Collier County
Growth Management Division
Engineering & Natural Resources

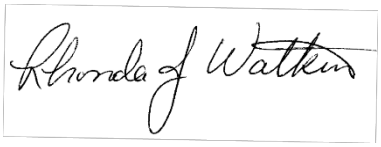
Monday, October 31, 2016

Joseph D. Schmidt, P.E.
Office of Everglades Policy and Coordination
South Florida Water Management District
2600 Horseshoe Drive North, Suite 101
Naples, FL 34104

Dear Joe,

Please find below the FY16 Groundwater Report that satisfies Task 2 of South Florida Water Management District's Purchase Order #4500092057. The report includes a summary of program activities, problems encountered, and exceedances of groundwater standards. The data deliverables under Task 2 were submitted electronically under a separate email dated October 31, 2016. If you have any questions, please contact me at (239) 252-2502 or rhondawatkins@colliergov.net.

Sincerely,



Rhonda J. Watkins
Principal Environmental Specialist

cc: Rod Braun, SFWMD

I. Introduction

This report satisfies the requirements of Task 2 of Purchase Order 4500092057 between the Collier County Pollution Control the South Florida Water Management District for the collection and analyses of ground water quality samples in Collier County.

II. Scope of Work

Forty-eight ground water wells are monitored semi-annually; once during the dry season (February-April) and once during the wet season (August-October), These sites are listed in Appendix A. An additional three, randomly selected, residential drinking water wells (Surficial aquifer) are also sampled semi-annually. See Figure 1 for a map of the sampling station locations. All the samples collected are analyzed for the parameters listed in Appendix B.

III. Program Activities

Purging and sampling of wells followed the Collier County Pollution Control Field Sampling Quality Manual; Florida Department of Environmental Protection's (FDEP) Standard Operating Procedures (SOPs) *DEP-SOP-001/01FS 2200 Groundwater Sampling*; and the SOPs referenced therein.

All chemical parameters for this project were analyzed by the Collier County Pollution Control Laboratory (CCPCL) or PACE Analytical, Inc., (PACE) laboratory. All laboratories held current National Environmental Laboratory Accreditation Program (NELAP) certification for all the parameters being analyzed for this project. Physical measurements of pH, dissolved oxygen, specific conductance, and temperature were obtained during well purging and stabilization using a Yellow Springs Instrument (YSI) ProDSS multi-probe and flow-through cell. Field turbidity measurements were also obtained as part of the purge stabilization process using a HF Scientific MicroTPW portable field meter. However, the turbidity readings provided in the data reports are those obtained through laboratory analysis.

For the random well monitoring portion of the contract, wells were randomly selected from the county's well permit records. Letters of intent were sent to the property owners requesting their voluntary participation in the project. To be considered for sampling, each well was required to have a spigot at the well-head to prevent any potential sample contamination from the on-site treatment system. Samples were collected directly from the spigot. Copies of the laboratory results and explanation of the results were sent to the well owners.

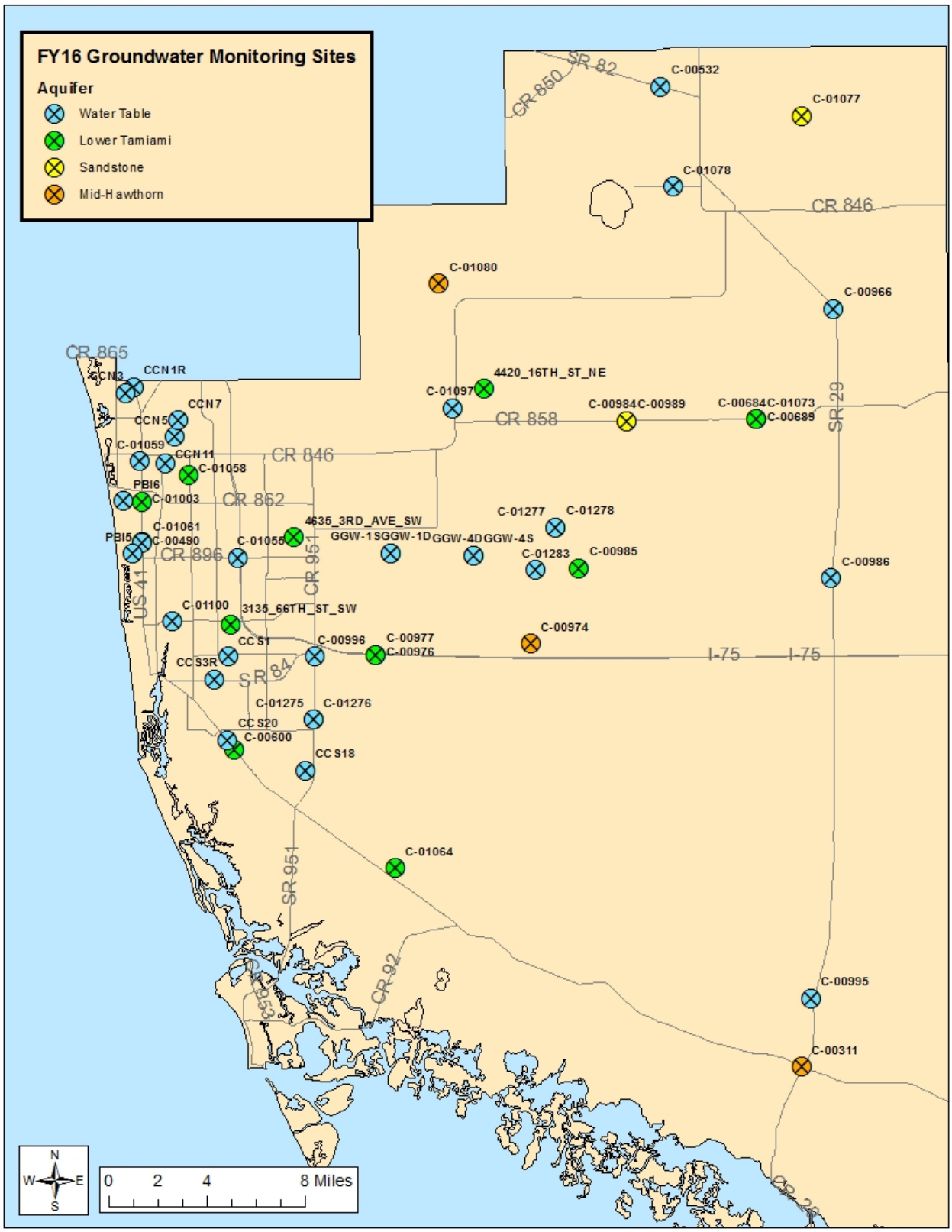


Figure 1. Groundwater Monitoring Sites

IV. Problems Encountered

Please see Appendix C for the sampling and laboratory analytical status of each well.

A. C-00989 had two separate sampling events during the dry season. The first time it did not stabilize during purging and as a result sampling was abandoned for the day. The well was successfully resampled on February 25, 2016.

B. There were six wells that were added back into the trend network after 5 years. These wells were originally owned by Collier County Wastewater Division and were scheduled to be abandoned as they were removed from the Florida Department of Environmental Protection permit that required their installation. Ownership of these wells was transferred to Pollution Control and the wells were added back into the trend network beginning in 2016. These shallow wells had to be re-developed due to turbidity issues during initial purging. Redevelopment removed sediment that had collapsed into the well. This altered the total depth of the well and brought the total well depth back closer to their original install depth. This change in total depth is provided in Appendix C.

C. Well CCN7 was sampled in place of well CCN8 during both dry and wet seasons. CCN8, which was mistakenly abandoned, was next to CCN7 in Imperial Golf Course. Although CCN8 was 43 ft. deep and CCN7 is 19.45 ft. deep, both wells represent the water table aquifer.

D. Well C-00995 had petroleum odors and petroleum products around the site during the dry season sampling and then a leaking lead-acid battery and petroleum products were reported around the site during the wet season sampling. This information was forwarded to Pollution Control staff for further investigation and remediation. The file number for this investigation is PC2016-182. The site was remediated with a small amount of soil removal and disposal. No impacts to the well are expected.

E. Access to well C-01077 continues to present problems each time this well is sampled. High water levels during the wet season and lack of maintenance of access roads (private agriculture roads) are creating issues that could lead to potential vehicle damage. If conditions persist, this Sandstone aquifer well may have to be dropped from the network.

F. C-00490 had to be sampled twice during wet season due to a sulfide bottle leaking once it has been placed in the cooler.

V. Data Validity

The data provided in this report have been checked for accuracy and completeness and the Collier County Pollution Control attests to the validity of these results. All data qualifiers follow Florida Administrative Code (FAC) 62-160 Table 1.

All CCPCL and PACE data have been submitted using the ADaPT software and the quality control checks provided in the software were applied. Calibration logs for field instruments were reviewed and all associated data that were outside the quality control criteria were qualified using a "J" flag in the electronic data report.

VI. Exceedances

Appendix D provides a list of all FY16 groundwater results that were in exceedance of the Primary and Secondary Drinking Water Standards, Florida Administrative Code (FAC) Chapter 62-550. These standards were adopted and referenced as the state's ground water quality standards by FAC Chapter 62-520. Table 1 shows the frequency of exceedances in each aquifer.

Table 1. Frequency of FY16 Exceedances by Aquifer

Water Table	Frequency of Exceedances
Arsenic	6%
Chloride	5%
Fluoride	2%
Iron	55%
Manganese	14%
Residues- Filterable (TDS)	36%
Sodium	6%
Lower Tamiami	
Chloride	26%
Coliform Fecal	13%
Coliform Total	13%
Iron	26%
Manganese	3%
Residues- Filterable (TDS)	46%
Sodium	23%
Sulfate	11%
Sandstone	
Chloride	44%
Residues- Filterable (TDS)	67%
Sodium	67%
Mid-Hawthorn	
Chloride	50%
Residues- Filterable (TDS)	75%
Sodium	75%
Sulfate	38%

Appendix A
Station Names

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer
C-00311*	25.91073	-81.36497	4	450	Mid-Hawthorn
C-00490	26.22061	-81.80033	2	71	Lower Tamiami
C-00532	26.49212	-81.45981	4	13	Water Table
C-00600	26.09751	-81.73882	4	52	Lower Tamiami
C-00684*	26.29509	-81.39595	4	490	Mid-Hawthorn
C-00689	26.29503	-81.39590	4	265	Sandstone
C-00966	26.36076	-81.34512	6	40	Water Table
C-00974*	26.16144	-81.54414	6	460	Mid-Hawthorn
C-00976	26.15455	-81.64602	6	40	Water Table
C-00977*	26.15455	-81.64602	6	140	Lower Tamiami
C-00984	26.29376	-81.48174	6	40	Water Table
C-00986	26.20074	-81.34631	6	40	Water Table
C-00995	25.95146	-81.35902	2	37	Water Table
C-00996	26.15325	-81.68632	4	24	Water Table
C-01003	26.24410	-81.80062	4	61	Lower Tamiami
C-01055	26.21139	-81.73732	4	25	Water Table
C-01058	26.26047	-81.76987	4	80	Lower Tamiami
C-01059	26.26822	-81.80247	4	25	Water Table
C-01064	26.02782	-81.63253	4	120	Lower Tamiami
C-01073	26.29506	-81.39589	4	160	Lower Tamiami
C-01077	26.47511	-81.36628	4	210	Sandstone
C-01078	26.43294	-81.45130	4	38	Water Table
C-01080*	26.37469	-81.60542	4	309	Mid-Hawthorn
C-01097	26.30108	-81.59621	4	18	Water Table
C-01100	26.17345	-81.78002	4	20	Water Table
C-01275	26.11573	-81.68668	2	118	Lower Tamiami
C-01276	26.11575	-81.68668	2	15	Water Table
C-01277	26.23030	-81.52810	2	133	Lower Tamiami
C-01278	26.23032	-81.52809	2	13	Water Table
C-01283	26.20519	-81.54130	4	40	Water Table
CCN1	26.31224	-81.80631	2	18	Water Table
CCN3	26.30902	-81.81172	2	14	Water Table
CCS1	26.15294	-81.74300	2	15	Water Table
CCS3	26.13934	-81.75183	2	15	Water Table
GGW-1D	26.21468	-81.63681	4	61	Lower Tamiami
GGW-1S	26.21465	-81.63682	4	15	Water Table
GGW-4D	26.21363	-81.58222	4	77	Lower Tamiami
GGW-4S	26.21361	-81.58223	4	16	Water Table
C-00985	26.20632	-81.51226	6	160	Lower Tamiami
C-00989	26.29374	-81.48138	6	270	Sandstone

Appendix A
Station Names

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer
C-01061	26.21996	-81.80019	4	25	Water Table
CCN11	26.26758	-81.78540	2	12	Water Table
CCN5	26.28293	-81.77914	2	17	Water Table
CCN8 (CCN7)	26.29266	-81.77720	2	43 (19.45)	Water Table
CCS18	26.08567	-81.69196	2	9	Water Table
CCS20	26.10321	-81.74303	2	11	Water Table
PBI5	26.21356	-81.80671	2	13	Water Table
PBI6	26.24482	-81.81283	2	12	Water Table
3135_66TH_ST_SW	26.17178	-81.74123	4	100	Lower Tamiami
4420_16TH_ST_NE	26.31251	-81.57573	4	120	Lower Tamiami
4635_3RD_AVE_SW	26.22381	-81.70004	4	80	Lower Tamiami

* Artesian

Appendix B
Parameters and Sampling Frequency

Frequency	Parameter	Method
Semi-annually	Alkalinity	SM18 2320 B
Semi-annually	Ammonia	EPA 350.1 No Distillation (NH3)
Semi-annually	Arsenic (total)	EPA 200.8 (As)
Semi-annually	Barium (total)	EPA 200.8 (Ba)
Semi-annually	Cadmium (total)	EPA 200.8 (Cd)
Semi-annually	Calcium	EPA 200.7 (Ca)
Semi-annually	Chloride	EPA 300.0 (Chloride)
Semi-annually	Chromium (total)	EPA 200.8 (Cr)
Semi-annually	Copper (total)	EPA 200.8 (Cu)
Semi-annually	Fecal coliform*	SM 9222D
Semi-annually	Fluoride	EPA 300.0 (Fluoride)
Semi-annually	Hardness (total)	SM18 2340 B
Semi-annually	Iron	EPA 200.7 (Fe)
Semi-annually	Lead (total)	EPA 200.8 (Pb)
Semi-annually	Magnesium (total)	EPA 200.7 (Mg)
Semi-annually	Manganese (total)	EPA 200.8 (Mn)
Semi-annually	Nickel (total)	EPA 200.8 (Ni)
Semi-annually	Nitrate	EPA 300.0 (Nitrate (N))
Semi-annually	Nitrate/Nitrite (NOX)	NO2+NO3
Semi-annually	Nitrite	EPA 300.0 (Nitrite (N))
Semi-annually	Ortho-phosphate	SM18 4500-P E (Orthophosphate)
Semi-annually	Potassium	EPA 200.7 (K)
Semi-annually	Selenium (total)	EPA 200.8 (Se)
Semi-annually	Silver (total)	EPA 200.8 (Ag)
Semi-annually	Sodium	EPA 200.7 (Na)
Semi-annually	Strontium (total)	EPA 200.7 (Sr)
Semi-annually	Sulfate	EPA 300.0 (Sulfate)
Semi-annually	Sulfide	SM18 4500-S E
Semi-annually	Total coliform*	SM 9222B
Semi-annually	Total Dissolved Solids	SM18 2540 C
Semi-annually	Residues- Nonfilterable (TSS)	SM18 2540 D
Semi-annually	Total Kjeldahl Nitrogen	EPA 351.2
Semi-annually	Total Nitrogen	TKN+NO3+NO2
Semi-annually	Total Phosphorus	SM18 4500-P E (Phosphorus - Total)
Semi-annually	Turbidity	SM18 2130 B
Semi-annually	Zinc	EPA 200.8 (Zn)

*Only analyzed in private, potable wells

Appendix C
Sampling Summary and Problems Encountered

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer	Dry Season Sampling Date	Wet Season Sampling Date	Comments
C-00311*	25.91073	-81.36497	4	450	Mid-Hawthorn	2/3/2016 9:56	7/18/2016 10:45	
C-00490	26.22061	-81.80033	2	71	Lower Tamiami	2/4/2016 9:41	8/10/2016 13:10	Well casing is made of metal
C-00532	26.49212	-81.45981	4	13	Water Table	2/22/2016 10:02	8/4/2016 11:23	
C-00600	26.09751	-81.73882	4	52	Lower Tamiami	3/10/2016 10:22	8/31/2016 10:33	
C-00684*	26.29509	-81.39595	4	490	Mid-Hawthorn	2/9/2016 13:55	7/20/2016 13:26	
C-00689	26.29503	-81.39590	4	265	Sandstone	2/9/2016 10:04	7/20/2016 10:58	
C-00966	26.36076	-81.34512	6	40	Water Table	3/1/2016 10:20	7/18/2016 11:23	Well casing is made of metal
C-00974*	26.16144	-81.54414	6	460	Mid-Hawthorn	2/22/2016 13:16	7/21/2016 10:28	
C-00976	26.15455	-81.64602	6	40	Water Table	2/17/2016 9:40	9/6/2016 11:15	
C-00977*	26.15455	-81.64602	6	140	Lower Tamiami	2/17/2016 11:30	9/6/2016 10:06	
C-00984	26.29376	-81.48174	6	40	Water Table	2/25/2016 11:16	7/19/2016 12:32	
C-00986	26.20074	-81.34631	6	40	Water Table	2/3/2016 11:44	7/18/2016 10:00	
C-00995	25.95146	-81.35902	2	37	Water Table	2/3/2016 13:01	7/18/2016 12:22	Petroleum products and battery acid was noted around the well. This was reported to Pollution Control staff for investigation and site remediation. (File PC2016-182)
C-00996	26.15325	-81.68632	4	24	Water Table	3/22/2016 9:48	9/6/2016 13:14	
C-01003	26.24410	-81.80062	4	61	Lower Tamiami	3/21/2016 11:58	8/10/2016 11:33	
C-01055	26.21139	-81.73732	4	25	Water Table	2/17/2016 13:30	9/7/2016 12:41	
C-01058	26.26047	-81.76987	4	80	Lower Tamiami	3/3/2016 13:04	8/10/2016 9:23	
C-01059	26.26822	-81.80247	4	25	Water Table	3/21/2016 9:19	8/10/2016 10:29	
C-01064	26.02782	-81.63253	4	120	Lower Tamiami	3/10/2016 9:19	7/18/2016 14:31	
C-01073	26.29506	-81.39589	4	160	Lower Tamiami	2/9/2016 10:41	7/20/2016 12:00	

Appendix C
Sampling Summary and Problems Encountered

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer	Dry Season Sampling Date	Wet Season Sampling Date	Comments
C-01077	26.47511	-81.36628	4	210	Sandstone	3/3/2016 10:29	7/11/2016 12:25	
C-01078	26.43294	-81.45130	4	38	Water Table	3/1/2016 12:05	7/18/2016 13:47	
C-01080*	26.37469	-81.60542	4	309	Mid-Hawthorn	2/2/2016 12:50	7/20/2016 11:26	
C-01097	26.30108	-81.59621	4	18	Water Table	2/8/2016 9:30	7/20/2016 13:58	
C-01100	26.17345	-81.78002	4	20	Water Table	2/4/2016 11:15	9/1/2016 12:09	
C-01275	26.11573	-81.68668	2	118	Lower Tamiami	2/11/2016 10:50	8/4/2016 13:38	
C-01276	26.11575	-81.68668	2	15	Water Table	2/11/2016 10:06	8/4/2016 14:29	
C-01277	26.23030	-81.52810	2	133	Lower Tamiami	2/8/2016 10:48	9/7/2016 10:19	
C-01278	26.23032	-81.52809	2	13	Water Table	2/8/2016 11:23	9/7/2016 10:50	
C-01283	26.20519	-81.54130	4	40	Water Table	2/8/2016 13:03	7/21/2016 13:57	
CCN1R	26.31224	-81.80631	2	18	Water Table	3/22/2016 12:43	8/15/2016 11:26	Well CCN1 was re-drilled and replaced with well CCN1R
CCN3	26.30902	-81.81172	2	14	Water Table	3/22/2016 13:33	8/15/2016 12:11	
CCS1	26.15294	-81.74300	2	15	Water Table	2/4/2016 12:23	9/7/2016 13:33	
CCS3R	26.13934	-81.75183	2	15	Water Table	2/4/2016 13:38	9/1/2016 13:18	Well CCS3 was re-drilled and replaced with well CCS3R
GGW-1D	26.21468	-81.63681	4	61	Lower Tamiami	2/10/2016 10:40	7/21/2016 9:26	Well casing is made of metal
GGW-1S	26.21465	-81.63682	4	15	Water Table	2/10/2016 11:25	7/21/2016 10:13	Well casing is made of metal
GGW-4D	26.21363	-81.58222	4	77	Lower Tamiami	2/10/2016 9:08	7/21/2016 11:34	Well casing is made of metal
GGW-4S	26.21361	-81.58223	4	16	Water Table	2/10/2016 9:44	7/21/2016 12:25	Well casing is made of metal
C-00985	26.20632	-81.51226	6	160	Lower Tamiami	2/25/2016 10:21	7/19/2016 11:32	
C-00989	26.29374	-81.48138	6	270	Sandstone	2/25/2016 10:15	7/19/2016 11:59	
C-01061	26.21996	-81.80019	4	25	Water Table	3/21/2016 10:43	8/31/2016 12:21	

Appendix C
Sampling Summary and Problems Encountered

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer	Dry Season Sampling Date	Wet Season Sampling Date	Comments
CCN11	26.26758	-81.78540	2	12	Water Table	3/22/2016 14:32	8/15/2016 13:08	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 17.89ft
CCN5	26.28293	-81.77914	2	17	Water Table	3/24/2016 12:01	8/15/2016 9:30	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 19.81ft
~~CCN8~~ CCN7	26.29266	-81.77720	2	43	Water Table	3/22/2016 11:45	8/15/2016 10:34	Well CCN8 was abandoned and well CCN7 remains in place. Well CCN7 was sampled for both dry and wet seasons in 2016. Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 19.45ft
CCS18	26.08567	-81.69196	2	9	Water Table	2/11/2016 12:33	8/31/2016 9:23	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 15.1ft
CCS20	26.10321	-81.74303	2	11	Water Table	3/24/2016 9:44	9/8/2016 12:21	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 12.78ft

Appendix C
Sampling Summary and Problems Encountered

Station	Latitude	Longitude	Diameter (in)	Depth (ft)	Aquifer	Dry Season Sampling Date	Wet Season Sampling Date	Comments
PBI5	26.21356	-81.80671	2	13	Water Table	4/6/2016 9:44	9/1/2016 10:29	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 17.57ft
PBI6	26.24482	-81.81283	2	12	Water Table	2/18/2016 10:40	9/1/2016 9:28	Well was redeveloped to remove sediment that had collapsed in the well. Depth is now 17.3ft
3135_66TH_ST_SW	26.17178	-81.74123	4	100	Lower Tamiami	3/2/2016 13:24	8/30/2016 12:48	
4420_16TH_ST_NE	26.31251	-81.57573	4	120	Lower Tamiami	3/2/2016 10:53	8/30/2016 9:46	Well was resampled due to fecal and total coliform exceedances during wet season. Resample showed no fecal or total coliforms present.
4635_3RD_AVE_SW	26.22381	-81.70004	4	80	Lower Tamiami	3/2/2016 12:25	8/30/2016 11:33	

*Artesian

Appendix D
FY16 Exceedances

Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
CCN11	03/22/2016	Water Table	Arsenic	37.7	ug/L		0.100	10	
CCN11	08/15/2016	Water Table	Arsenic	25	ug/L		0.100	10	
CCN5	03/24/2016	Water Table	Arsenic	45.9	ug/L		0.100	10	
CCN5	08/15/2016	Water Table	Arsenic	85.8	ug/L		0.100	10	
3135_66TH_ST_SW	03/02/2016	Lower Tamiami	Chloride	649	mg/L		0.250		250
3135_66TH_ST_SW	08/30/2016	Lower Tamiami	Chloride	627	mg/L		0.250		250
C-00311	02/03/2016	Mid-Hawthorn	Chloride	448	mg/L		0.250		250
C-00311	07/18/2016	Mid-Hawthorn	Chloride	448	mg/L		0.250		250
C-00974	02/22/2016	Mid-Hawthorn	Chloride	2060	mg/L		0.250		250
C-00974	07/21/2016	Mid-Hawthorn	Chloride	2140	mg/L		0.250		250
C-00977	02/17/2016	Lower Tamiami	Chloride	265	mg/L		0.250		250
C-00977	09/06/2016	Lower Tamiami	Chloride	532	mg/L		0.250		250
C-01064	03/10/2016	Lower Tamiami	Chloride	285	mg/L		0.250		250
C-01077	03/03/2016	Sandstone	Chloride	384	mg/L		0.250		250
C-01077	03/03/2016	Sandstone	Chloride	383	mg/L		0.250		250
C-01077	07/11/2016	Sandstone	Chloride	355	mg/L	J	0.250		250
C-01077	07/11/2016	Sandstone	Chloride	390	mg/L		0.250		250
C-01275	02/11/2016	Lower Tamiami	Chloride	1500	mg/L		0.250		250
C-01275	02/11/2016	Lower Tamiami	Chloride	1480	mg/L		0.250		250
C-01275	08/04/2016	Lower Tamiami	Chloride	1510	mg/L		0.250		250
C-01275	08/04/2016	Lower Tamiami	Chloride	1510	mg/L		0.250		250
C-01276	08/04/2016	Water Table	Chloride	255	mg/L		0.250		250
CCN5	03/24/2016	Water Table	Chloride	1620	mg/L	J	0.250		250
PBI6	09/01/2016	Water Table	Chloride	251	mg/L		0.250		250
4420_16TH_ST_NE	08/30/2016	Lower Tamiami	Coliform Fecal	2	cfu/100ml	B	1	0	

Appendix D
FY16 Exceedances

Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
4420_16TH_ST_NE	08/30/2016	Lower Tamiami	Coliform Total	200	cfu/100ml	Z	1	*4	
CCN5	03/24/2016	Water Table	Fluoride	5.32	mg/L	J	0.002		2.0
C-00490	02/04/2016	Lower Tamiami	Iron	2300	ug/L		1.98		300
C-00490	08/10/2016	Lower Tamiami	Iron	1670	ug/L		1.98		300
C-00532	08/04/2016	Water Table	Iron	392	ug/L	J	1.98		300
C-00600	03/10/2016	Lower Tamiami	Iron	756	ug/L		1.98		300
C-00600	08/31/2016	Lower Tamiami	Iron	520	ug/L		1.98		300
C-00966	03/01/2016	Water Table	Iron	3460	ug/L		1.98		300
C-00966	07/18/2016	Water Table	Iron	3290	ug/L		1.98		300
C-00984	02/25/2016	Water Table	Iron	3700	ug/L		1.98		300
C-00984	07/19/2016	Water Table	Iron	1990	ug/L		1.98		300
C-00986	07/18/2016	Water Table	Iron	491	ug/L	J	1.98		300
C-00995	02/03/2016	Water Table	Iron	474	ug/L		1.98		300
C-00996	03/22/2016	Water Table	Iron	1860	ug/L		1.98		300
C-00996	09/06/2016	Water Table	Iron	626	ug/L		1.98		300
C-01003	03/21/2016	Lower Tamiami	Iron	2680	ug/L		1.98		300
C-01003	08/10/2016	Lower Tamiami	Iron	2660	ug/L	J	1.98		300
C-01055	02/17/2016	Water Table	Iron	3100	ug/L		1.98		300
C-01055	09/07/2016	Water Table	Iron	2640	ug/L	J	1.98		300
C-01059	03/21/2016	Water Table	Iron	7960	ug/L		1.98		300
C-01059	08/10/2016	Water Table	Iron	8310	ug/L		1.98		300
C-01061	03/21/2016	Water Table	Iron	502	ug/L		1.98		300
C-01061	08/31/2016	Water Table	Iron	555	ug/L		1.98		300
C-01064	03/10/2016	Lower Tamiami	Iron	2940	ug/L		1.98		300
C-01064	07/18/2016	Lower Tamiami	Iron	888	ug/L	J	1.98		300
C-01078	03/01/2016	Water Table	Iron	1930	ug/L		1.98		300

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
C-01078	07/18/2016	Water Table	Iron	2170	ug/L		1.98		300
C-01097	02/08/2016	Water Table	Iron	2290	ug/L		1.98		300
C-01097	07/20/2016	Water Table	Iron	2850	ug/L		1.98		300
CCN11	03/22/2016	Water Table	Iron	4130	ug/L		1.98		300
CCN11	08/15/2016	Water Table	Iron	1760	ug/L		1.98		300
CCN5	03/24/2016	Water Table	Iron	6180	ug/L		1.98		300
CCN5	08/15/2016	Water Table	Iron	2360	ug/L		1.98		300
CCS1	09/07/2016	Water Table	Iron	2390	ug/L		1.98		300
CCS1	02/04/2016	Water Table	Iron	7720	ug/L	!	1.98		300
CCS18	02/11/2016	Water Table	Iron	1130	ug/L		1.98		300
CCS18	08/31/2016	Water Table	Iron	518	ug/L	J	1.98		300
CCS3	09/01/2016	Water Table	Iron	348	ug/L		1.98		300
CCS3	09/01/2016	Water Table	Iron	420	ug/L		1.98		300
GGW-1D	02/10/2016	Lower Tamiami	Iron	420	ug/L		1.98		300
GGW-1S	02/10/2016	Water Table	Iron	3450	ug/L		1.98		300
GGW-1S	07/21/2016	Water Table	Iron	8800	ug/L	!	1.98		300
GGW-4S	02/10/2016	Water Table	Iron	679	ug/L		1.98		300
GGW-4S	07/21/2016	Water Table	Iron	407	ug/L	J	1.98		300
PBI5	04/06/2016	Water Table	Iron	10800	ug/L		1.98		300
PBI5	09/01/2016	Water Table	Iron	9300	ug/L		1.98		300
C-00986	02/03/2016	Water Table	Manganese	51.6	ug/L		0.220		50
C-00986	02/03/2016	Water Table	Manganese	52.6	ug/L		0.220		50
C-01064	03/10/2016	Lower Tamiami	Manganese	54.8	ug/L		0.220		50
CCN11	03/22/2016	Water Table	Manganese	178	ug/L		0.220		50
CCN11	08/15/2016	Water Table	Manganese	146	ug/L		0.220		50
CCN1R	08/15/2016	Water Table	Manganese	92.6	ug/L		0.220		50

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
CCN5	03/24/2016	Water Table	Manganese	4220	ug/L		0.220		50
CCN5	08/15/2016	Water Table	Manganese	2170	ug/L		0.220		50
CCS20	03/24/2016	Water Table	Manganese	319	ug/L		0.220		50
CCS20	09/08/2016	Water Table	Manganese	400	ug/L	J	0.220		50
3135_66TH_ST_SW	03/02/2016	Lower Tamiami	Residues-Filterable (TDS)	1610	mg/L		2.0		500
3135_66TH_ST_SW	08/30/2016	Lower Tamiami	Residues-Filterable (TDS)	1500	mg/L		2.0		500
4635_3RD_AVE_SW	03/02/2016	Lower Tamiami	Residues-Filterable (TDS)	570	mg/L		2.0		500
4635_3RD_AVE_SW	08/30/2016	Lower Tamiami	Residues-Filterable (TDS)	554	mg/L		2.0		500
C-00311	02/03/2016	Mid-Hawthorn	Residues-Filterable (TDS)	1300	mg/L		2.0		500
C-00311	07/18/2016	Mid-Hawthorn	Residues-Filterable (TDS)	1260	mg/L		2.0		500
C-00684	02/09/2016	Mid-Hawthorn	Residues-Filterable (TDS)	4790	mg/L		2.0		500
C-00684	07/20/2016	Mid-Hawthorn	Residues-Filterable (TDS)	4860	mg/L		2.0		500
C-00974	02/22/2016	Mid-Hawthorn	Residues-Filterable (TDS)	3880	mg/L		2.0		500
C-00974	07/21/2016	Mid-Hawthorn	Residues-Filterable (TDS)	5440	mg/L		2.0		500
C-00977	02/17/2016	Lower Tamiami	Residues-Filterable (TDS)	1500	mg/L		2.0		500
C-00977	09/06/2016	Lower Tamiami	Residues-Filterable (TDS)	1500	mg/L		2.0		500
C-00989	02/25/2016	Sandstone	Residues-Filterable (TDS)	808	mg/L		2.0		500
C-00989	07/19/2016	Sandstone	Residues-Filterable (TDS)	798	mg/L		2.0		500
C-01055	02/17/2016	Water Table	Residues-Filterable (TDS)	524	mg/L		2.0		500

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
C-01055	09/07/2016	Water Table	Residues-Filterable (TDS)	514	mg/L		2.0		500
C-01058	03/03/2016	Lower Tamiami	Residues-Filterable (TDS)	672	mg/L		2.0		500
C-01058	08/10/2016	Lower Tamiami	Residues-Filterable (TDS)	673	mg/L		2.0		500
C-01064	03/10/2016	Lower Tamiami	Residues-Filterable (TDS)	899	mg/L		2.0		500
C-01064	07/18/2016	Lower Tamiami	Residues-Filterable (TDS)	692	mg/L		2.0		500
C-01073	02/09/2016	Lower Tamiami	Residues-Filterable (TDS)	556	mg/L		2.0		500
C-01077	03/03/2016	Sandstone	Residues-Filterable (TDS)	1070	mg/L		2.0		500
C-01077	03/03/2016	Sandstone	Residues-Filterable (TDS)	1060	mg/L		2.0		500
C-01077	07/11/2016	Sandstone	Residues-Filterable (TDS)	1160	mg/L		2.0		500
C-01077	07/11/2016	Sandstone	Residues-Filterable (TDS)	1090	mg/L		2.0		500
C-01100	02/04/2016	Water Table	Residues-Filterable (TDS)	551	mg/L		2.0		500
C-01100	09/01/2016	Water Table	Residues-Filterable (TDS)	514	mg/L		2.0		500
C-01275	02/11/2016	Lower Tamiami	Residues-Filterable (TDS)	3200	mg/L		2.0		500
C-01275	02/11/2016	Lower Tamiami	Residues-Filterable (TDS)	3040	mg/L		2.0		500
C-01275	08/04/2016	Lower Tamiami	Residues-Filterable (TDS)	3280	mg/L		2.0		500
C-01275	08/04/2016	Lower Tamiami	Residues-Filterable (TDS)	3220	mg/L		2.0		500
C-01276	02/11/2016	Water Table	Residues-Filterable (TDS)	964	mg/L		2.0		500

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
C-01276	08/04/2016	Water Table	Residues-Filterable (TDS)	1020	mg/L		2.0		500
C-01283	02/08/2016	Water Table	Residues-Filterable (TDS)	513	mg/L		2.0		500
CCN11	03/22/2016	Water Table	Residues-Filterable (TDS)	812	mg/L		2.0		500
CCN11	08/15/2016	Water Table	Residues-Filterable (TDS)	706	mg/L		2.0		500
CCN1R	08/15/2016	Water Table	Residues-Filterable (TDS)	562	mg/L		2.0		500
CCN1R	03/22/2016	Water Table	Residues-Filterable (TDS)	530	mg/L		2.0		500
CCN3	03/22/2016	Water Table	Residues-Filterable (TDS)	531	mg/L		2.0		500
CCN3	08/15/2016	Water Table	Residues-Filterable (TDS)	615	mg/L		2.0		500
CCN5	03/24/2016	Water Table	Residues-Filterable (TDS)	874	mg/L		2.0		500
CCN5	08/15/2016	Water Table	Residues-Filterable (TDS)	801	mg/L		2.0		500
CCS1	09/07/2016	Water Table	Residues-Filterable (TDS)	526	mg/L		2.0		500
CCS1	02/04/2016	Water Table	Residues-Filterable (TDS)	544	mg/L		2.0		500
CCS3	09/01/2016	Water Table	Residues-Filterable (TDS)	536	mg/L		2.0		500
CCS3	09/01/2016	Water Table	Residues-Filterable (TDS)	539	mg/L		2.0		500
GGW-1D	02/10/2016	Lower Tamiami	Residues-Filterable (TDS)	573	mg/L		2.0		500
PBI5	04/06/2016	Water Table	Residues-Filterable (TDS)	547	mg/L		2.0		500
PBI5	09/01/2016	Water Table	Residues-Filterable (TDS)	642	mg/L		2.0		500

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
PBI6	02/18/2016	Water Table	Residues-Filterable (TDS)	776	mg/L		2.0		500
PBI6	09/01/2016	Water Table	Residues-Filterable (TDS)	844	mg/L		2.0		500
3135_66TH_ST_SW	03/02/2016	Lower Tamiami	Sodium	339	mg/L		0.380	160	
3135_66TH_ST_SW	08/30/2016	Lower Tamiami	Sodium	333	mg/L		0.380	160	
C-00311	02/03/2016	Mid-Hawthorn	Sodium	405	mg/L	J	0.380	160	
C-00311	07/18/2016	Mid-Hawthorn	Sodium	456	mg/L	J	0.380	160	
C-00684	02/09/2016	Mid-Hawthorn	Sodium	372	mg/L		0.380	160	
C-00684	07/20/2016	Mid-Hawthorn	Sodium	344	mg/L		0.380	160	
C-00974	02/22/2016	Mid-Hawthorn	Sodium	1740	mg/L		0.380	160	
C-00974	07/21/2016	Mid-Hawthorn	Sodium	1230	mg/L		0.380	160	
C-00977	02/17/2016	Lower Tamiami	Sodium	277	mg/L		0.380	160	
C-00977	09/06/2016	Lower Tamiami	Sodium	348	mg/L		0.380	160	
C-00989	02/25/2016	Sandstone	Sodium	227	mg/L		0.380	160	
C-00989	07/19/2016	Sandstone	Sodium	263	mg/L	J	0.380	160	
C-01077	03/03/2016	Sandstone	Sodium	191	mg/L		0.380	160	
C-01077	03/03/2016	Sandstone	Sodium	188	mg/L		0.380	160	
C-01077	07/11/2016	Sandstone	Sodium	209	mg/L		0.380	160	
C-01077	07/11/2016	Sandstone	Sodium	207	mg/L	J	0.380	160	
C-01275	02/11/2016	Lower Tamiami	Sodium	756	mg/L		0.380	160	
C-01275	02/11/2016	Lower Tamiami	Sodium	739	mg/L		0.380	160	
C-01275	08/04/2016	Lower Tamiami	Sodium	795	mg/L	J	0.380	160	
C-01275	08/04/2016	Lower Tamiami	Sodium	941	mg/L	J	0.380	160	
CCN3	08/15/2016	Water Table	Sodium	162	mg/L		0.380	160	
GGW-1S	07/21/2016	Water Table	Sodium	180	mg/L		0.380	160	
PBI6	02/18/2016	Water Table	Sodium	162	mg/L		0.380	160	

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Well #	Sample Date	Aquifer	Parameter	Result	Units	Lab Qualifier	Detection Limit	FAC 62-550 Primary Drinking Water Standard	FAC 62-550 Secondary Drinking Water Standard
PBI6	09/01/2016	Water Table	Sodium	190	mg/L		0.380	160	
C-00684	07/20/2016	Mid-Hawthorn	Sulfate	1370	mg/L		0.250		250
C-00974	02/22/2016	Mid-Hawthorn	Sulfate	453	mg/L		0.250		250
C-00974	07/21/2016	Mid-Hawthorn	Sulfate	473	mg/L		0.250		250
C-01275	02/11/2016	Lower Tamiami	Sulfate	517	mg/L		0.250		250
C-01275	02/11/2016	Lower Tamiami	Sulfate	510	mg/L		0.250		250
C-01275	08/04/2016	Lower Tamiami	Sulfate	435	mg/L		0.250		250
C-01275	08/04/2016	Lower Tamiami	Sulfate	429	mg/L		0.250		250