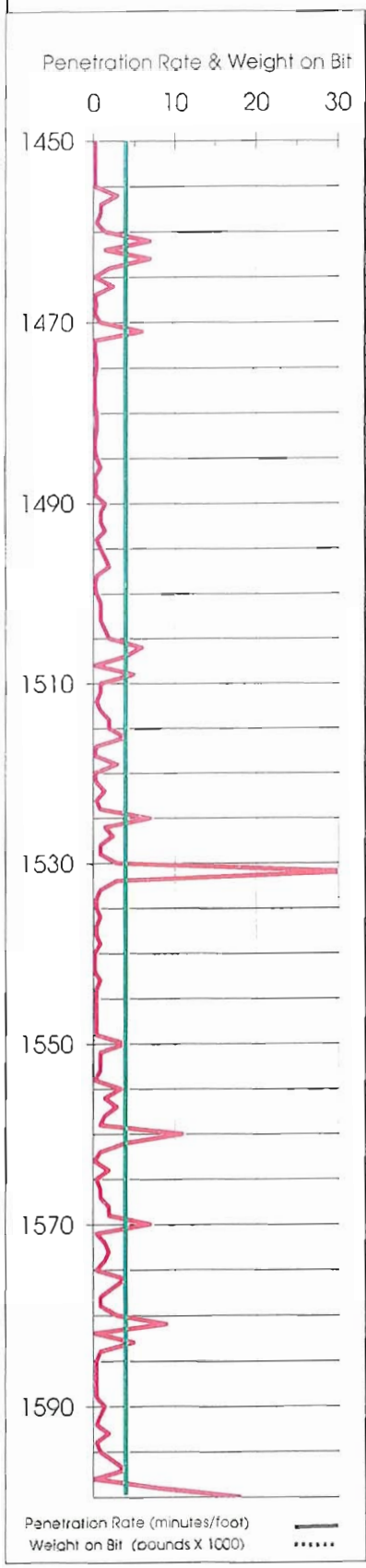


LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
	1165	
		LIMESTONE 100% (from core 1165-1168): Color – white (N9) to moderate yellowish brown (10YR 5/4). Texture – wackestone to packstone with mudstone interbeds, poor to moderately indurated. Grains – very fine to coarse sand sized. Cement/Matrix – micrite. Porosity – low to moderate (10%), intergranular, vuggy, and moldic. Permeability – low to moderate. Hardness – moderate. Fossils – foraminifera.
	1190	
		LIMESTONE 100% (from core 1190-1191): Color – white (N9) to very pale orange (10YR 8/2). Texture – wackestone (85%), carbonate mud (15%), well cemented. Grains – very fine to coarse sand sized. Cement/Matrix – micrite. Porosity – low. Permeability – low. Hardness – moderate. Fossils – pelecypods.
	1215	
		LIMESTONE 100% (from core 1215-1215.5): Color – white (N9) to very pale orange (10YR 8/2). Texture – wackestone with some recrystalization, moderately indurated. Grains – very fine to coarse sand sized. Cement/Matrix – micrite. Porosity – low (10%), vuggy. Permeability – low. Hardness – moderate. Fossils – pelecypods.
	1240	
		LIMESTONE 100%: Color – white (N9) to very pale orange (10YR 8/2). Texture – wackestone to packstone with some recrystalization, moderately indurated. Grains – very fine to coarse sand sized, clear to tan rhombs, some massive. Cement/Matrix – micrite. Porosity – moderate, intergranular, vuggy, and moldic Permeability – moderate. Hardness – moderate. Fossils – foraminifera, mollusks.
	1300	



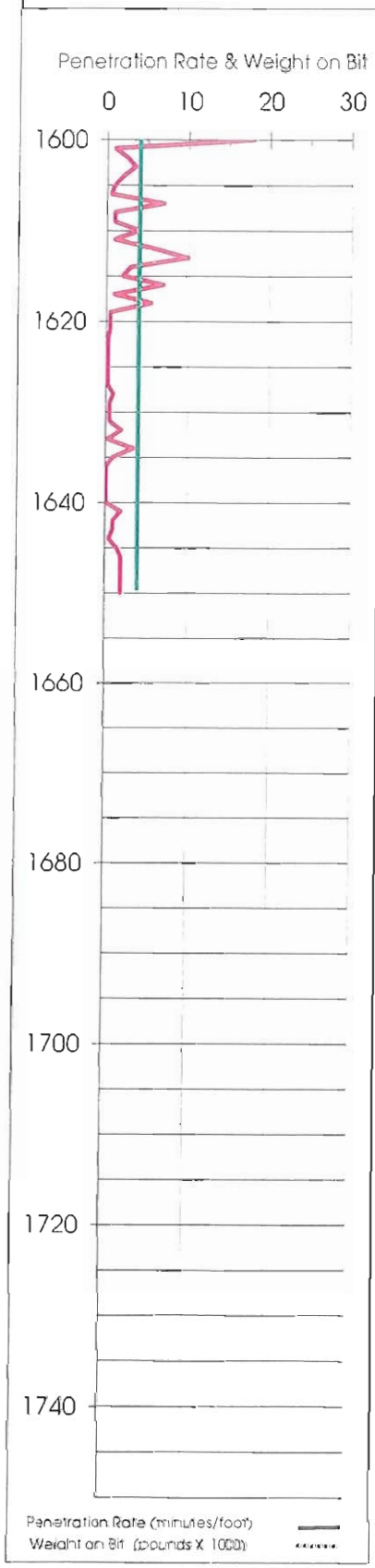


DEPTH	LITHOLOGIC DESCRIPTION
1325	LIMESTONE 100% (from core 1300-1319): Color – white (N9) to very pale orange (10YR 8/2). Texture – wackestone to packstone with some recrystalization and laminations, moderately indurated. Grains – crystal, micrite, biogenic, microcrystalline to coarse sand sized, minor sparry calcite infilling. Cement/Matrix – micrite. Porosity – moderate, intergranular, vuggy, and moldic. Permeability – moderate. Hardness – moderate. Fossils – foraminifera, mollusks, echinoids.
1350	LIMESTONE 100% (from core 1326-1329): Color – very pale orange (10YR 8/2). Texture – packstone, laminations, moderately indurated. Grains – micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix – micrite. Porosity – low, intergranular, vuggy, and moldic. Permeability – moderate. Hardness – moderate. Fossils – foraminifera, mollusks, echinoids.
1375	LIMESTONE 100% (from core 1351-1365): Color – very pale orange (10YR 8/2). Texture – packstone grading to wackestone with depth, laminations, moderately indurated. Grains – micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix – carbonate mud increasing with depth. Porosity – moderate (20%), intergranular, increasing vugs with depth. Permeability – moderate. Hardness – moderate. Fossils – increasing number with depth, foraminifera, pelecypods.
1400	LIMESTONE 100% (from core 1376-1386): Color – grayish orange (10YR 7/4). Texture – packstone, moderately cemented, well indurated. Grains – micrite, biogenic, microcrystalline to coarse sand sized. Cement/Matrix –micrite. Porosity – moderate (25%), intergranular. Permeability – moderate. Hardness – moderate. Fossils – foraminifera, coral interclasts.
	LIMESTONE 100%: Color – white (N9) to very pale orange (10YR 8/2). Texture – packstone with some recrystalization, moderately indurated. Grains – micrite, biogenic, fine to coarse sand sized, minor sparry calcite infilling. Cement/Matrix – micrite. Porosity – moderate, intergranular, vuggy, and moldic. Permeability – moderate. Hardness – moderate. Fossils – foraminifera, mollusks.



LITHOLOGY

DEPTH	LITHOLOGIC DESCRIPTION
1500	
	LIMESTONE 100% (from core 1500-1514): Color – light gray (N7) to very pale orange (10YR 8/2). Texture – packstone to wackestone, poor to moderately cemented, poor to moderately indurated, friable, zones of laminations. Grains – micrite, biogenic, fine to coarse sand sized. Cement/Matrix – micrite. Porosity – high (25-30%), intergranular, minor vugs. Permeability – high. Hardness – moderate. Fossils – foraminifera, mollusks.
1520	
	LIMESTONE 100%: As above (1500 – 1520).
1600	



LITHOLOGY	DEPTH	LITHOLOGIC DESCRIPTION
		LIMESTONE 100% (from core 1600-1607): Color – white (N9) to very pale orange (10YR 8/2). Texture – packstone to wackestone, poor to moderately cemented, poor to moderately indurated. Grains – sand sized. Cement/Matrix – carbonate. Porosity – high (25%), intergranular, vuggy, moldic. Permeability – high. Hardness – moderate. Fossils – foraminifera.
	1625	LIMESTONE 100% (from core 1607-1610): Color – medium bluish gray (5B 5/1) to yellowish gray (5Y 8/1). Texture – packstone to wackestone, well cemented, well indurated, moderately recrystalized Grains – sand sized. Cement/Matrix – carbonate. Porosity – high (25), intergranular, buggy, moldic. Permeability – high. Hardness – moderate. Fossils – foraminifera.
	1650	LIMESTONE 100%: As above (1607 – 1610).

LITHOLOGIC DESCRIPTION

Well:	Floridan Aquifer Monitor Well
Total Depth:	1,650 feet
County:	Palm Beach
Location:	Hillsboro Canal
Owner:	Palm Beach County Water Utilities Department
Driller:	Integrity Well and Pump
Date Drilled:	March 26 through August 7, 2001

HYDROLOGIC UNITS

0 to 210 feet	Surficial Aquifer
210 to 995 feet	Upper Confining Unit – Hawthorn Group
995 to 1,650	Upper Floridan Aquifer

DEPTH	DESCRIPTION
0'-30'	**SAND 100%:** **Color** – very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2). **Grains** - fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar. Sand is mostly clean. **Cement/Matrix** – none. **Porosity** – high. **Permeability** – high. **Hardness** – unconsolidated.
30'-40'	**SAND 80%:** **Color** - pale yellowish brown (10YR 6/2). **Grains** - fine grained, well rounded and well sorted, quarts based with trace lithics-heavies-and feldspar. Sand is mostly clean. **Cement/Matrix** – none. **Porosity** – high. **Permeability** – high. **Hardness** – soft and unconsolidated. **SHELL 20%:** **Color** - very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
40'-70'	**LIMESTONE 35%:** **Color** - pale yellowish brown (10YR 6/2). **Grains** – very fine grained, well rounded. **Texture** – boundstone to crystalline, clear tan rhombs cemented with slight amounts of calcite spar cement (white). **Cement/Matrix** – calcite spar. **Porosity** – moderate. **Permeability** – moderate. **Hardness** – moderate to friable. **SHELL 65%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).

DEPTH	DESCRIPTION
70'-90'	**LIMESTONE 60%:** **Color** – medium gray (N5). **Grains** – very fine grained, well rounded. **Texture** – crystalline, clear to tan rhombs, massive. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard. **SHELL 40%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
90'-120'	**LIMESTONE 95%:** As above (70 to 90). **SHELL 5%:** As above (70 to 90).
120'-210'	**LIMESTONE 75%:** **Color** – medium gray (N5) to yellowish gray (5Y 8/1). **Grains** – very fine to fine grained, well rounded. **Texture** – packstone to grainstone, clear to tan rhombs, massive. **Cement/Matrix** – slight calcite spar. **Porosity** – moderate. **Permeability** – moderate. **Hardness** – hard. **SHELL 25%:** **Color** – white to very pale orange (10YR 8/2). **Grains** – fragmented, broken, and angular (hash).
210'-230'	**LIMESTONE 50%:** As above (120 – 210). **SHELL 25%:** As above (120 – 210). **CLAY 25%:** **Color** – dark yellowish brown (10YR 4/2). **Texture** – unconsolidated terrigenous clay/mud. **Grains** – silt to clay sized. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.
230'-280	Sample contaminated with cement cuttings from the surface casing cement job. **LIMESTONE 50%:** As above (210 – 230). **SHELL 10%:** As above (210 – 230). **CLAY 40%:** As above (210 – 230).

DEPTH	DESCRIPTION
280'-520'	**CLAY 100%:** **Color** – grayish olive (10Y 4/2) to olive gray (5Y 3/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – silt to clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – soft.
520'-670'	**CLAY 100%:** **Color** – yellowish gray (5Y 7/2) to pale olive (10Y 6/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Accessories** – phosphate nodules, more abundant with depth to 580 feet then the sequence repeats. **Hardness** – soft.
670'-820'	**CLAY 60%:** **Color** – yellowish gray (5Y 7/2) to pale olive (10Y 6/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Accessories** – phosphate nodules present. **Hardness** – soft. **LIMESTONE 40%:** **Color** – yellowish gray (5Y 8/1). **Texture** – packstone, clear to tan rhombs, massive. **Grains** – microcrystalline to very fine grained, well rounded. **Cement/Matrix** – calcite spar abundant. **Porosity** – low. **Permeability** – low. **Hardness** – moderate.
820'-920'	**CLAY 80%:** **Color** – yellowish gray (5Y 7/2). **Texture** – unconsolidated clay/mud, plastic. **Grains** – clay sized carbonate. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Accessories** – phosphate nodules present. **Hardness** – soft. **LIMESTONE 20%:** As above (670 – 820).
920'-940'	**LIMESTONE 80%:** **Color** – yellowish gray (5Y 7/2) to very pale orange (10YR 8/2). **Texture** – packstone, highly recrystalized. **Grains** – microcrystalline to very fine grained. **Cement/Matrix** – none. **Porosity** – low. **Permeability** – low. **Hardness** – hard. **CLAY 20%:** As above (820 – 920).
940'-960'	NO CUTTINGS. Core depth from 940' – 964'. **LIMESTONE 100% (from core 940-940.5):** **Color** – light olive gray (5Y 5/2). **Texture** – packstone, moderate to well indurated. **Grains** – siliciclastic, biogenic, micritic, microcrystalline to pebble sized. **Cement/Matrix** – carbonate. **Porosity** – low to moderate (15%). **Permeability** – low. **Hardness** – hard. **Fossils** – mollusks, bryozoans.

DEPTH	DESCRIPTION
960'-980'	**LIMESTONE 100%:** **Color** – pale olive (10Y 6/2). **Texture** – wackestone to packstone, moderate to well indurated. **Grains** – siliciclastic, biogenic, micritic, phosphate, microcrystalline to pebble sized. **Cement/Matrix** – carbonate. **Porosity** – low to moderate (15%), intergranular and moldic with minor vugs. **Permeability** – low. **Hardness** – hard. **Fossils** – mollusks and bryozoans fragments.
980'-995'	NO CUTTINGS. Core depth from 980' - 995'. **LIMESTONE 100% (from core 980-984):** **Color** – dark gray (N3) to very pale orange (10YR 8/2). **Texture** – phosphatic wackestone to packstone, moderate induration. **Grains** – siliciclastic, biogenic, micritic, phosphate, microcrystalline to very coarse sand sized. **Cement/Matrix** – carbonate. **Porosity** – moderate to high (35%), intergranular. **Permeability** – high. **Hardness** – hard. **Fossils** – pelecypods, foraminifera, corals, some agetized mollusks.
995'-1005'	NO CUTTINGS. Core depth from 995' – 1,005'. **LIMESTONE 100% (from core 995-999):** **Color** – very light gray (N8) to medium gray (N5). **Texture** – phosphatic packstone, moderate induration. **Grains** – siliciclastic, biogenic, micritic, phosphate, fossil recrystalization, sparry calcite. **Cement/Matrix** – micrite. **Porosity** – moderate to high (30%), intergranular and moldic. **Permeability** – moderate. **Hardness** – moderate, slightly friable. **Fossils** – pelecypods, gastropods, skeletal fragments, dugong rib.
1006'-1026'	NO CUTTINGS. Core depth from 1,006' – 1,026'. **LIMESTONE 100% (from core 1006 1010):** **Color** – very light gray (N8). **Texture** – wackestone to packstone, well indurated. **Grains** – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. **Cement/Matrix** – micrite. **Porosity** – moderate (15%), moldic. **Permeability** – low to moderate. **Hardness** – hard. **Fossils** – pelecypods, gastropods, mollusks (turitella).
1026'-1040'	**LIMESTONE 100%:** As above (1006 – 1026)
1040'-1065'	NO CUTTINGS. Core depth from 1,040' – 1,065'. **LIMESTONE 100% (from core 1040-1048):** **Color** – light gray (N7). **Texture** – wackestone to packstone, well indurated. **Grains** – microcrystalline to very coarse sand sized, phosphate specs, some recrystalization. **Cement/Matrix** – micrite. **Porosity** – moderate (15%), moldic. **Permeability** – low to moderate. **Hardness** – hard. **Fossils** – pelecypods, gastropods, mollusks (turitella).

DEPTH	DESCRIPTION
1065'-1115	NO CUTTINGS. Core depth from 1,065' – 1,115'. **LIMESTONE 100% (from core 1090-1096):** **Color** – very pale orange (10YR 8/2) to yellowish gray (5Y 8/1). **Texture** – packstone, poor to moderately indurated, friable. **Grains** – fine to very coarse sand sized, phosphate, some recrystalization. **Cement/Matrix** – micrite. **Porosity** – moderate (15%), intergranular and moldic. **Permeability** – low to moderate. **Hardness** – moderate. **Fossils** – echinoids, foraminifera, cones, spines, bryozoans.
1115'-1140'	NO CUTTINGS. Core depth from 1,115' – 1,140'. **LIMESTONE 100% (from core 1115-1121):** **Color** – very pale orange (10YR 8/2). **Texture** – packstone with well lithified mudstone interclasts, poor to moderately indurated. **Grains** – micrite, biogenic, fine to very coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – high (30%), intergranular, vugs, and moldic. **Permeability** – high. **Hardness** – moderate. **Fossils** – echinoids, mollusks.
1140'-1165'	NO CUTTINGS. Core depth from 1,140' – 1,165'. **LIMESTONE 100% (from core 1140-1148):** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – mudstone to wackestone (chalky) poorly lithified, poor to moderately indurated. **Grains** – clay to very fine sand sized. **Cement/Matrix** – micrite. **Porosity** – low (5%), intergranular and moldic. **Permeability** – low. **Hardness** – soft. **Fossils** – few foraminifera.
1165'-1190'	NO CUTTINGS. Core depth from 1,165' – 1,190'. **LIMESTONE 100% (from core 1165-1168):** **Color** – white (N9) to moderate yellowish brown (10YR 5/4). **Texture** – wackestone to packstone with mudstone interbeds, poor to moderately indurated. **Grains** – very fine to coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – low to moderate (10%), intergranular, vuggy, and moldic. **Permeability** – low to moderate. **Hardness** – moderate. **Fossils** – foraminifera.
1190'-1215'	NO CUTTINGS. Core depth from 1,190' – 1,215'. **LIMESTONE 100% (from core 1190-1191):** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – wackestone (85%), carbonate mud (15%), well cemented. **Grains** – very fine to coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – low. **Permeability** – low. **Hardness** – moderate. **Fossils** – pelecypods.

DEPTH	DESCRIPTION
1215'-1240'	NO CUTTINGS. Core depth from 1,215' – 1,240'. **LIMESTONE 100% (from core 1215-1215.5):** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – wackestone with some recrystalization, moderately indurated. **Grains** – very fine to coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – low (10%), vuggy. **Permeability** – low. **Hardness** – moderate. **Fossils** – pelecypods.
1240'-1300'	**LIMESTONE 100%:** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – wackestone to packstone with some recrystalization, moderately indurated. **Grains** – very fine to coarse sand sized, clear to tan rhombs, some massive. **Cement/Matrix** – micrite. **Porosity** – moderate, intergranular, vuggy, and moldic. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – foraminifera, mollusks.
1300'-1325'	NO CUTTINGS. Core depth from 1,300' - 1,325'. **LIMESTONE 100% (from core 1300-1319):** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – wackestone to packstone with some recrystalization and laminations, moderately indurated. **Grains** – crystal, micrite, biogenic, microcrystalline to coarse sand sized, minor sparry calcite infilling. **Cement/Matrix** – micrite. **Porosity** – moderate, intergranular, vuggy, and moldic. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – foraminifera, mollusks, echinoids.
1326'-1351'	NO CUTTINGS. Core depth from 1,326' - 1,351'. **LIMESTONE 100% (from core 1326-1329):** **Color** – very pale orange (10YR 8/2). **Texture** – packstone, laminations, moderately indurated. **Grains** – micrite, biogenic, microcrystalline to coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – low, intergranular, vuggy, and moldic. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – foraminifera, mollusks, echinoids.
1351'-1376'	NO CUTTINGS. Core depth from 1,351' - 1,376'. **LIMESTONE 100% (from core 1351-1365):** **Color** – very pale orange (10YR 8/2). **Texture** – packstone grading to wackestone with depth, laminations, moderately indurated. **Grains** – micrite, biogenic, microcrystalline to coarse sand sized. **Cement/Matrix** – carbonate mud increasing with depth. **Porosity** – moderate (20%), intergranular, increasing vugs with depth. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – increasing number with depth, foraminifera, pelecypods.

DEPTH	DESCRIPTION
1376'-1401'	NO CUTTINGS. Core depth from 1,376' - 1,401'. **LIMESTONE 100% (from core 1376-1386):** **Color** – grayish orange (10YR 7/4). **Texture** – packstone, moderately cemented, well indurated. **Grains** – micrite, biogenic, microcrystalline to coarse sand sized. **Cement/Matrix** –micrite. **Porosity** – moderate (25%), intergranular. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – foraminifera, coral interclasts.
1401'-1500'	**LIMESTONE 100%:** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – packstone with some recrystalization, moderately indurated. **Grains** – micrite, biogenic, fine to coarse sand sized, minor sparry calcite infilling. **Cement/Matrix** – micrite. **Porosity** – moderate, intergranular, vuggy, and moldic. **Permeability** – moderate. **Hardness** – moderate. **Fossils** – foraminifera, mollusks.
1500'-1520'	NO CUTTINGS. Core depth from 1,500' - 1,520'. **LIMESTONE 100% (from core 1500-1514):** **Color** – light gray (N7) to very pale orange (10YR 8/2). **Texture** – packstone to wackestone, poor to moderately cemented, poor to moderately indurated, friable, zones of laminations. **Grains** – micrite, biogenic, fine to coarse sand sized. **Cement/Matrix** – micrite. **Porosity** – high (25-30%), intergranular, minor vugs. **Permeability** – high. **Hardness** – moderate. **Fossils** – foraminifera, mollusks.
1520'-1600'	**LIMESTONE 100%:** As above (1500 – 1520).
1600'-1625'	NO CUTTINGS. Core depth from 1,600' - 1,625'. **LIMESTONE 100% (from core 1600-1607):** **Color** – white (N9) to very pale orange (10YR 8/2). **Texture** – packstone to wackestone, poor to moderately cemented, poor to moderately indurated. **Grains** – sand sized. **Cement/Matrix** – carbonate. **Porosity** – high (25%), intergranular, vuggy, moldic. **Permeability** – high. **Hardness** – moderate. **Fossils** – foraminifera. **LIMESTONE 100% (from core 1607-1610):** **Color** – medium bluish gray (5B 5/1) to yellowish gray (5Y 8/1). **Texture** – packstone to wackestone, well cemented, well indurated, moderately recrystalized. **Grains** – sand sized. **Cement/Matrix** – carbonate. **Porosity** – high (25%), intergranular, buggy, moldic. **Permeability** – high. **Hardness** – moderate. **Fossils** – foraminifera.
1625'-1650'	**LIMESTONE 100%:** As above (1607 – 1610).