

**FLORIDAN AQUIFER WELL COMPLETION REPORT
FOR PRODUCTION WELL RO-4**

MARTIN COUNTY ENVIRONMENTAL SERVICES

MARTIN COUNTY, FLORIDA

Prepared for

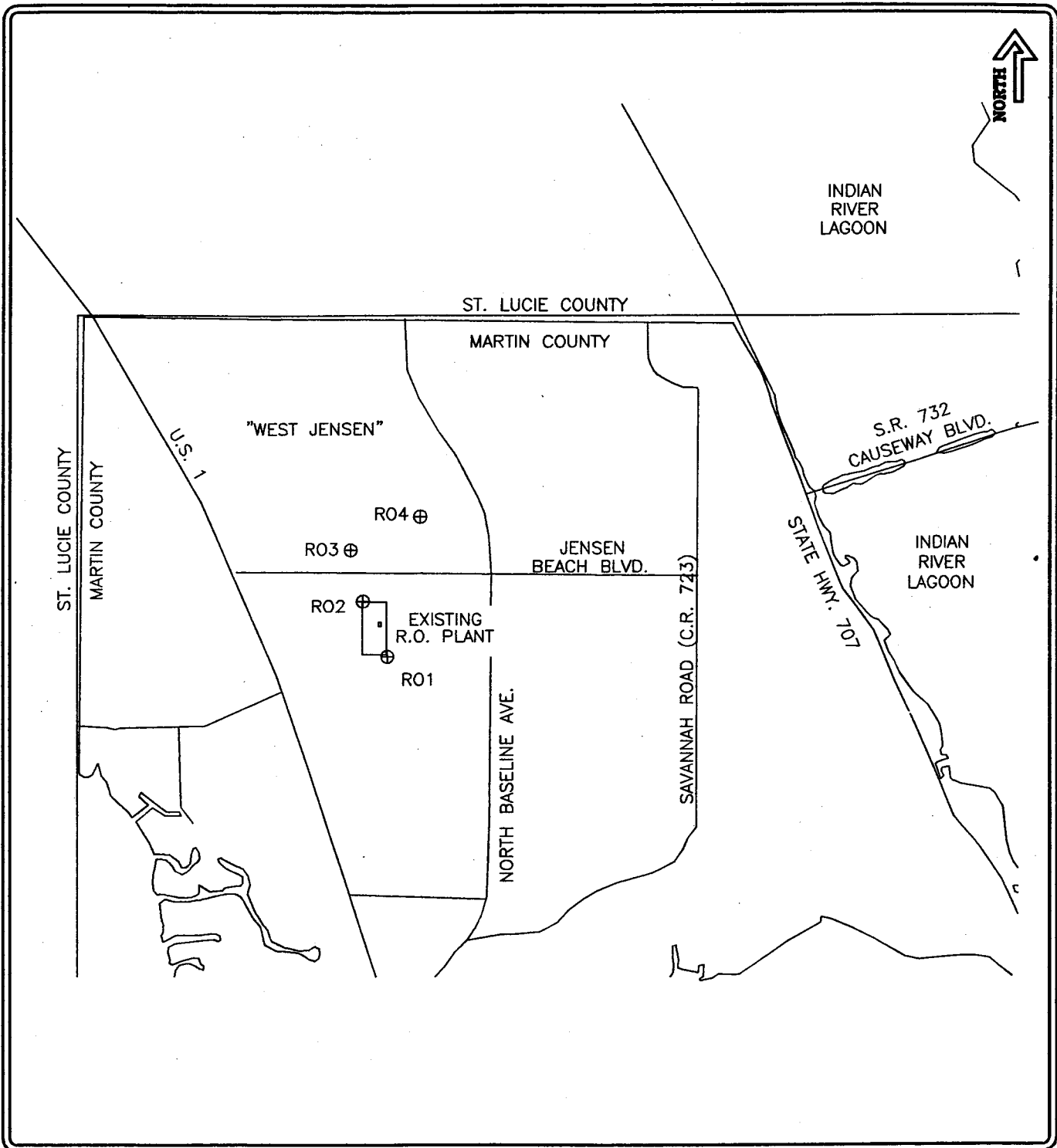
**Hutcheon Engineers
A Division of
Kimley Horn and Associates, Inc.
4431 Embarcadero Drive
West Palm Beach, Florida 33407**

September, 2000

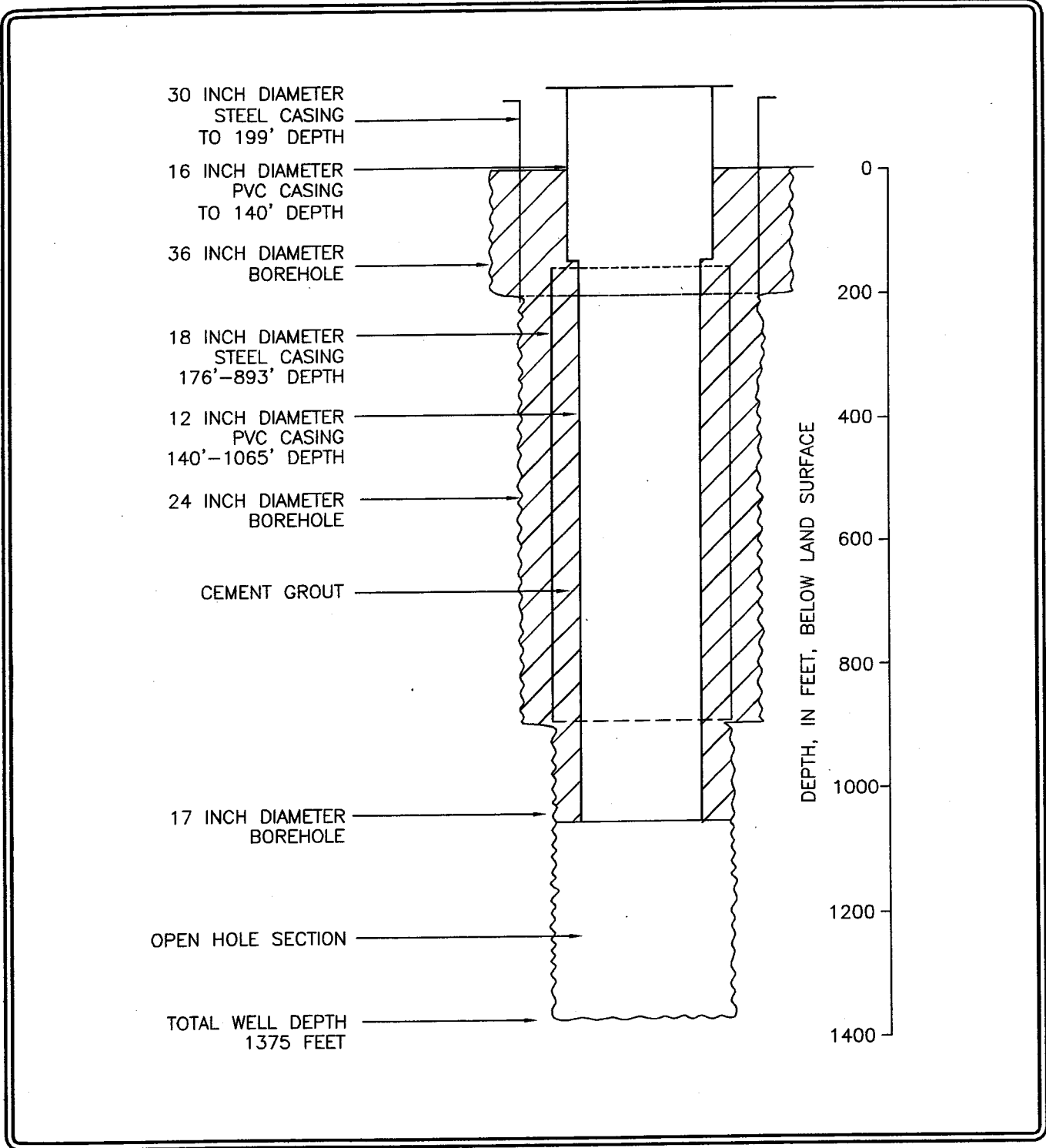
Prepared by
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Licensed Professional Geologist #1103**

JA
10/9/00



LEGEND: ⊕ RO-# FLORIDAN WELL LOCATION		SCALE 1" = 3,600'	Stemle, Andersen & Associates	
PREPARED FOR: MARTIN COUNTY ENVIRONMENTAL SERVICES			DRAWN BY: JM DATE: 09/12/00 DWG #: 000904F3	
FIGURE TITLE: SITE AND WELL LOCATIONS			PROJECT NUMBER:	FIGURE NUMBER: 2



LEGEND:  CEMENT GROUT	SCALE AS SHOWN	Stemle, Andersen & Associates
PREPARED FOR: MARTIN COUNTY ENVIRONMENTAL SERVICES	DRAWN BY: JM DATE: 09/11/00 DWG #: 000904F1	
FIGURE TITLE: FLORIDAN AQUIFER PRODUCTION WELL RO-4 AS-BUILT CONSTRUCTION DETAILS	PROJECT NUMBER:	FIGURE NUMBER: 3

DEPTH	SYMBOL	LITHOLOGY	AQUIFER	FORMATION
0		SAND AND SHELL	SURFICIAL	NOT DIFFERENTIATED
		SANDSTONE, LIMESTONE WITH INTERBEDDED SAND AND SHELL		
200		LIMEMUD CLAY, SAND AND LIMESTONE	CONFINING BEDS	PEACE RIVER FORMATION
400		LIMEMUD CLAY		
600		LIMESTONE INTERBEDDED WITH LIMEMUD/CLAY	UPPER FLORIDAN	ARCADIA
800		LIMESTONE, MEDIUM TO HARD		SUWANNEE
1000		LIMESTONE, GENERALLY SOFT TO MEDIUM HARDNESS, SANDY, LEPIDOCYCLINA	CONFINING BEDS	OCALA
1200		LIMESTONE, MEDIUM HARD, CONE FORAMS, DOLOMITE	MID FLORIDAN	AVON PARK
1400				

HAWTHORN GROUP

LEGEND: DETAILS SHOWN	SCALE AS SHOWN	Stemle, Andersen & Associates	
PREPARED FOR: MARTIN COUNTY ENVIRONMENTAL SERVICES	DRAWN BY: JM DATE: 09/12/00 DRAWING #: 000904F4		
FIGURE TITLE: TYPICAL HYDROSTRATIGRAPHIC SECTION IN THE VICINITY OF THE NO. MARTIN COUNTY TREATMENT PLANT	PROJECT NUMBER:	FIGURE NUMBER: 4	

TABLE 2

WATER QUALITY AND WELL FLOW CAPACITY SUMMARY

**MARTIN COUNTY ENVIRONMENTAL SERVICES
PRODUCTION WELL RO-4
DRILLING DATA (FROM 930 TO 1375 FEET BLS)
Reference elevation: +17.75 feet NGVD**

Sample Depth (feet)	Chloride Conc. (mg/l)	Specific Conductance (μ mos/cm)	Temp ($^{\circ}$ C)	Static water level (ft above land surface)	Static water level (ft NGVD)	Flowing water level (ft. above land surface)	Flowing water level (ft NGVD)	Wellhead Flow (gpm)
930		3902	28.0			8.45	25.9	70 (vm)
940		5150	28.8					
950		3872	28.6					
955		4870	28.8					
Wellhead (955)		4880	29.2	22.22	39.65	8.45	25.9	87 (vm)
960		4910	29.0					
970		4760	29.1					
980		4700	29.0					
Wellhead (985)		4500	29.2	21.07	38.52	8.50	25.95	140 (vm)
990		4208	29.1					
1000		4400	29.2					
1010		4340	29.2					
Wellhead (1015)		4500	29.5	20.90	38.35	9.00	26.45	228 (vm)
1020		4365	29.8					
1030		4195	29.4					
1040		4230	29.4					
Wellhead (1045)		4365	29.6	21.65	39.1	10.45	27.9	360 (orf)
1045		5330	28.5					
1070		4240	29.3					
1075				20.66	38.11	9.3	26.75	403 (orf)
Wellhead (1075)		4330	28.7					
<i>Flowed well to remove current water quality from casing, displacing with ambient water.</i>								
Wellhead (1075)		5660	26.8			22.37	39.82	
1080	1780	6400	25.7					
1100		6470	25.2					

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Sample Depth (feet)	Chloride Conc. (mg/l)	Specific Conductance ($\mu\text{mos/cm}$)	Temp ($^{\circ}\text{C}$)	Static water level (ft above land surface)	Static water level (ft NGVD)	Flowing water level (ft. above land surface)	Flowing water level (ft NGVD)	Wellhead Flow (gpm)
Wellhead (1105)		6010	26.5	19.73	37.18	9.78	27.23	483 (orf) 490 (vm)
1110	1950	6670	25.3					
1120		6450	25.3					
1130		6430	25.1					
Wellhead (1135)		5600	25.5	19.18	36.63	9.85	27.3	483 (orf) 525 (vm)
1140	1825	6450	25.3					
1150		6350	25.2					
1160		6320	25.6					
Wellhead (1165)		5610	25.5	18.85	36.3	9.95	27.4	483 (orf) 525 (vm)
1170	1810	6300	25.6					
1180		6000	25.2					
1190		5990	25.0					
1195		5420	25.4	19.12	26.57	10.32 to 10.40	27.77 to 27.85	588 (orf) 630 (vm)
1198 (well flowing)		5320	25					
(well not flowing)		5880	25					
1200	1685	5780	25					
1210		5490	25.1					
Wellhead (1225)	1870	6240	25.2	18.90	36.35	11.44	28.89	744 (orf) 735 (vm)
1230	775	3039	25.2					
1240		4840	25.5					
1250		4750	24.9					

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Sample Depth (feet)	Chloride Conc (mg/l)	Specific Conductance ($\mu\text{mos/cm}$)	Temp ($^{\circ}\text{C}$)	Static water level (ft above land surface)	Static water level (ft NGVD)	Flowing water level (ft above land surface)	Flowing water level (ft NGVD)	Wellhead Flow (gpm)
1255		5890	25.1	19.25	36.7	12.33	29.78	858 (orf) 893 (vm)
1260	985	3802	24.9					
1270		4498	24.8					
1285		4880	25.1	21.80	39.25	13.65	31.1	1002(orf) 980 (vm)
1290		4490	25.0					
1300		4510	25.0					
1310		4470	24.9					
Wellhead (1315)		5750	24.9	20.95	38.4	13.55	31	1002(orf) 980 (vm)
1320		3360	25.0					
1340		4268	24.8					
1345		5510	25.1	21.63	39.08	11.03	28.48	1244(orf) 1225(vm)
1350	725	2990	25.0					
1360		3845	24.9					
1370		4414	24.9					
1375		4454	24.9					
1375		4680	24.9	19.70	37.15	10.70	28.15	1157(orf)
Wellhead (1375)		3520	24.6			12.73	30.18	

Notes:

mg/l - milligrams per liter, chloride concentration determined by the silver nitrate titration method.

$\mu\text{mos/cm}$ - micromhos per cubic centimeter

$^{\circ}\text{C}$ - degrees Celsius

gpm - gallons per minute

orf - orifice weir flow measurement method

vm - timed volume flow measurement method

TABLE 1

WELL CONSTRUCTION DETAILS

MARTIN COUNTY ENVIRONMENTAL SERVICES
PRODUCTION WELL RO-4

TOTAL DEPTH (FEET)	CASING DETAILS									OPEN HOLE COMPLETION	
	OUTER CASING			INTERMEDIATE CASING			INNER CASING				
	TYPE	DIAM. (in.)	DEPTH (ft.)	TYPE	DIAM. (in.)	DEPTH INTERVAL (ft.)	TYPE	DIAM. (in.)	DEPTH (ft.)	DIAM. (in.)	DEPTH INT. (ft.)
1375	STEEL	30	199	STEEL	18	176 - 893	SCH 80 PVC	16/12	140/1065	17	1065-1375

Abbreviations:

Ft. - feet

in. - inches

DIAM. - Diameter

PVC - Polyvinyl chloride

SCH 80 - Schedule 80

INT. - Interval

Depths are feet below land surface.

PVC casings used in RO-4 were Certa-Lok (TM) type, manufactured by CertainTeed Corporation, Social Circle, Georgia.