South Florida Water Management District
Contract #4600001937
Agreement with
Collier County Pollution Control & Prevention Department

Annual Report FY10

October 2009-September 2010

Prepared by:
Collier County Pollution Control & Prevention Department
August 2011

I. Project Title: South Florida Water Management District Agreement (SFWMD) #4600001937—Collier County Supplemental Water Quality Monitoring

II. Objective: The primary objective of this three-year Agreement is to receive financial assistance from SFWMD to: 1) continue evaluation of surface water quality in the inland and the coastal waters of Collier County; 2) provide data and analyses required for development and implementation of the County's watershed management plans; 3) meet the water quality protection objectives of the County's growth management plan; and 4) meet the requirements of the Florida Department of Environmental Protection's Total Maximum Daily Load program. This report satisfies the requirements of this Agreement Fiscal Year (FY) 2010 (October 2009-September 2010).

III. Program Activities:

During FY10, fifty (50) stations surface water stations listed in Appendix A were sampled monthly for the laboratory analytes listed in Appendix B. Additional "quarterly" parameters were analyzed during October, January, April and July. Five of the sites (CORKN, CORKS, CORKSW, CORKSCRD, and CHKMATE) are only sampled "seasonally" during December, April, June, and August. Figure 1 shows the location of the stations. Appendix C provides a list of sampling dates.

All chemical parameters were analyzed by the Collier County Pollution Control Laboratory (CCPCL) or PACE, Inc. laboratories. Physical measurements of pH, dissolved oxygen, salinity, specific conductance and temperature were obtained in the field one foot (0.3 meters) below the water surface using a Yellow Springs Instrument (YSI) 600XL multi-probe. These field measurements were also taken from one foot (0.3 meters) above bottom when total water depth exceeded 1.5 meters. Secchi depth, total water depth and staff gauge readings (where available) were also recorded at each station.

III. Data Validity and Quality Assurance

All sampling methodologies followed the Collier County Pollution Control & Prevention Field Sampling Quality Manual and the Florida Department of Environmental Protection Standard Operating Procedures reference therein.

The data provided in this report have been checked for accuracy and completeness and the Collier County Pollution Control & Prevention Department attests to the validity of these results. All data qualifiers follow Florida Administrative Code 62-160.670(1)(h).

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. Please see Appendix D for specific quality assurance issues.

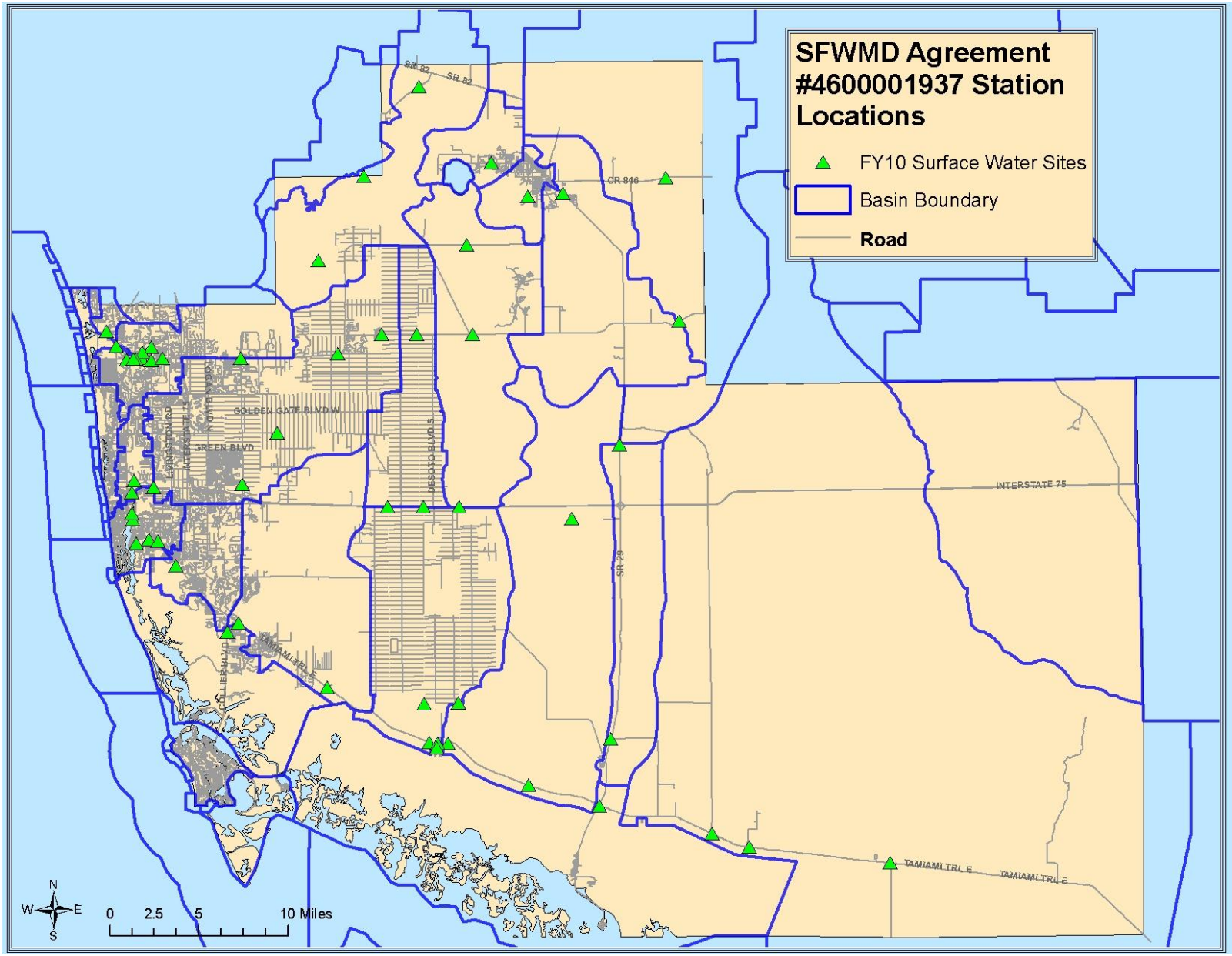


Figure 1. Station Locations

IV. Exceedances of State Standards or Thresholds in FY10

Results were compared to Florida Administrative Code (FAC) Chapter 62-302 to determine if they are meeting the state water quality criteria. For a complete list of the state standards, please go to FAC 62-302.530 (http://www.dep.state.fl.us/legal/Rules/shared/62-302/302-Table.pdf).

The current standard is narrative that states *"In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."* Since there are no numeric standards for total nitrogen (TN) and total phosphorus (TP), "threshold" values were used to compare TN and TP concentrations. These "threshold" values were obtained from the Total Maximum Daily Load (TMDL) report prepared by the Florida Department of Environmental Protection (FDEP) for Gordon River Extension basin in 2008. This report established numeric limits for nutrient concentrations for that basin. These values (TN: 0.74 mg/L and TP: 0.04mg/L) were derived by using the 75th percentile of median values obtained from reference stations that represent "natural conditions" in the Southwest Coast Planning Unit. These values also serve as regional concentration thresholds and have been used to establish nutrient criteria in several basins within the Everglades West Coast basin. For the purposes of this report, these numeric thresholds are being used to compare nutrient data for possible "exceedances". It should be noted that any listed nutrient "exceedances" are not actual violations of water quality standards except those that occurred in Gordon River Extension basin.

Additionally, FDEP's TMDL report for Gordon River Extension includes a threshold value for biochemical oxygen demand (BOD) of 1.85 mg/L; however, the Collier County Pollution Control Laboratory's current method detection limit for BOD is 2.0 mg/L. This detection limit is not sensitive enough to capture potential exceedances of BOD. Therefore, only values that were above the method detection limit were designated as exceedances.

It should be noted that the above thresholds are only for freshwater waterbodies and were not applied to results from tidal locations in this report. For tidal stations, the state screening levels for estuaries used by FDEP in their Impaired Waters Rule (IWR) assessments (FAC 62-303) were applied. Chlorophyll-a results were also screened using these IWR threshold levels for fresh water (20 μg/L) and marine water (11μg/L).

Table 1 provides a summary of the water quality parameters in FY10 that were in exceedance of state standards, thresholds or screening levels. All basins sampled had exceedances during this reporting period. As shown in Table 1, dissolved oxygen, total nitrogen, ammonia, total phosphorus, BOD, fecal coliform, iron and copper were the parameters that were in exceedance during FY10. Table 2 shows the percentage of exceedances by basin or WBID (water body identification) and by parameter. These WBID boundaries are the same used by FDEP in their 2007 IWR assessment and verification process. These exceedances are further broken down by station and by parameter in Appendix E. The majority of the exceedances during FY10 occurred during the wet season (June-September).

Table 1. Exceedances of water quality standards or threshold levels in FY10

Parameter	Standard (FAC 62-302)	FDEP Threshold Levels (TMDL[2] or IWR[3])	Total Number of Samples Collected	Total Number of Exceedances	Percent of Wet Season Exceedances	Percent of Dry Season Exceedances
Ammonia (Class III-Fresh)	≤0.02 mg/L		495	303	49%	57%
Bacteria, Fecal Coliform (Class III waterbodies)	not to exceed 400 cfu/100ml in 10% of samples or 800 cfu/100ml in one day		491	14	7%	1%
Bacteria, Fecal Coliform (Class II waterbodies)	not to exceed 43 cfu/100ml in 10% of samples or 800 cfu/100ml in one day		71	47	71%	26%
Copper (Class III-Fresh)	≤21.4 ug/L[1]		169	2	0%	2%
Copper (Class II-Marine)	≤3.7 ug/L		24	7	17%	33%
Dissolved Oxygen (Class III-Fresh)	≥ 5 mg/L		718	343	62%	49%
Dissolved Oxygen (Class II-Marine)	≥ 4 mg/L		127	47	59%	33%
Iron (Class III-Fresh)	≤1000 ug/L		161	9	5%	6%
Iron (Class II-Marine)	≤300 ug/L		18	3	0%	17%
Biochemical Oxygen Demand (Fresh Water/TMDL)		≤1.85 mg/L	479	95	28%	16%
Biochemical Oxygen Demand (Estuary/IWR)		≤2.10 mg/L	67	10	25%	11%
Total Nitrogen (Fresh Water/TMDL)		≤0.74 mg/L	494	308	65%	62%
Total Nitrogen (Estuary/IWR)		≤1.00 mg/L	72	18	8%	33%
Total Phosphorus (Fresh Water/TMDL)		≤0.04mg/L	495	183	47%	33%
Total Phosphorus (Estuary/IWR)		≤0.19 mg/L	72	0	0%	0%

[1] *Standard is based on the equation e(0.8545[lnH]-1.702) where H is hardness. Mean hardness for all fresh water sites in FY10 was 264 mg/L*

[2] *TMDL (Total Maximum Daily Load)—Levels established in the Gordon River Extension TMDL*

[3] *IWR (Impaired Waters Rule)—Threshold limits established in Florida Administrative Code Chapter 62-303.*

Table 2. Percent Exceedances by WBID

WBID	Percent samples in Exceedances of Standards								
	All Parameters	Dissolved Oxygen	Total Nitrogen	Ammonia	Total Phosphorus	Biochemical Oxygen Demand	Fecal Coliform	Iron	Copper
GORDON RIVER EXTENSION	22%	89%	67%	50%	50%	43%	65%	13%	29%
COW SLOUGH	20%	58%	100%	92%	100%	17%	33%	0%	0%
BARRON RIVER CANAL	20%	75%	92%	100%	92%	18%	0%	0%	0%
SILVER STRAND	19%	58%	100%	100%	100%	42%	0%	25%	0%
NAPLES BAY (COASTAL SEGMENT)	17%	38%	49%	32%	30%	23%	68%	18%	38%
COCOHATCHEE (INLAND SEGMENT)	17%	43%	84%	71%	56%	36%	3%	2%	3%
CAMP KEAIS	16%	86%	58%	66%	57%	35%	0%	0%	0%
COCOHATCHEE GOLF COURSE DISCHARGE	15%	67%	91%	83%	0%	25%	10%	75%	0%
TAMIAMI CANAL	15%	90%	16%	54%	8%	3%	3%	0%	0%
IMMOKALEE BASIN	14%	100%	63%	78%	100%	11%	0%	0%	0%
COCOHATCHEE RIVER	14%	64%	36%	0%	0%	33%	83%	0%	25%
OKALOACOOCHEE SLOUGH	13%	79%	100%	45%	43%	5%	5%	0%	0%
NORTH GOLDEN GATE	13%	61%	75%	59%	14%	4%	0%	21%	0%
ROOKERY BAY (INLAND WEST SEGMENT)	10%	13%	58%	67%	17%	17%	0%	0%	0%
ROOKERY BAY (INLAND EAST SEGMENT)	10%	30%	50%	42%	8%	0%	0%	0%	0%
TEN THOUSAND ISLANDS	10%	37%	23%	0%	0%	5%	23%	0%	0%
FAKAHATCHEE STRAND	10%	78%	85%	57%	7%	8%	0%	0%	0%
FAKA UNION (NORTH SEGMENT)	9%	24%	30%	36%	8%	3%	0%	0%	0%
FAKA UNION (SOUTH SEGMENT)	8%	37%	37%	15%	9%	16%	0%	0%	0%
CORKSCREW MARSH	5%	54%	69%	56%	31%	13%	0%	0%	0%

Chlorophyll-a is a pigment found in every living plant. It is typically used to determine the intensity of algae in the water column. More specifically, high chlorophyll-a levels would be representative of an imbalance in the aquatic flora. Although elevated nutrients can be linked to elevated chlorophyll-a concentrations, no chlorophyll-a exceedances were noted during FY10. Chlorophyll-a screening levels are based on annual means and no annual means at any station exceeded these levels during FY10. Although TN and TP were found in exceedance of thresholds in 58% and 32% of the samples, respectively, chlorophyll-a was not elevated to the point of exceedance.

Located within Cocohatchee (Inland Segment) basin, station "COCPALM" in the Palm River has the highest annual average chlorophyll-a of 17.9 mg/m3. This is close to exceeding the screening level of 20 mg/m3 (ug/L). Station "COC@IBIS" located 0.5 miles upstream of "COCPALM" only has an annual average of 3.8 mg/m3. While the average total nitrogen values are similar at both sites ("COC@IBIS"=0.90mg/L and "COCPALM"=0.96m/L), the average total phosphorus was higher at "COCPALM" (0.068mg/L) than "COC@IBIS" (0.024mg/L). This would indicate there may be a source of phosphorus between the two sites.

Fecal coliforms were in exceedance approximately 11% of the time, most all of these occurred in Class II marine waters (66%). It should be noted that there is a significant variation in the standards between Class II and Class III waters. The Class II standard allows no more than 10% of the samples collected to exceed 43 cfu/100ml. For Class III, no more than 10% of the samples collected can exceed 400 cfu/100ml. This is a 90% decrease between the discharge waters and the receiving waters.

Many studies have been done challenging the effectiveness of using fecal coliform bacteria as an indicator of anthropogenic inputs. Fecal coliforms have been found to actually persist and grow in the sediments and re-suspend in the water column (Byappanahalli et al., 2003; Solo-Gabriele et al., 1999; Fujioka et al., 1999). Therefore, the abundance of fecal coliform bacteria may not indicate an ongoing source of human sewage. However, regardless of the source, elevated levels fecal coliform bacteria in the water column would be a detriment to shellfish harvesting and recreational contact as the water body classifications would indicate.

Cocohatchee River, Naples Bay, Gordon River Extension and Ten Thousand Islands are all Class II basins that have fecal coliform exceedances. Cocohatchee River was verified impaired for fecal coliform bacteria by FDEP in 2008. During the wet season of 2008, the Collier County Pollution Control & Prevention Department, in cooperation with the Collier County Environmental Health & Engineering and Collier County Wastewater Departments, conducted an investigation of sewage sources in this basin. The investigation included intensive sampling in all the tributaries; inspection of lift stations and septic tanks; and sewer line integrity tests. No sources of sewage discharge were found. FDEP continued sampling after the conclusion of

this investigation. No source has been found to date (personal communication, Jennifer Thera, FDEP).

Cow Slough is the only fresh water basin that has notable fecal coliform exceedances, specifically, site "IMKFSHCK". This site is located a natural creek that runs through cattle pasture. There are utilities around the monitoring site. Further investigation would be needed to determine the source.

The Naples Bay basin is currently impaired for copper and oysters in Naples Bay were found to contain the highest levels of copper in the state of Florida (Kimbrough 2008). Copper exceedances continue to be an issue in Naples Bay in FY10; however, the exceedances are occurring in the tributaries rather than in the bay itself. The Gordon River Extension and Haldeman Creek tributaries both have exceedances for copper during FY10. Station "HALDCRK" had the highest annual average copper levels in the county at 21.61 ug/L. Although North Golden Gate basin contributes the most flow by volume to Naples Bay, there were no exceedances of copper in this basin.

v. Basin Information & Status

Figures 2 through 21 provide a "snap shot" of each basin and show the location of the basin, location of sampling stations, information regarding size, land use, drainage, impairments, long term trends and FY 2010 exceedances of water quality standards or thresholds. Long term trends were taken from Janicki 2010—*Surface Water Quality Annual Assessment and Trend Report for Collier County Pollution Control Department.* The trend analyses covers data collected in Collier County from 1999-2009. Trend data is included in this report to give historical perspective as to the water quality conditions in each basin. Only basins that have water quality monitoring stations are included in this section.

Summary statistics by basin are also provided in Appendix F.

VI. Conclusions

- Dissolved oxygen levels were in exceedance of state standards most frequently during FY10. Currently, eleven (11) of the county's basins are impaired for dissolved oxygen. It should be noted that FDEP is currently reviewing the standards for dissolved oxygen because 70% of the relatively un-disturbed water bodies in Florida that have healthy biological communities are not meeting the current standards. FDEP recognizes that low dissolved oxygen may be attributed to natural causes.

- The majority of FY10 exceedances occurred during the wet season (June-September).

- Gordon River Extension basin had the highest percentage of exceedances for all parameters in FY10. Sixty-seven percent (67%) of the total nitrogen concentrations reported in this basin for FY10 were in violation of the established Total Maximum Daily Load concentration of 0.74mg/L.

- Although total nitrogen and total phosphorus were found in exceedance of thresholds in 58% and 32% of the samples, respectively, chlorophyll-a was not elevated to the point of exceedance in FY10. This is an indication that the nutrients are not causing an imbalance of the aquatic flora (algae).

- Basins with 100% exceedance frequencies for total nitrogen and total phosphorus (Cow Slough, Immokalee Basin, Silver Strand) have agriculture as their dominant land use with the exception of Okaloacoochee Slough, which is 45% wetlands and 42% agriculture.

- All of the basins with copper exceedances are dominated by urban land use. Gordon River Extension and Haldeman Creek tributaries are contributing copper loads to Naples Bay.

- Fecal coliform exceedances occurred in every Class II water body.

VII. Recommendations

- Continue monitoring as required in SFWMD Contract #4600001937 for two more years and update this report annually.

- A trend analysis (Janicki 2010) was performed in 2010 for ten years of data (1999-2009). This trend analysis should be repeated every five years to capture changing trends in water quality and land use.

- Although there may be obvious sources of fecal coliform (cattle pasture) around site “IMKFSHCK”, further investigate may be warranted to determine if there are other possible sources of fecal coliform bacteria around the site.

- Further define the spatial extent of elevated copper levels in the Haldeman Creek and Gordon River Extension tributaries to determine potential sources and implement Best Management Practices (BMPs) to reduce copper loads to Naples Bay.

- In light of the recent developments involving state and federal efforts to establish numeric nutrient criteria, those basins or stations with annual averages above the FDEP screening criteria should be scrutinized to determine if nutrient reduction BMPs could be implemented to reduce loads.

One BMP that is in the process of implementation to address nutrient pollution is the Collier County Florida Friendly Fertilizer Ordinance. Section 403.9337(2), Florida Statutes requires all counties and municipalities with FDEP designated impaired waters to adopt and enforce, at a minimum, the Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes for the protection of local surface and groundwater quality. This model ordinance was adopted by Collier County in July 2011.

- A copy of this report this report will be forwarded to the appropriate regulatory agencies including the Florida Department of Environmental Protection, the Florida Department of Agriculture and Consumer Services and the Florida Department of Health for any further investigation warranted by those agencies.

VIII. References

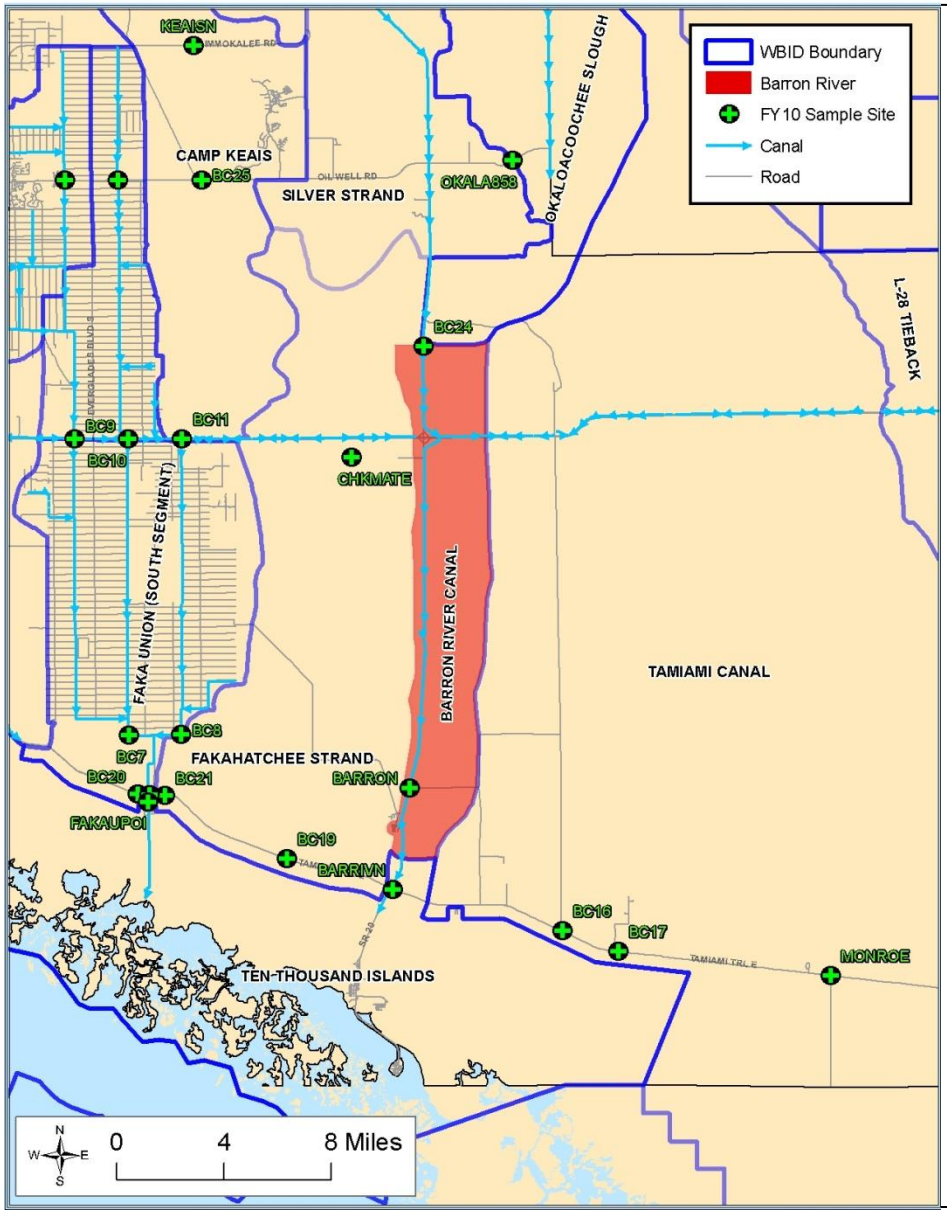
Kimbrough, K. L., W. E. Johnson, G. G. Lauenstein, J. D. Christensen and D. A. Apeti. 2008. An Assessment of Two Decades of Contaminant Monitoring in the Nation's Coastal Zone. Silver Spring, MD. NOAA Technical Memorandum NOS NCCOS 74. p. 105.

South Florida Water Management District. 2008. Naples Bay Surface Water Improvement and Management Plan. 2007. Technical Report.

Byappanahalli, M., M. Fowler, D. Shively, and R.Whitman. 2003. Ubiquity and Persistence of Escherichia coli in a Midwestern Coastal Stream, Applied And Environmental Microbiology, Aug. 2003, p. 4549–4555.

Fujioka, R. S., C. Sian-Denton, M. Borja, J. Castro, and K. Morphew. 1999. Soil: the environmental source of *Escherichia coli* and enterococci in Guam's streams. J. Appl. Microbiol. Symp. Suppl. 85:83S–89S.

Solo-Gabriele, H. M., M. A. Wolfert, T.R. Desmarais, and C.J. Palmer. 1999. Sources of *Escherichia coli* in a Coastal Subtropical Environment", Applied And Environmental Microbiology, Jan. 2000, p. 230–237.



BARRON RIVER CANAL

- Size: 33,368.45 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Okaloacoochee Slough, Fakahatchee Strand Silver Strand
  - Drains to: Ten Thousand Islands
- Landuse: Wetlands (94%)
- FDEP Impairments: Iron
- Long Term Trends: dissolved oxygen levels are decreasing
- # of FY10 Exceedances: 47
- Summary Statistics: Appendix F

Figure 2

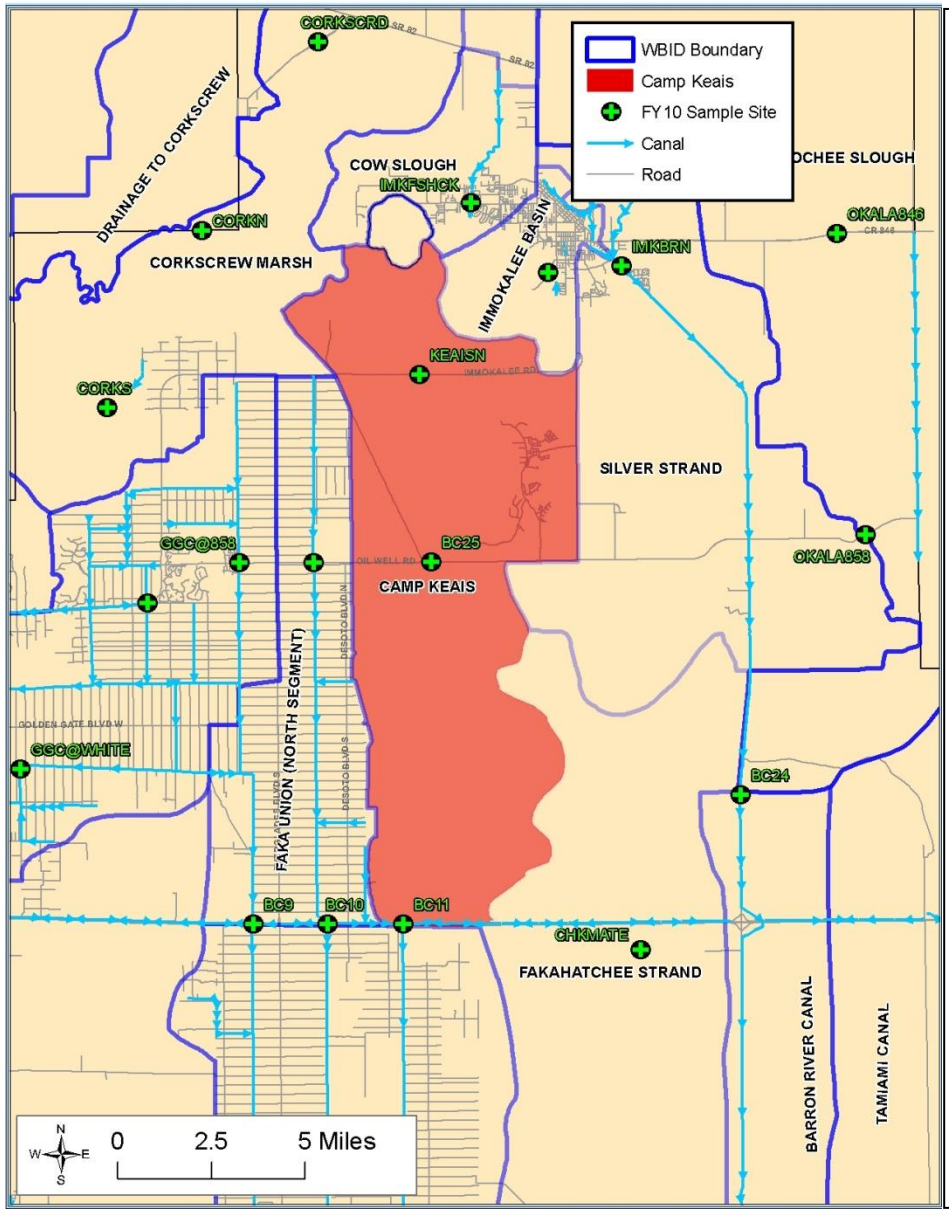
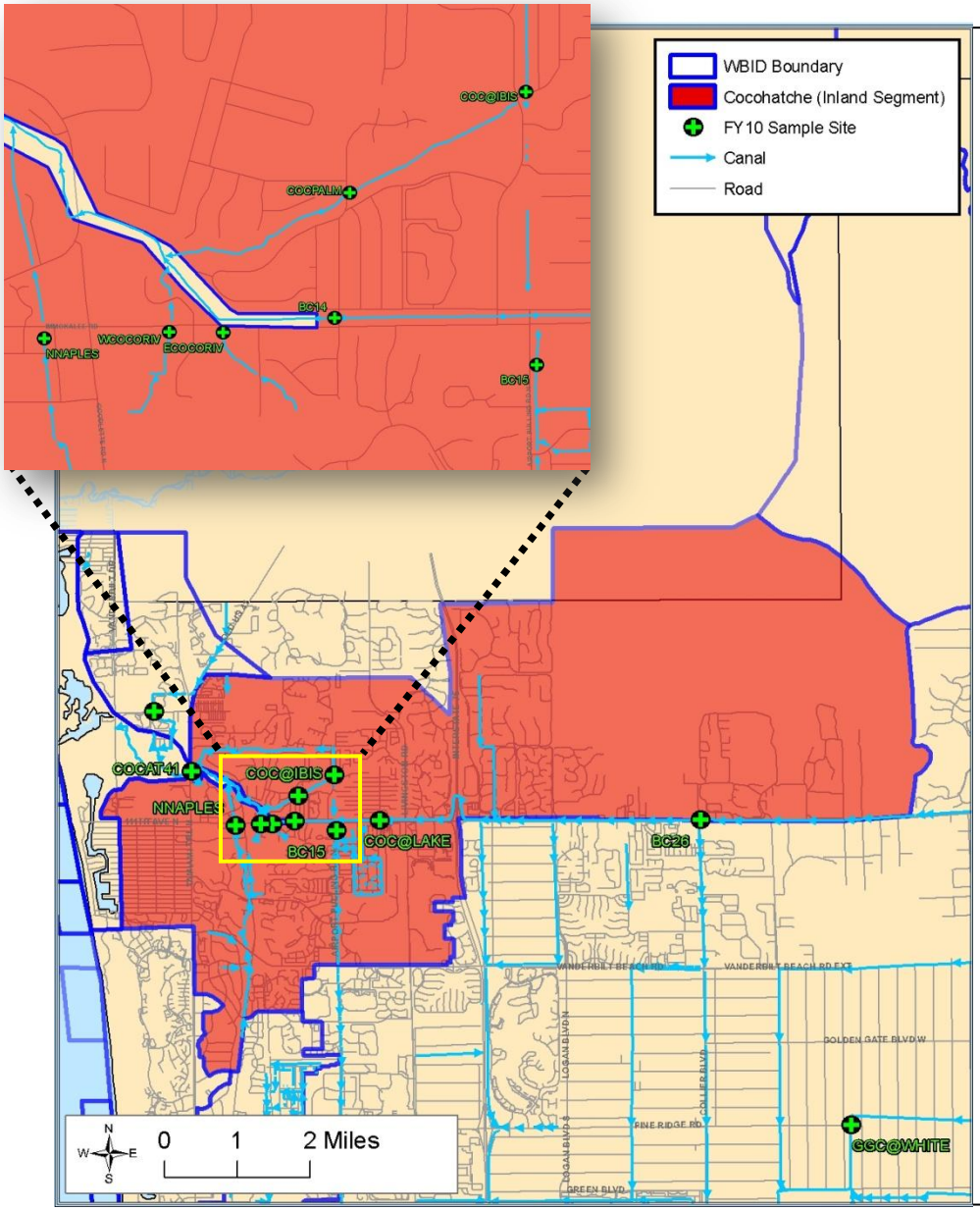


Figure 3

CAMP KEAIS

- Size: 55,709 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Immokalee Basin, Lake Trafford, Cow Slough
  - Drains to: Faka Union (South Segment), Fakahatchee Strand
- Landuse: Wetlands (48%), Agriculture (39%)
- FDEP Impairments: None
- Long Term Trends: organic nitrogen, total nitrogen, phosphorus, and turbidity levels are increasing
- # of FY10 Exceedances: 103
- Summary Statistics: Appendix F
- Factoids: Contains the City of Ave Maria



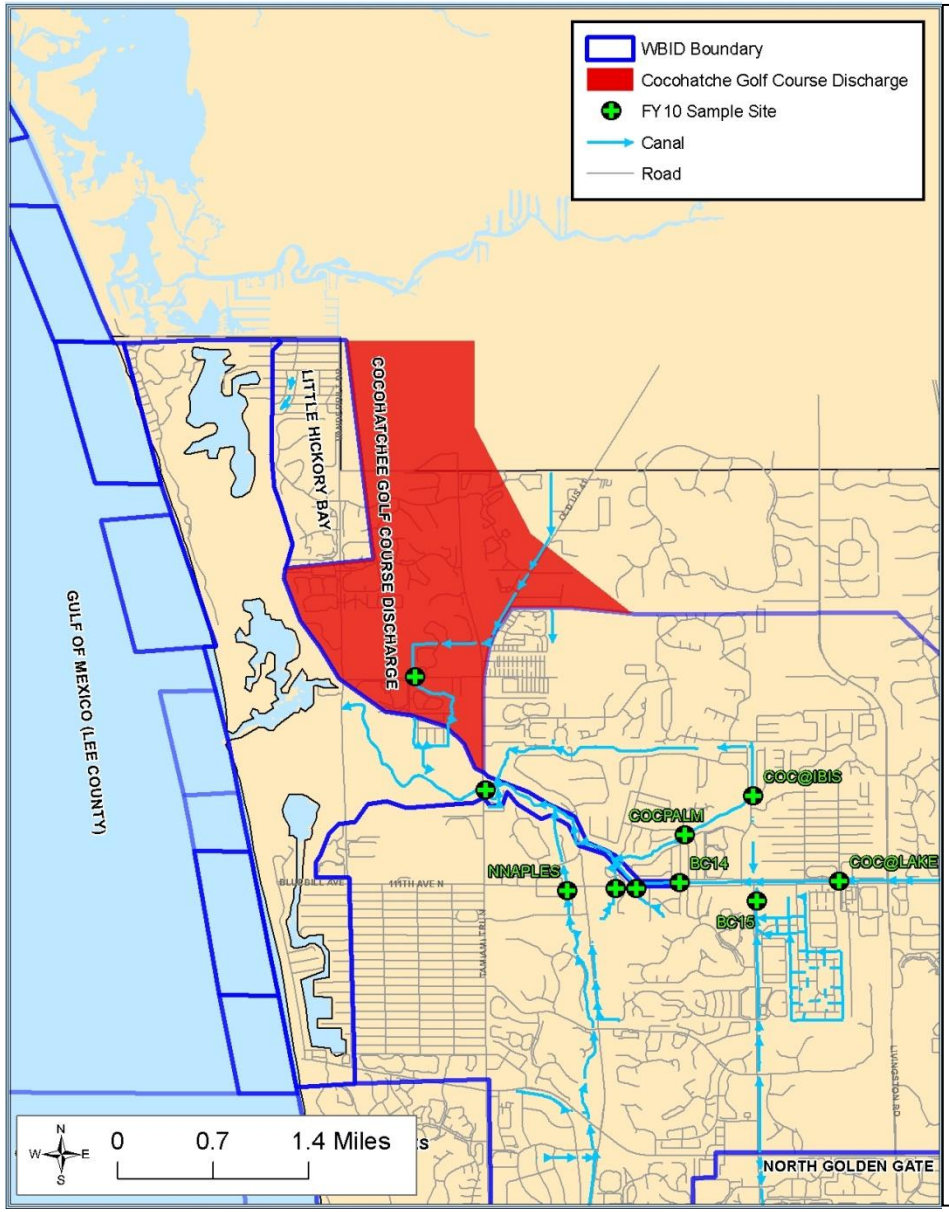
COCOHATCHEE (INLAND SEGMENT)

- Size 25,837 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Corkscrew Marsh, Cocohatchee Golf Course Drainage, Drainage to Corkscrew, North Golden Gate, Lake Trafford, Cow Slough
  - Drains to: Cocohatchee River
- Landuse: Urban (48%), Wetlands (34%)

Urban Land Use	% of total Urban
Fixed Single Family Units	39%
Golf Course	24%
Multiple Dwelling Units, Low Rise	9%

- FDEP Impairments: Dissolved Oxygen
- Long Term Trends:
  - pH levels are increasing
  - Total nitrogen, Kjeldahl nitrogen and copper levels are decreasing
- # of FY10 Exceedances: 331
- Summary Statistics: Appendix F

Figure 4



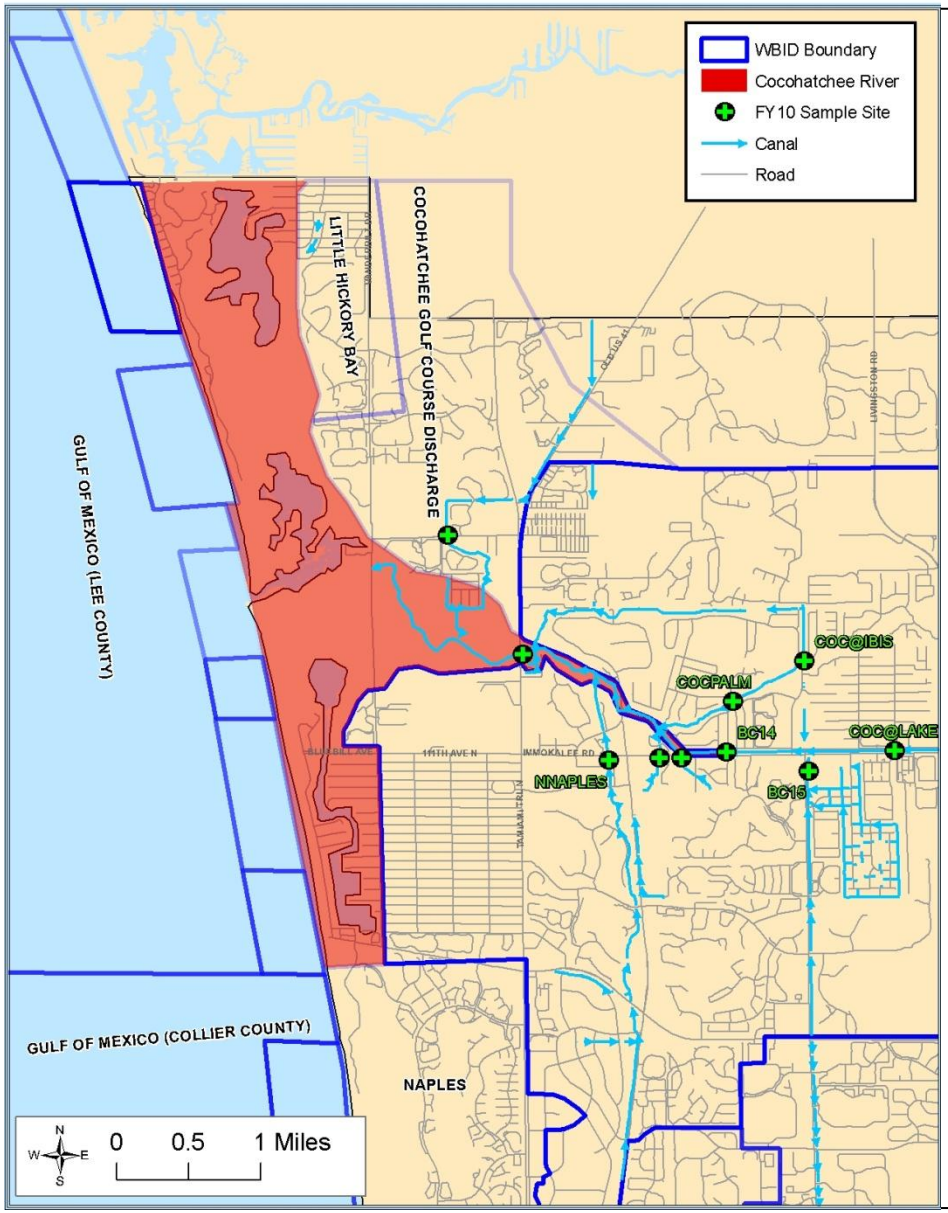
COCOHATCHEE GOLF COURSE DISCHARGE

- Size: 2,155 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Oak Creek (partially in Lee County), Little Hickory Bay
  - Drains to: Cocohatchee (Inland Segment)
- Landuse: Urban (56%), Wetlands (24%)

Urban Land Use	% of total Urban
Fixed Single Family Units	35%
Multiple Dwelling Units, Low Rise	21%
Commercial and Services	15%
Multiple Dwelling Units, High Rise	10%
Golf Course	9%

- FDEP Impairments: None
- Long Term Trends: Not enough data to evaluate
- # of FY10 Exceedances: 31
- Summary Statistics: Appendix F

Figure 5



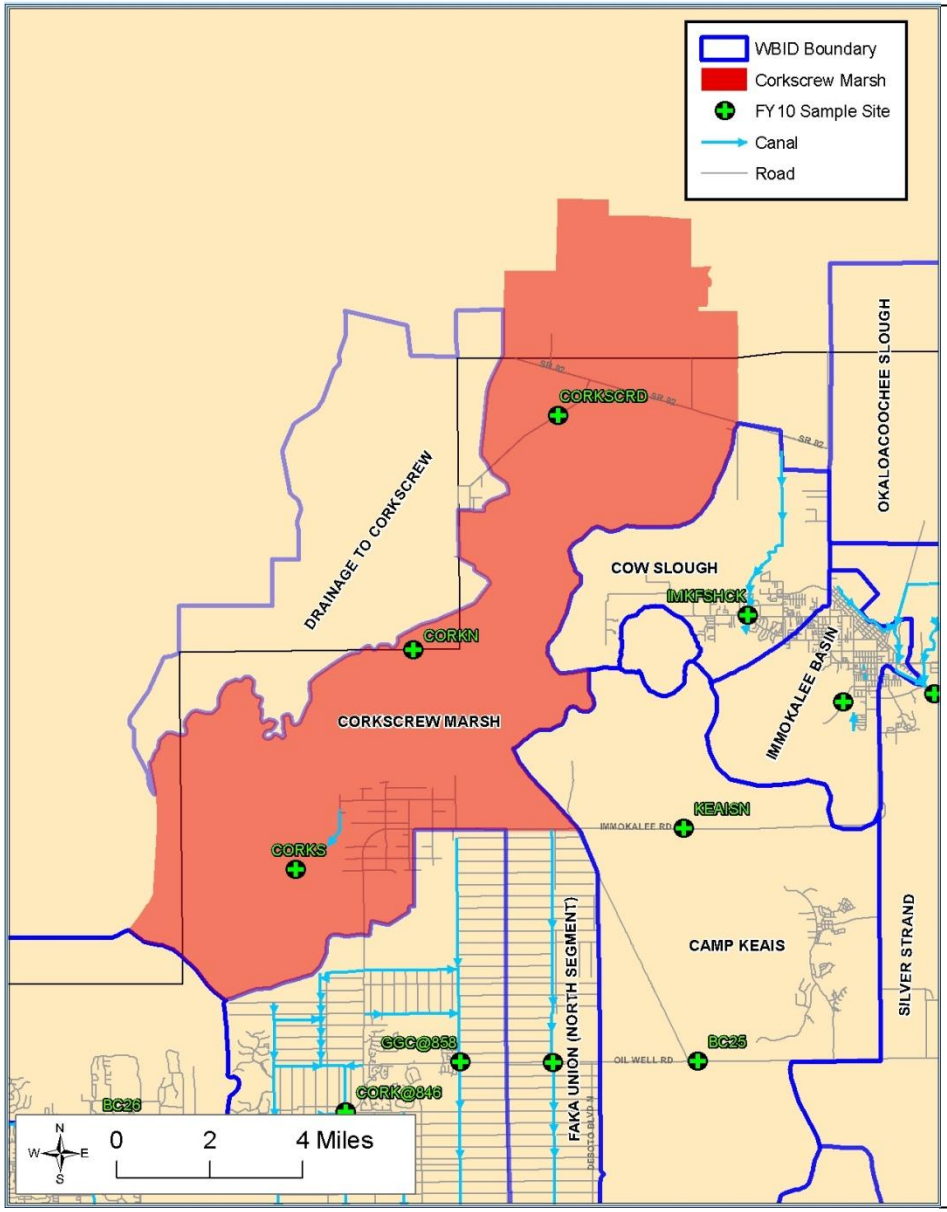
COCOHATCHEE RIVER

- Size: 3,087 acres
- Classification (FAC 62-302): Class II
- Drainage:
  - Receives from: Cocohatchee (Inland Segment), Little Hickory Bay, Oak Creek (partially in Lee County), Corkscrew Marsh, Cocohatchee Golf Course Drainage, Drainage to Corkscrew, North Golden Gate, Lake Trafford, Cow Slough
  - Drains to: Gulf of Mexico
- Landuse: Wetlands (40%), Water (32%), Urban (23%)

Urban Land Use	% of total Urban
Fixed Single Family Units	50%
Multiple Dwelling Units, High Rise	19%
Commercial and Services	14%

- FDEP Impairments: Fecal Coliform, Iron
- Long Term Trends:
  - Color, turbidity, organic nitrogen and total nitrogen levels are decreasing
  - Salinity, arsenic, and conductivity levels are increasing
- # of FY10 Exceedances: 26
- Summary Statistics: Appendix F
- Factoids:
  - Total Maximum Daily Load established for Fecal Coliform
  - Outstanding Florida Water Body
  - Contains Delnor-Wiggins State Park

Figure 6



CORKSCREW MARSH

- Size: 52,916 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Drainage to Corkscrew, Lake Trafford, Cow Slough
  - Drains to: Estero Bay, Estero Bay Drainage, Cocohatchee (Inland Segment), North Golden Gate
- Landuse: Wetlands (60%), Agriculture (30%)
- FDEP Impairments: Dissolved oxygen
- Long Term Trends: Conductivity and salinity levels are increasing
- # of FY10 Exceedances: 34
- Summary Statistics: Appendix F
- Factoids: Majority of basin is held in Corkscrew Swamp Sanctuary

Figure 7

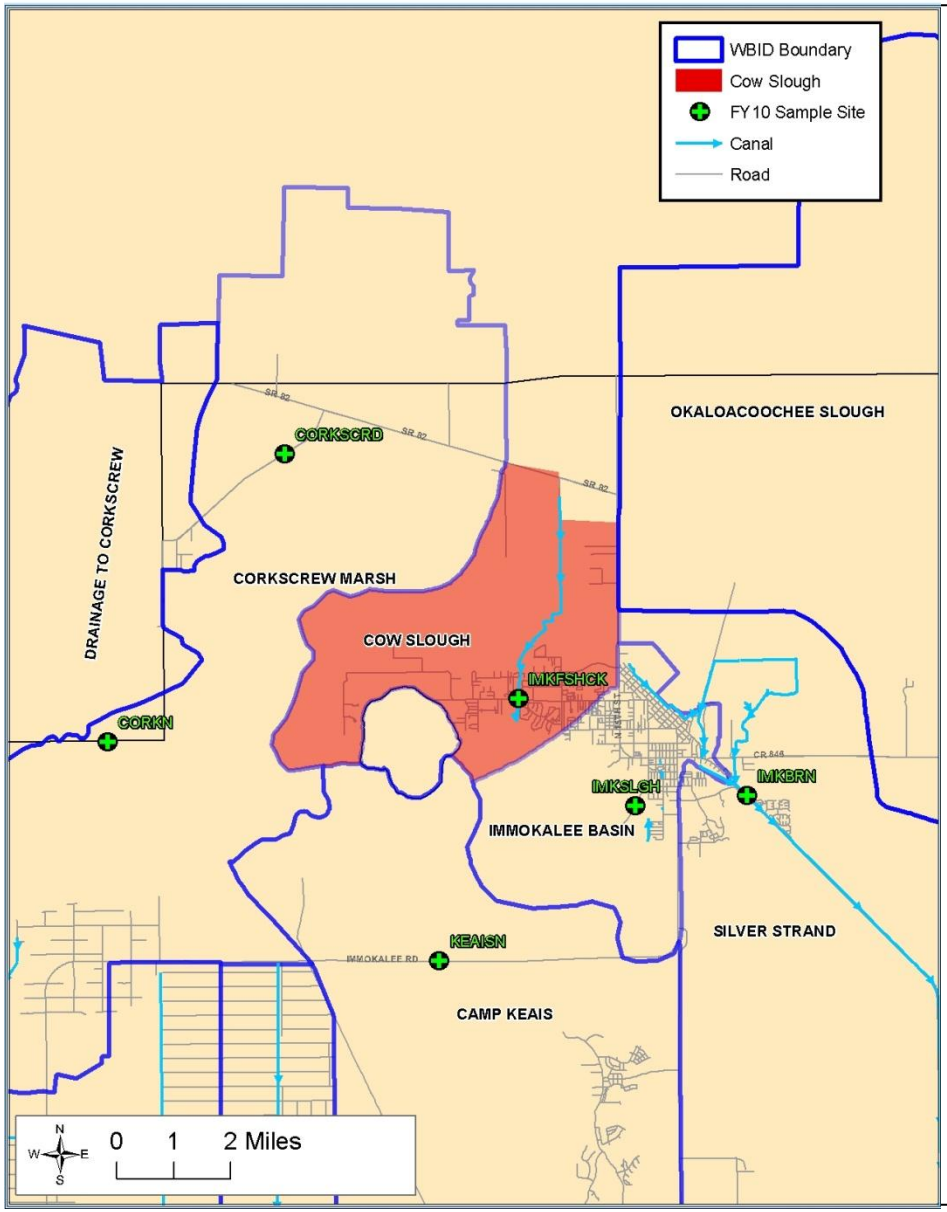


Figure 8

COW SLOUGH

- Size: 11,778 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Lake Trafford
  - Drains to: Lake Trafford, Camp Keais, Corkscrew Marsh, Immokalee Basin
- Landuse: Agriculture (55%), Wetlands (25%)

Agriculture Land Use	% of total Ag
Citrus Groves	41%
Improved Pastures	29%
Woodland Pastures	13%

- FDEP Impairments: None
- Long Term Trends: Not enough data to evaluate
- # of FY10 Exceedances: 47
- Summary Statistics: Appendix F

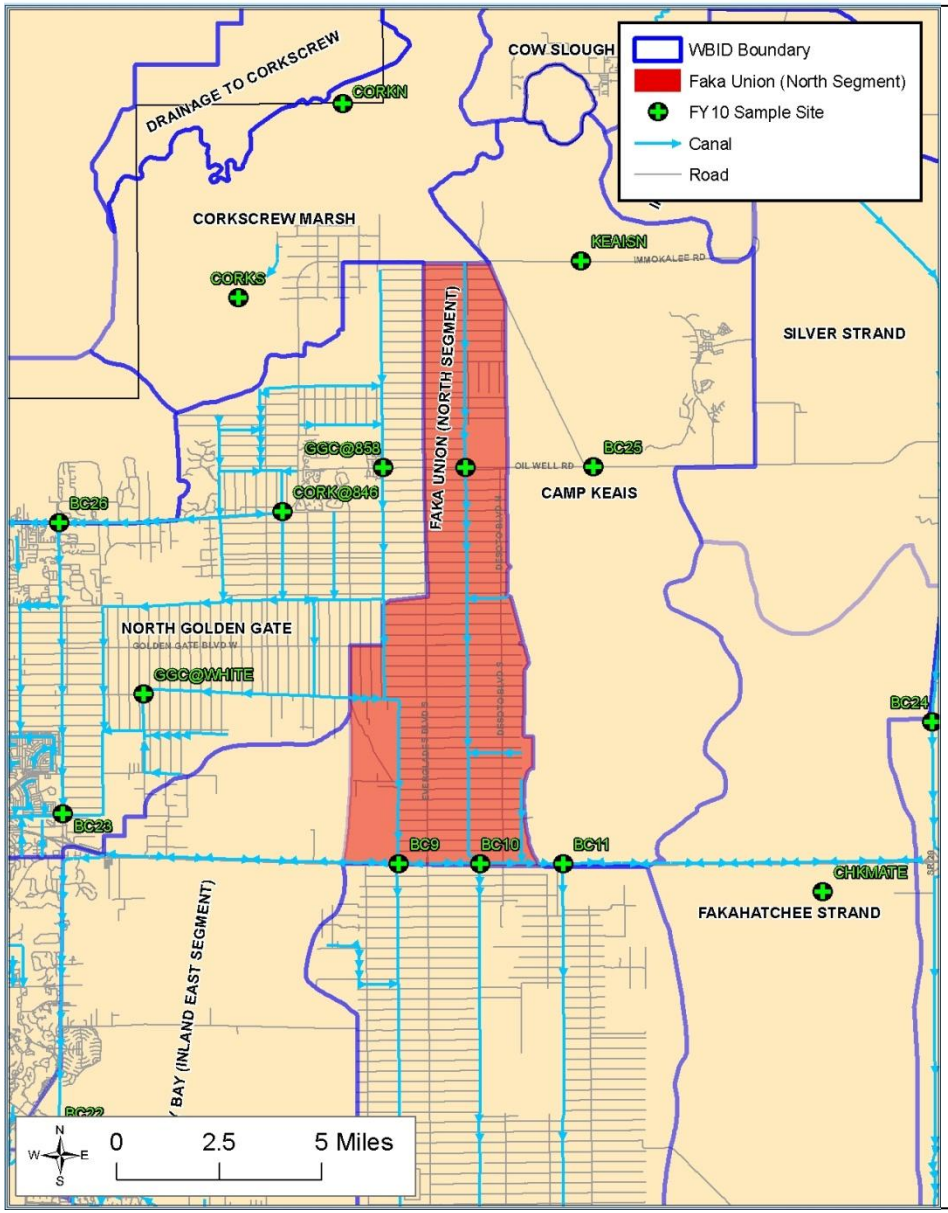


Figure 9

FAKA UNION (NORTH SEGMENT)

- Size: 27,450 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: North Golden Gate, Camp Keais, Immokalee Basin, Lake Trafford, Cow Slough
  - Drains to: Faka Union (South Segment), Rookery Bay (Inland East Segment)
- Landuse: Wetlands (39%), Urban (33%), Upland Forested (23%)

Urban Land Use	% of total Urban
Rural Residential	68%
Fixed Single Family Units	19%
Inactive Land with Street Pattern	12%

- FDEP Impairments: None
- Long Term Trends:
  - Salinity, conductivity, color, copper, chlorophyll, inorganic nitrogen, and turbidity levels are decreasing
  - pH levels are increasing
- # of FY10 Exceedances: 40
- Summary Statistics: Appendix F

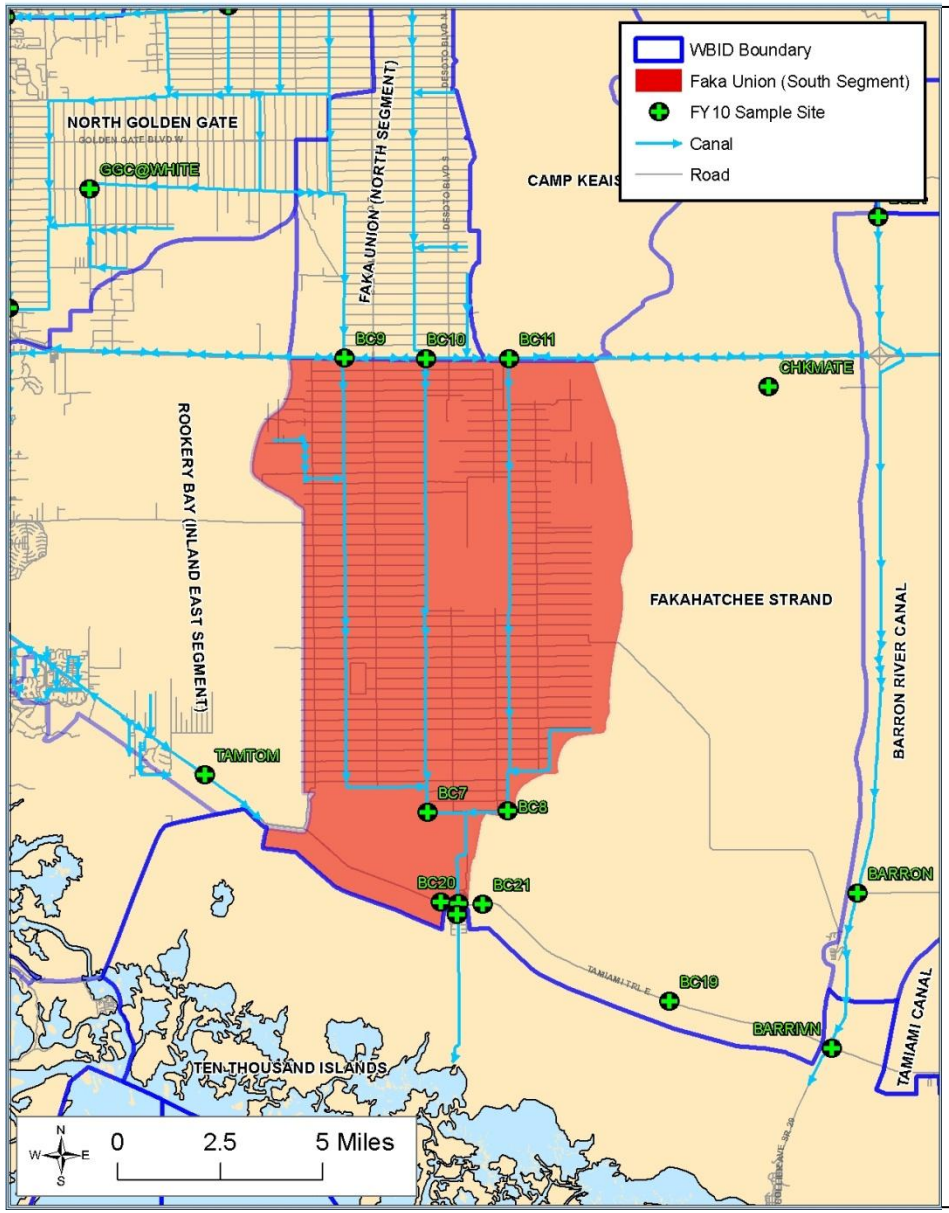


Figure 10

FAKA UNION (SOUTH SEGMENT)

- Size: 59,453 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Faka Union (North Segment), Rookery Bay (Inland East Segment), Fakahatchee Strand, Camp Keais, North Golden Gate, Immokalee Basin, Lake Trafford, Cow Slough, Okaloacoochee Slough, Silver Strand
  - Drains to: Ten Thousand Islands
- Landuse: Wetlands (95%)
- FDEP Impairments: None
- Long Term Trends:
  - Copper levels are decreasing
  - Conductivity, salinity, organic nitrogen, total nitrogen, phosphorus, and pH levels are increasing.
- # of FY10 Exceedances: 48
- Summary Statistics: Appendix F
- Factoids:
  - Wholly held in Picayune Strand State Forest
  - Contains Collier County's only Comprehensive Everglades Restoration Plan Project—Picayune Strand Restoration Project

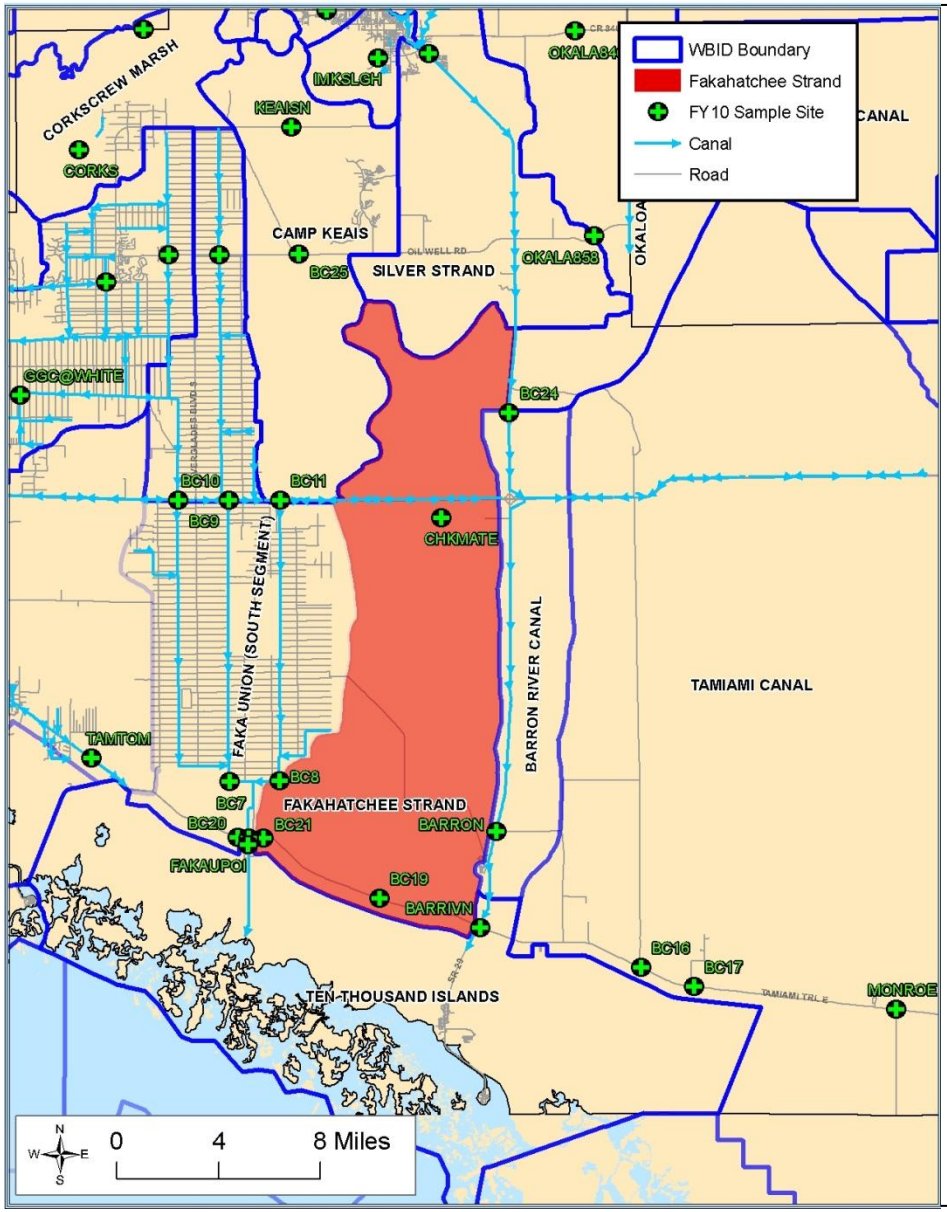


Figure 11

FAKAHATCHEE STRAND

- Size: 94,502 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Okaloacoochee Slough, Camp Keais, Silver Strand, Lake Trafford, Immokalee Basin, Cow Slough
  - Drains to: Ten Thousand Islands
- Landuse: Wetlands (98%)
- FDEP Impairments: Fecal coliform, dissolved oxygen
- Long Term Trends: Arsenic, color, conductivity, salinity, organic nitrogen, total nitrogen and phosphorus levels are increasing
- # of FY10 Exceedances: 64
- Summary Statistics: Appendix F
- Factoids:
  - Contains Fakahatchee Strand State Preserve and a portion of the Florida Panther National Wildlife Refuge

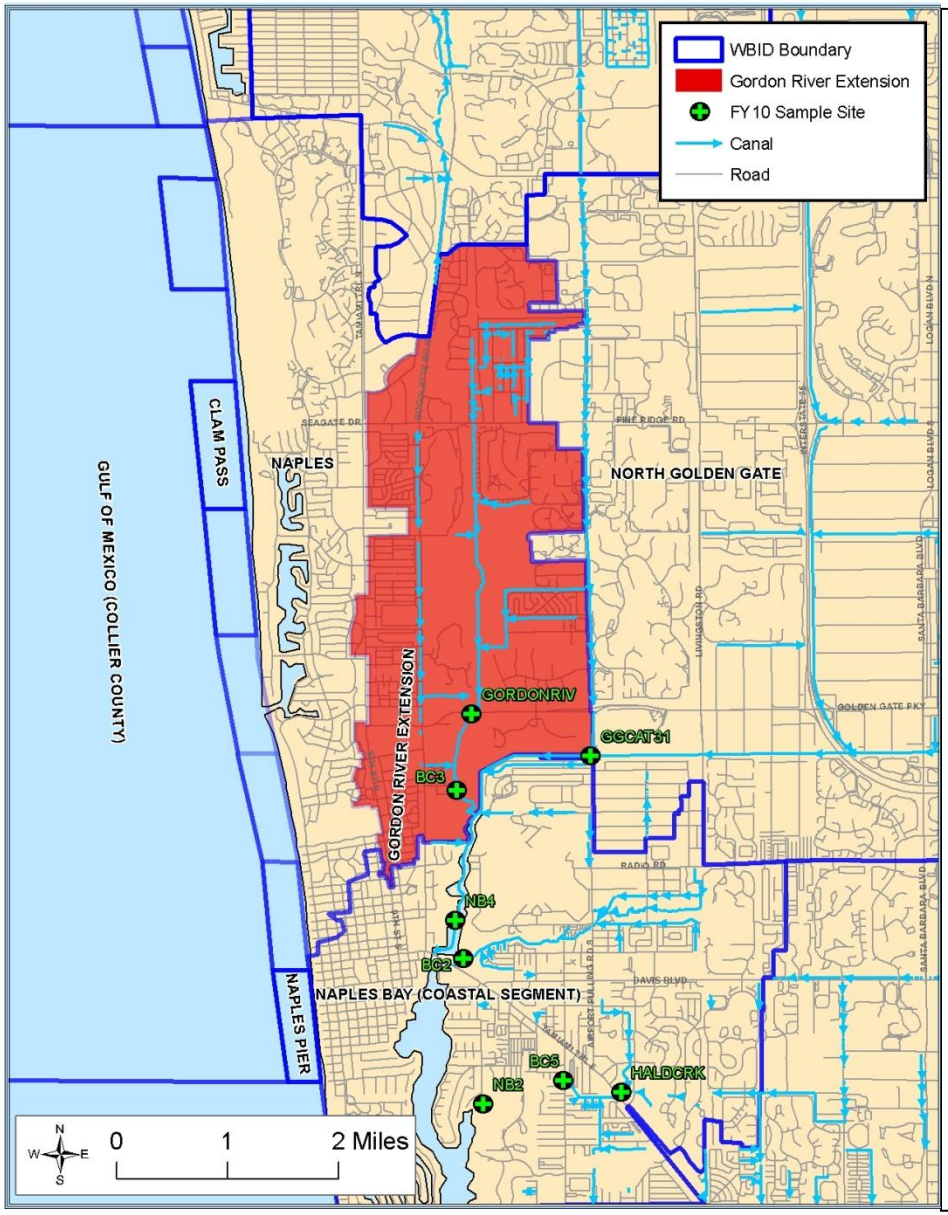


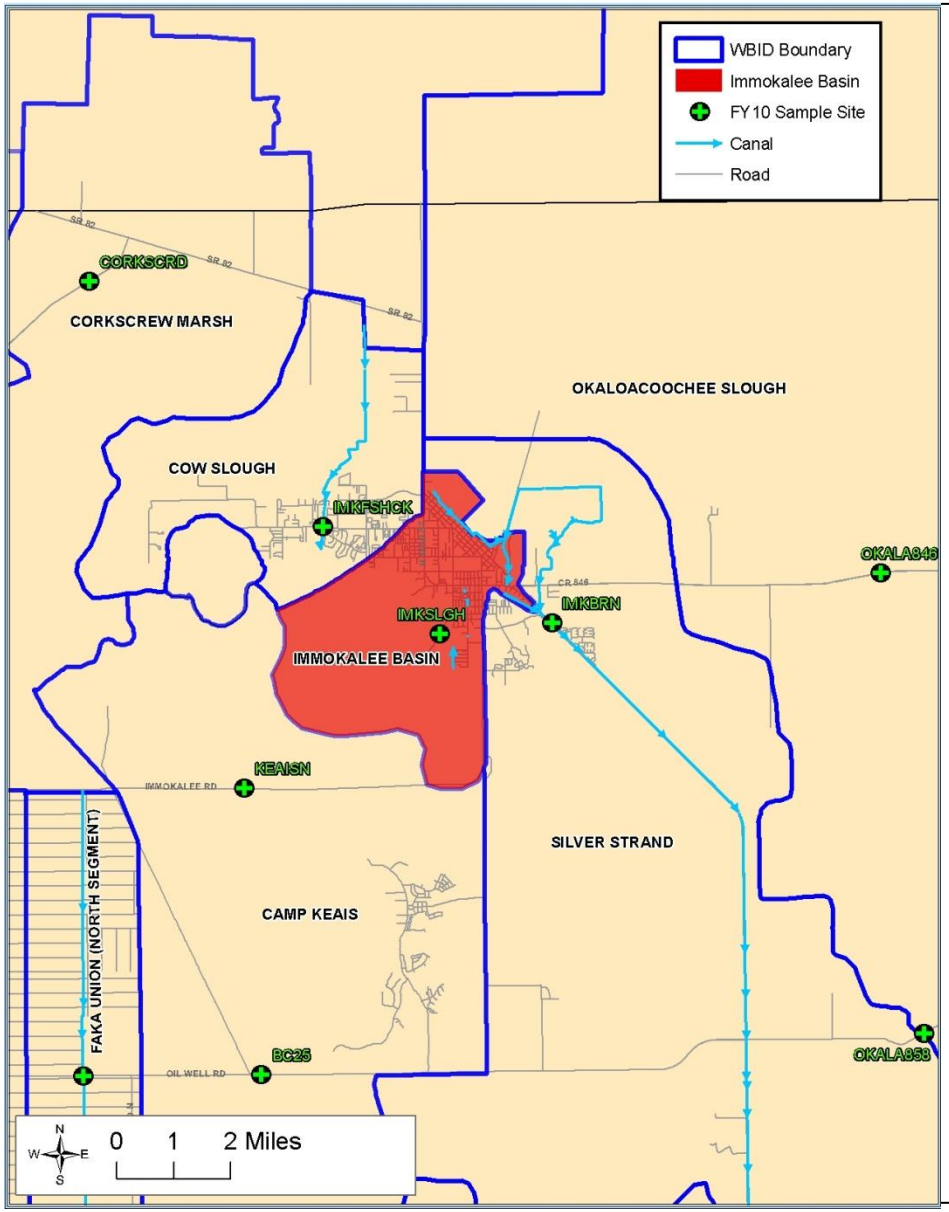
Figure 12

GORDON RIVER EXTENSION

- Size: 5,412 acres
- Classification (FAC 62-302): Class II (tidal) and Class III (non-tidal)
- Drainage:
  - Receives from: None
  - Drains to: Naples Bay (Coastal Segment)
- Landuse: Urban (79%), Wetland (7%), Upland Forest (7%), Water (5%)

Urban Land Use	% of total Urban
Fixed Single Family Units	35%
Golf Course	23%
Other Light Industry	9%

- FDEP Impairments: Dissolved oxygen
- Long Term Trends:
  - pH levels are decreasing
  - salinity and turbidity levels are increasing
- # of FY10 Exceedances: 97
- Summary Statistics: Appendix F
- Factoids:
  - Total Maximum Daily Load established for dissolved oxygen
  - Contains Freedom Park (Gordon River Water Quality Park)



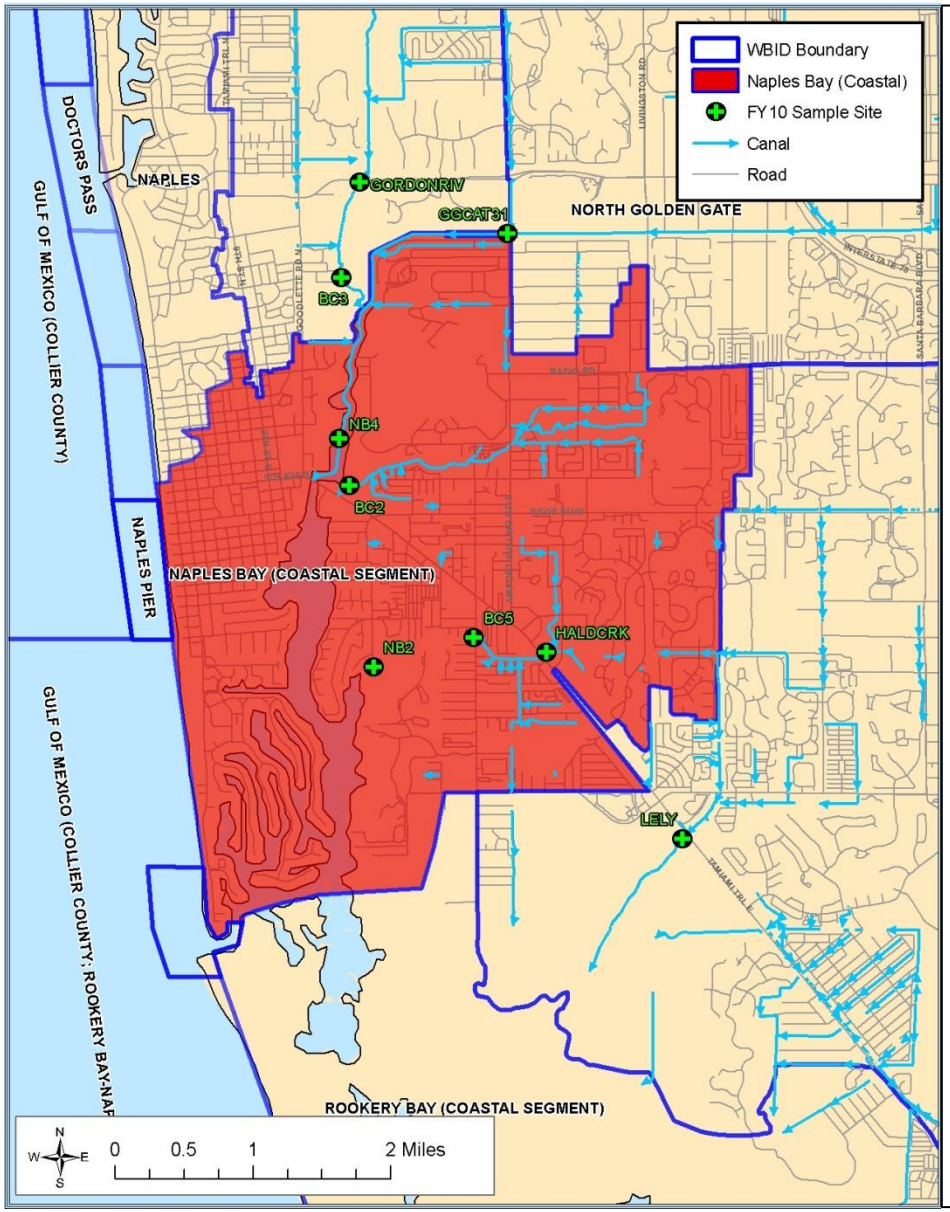
IMMOKALEE BASIN

- Size: 8,745 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Silver Strand
  - Drains to: Camp Keais, Silver Strand, Cow Slough
- Landuse: Agriculture (48%), Wetlands (22%), Urban (21%)

Agriculture Land Use	% of total Ag
Row Crops	57%
Citrus Groves	20%
Field Crops	7%

- FDEP Impairments: Dissolved oxygen
- Long Term Trends: Arsenic levels are decreasing
- # of FY10 Exceedances: 30
- Summary Statistics: Appendix F

Figure 13



NAPLES BAY (COASTAL SEGMENT)

- Size: 9,313 acres
- Classification (FAC 62-302): Class II (tidal) and Class III (non-tidal)
- Drainage:
  - Receives from: Gordon River Extension, North Golden Gate, Rookery Bay (Inland West Segment)
  - Drains to: Rookery Bay (Inland West Segment), Gulf of Mexico
- Landuse: Urban (69%), Water (15%)

Urban Land Use	% of total Urban
Fixed Single Family Units	44%
Multiple Dwelling Units, Low Rise	16%
Commercial and Services	15%
Golf Course	7%

- FDEP Impairments: Copper, fecal coliform, iron, dissolved oxygen
- Long Term Trends:
  - Dissolved oxygen, turbidity and total phosphorus levels are decreasing.
  - Salinity, conductivity and pH levels are increasing.
- # of FY10 Exceedances: 98
- Summary Statistics: Appendix F
- Factoids:
  - Naples Bay is SWIM (Surface Water Improvement and Management) water body (SFWMD, 2007)
  - NOAA Mussel Watch Program found oysters in Naples Bay to contain the highest levels of copper in the state of Florida (Kimbrough, et.al, 2008)

Figure 14

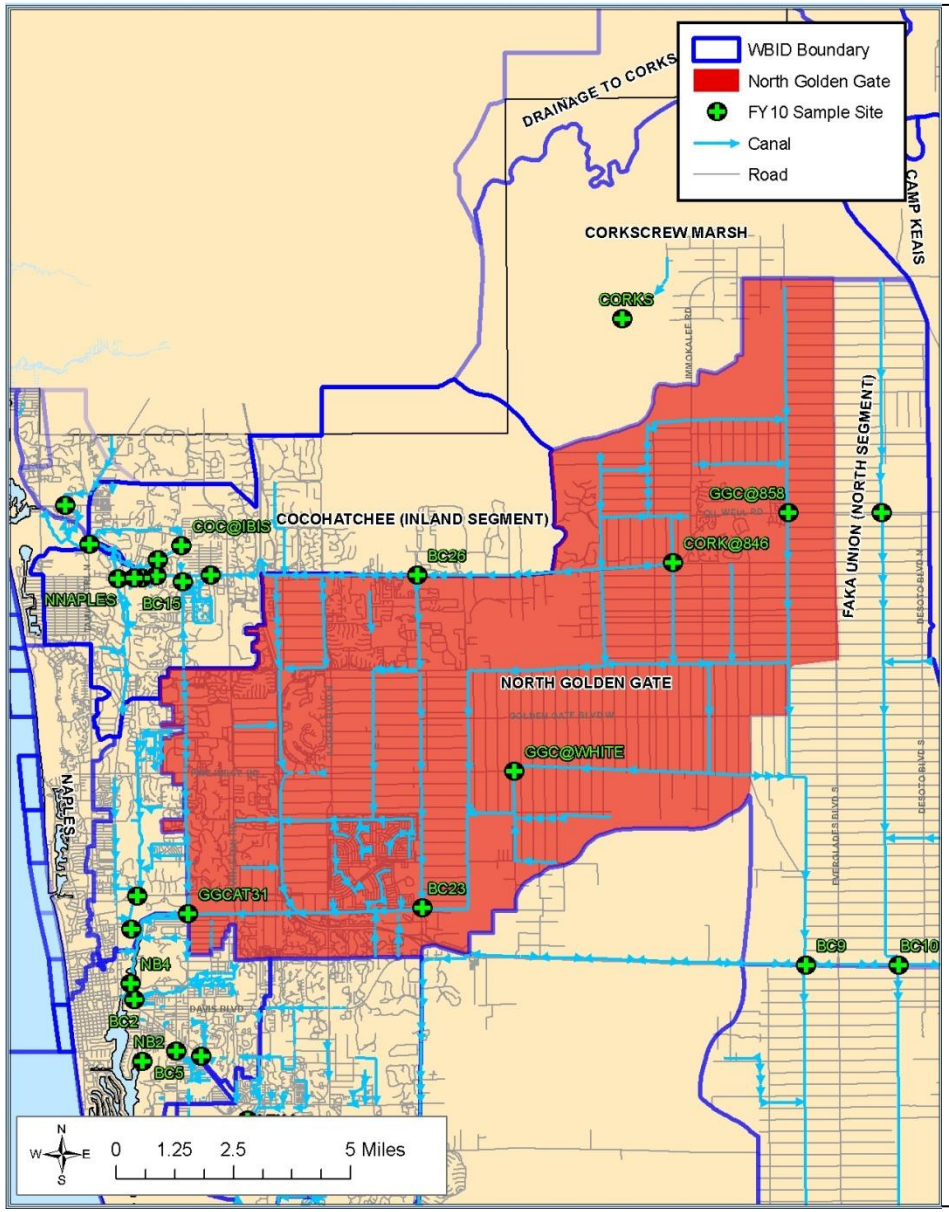


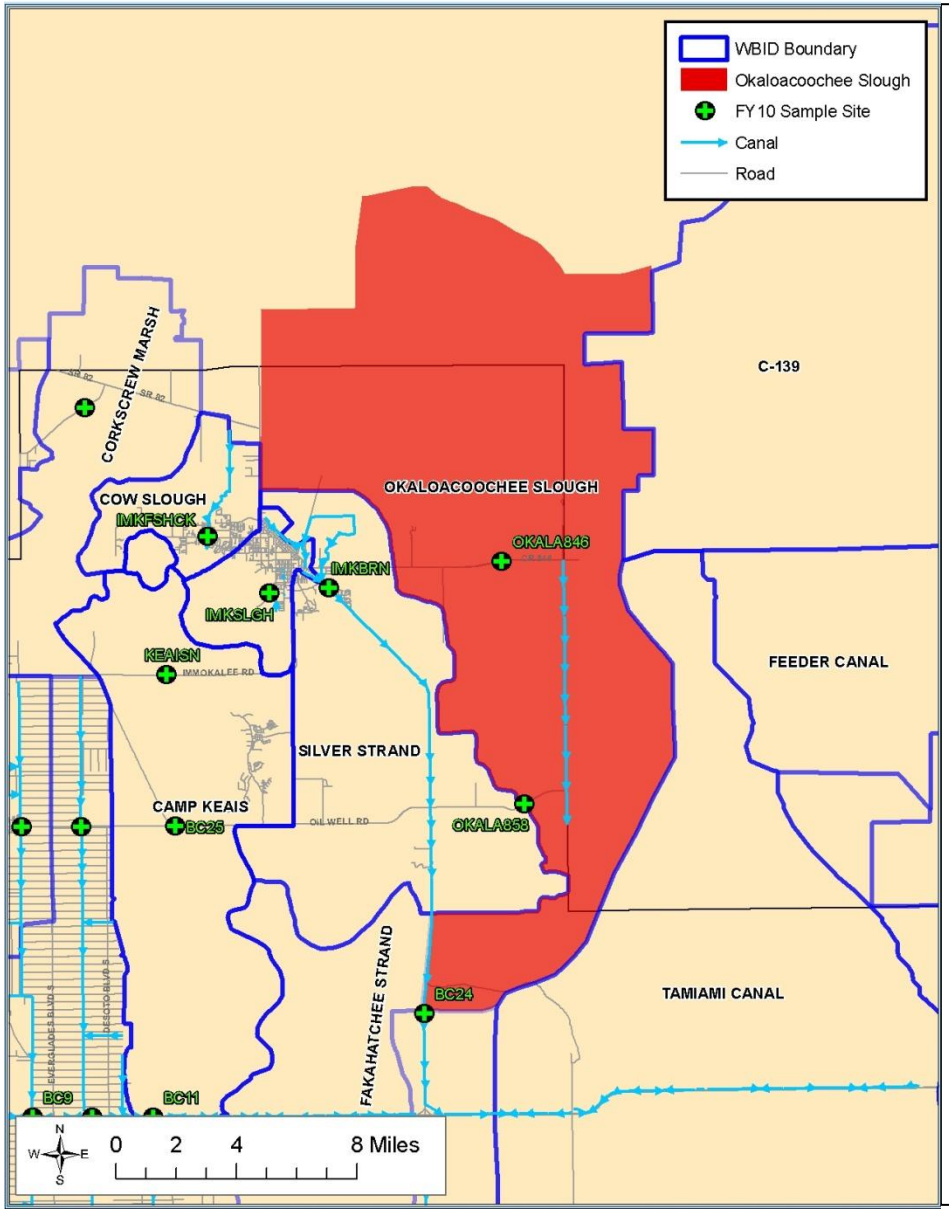
Figure 15

NORTH GOLDEN GATE

- Size: 72,785 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Corkscrew Marsh, Cocohatchee (Inland Segment), Drainage to Corkscrew, Lake Trafford, Cow Slough
  - Drains to: Cocohatchee (Inland Segment), Naples Bay (Coastal Segment)
- Landuse: Urban (57%), Wetlands (23%), Upland Non-forested (7%)

Urban Land Use	% of total Urban
Fixed Single Family Units	54%
Rural Residential	17%
Golf Course	6%
Multiple Dwelling Units, Low Rise	6%

- FDEP Impairments: Iron, dissolved oxygen
- Long Term Trends:
  - Color and copper levels are decreasing
  - Total suspended solids levels are increasing
- # of FY10 Exceedances: 134
- Summary Statistics: Appendix F



OKALOACOOCHEE SLOUGH

- Size: 125,992 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: None
  - Drains to: Barron River Canal, Fakahatchee Strand, Silver Strand, Tamiami Canal
- Landuse: Wetlands (45%), Agriculture (42%), Upland Non-forested (28%)

Agriculture Land Use	% of total Ag
Improved Pastures	37%
Citrus Groves	26%
Unimproved Pastures	14%
Row Crops	11%
Woodland Pastures	10%

- FDEP Impairments: Dissolved oxygen
- Long Term Trends: Color, organic nitrogen, total nitrogen and turbidity levels are increasing
- # of FY10 Exceedances: 60
- Summary Statistics: Appendix F

Figure 16

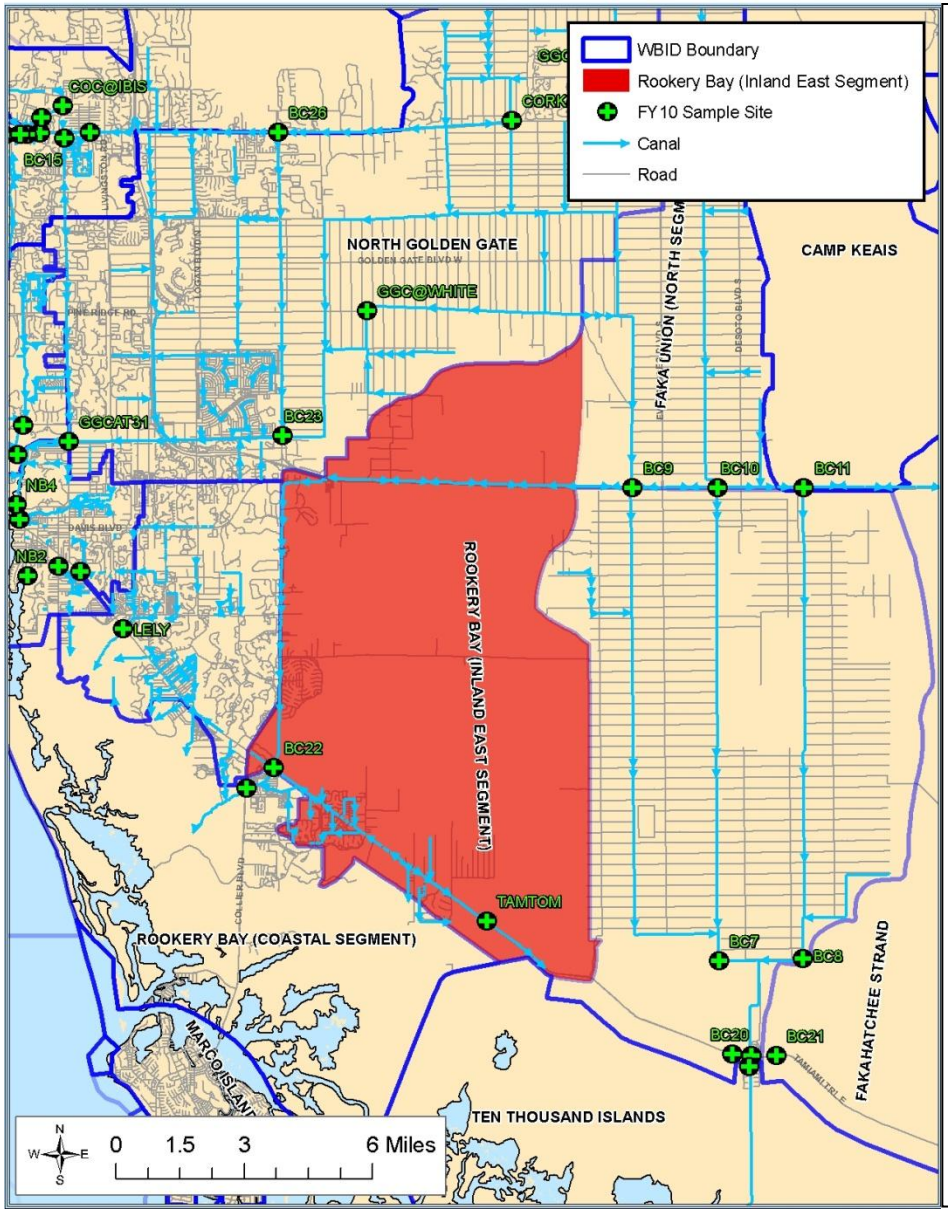


Figure 17

ROOKERY BAY (INLAND EAST SEGMENT)

- Size: 53,993 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Faka Union (North Segment)
  - Drains to: Rookery Bay (Coastal Segment)
- Landuse: Wetlands (64%), Agriculture (15%), Upland Non-forested (12%)

Agriculture Land Use	% of total Ag
Row Crops	75%
Fallow Cropland	16%
Ornamentals	3%

- FDEP Impairments: None
- Long Term Trends:
  - Color levels are decreasing
  - pH, turbidity and total phosphorus levels are increasing
- # of FY10 Exceedances: 18
- Summary Statistics: Appendix F
- Factoids: Most of the basin is largely held by Picayune Strand State Forest and contains North Belle Meade (north of I-75)

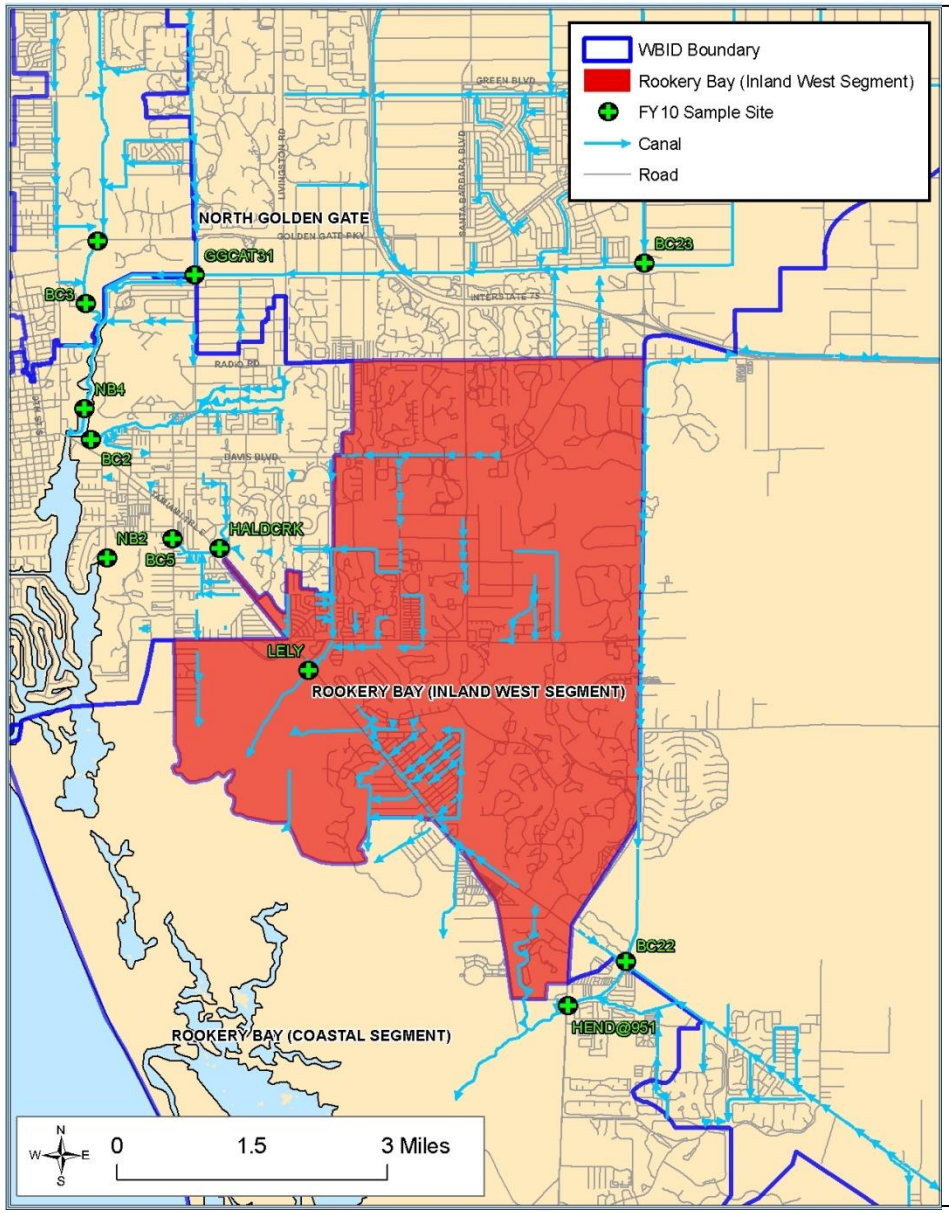


Figure 18

ROOKERY BAY (INLAND WEST SEGMENT)

- Size: 15,055 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: None
  - Drains to: Naples Bay (Coastal Segment), Rookery Bay (Coastal Segment)
- Landuse: Urban (47%), Wetlands (33%), Upland Non-forested (8%)

Urban Land Use	% of total Urban
Fixed Single Family Units	33%
Golf Course	26%
Multiple Dwelling Units, Low Rise	18%

- FDEP Impairments: None
- Long Term Trends:
  - Color, turbidity, inorganic nitrogen, organic nitrogen and total nitrogen levels are decreasing.
  - pH and salinity levels are increasing
- # of FY10 Exceedances: 21
- Summary Statistics: Appendix F

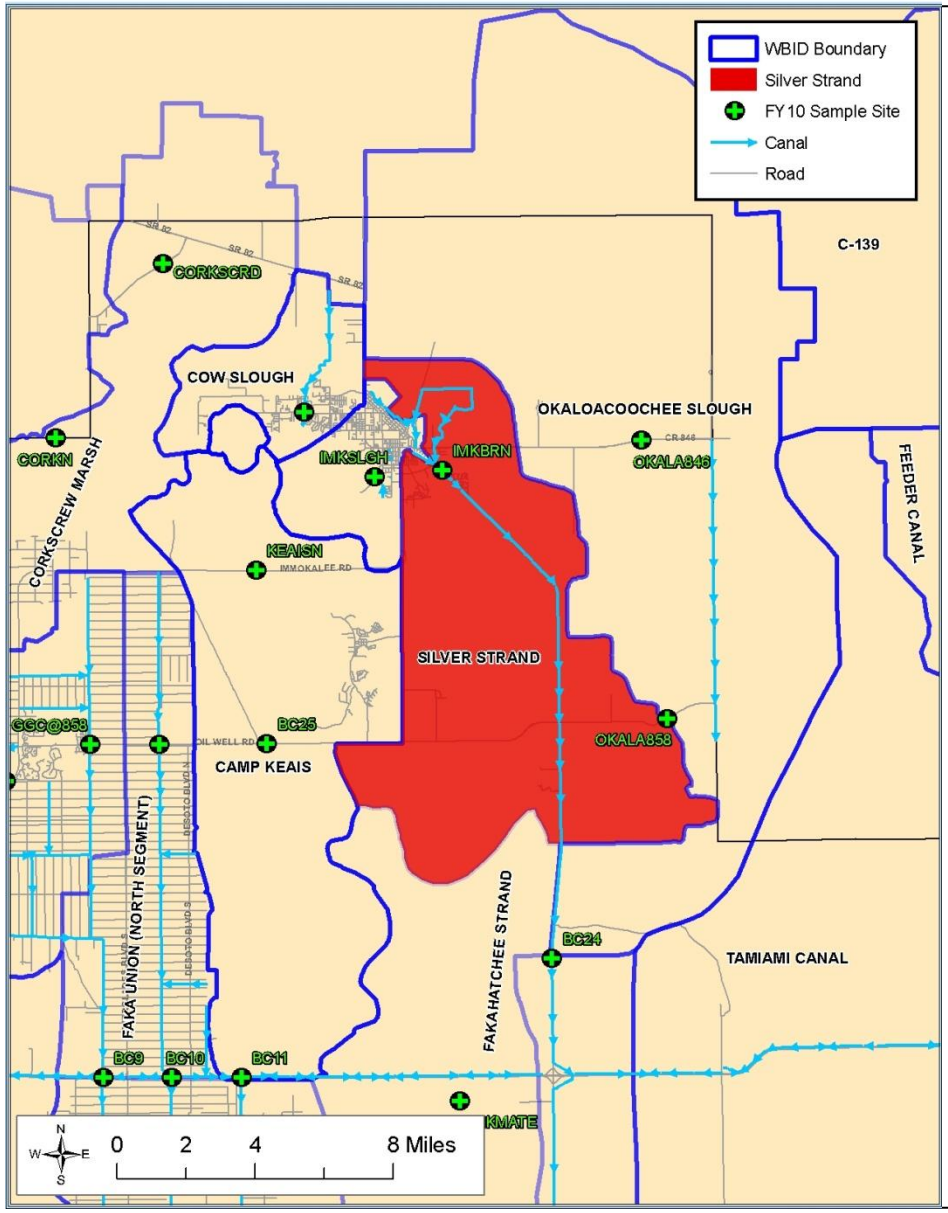


Figure 19

SILVER STRAND

- Size: 53,835 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Immokalee Basin, Okaloacoochee Slough
- Drains to: Okaloacoochee Slough, Fakahatchee Strand
- Landuse: Agriculture (65%), Wetlands (24%), Upland Non-forested (6%)

Agriculture Land Use	% of total Ag
Citrus Groves	47%
Improved Pastures	21%
Row Crops	14%
Woodland Pastures	12%
Unimproved Pastures	6%

- FDEP Impairments: Dissolved oxygen
- Long Term Trends: Conductivity and salinity levels are increasing
- # of FY10 Exceedances: 49
- Summary Statistics: Appendix F

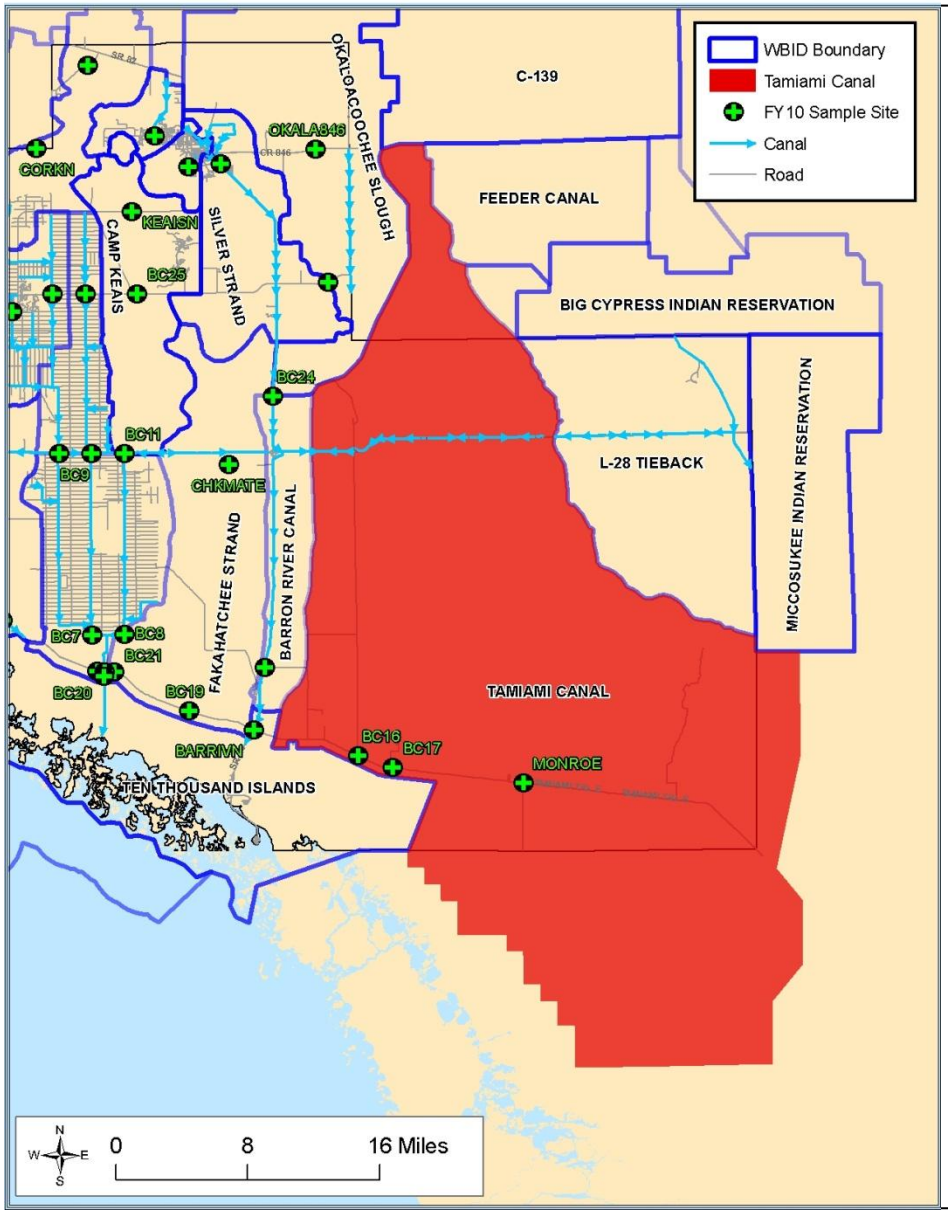
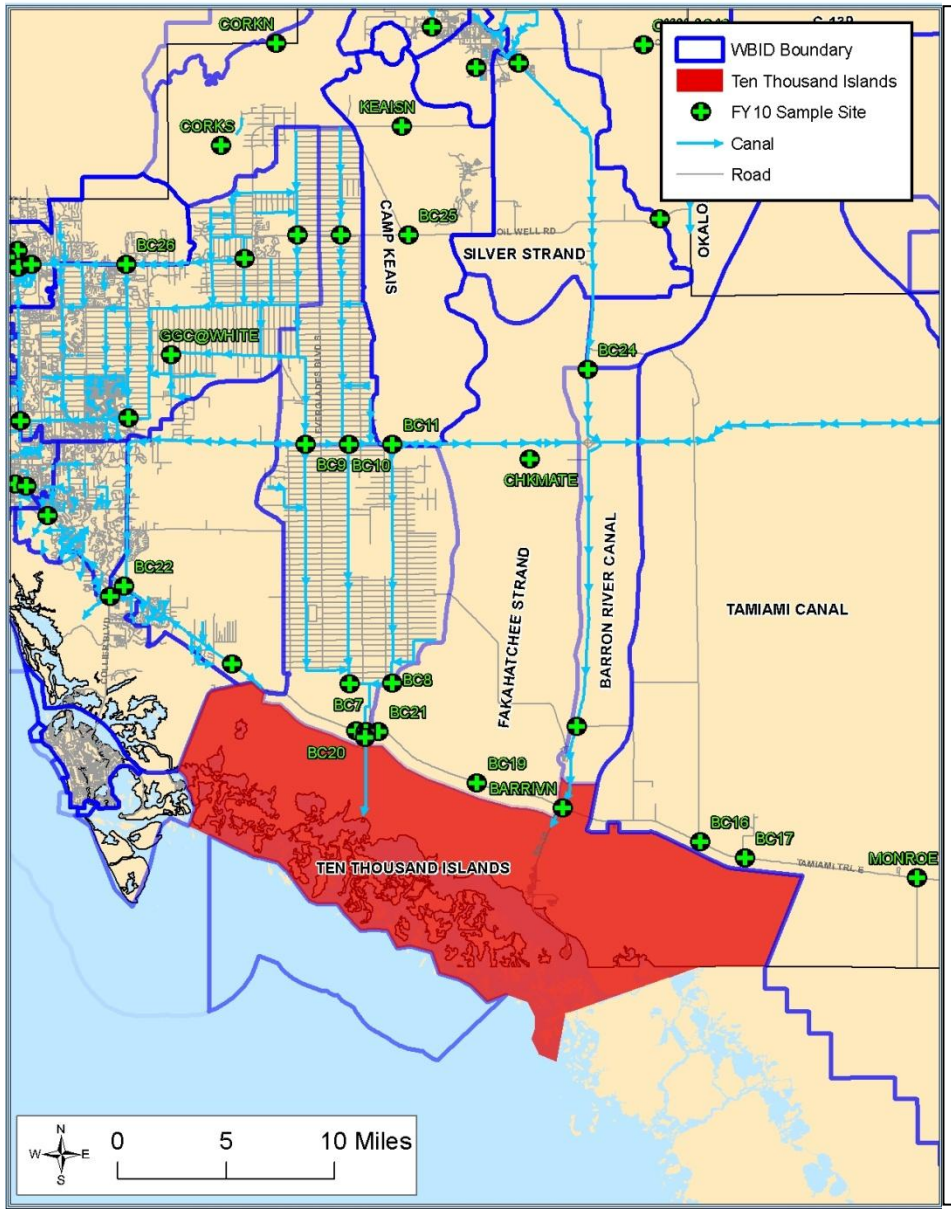


Figure 20

TAMIAMI CANAL

- Size 588,755 acres
- Classification (FAC 62-302): Class III Fresh
- Drainage:
  - Receives from: Barron River Canal, L-28 Tieback, L-28 Gap (Upper Segment), Okaloacoochee Slough
  - Drains to: Ten Thousand Islands
- Landuse: Wetlands (79%), Upland Non-forested (7%)
- FDEP Impairments: None
- Long Term Trends:
  - Arsenic, copper and color levels are decreasing
  - Biochemical oxygen demand, salinity, organic nitrogen and total phosphorus levels are increasing
- # of FY10 Exceedances: 72
- Summary Statistics: Appendix F
- Factoids: Majority of basin is held in Big Cypress National Preserve



TEN THOUSAND ISLANDS

- Size: 127,248 acres
- Classification (FAC 62-302): Class II
- Drainage:
  - Receives from: Faka Union (South Segment), Fakahatchee Strand, Barron River Canal, Tamiami Canal
  - Drains to: Gulf of Mexico
- Landuse: Wetlands (73%), Water (25%)
- FDEP Impairments: None
- Long Term Trends:
  - Dissolved oxygen levels are decreasing
  - Organic nitrogen, total nitrogen and phosphorus levels are increasing
- # of FY10 Exceedances: 28
- Summary Statistics: Appendix F
- Factoids: Mostly held in Ten Thousand Islands National Wildlife Refuge and Everglades National Park.

Figure 21

APPENDIX A
Station Descriptions

Station	Location Description	Latitude (dd.ddddd)	Longitude (dd.ddddd)
BARRIVN	Off dock at sheriff's substation on corner US41 & CR29	25.90977	-81.36348
BC10	FakaUnion Canal at intersect of I-75 (FAKAUC75)	26.15330	-81.52323
BC11	Merrit Canal at intersect of I-75	26.15338	-81.49068
BC14	Immokalee Rd Canal at intersection of Palm River Blvd	26.27269	-81.77871
BC15	Airport Rd Canal at entrance to Sam's Club	26.27083	-81.76955
BC16	Bridge #84 on US41E	25.88747	-81.26176
BC17	Bridge #86 on US41E	25.87664	-81.22823
BC19	Bridge #69 on US41E	25.92638	-81.42709
BC2	Just inside the mouth of Rock Creek	26.14131	-81.78548
BC20	Bridge #52 on US41E	25.96104	-81.51664
BC21	Bridge #55 on US41E (TAMBR55)	25.96047	-81.50022
BC22	Gauging station north of intersection US41 and Henderson Creek (HENDCRK)	26.05760	-81.68938
BC23	Bridge at intersection of main Golden Gate Canal & CR951 (GGC@951)	26.17034	-81.68674
BC24	Bridge #30211 on SR29; 3 miles north of I-75	26.20398	-81.34598
BC25	Bridge east of Oil Well Grade Rd on CR858 in Camp Keais Strand	26.29391	-81.47935
BC26	Intersection of 951 Canal and Immokalee Road Canal	26.27340	-81.68899
BC3	Gordon River ext. at mouth of canal leading to main P.O.	26.16328	-81.78653
BC5	Bridge at intersect of Haldeman Creek and Bayshore Dr.	26.12543	-81.77085
BC7	FakaUnion Canal at west bend of "T"	25.99276	-81.52181
BC8	Merritt Canal at east bend of "T"	25.99350	-81.49049
BC9	Miller Canal at intersect of I-75	26.15320	-81.55505
CHKMATE*	Middle of Checkmate Pond Fakahatchee Strand	26.14383	-81.38875
COC@IBIS	Bridge at intersection of Coconut Palm River and Ibis Way	26.28197	-81.77011
COC@LAKE	Bridge at intersection of Lakeland Ave. and Cocohatchee River Canal	26.27297	-81.75989
COCAT41	Cocohatchee River @ US41	26.28245	-81.80158
COCPALM	Bridge at intersection of Palm River Dr & Coconut Palm River	26.27780	-81.77807
CORK@846	Bridge at intersect of Corkscrew Canal & CR846	26.27766	-81.60124
CORKN*	Bridge just south of County line and USGS gauging station on tram road to Little Corkscrew Island in Corkscrew Swamp Sanctuary	26.42202	-81.57849
CORKS*	Southern most bridge on tram road in sanctuary	26.35321	-81.61899

APPENDIX A
Station Descriptions

Station	Location Description	Latitude (dd.ddddd)	Longitude (dd.ddddd)
CORKSCRD*	Bridge @ intersect of Corkscrew Rd & canal NE of Corkscrew Marsh trailhead	26.49548	-81.52877
ECOCORIV	East of WCOCORIV site at amil gate	26.27207	-81.78376
FAKA	Gauging station N of weir @ intersect of US41/FakaUnion Canal	25.96050	-81.50951
FAKA858	S side of bridge @ Faka Union Canal and CR858	26.29341	-81.52964
FAKAUPOI	Faka Union Canal @ entrance to Port of the Islands marina	25.95678	-81.51025
GGC@858	Bridge @ intersect of Golden Gate Canal and CR858	26.29331	-81.56175
GGC@WHITE	Bridge at intersection of Golden Gate Canal and White Blvd.	26.21279	-81.65533
GGCAT31	Bridge @ intersect of Airport Rd and Golden Gate Canal	26.16797	-81.76720
GORDONRIV	Upstream of weir at intersection of Golden Gate Pkwy and Gordon River Extension	26.17334	-81.78451
HALDCRK	Upstream of amil gate @ intersect of US41 & Haldeman Creek	26.12388	-81.76240
IMKBRN	First bridge over canal on US29 S of convergence of NW and N drainage canals on SE end of Immokalee	26.40900	-81.39777
IMKFSHCK	On Lake Trafford Rd. just west of elementary school at sidewalk bridge	26.43337	-81.46260
IMKSLGH	On Sanitation Rd. leading to Eustis Landfill on east side of road approx. half way between entrance gate at Immokalee Water & Sewer District Office and Eustis Landfill gate.	26.40624	-81.42945
KEAISN	Bridge on CR846, 3.5 miles east of Everglades Blvd.	26.36667	-81.48457
LELY	Bridge @ intersect of US41 & Lely Main Canal	26.10434	-81.74639
MONROE	Bridge 30096 @ intersect of US41 & Loop Rd	25.86365	-81.10098
NNAPLES	South side of amil gate at junction of North Naples Canal and Immokalee Rd.	26.27178	-81.79189
OKALA846	Okaloacoochee Slough crossing east of Immokalee on CR846	26.42193	-81.30501
OKALA858	Okaloacoochee Slough crossing on CR858	26.30495	-81.29252
WCOCORIV	Upstream side of first amil gate on south side of Immokalee Rd east of Goodlette Rd	26.27207	-81.78622
WIGGINSBY	Wiggins Bay Canal at intersection of Wiggins Pass Rd.	26.29436	-81.81004

* Sampled December, April, June and August only

APPENDIX B
Parameter List

Parameter	Method	Require MDL*	Frequency
Ammonia	EPA 350.1	0.01 mg/L	Monthly
Biochemical Oxygen Demand	SM5210 B	2 mg/L	Monthly
Chlorophyll-a	SM 10200 H	3.0 mg/m^3	Monthly
Color	EPA 110.2	5 pcu	Monthly
Fecal coliform	SM18 9222 D (MF)	1 cfu/100ml	Monthly
Nitrate/Nitrite (NOX)	EPA 353.2 (Nitrate-Nitrite (N))	0.01 mg/L	Monthly
Nitrite (N)	SM18 4500-NO2 B	0.002 mg/L	Monthly
Orthophosphate (P)	SM18 4500-P E (Orthophosphate)	0.004 mg/L	Monthly
Phaeophytin	SM 10200 H	3.0 mg/m^3	Monthly
Total dissolved solids (TDS)	SM18 2540 C	2 mg/L	Monthly
Total Kjeldahl Nitrogen (TKN)	SM20 4500-Norg D	0.076 mg/L	Monthly
Total Organic Carbon	EPA 415.1	0.32 mg/L	Monthly
Total phosphorus	SM18 4500-P E (Phosphorus -Total)	0.004 mg/L	Monthly
Total suspended solids (TSS)	SM18 2540 D	2 mg/L	Monthly
Turbidity	SM18 2130 B	0.10 NTU	Monthly
Alkalinity	SM18 2320 B	1.0 mg/L	Quarterly
Arsenic	EPA 200.8 (As)	1.0 ug/L	Quarterly
Cadmium	EPA 200.8 (Cd)	0.1 ug/L	Quarterly
Calcium	SM18 3111 B (Ca)	0.5 mg/L	Quarterly
Chloride	SM18 4500-Cl - E	1.0 mg/L	Quarterly
Chromium	EPA 200.8 (Cr)	2.0 ug/L	Quarterly
Copper	EPA 200.8 (Cu)	1.0 ug/L	Quarterly
Dissolved Silica	SM 4500Si-C	1.0 mg/L	Quarterly
Hardness- Calculated	SM18 2340 B	1.0 mg/L	Quarterly
Iron	SM18 3111 B (Fe)	120 ug/L	Quarterly
Lead	EPA 200.8 (Pb)	1.0 ug/L	Quarterly
Magnesium	SM18 3111 B (Mg)	0.07 mg/L	Quarterly
Sulfate	EPA 375.4	1.0 mg/L	Quarterly
Zinc	EPA 200.8 (Zn)	0.96 ug/L	Quarterly

***Laboratory must obtain this MDL or a lower value**

Appendix C. Sampling summary for FY10

Station	October	November	December	January	February	March	April	May	June	July	August	September
BARRIVN	10/22/2009	11/19/2009	12/21/2009	1/25/2010	2/16/2010	3/24/2010	4/22/2010	5/10/2010	6/15/2010	7/14/2010	8/17/2010	9/15/2010
BC10	10/20/2009	11/17/2009	12/15/2009	1/12/2010	2/10/2010	3/10/2010	4/13/2010	5/11/2010	6/8/2010	7/7/2010	8/9/2010	9/8/2010
BC11	10/20/2009	11/17/2009	12/15/2009	1/12/2010	2/10/2010	3/10/2010	4/13/2010	5/11/2010	6/8/2010	7/7/2010	8/9/2010	9/8/2010
BC14	10/26/2009	11/12/2009	12/8/2009	1/21/2010	2/18/2010	3/18/2010	4/20/2010	5/19/2010	6/17/2010	7/21/2010	8/19/2010	9/20/2010
BC15	10/15/2009	11/16/2009	12/14/2009	1/6/2010	2/17/2010	3/17/2010	4/19/2010	5/18/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010
BC16	10/22/2009	11/19/2009	12/21/2009	1/25/2010	2/16/2010	3/24/2010	4/22/2010	5/10/2010	6/15/2010	7/14/2010	8/17/2010	9/15/2010
BC17	10/22/2009	11/19/2009	12/21/2009	1/25/2010	2/16/2010	3/24/2010	4/22/2010	5/10/2010	6/15/2010	7/14/2010	8/17/2010	9/15/2010
BC19	10/22/2009	11/19/2009	12/21/2009	1/25/2010	2/16/2010	3/24/2010	4/22/2010	5/10/2010	6/15/2010	7/14/2010	8/17/2010	9/15/2010
BC2	10/12/2009	11/9/2009	12/22/2009	1/7/2010	2/23/2010	3/23/2010	4/21/2010	5/20/2010	6/22/2010	7/19/2010	8/18/2010	9/16/2010
BC20	10/8/2009	11/23/2009	12/7/2009	1/19/2010	2/4/2010	3/16/2010	4/15/2010	5/17/2010	6/14/2010	7/15/2010	8/16/2010	9/14/2010
BC21	10/8/2009	11/23/2009	12/7/2009	1/19/2010	2/4/2010	3/16/2010	4/15/2010	5/17/2010	6/14/2010	7/15/2010	8/16/2010	9/14/2010
BC22	10/8/2009	11/23/2009	12/16/2009	1/13/2010	2/11/2010	3/11/2010	4/14/2010	5/12/2010	6/9/2010	7/8/2010	8/11/2010	9/13/2010
BC23	10/19/2009	11/4/2009	12/3/2009	1/5/2010	2/3/2010	3/18/2010	4/26/2010	5/26/2010	6/21/2010	7/13/2010	8/24/2010	9/22/2010
BC24	10/15/2009	11/17/2009	12/15/2009	1/12/2010	2/10/2010	3/10/2010	4/13/2010	5/11/2010	6/8/2010	7/7/2010	8/9/2010	9/8/2010
BC25	10/20/2009	11/17/2009	12/15/2009	1/12/2010	2/10/2010	3/10/2010	4/13/2010	Road widening and bridge construction prevented sample collection	Road widening and bridge construction prevented sample collection	Road widening and bridge construction prevented sample collection	Road widening and bridge construction prevented sample collection	9/8/2010
BC26	10/15/2009	11/16/2009	12/14/2009	1/6/2010	2/2/2010	3/8/2010	4/8/2010	5/10/2010	6/7/2010	7/6/2010	8/10/2010	9/9/2010
BC3	10/12/2009	11/9/2009	12/22/2009	1/7/2010	2/23/2010	3/23/2010	4/21/2010	5/20/2010	6/22/2010	7/19/2010	8/18/2010	9/16/2010
BC5	10/12/2009	11/9/2009	12/22/2009	1/7/2010	2/23/2010	3/23/2010	4/21/2010	5/20/2010	6/22/2010	7/19/2010	8/18/2010	9/16/2010

Appendix C. Sampling summary for FY10

Station	October	November	December	January	February	March	April	May	June	July	August	September
BC7	10/19/2009	11/4/2009	12/3/2009	1/5/2010	2/3/2010	3/18/2010	4/26/2010	5/26/2010	6/21/2010	Unable to reach sample site due to restoration activities	Unable to reach sample site due to restoration activities	9/27/2010
BC8	10/19/2009	11/4/2009	12/3/2009	1/5/2010	2/3/2010	3/18/2010	4/26/2010	Unable to sample due to vegetation clearing and controlled burn	6/21/2010	7/13/2010	Unable to reach sample site due to restoration activities	9/27/2010
BC9	10/20/2009	11/17/2009	12/15/2009	1/12/2010	2/10/2010	3/10/2010	4/13/2010	5/11/2010	6/8/2010	7/7/2010	8/9/2010	9/8/2010
CHKMATE	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	12/15/2009	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	4/7/2010	Only sampled in Dec, Apr, Jun, Aug	6/2/2010	Only sampled in Dec, Apr, Jun, Aug	8/5/2010	Only sampled in Dec, Apr, Jun, Aug
COC@IBIS	10/26/2009	11/12/2009	12/8/2009	1/20/2010	2/17/2010	3/17/2010	4/19/2010	5/18/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010
COC@LAKE	10/15/2009	11/16/2009	12/14/2009	1/6/2010	2/2/2010	3/17/2010	4/8/2010	5/10/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010
COCAT41	10/26/2009	11/12/2009	12/8/2009	1/21/2010	2/18/2010	3/18/2010	4/20/2010	5/19/2010	6/17/2010	7/21/2010	8/19/2010	9/20/2010
COCPALM	10/26/2009	11/12/2009	12/8/2009	1/21/2010	2/18/2010	3/18/2010	4/20/2010	5/19/2010	6/17/2010	7/21/2010	8/19/2010	9/20/2010
CORK@846	10/15/2009	11/16/2009	12/14/2009	1/6/2010	2/2/2010	3/8/2010	4/8/2010	5/10/2010	6/7/2010	7/6/2010	8/10/2010	9/9/2010
CORKN	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	12/2/2009	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	4/22/2010	Only sampled in Dec, Apr, Jun, Aug	6/10/2010	Only sampled in Dec, Apr, Jun, Aug	8/12/2010	Only sampled in Dec, Apr, Jun, Aug
CORKS	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	12/2/2009	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	4/22/2010	Only sampled in Dec, Apr, Jun, Aug	6/10/2010	Only sampled in Dec, Apr, Jun, Aug	8/12/2010	Only sampled in Dec, Apr, Jun, Aug

Appendix C. Sampling summary for FY10

Station	October	November	December	January	February	March	April	May	June	July	August	September
CORKSCRD	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	12/17/2009	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	Only sampled in Dec, Apr, Jun, Aug	4/22/2010	Only sampled in Dec, Apr, Jun, Aug	6/10/2010	Only sampled in Dec, Apr, Jun, Aug	8/12/2010	Only sampled in Dec, Apr, Jun, Aug
ECOCORIV	10/26/2009	11/12/2009	12/8/2009	1/21/2010	2/18/2010	3/18/2010	4/20/2010	5/19/2010	6/17/2010	7/21/2010	8/19/2010	9/20/2010
FAKA	10/8/2009	11/23/2009	12/7/2009	1/19/2010	2/4/2010	3/16/2010	4/15/2010	5/17/2010	6/14/2010	7/15/2010	8/16/2010	9/27/2010
FAKA858	10/20/2009	11/16/2009	12/14/2009	1/6/2010	2/2/2010	3/8/2010	4/8/2010	5/10/2010	6/7/2010	7/6/2010	8/10/2010	9/9/2010
FAKAUPOI	10/8/2009	11/23/2009	12/7/2009	1/19/2010	2/4/2010	3/16/2010	4/15/2010	5/17/2010	6/14/2010	7/15/2010	8/16/2010	9/14/2010
GGC@858	10/20/2009	11/16/2009	12/14/2009	1/6/2010	2/2/2010	3/8/2010	Road widening and bridge construction prevented sample collection	5/10/2010	6/7/2010	7/6/2010	8/10/2010	9/9/2010
GGC@WHITE	10/19/2009	Overgrown with hydrilla	12/3/2009	1/5/2010	2/3/2010	3/18/2010	4/26/2010	5/26/2010	6/21/2010	7/13/2010	8/24/2010	9/22/2010
GGCAT31	10/27/2009	11/18/2009	12/16/2009	1/13/2010	2/11/2010	3/11/2010	4/14/2010	5/12/2010	6/9/2010	7/8/2010	8/11/2010	9/13/2010
GORDONRIV	10/27/2009	11/18/2009	12/16/2009	1/13/2010	2/11/2010	3/11/2010	4/14/2010	5/12/2010	6/9/2010	7/8/2010	8/11/2010	9/13/2010
HALDCRK	10/27/2009	11/18/2009	12/16/2009	1/13/2010	2/11/2010	3/11/2010	4/14/2010	5/12/2010	6/9/2010	7/8/2010	8/11/2010	9/13/2010
IMKBRN	10/13/2009	11/19/2009	12/17/2009	1/14/2010	2/9/2010	3/9/2010	4/27/2010	5/13/2010	6/3/2010	7/12/2010	8/4/2010	9/7/2010
IMKFSHCK	10/13/2009	11/19/2009	12/17/2009	1/14/2010	2/9/2010	3/9/2010	4/27/2010	5/13/2010	6/3/2010	7/12/2010	8/4/2010	9/7/2010
IMKSLGH	10/13/2009	Site dry, no samples collected	Water too low (<6 inches) to sample	1/14/2010	2/9/2010	3/9/2010	4/27/2010	5/13/2010	Site was dry	7/12/2010	8/4/2010	9/7/2010
KEAISN	10/13/2009	11/19/2009	12/17/2009	1/14/2010	2/9/2010	3/9/2010	4/27/2010	5/13/2010	6/3/2010	7/12/2010	8/4/2010	9/7/2010
LELY	10/27/2009	11/18/2009	12/16/2009	1/13/2010	2/11/2010	3/11/2010	4/14/2010	5/12/2010	6/9/2010	7/8/2010	8/11/2010	9/13/2010
MONROE	10/22/2009	11/19/2009	12/21/2009	1/25/2010	2/16/2010	3/24/2010	4/22/2010	5/10/2010	6/15/2010	7/14/2010	8/17/2010	9/15/2010
NNAPLES	10/26/2009	11/12/2009	12/8/2009	1/20/2010	2/17/2010	3/17/2010	4/19/2010	5/18/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010

Appendix C. Sampling summary for FY10

Station	October	November	December	January	February	March	April	May	June	July	August	September
OKALA846	10/13/2009	11/19/2009	12/17/2009	1/14/2010	2/9/2010	3/9/2010	4/27/2010	5/13/2010	6/3/2010	7/12/2010	8/4/2010	9/7/2010
OKALA858	10/15/2009	11/17/2009	Bridge construction impacting site. No sample collected.	Bridge constructio n impacting site. No sample collected.	2/10/2010	3/10/2010	4/13/2010	5/11/2010	6/8/2010	7/7/2010	8/10/2010	9/9/2010
WCOCORIV	10/26/2009	11/12/2009	12/8/2009	1/20/2010	2/17/2010	3/17/2010	4/19/2010	5/18/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010
WIGGINSBY	10/26/2009	11/12/2009	12/8/2009	1/20/2010	2/17/2010	3/17/2010	4/19/2010	5/18/2010	6/16/2010	7/20/2010	8/23/2010	9/21/2010

APPENDIX D
Data Quality Assurance Issues FY10

A. Missed Analyses:
   1. First Quarter
      a). October
         - Fecal coliform is missing for samples collected at MONROE, BC17, BC16, BARRIVN, and BC19 due to sampler error.

      b). November—None.
      c). December
         - Biochemical oxygen demand is missing for samples collected at MONROE, BC17, BC16, BARRIVN, and BC19 due to laboratory error.

   2. Second Quarter
      a). January—None.
      b). February—Chlorophyll-a and Phaeophytin for samples collected at FAKAUPOI, BC21, FAKA, BC20, KEAISN, IMKSLGH, IMKBRN, OKALA846, IMKFSHCK, CORKSCRD, BC25, OKALA858, BC24, BC11, BC10, and BC9 were not analyzed due to building evacuation.
      c). March—None.

   3. Third Quarter
      a). April—None.
      b). May—Total organic carbon was not analyzed for samples collected at BC5, BC2 and BC3 due to shipping error.
      c). June—None.

   4. Fourth Quarter
      a). July—Orthophosphate was not analyzed for the sample collected at FAKA due to sampler error.
      b). August—None.
      c). September—Biochemical oxygen demand was not analyzed for samples collected at MONROE, BC17, BC16, BC16, BARRIVN, BC19, BC5, BC2, and BC3 due to analyst error.

B. Out of Hold:
   1. First Quarter—None.
   2. Second Quarter

a). January—Sulfate was analyzed outside of the required holding time for samples MONROE, BC17, BC16, BARRIVN, and BC19 due to analyst error.
b). February—Fecal coliform for samples GORDONRIV and GGCAT31 were analyzed outside of the required holding time due to building evacuation.
c). March—None.

3. Third Quarter
    a). April—Fecal coliform for sample BC25 was analyzed outside of the required holding time.
    b). May—None.
    c). June—None.

4. Fourth Quarter
    a). July—None.
    b). August—None.
    c). September
        - Ammonia for samples B14, COCAT41, ECOCORIV was analyzed outside of the required holding time due to analyst error.
        - Total Kjeldahl nitrogen for samples B14, COCAT41, ECOCORIV, KEAISN, IMKSLGH, IMKBRN, OKALA846, IMKFSHCK, BC10, BC9, OKALA858, FAKA858, GGC@858, CORK@846, and BC26 was analyzed outside of the required holding time due to analyst error

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
BARRON RIVER CANAL			**47**
	BC24		**47**
		Dissolved Oxygen	12
		Nitrogen-Total	11
		Phosphorus- Total	11
		Ammonia	11
		BOD	2
CAMP KEAIS			**103**
	BC11		**30**
		Dissolved Oxygen	18
		Ammonia	7
		Nitrogen-Total	3
		Phosphorus- Total	1
		BOD	1
	BC25		**28**
		Phosphorus- Total	7
		Nitrogen-Total	7
		Ammonia	6
		Dissolved Oxygen	6
		BOD	2
	KEAISN		**45**
		Dissolved Oxygen	12
		Phosphorus- Total	9
		Nitrogen-Total	8
		BOD	8
		Ammonia	8
COCOHATCHEE (INLAND SEGMENT)			**331**
	BC14		**26**
		Dissolved Oxygen	9
		Nitrogen-Total	8
		Ammonia	5
		Phosphorus- Total	2
		BOD	2
	BC15		**47**
		Dissolved Oxygen	16
		Nitrogen-Total	11

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		Ammonia	10
		Phosphorus- Total	7
		BOD	3
	BC26		**23**
		Ammonia	9
		Nitrogen-Total	6
		Dissolved Oxygen	4
		Phosphorus- Total	3
		Iron	1
	COC@IBIS		**18**
		Ammonia	10
		Nitrogen-Total	8
	COC@LAKE		**31**
		Dissolved Oxygen	15
		Ammonia	7
		Nitrogen-Total	6
		BOD	2
		Phosphorus- Total	1
	COCPALM		**45**
		Nitrogen-Total	11
		Ammonia	11
		Phosphorus- Total	11
		BOD	10
		Dissolved Oxygen	2
	ECOCORIV		**49**
		Phosphorus- Total	12
		Dissolved Oxygen	12
		Nitrogen-Total	10
		BOD	8
		Ammonia	7
	NNAPLES		**39**
		Phosphorus- Total	12
		Ammonia	10
		Nitrogen-Total	9
		BOD	7
		Copper	1
	WCOCORIV		**53**

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		Phosphorus- Total	12
		Nitrogen-Total	12
		Ammonia	11
		BOD	8
		Dissolved Oxygen	7
		Coliform Fecal	3
COCOHATCHEE GOLF COURSE DISCHARGE			**35**
	WIGGINSBY		**35**
		Nitrogen-Total	10
		Ammonia	10
		Dissolved Oxygen	8
		Iron	3
		BOD	3
		Coliform Fecal	1
COCOHATCHEE RIVER			**26**
	COCAT41		**26**
		Coliform Fecal	10
		Dissolved Oxygen	7
		Nitrogen-Total	4
		BOD	4
		Copper	1
CORKSCREW MARSH			**34**
	CORKN		**8**
		Nitrogen-Total	4
		Dissolved Oxygen	3
		Phosphorus- Total	1
	CORKS		**13**
		Nitrogen-Total	4
		Ammonia	3
		Dissolved Oxygen	3
		BOD	2
		Phosphorus- Total	1
	CORKSCRD		**13**
		Ammonia	6
		Nitrogen-Total	3
		Phosphorus- Total	3

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		Dissolved Oxygen	1
COW SLOUGH			**47**
	IMKFSHCK		**47**
		Phosphorus- Total	12
		Nitrogen-Total	11
		Ammonia	11
		Dissolved Oxygen	7
		Coliform Fecal	4
		BOD	2
FAKA UNION (NORTH SEGMENT)			**40**
	BC10		**6**
		Ammonia	3
		Nitrogen-Total	1
		Phosphorus- Total	1
		Dissolved Oxygen	1
	BC9		**20**
		Dissolved Oxygen	9
		Ammonia	6
		Nitrogen-Total	4
		Phosphorus- Total	1
	FAKA858		**14**
		Nitrogen-Total	5
		Ammonia	4
		Dissolved Oxygen	3
		Phosphorus- Total	1
		BOD	1
FAKA UNION (SOUTH SEGMENT)			**48**
	BC20		**32**
		Dissolved Oxygen	11
		Nitrogen-Total	10
		Ammonia	5
		BOD	4
		Phosphorus- Total	2
	BC7		**6**
		Dissolved Oxygen	2
		Phosphorus- Total	1
		Nitrogen-Total	1

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		BOD	1
		Ammonia	1
	BC8		**6**
		BOD	2
		Dissolved Oxygen	2
		Phosphorus- Total	1
		Nitrogen-Total	1
	FAKA		**4**
		Nitrogen-Total	3
		Ammonia	1
FAKAHATCHEE STRAND			**64**
	BC19		**25**
		Nitrogen-Total	10
		Dissolved Oxygen	8
		Ammonia	7
	BC21		**27**
		Nitrogen-Total	10
		Dissolved Oxygen	9
		Ammonia	8
	CHKMATE		**12**
		Dissolved Oxygen	4
		Nitrogen-Total	3
		Phosphorus- Total	2
		BOD	2
		Ammonia	1
GORDON RIVER EXTENSION			**97**
	BC3		**30**
		Coliform Fecal	11
		Dissolved Oxygen	10
		Nitrogen-Total	4
		BOD	2
		Copper	2
		Iron	1
	GORDONRIV		**67**
		Dissolved Oxygen	21
		Nitrogen-Total	12
		Phosphorus- Total	12

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		Ammonia	12
		BOD	8
		Coliform Fecal	2
IMMOKALEE BASIN			**30**
	IMKSLGH		**30**
		Dissolved Oxygen	9
		Phosphorus- Total	8
		Ammonia	7
		Nitrogen-Total	5
		BOD	1
NAPLES BAY (COASTAL SEGMENT)			**98**
	BC2		**18**
		Coliform Fecal	10
		Dissolved Oxygen	3
		Nitrogen-Total	2
		Iron	2
		BOD	1
	BC5		**30**
		Coliform Fecal	11
		Dissolved Oxygen	10
		Copper	4
		Nitrogen-Total	3
		BOD	2
	HALDCRK		**50**
		Nitrogen-Total	13
		Ammonia	12
		Phosphorus- Total	11
		Dissolved Oxygen	6
		BOD	5
		Coliform Fecal	2
		Copper	1
NORTH GOLDEN GATE			**134**
	BC23		**26**
		Dissolved Oxygen	11
		Nitrogen-Total	8
		Ammonia	6

APPENDIX E
Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		Iron	1
	CORK@846		**38**
		Nitrogen-Total	12
		Ammonia	10
		Dissolved Oxygen	8
		Phosphorus- Total	5
		Iron	2
		BOD	1
	GGC@858		**14**
		Ammonia	8
		Nitrogen-Total	3
		Phosphorus- Total	1
		Dissolved Oxygen	1
		Iron	1
	GGC@WHITE		**30**
		Dissolved Oxygen	19
		Nitrogen-Total	8
		Ammonia	2
		BOD	1
	GGCAT31		**26**
		Nitrogen-Total	9
		Ammonia	8
		Dissolved Oxygen	7
		Phosphorus- Total	2
OKALOACOOCHEE SLOUGH			**60**
	OKALA846		**27**
		Nitrogen-Total	10
		Dissolved Oxygen	9
		Ammonia	5
		Phosphorus- Total	2
		Coliform Fecal	1
	OKALA858		**33**
		Nitrogen-Total	10
		Dissolved Oxygen	10
		Phosphorus- Total	7
		Ammonia	5
		BOD	1

APPENDIX E

Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
ROOKERY BAY (INLAND EAST SEGMENT)			**18**
	BC22		**18**
		Nitrogen-Total	6
		Dissolved Oxygen	6
		Ammonia	5
		Phosphorus- Total	1
ROOKERY BAY (INLAND WEST SEGMENT)			**21**
	LELY		**21**
		Ammonia	8
		Nitrogen-Total	7
		Phosphorus- Total	2
		BOD	2
		Dissolved Oxygen	2
SILVER STRAND			**49**
	IMKBRN		**49**
		Phosphorus- Total	12
		Nitrogen-Total	12
		Ammonia	12
		Dissolved Oxygen	7
		BOD	5
		Iron	1
TAMIAMI CANAL			**72**
	BC16		**25**
		Dissolved Oxygen	19
		Ammonia	3
		Nitrogen-Total	2
		Phosphorus- Total	1
	BC17		**22**
		Dissolved Oxygen	13
		Ammonia	6
		Phosphorus- Total	2
		Nitrogen-Total	1
	MONROE		**25**
		Dissolved Oxygen	11
		Ammonia	10
		Nitrogen-Total	2

APPENDIX E

Summary of Exceedances by WBID and Station in FY10

WBID	Station	Parameter	Number of Exceedances
		BOD	1
		Coliform Fecal	1
TEN THOUSAND ISLANDS			**28**
	BARRIVN		**18**
		Dissolved Oxygen	10
		Coliform Fecal	5
		Nitrogen-Total	3
	FAKAUPOI		**10**
		Dissolved Oxygen	7
		Nitrogen-Total	2
		BOD	1

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
BARRON RIVER CANAL					
Alkalinity	mg/L	4	142.000	208	78
Ammonia	mg/L	11	0.079	0.128	0.02
Arsenic	ug/L	4	0.903	1.14	0.79
BOD	mg/L	11	2.045	2.3	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	57.725	88	33.5
Carbon- Total Organic	mg/L	12	20.408	26.2	15
Chloride	mg/L	4	29.950	45.3	16.2
Chlorophyll a	mg/m3	9	6.378	19.8	3
Chromium	ug/L	2	0.390	0.45	0.33
Coliform Fecal	cfu/100 ml	12	72.833	380	4
Color	PCU	12	118.333	150	50
Copper	ug/L	4	2.025	4.31	0.15
Hardness- Calculated	mg/L	4	166.750	247	99
Iron	ug/L	4	432.500	552	275
Lead	ug/L	4	0.115	0.22	0.06
Magnesium	mg/L	4	5.455	6.7	3.62
Nitrate-Nitrite (N)	mg/L	12	0.083	0.251	0.019
Nitrite (N)	mg/L	12	0.008	0.02	0.003
Nitrogen- Total Kjeldahl	mg/L	12	1.224	2.1	0.556
Orthophosphate (P)	mg/L	12	0.033	0.128	0.004
Pheophytin	mg/m3	11	4.091	10.7	3
Phosphorus- Total	mg/L	12	0.102	0.497	0.029
Residues- Filterable (TDS)	mg/L	9	269.222	339	126
Residues- Nonfilterable (TSS)	mg/L	12	2.417	5	2
Silica (SiO2)	mg/L	4	4.525	7.1	1
Sulfate	mg/L	4	3.650	9	1
Turbidity	NTU	12	2.842	6.9	0.7
Zinc	ug/L	4	1.965	3.4	0.96
CAMP KEAIS					
Alkalinity	mg/L	11	212.364	280	138
Ammonia	mg/L	32	0.065	0.401	0.01
Arsenic	ug/L	10	0.958	1.51	0.57
BOD	mg/L	31	2.200	3.1	2
Cadmium	ug/L	11	0.060	0.06	0.06

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Calcium	mg/L	11	82.427	120	46.1
Carbon- Total Organic	mg/L	31	19.855	41	7.1
Chloride	mg/L	11	30.873	60.6	18.1
Chlorophyll a	mg/m3	26	7.327	35.8	3
Chromium	ug/L	7	0.417	0.56	0.18
Coliform Fecal	cfu/100 ml	31	30.355	200	1
Color	PCU	32	112.500	250	5
Copper	ug/L	11	0.412	1.9	0.15
Hardness- Calculated	mg/L	10	243.800	318	140
Iron	ug/L	11	318.691	896	72.6
Lead	ug/L	11	0.097	0.39	0.06
Magnesium	mg/L	11	7.195	12.9	4.28
Nitrate-Nitrite (N)	mg/L	32	0.014	0.094	0.002
Nitrite (N)	mg/L	32	0.003	0.01	0.002
Nitrogen- Total Kjeldahl	mg/L	31	0.989	4.141	0.059
Orthophosphate (P)	mg/L	30	0.032	0.138	0.004
Pheophytin	mg/m3	29	3.414	9.1	3
Phosphorus- Total	mg/L	30	0.088	0.513	0.008
Residues- Filterable (TDS)	mg/L	24	311.750	405	156
Residues- Nonfilterable (TSS)	mg/L	32	2.594	12	2
Silica (SiO2)	mg/L	11	5.882	11.2	1
Sulfate	mg/L	11	6.909	63	1
Turbidity	NTU	32	1.369	6.6	0.3
Zinc	ug/L	11	2.714	7.06	0.96
COCOHATCHEE (INLAND SEGMENT)					
Alkalinity	mg/L	42	232.333	384	114
Ammonia	mg/L	112	0.115	0.733	0.01
Arsenic	ug/L	42	2.830	8.89	0.88
BOD	mg/L	110	2.413	5.8	2
Cadmium	ug/L	42	0.060	0.06	0.06
Calcium	mg/L	42	104.102	203	50
Carbon- Total Organic	mg/L	114	14.543	56.2	7.3
Chloride	mg/L	41	107.722	374	17
Chlorophyll a	mg/m3	103	10.206	52.3	3
Chromium	ug/L	13	0.509	0.86	0.25
Coliform Fecal	cfu/100 ml	105	66.029	510	1

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Color	PCU	111	64.369	200	5
Copper	ug/L	38	4.100	22.67	0.15
Hardness- Calculated	mg/L	42	303.071	648	156
Iron	ug/L	42	398.262	1290	135
Lead	ug/L	40	0.134	0.56	0.06
Magnesium	mg/L	42	10.470	37.3	4.44
Nitrate-Nitrite (N)	mg/L	109	0.092	0.399	0.002
Nitrite (N)	mg/L	113	0.010	0.065	0.002
Nitrogen- Total Kjeldahl	mg/L	97	0.903	2.4	0.059
Orthophosphate (P)	mg/L	113	0.055	0.42	0.004
Pheophytin	mg/m3	110	3.692	11.4	3
Phosphorus- Total	mg/L	107	0.104	0.593	0.004
Residues- Filterable (TDS)	mg/L	93	517.398	1604	136
Residues- Nonfilterable (TSS)	mg/L	114	3.149	17	2
Silica (SiO2)	mg/L	42	6.295	12	1
Sulfate	mg/L	30	53.913	366	1
Turbidity	NTU	114	2.492	15.2	0.1
Zinc	ug/L	40	3.153	10.17	0.96
COCOHATCHEE GOLF COURSE DISCHARGE					
Alkalinity	mg/L	4	242.250	298	126
Ammonia	mg/L	12	0.307	0.743	0.01
Arsenic	ug/L	4	1.145	1.4	0.89
BOD	mg/L	12	2.067	2.4	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	111.475	138	62.9
Carbon- Total Organic	mg/L	12	17.817	21.9	15.7
Chloride	mg/L	4	141.250	171	126
Chlorophyll a	mg/m3	11	5.845	21.4	3
Chromium	ug/L	2	1.180	1.32	1.04
Coliform Fecal	cfu/100 ml	10	39.000	91	1
Color	PCU	12	91.667	100	50
Copper	ug/L	4	1.275	3.09	0.15
Hardness- Calculated	mg/L	4	308.000	370	190
Iron	ug/L	4	1427.000	2720	446
Lead	ug/L	4	0.113	0.27	0.06
Magnesium	mg/L	4	7.220	8.38	6.2

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Nitrate-Nitrite (N)	mg/L	12	0.093	0.262	0.025
Nitrite (N)	mg/L	12	0.017	0.041	0.003
Nitrogen- Total Kjeldahl	mg/L	11	1.129	2.448	0.64
Orthophosphate (P)	mg/L	12	0.006	0.01	0.004
Pheophytin	mg/m3	12	3.000	3	3
Phosphorus- Total	mg/L	12	0.027	0.039	0.017
Residues- Filterable (TDS)	mg/L	10	555.600	688	344
Residues- Nonfilterable (TSS)	mg/L	12	2.833	6	2
Silica (SiO2)	mg/L	4	5.600	8.1	1.5
Sulfate	mg/L	3	19.533	29	11.5
Turbidity	NTU	12	5.000	12	0.8
Zinc	ug/L	4	3.478	6.85	0.96
COCOHATCHEE RIVER					
Alkalinity	mg/L	4	190.750	222	179
Ammonia	mg/L	11	0.118	0.219	0.05
Arsenic	ug/L	4	5.753	9.87	2.81
BOD	mg/L	12	2.142	2.5	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	210.550	294	82.2
Carbon- Total Organic	mg/L	12	15.525	56.2	8.8
Chloride	mg/L	4	14596.750	26080	1229
Chlorophyll a	mg/m3	12	5.767	11.7	3
Chromium	ug/L	2	3.330	4.63	2.03
Coliform Fecal	cfu/100 ml	12	118.000	320	37
Color	PCU	12	65.000	200	10
Copper	ug/L	4	2.143	4.44	0.26
Hardness- Calculated	mg/L	4	2524.500	4090	268
Iron	ug/L	4	203.000	292	132
Lead	ug/L	4	0.250	0.46	0.06
Magnesium	mg/L	4	485.050	815	15.2
Nitrate-Nitrite (N)	mg/L	11	0.140	0.23	0.044
Nitrite (N)	mg/L	12	0.015	0.057	0.005
Nitrogen- Total Kjeldahl	mg/L	11	0.774	0.956	0.27
Orthophosphate (P)	mg/L	12	0.029	0.069	0.004
Pheophytin	mg/m3	12	3.000	3	3
Phosphorus- Total	mg/L	11	0.059	0.113	0.023

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Residues- Filterable (TDS)	mg/L	10	8586.800	22954	637
Residues- Nonfilterable (TSS)	mg/L	12	5.583	18	2
Silica (SiO2)	mg/L	4	4.575	6.6	1.9
Sulfate	mg/L	3	899.800	1685	59.4
Turbidity	NTU	12	3.183	15	1.3
Zinc	ug/L	4	2.868	4.63	0.96
CORKSCREW MARSH					
Alkalinity	mg/L	4	156.500	232	82
Ammonia	mg/L	16	0.065	0.292	0.01
Arsenic	ug/L	4	0.903	1.37	0.49
BOD	mg/L	15	2.080	2.8	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	68.875	107	37.1
Carbon- Total Organic	mg/L	15	25.607	51.2	8.8
Chloride	mg/L	4	32.825	44.7	26.7
Chlorophyll a	mg/m3	14	3.050	3.7	3
Chromium	ug/L	3	0.330	0.44	0.26
Coliform Fecal	cfu/100 ml	16	84.438	236	3
Color	PCU	16	102.188	250	30
Copper	ug/L	4	0.275	0.55	0.15
Hardness- Calculated	mg/L	4	190.750	281	112
Iron	ug/L	4	547.000	959	282
Lead	ug/L	4	0.093	0.19	0.06
Magnesium	mg/L	4	4.525	5.7	3.3
Nitrate-Nitrite (N)	mg/L	16	0.069	0.3	0.002
Nitrite (N)	mg/L	16	0.004	0.011	0.002
Nitrogen- Total Kjeldahl	mg/L	16	1.062	2.629	0.41
Orthophosphate (P)	mg/L	16	0.015	0.051	0.004
Pheophytin	mg/m3	15	3.100	4.5	3
Phosphorus- Total	mg/L	16	0.134	0.804	0.006
Residues- Filterable (TDS)	mg/L	15	261.400	372	2
Residues- Nonfilterable (TSS)	mg/L	16	3.938	15	2
Silica (SiO2)	mg/L	4	7.175	9.4	4.3
Sulfate	mg/L	4	7.800	15.2	1
Turbidity	NTU	16	2.375	7.2	0.4
Zinc	ug/L	4	0.990	1.08	0.96

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
COW SLOUGH					
Alkalinity	mg/L	4	134.750	260	41
Ammonia	mg/L	12	0.142	0.599	0.02
Arsenic	ug/L	4	1.018	1.38	0.41
BOD	mg/L	12	2.533	7.1	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	50.075	76.9	18.6
Carbon- Total Organic	mg/L	12	24.625	37	13.3
Chloride	mg/L	4	43.975	66.4	18.7
Chlorophyll a	mg/m3	10	4.600	9.1	3
Chromium	ug/L	3	0.823	1.23	0.44
Coliform Fecal	cfu/100 ml	12	336.333	1086	39
Color	PCU	12	145.000	250	40
Copper	ug/L	4	2.095	5.31	0.15
Hardness- Calculated	mg/L	3	187.667	258	68
Iron	ug/L	4	304.250	367	210
Lead	ug/L	3	0.130	0.17	0.06
Magnesium	mg/L	4	11.705	16.1	5.3
Nitrate-Nitrite (N)	mg/L	12	0.068	0.163	0.012
Nitrite (N)	mg/L	12	0.008	0.031	0.003
Nitrogen- Total Kjeldahl	mg/L	10	1.205	1.99	0.41
Orthophosphate (P)	mg/L	12	0.099	0.23	0.018
Pheophytin	mg/m3	11	3.873	6.7	3
Phosphorus- Total	mg/L	12	0.211	0.567	0.093
Residues- Filterable (TDS)	mg/L	10	290.000	453	142
Residues- Nonfilterable (TSS)	mg/L	12	9.417	74	2
Silica (SiO2)	mg/L	4	6.425	21.8	1
Sulfate	mg/L	4	28.250	43	1
Turbidity	NTU	12	2.225	8.5	0.4
Zinc	ug/L	4	4.895	9.45	1.71
FAKA UNION (NORTH SEGMENT)					
Alkalinity	mg/L	12	248.250	336	176
Ammonia	mg/L	36	0.022	0.07	0.01
Arsenic	ug/L	12	0.863	1.38	0.38
BOD	mg/L	36	2.011	2.4	2
Cadmium	ug/L	12	0.060	0.06	0.06

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Calcium	mg/L	12	109.217	151	69.6
Carbon- Total Organic	mg/L	36	13.253	46.5	5.8
Chloride	mg/L	12	23.258	30.4	15
Chlorophyll a	mg/m3	30	3.120	5.3	3
Chromium	ug/L	6	0.543	0.95	0.22
Coliform Fecal	cfu/100 ml	35	24.343	188	1
Color	PCU	36	77.500	250	5
Copper	ug/L	12	0.373	1.25	0.15
Hardness- Calculated	mg/L	12	295.333	397	205
Iron	ug/L	11	348.527	654	79.8
Lead	ug/L	12	0.088	0.22	0.06
Magnesium	mg/L	12	5.518	8.14	3.6
Nitrate-Nitrite (N)	mg/L	36	0.019	0.072	0.002
Nitrite (N)	mg/L	36	0.002	0.005	0.002
Nitrogen- Total Kjeldahl	mg/L	33	0.556	1.04	0.15
Orthophosphate (P)	mg/L	36	0.005	0.012	0.004
Pheophytin	mg/m3	33	6.515	87.9	3
Phosphorus- Total	mg/L	36	0.040	0.429	0.006
Residues- Filterable (TDS)	mg/L	27	352.000	884	191
Residues- Nonfilterable (TSS)	mg/L	36	2.194	5	2
Silica (SiO2)	mg/L	12	5.525	8.3	2.1
Sulfate	mg/L	12	27.975	119	1
Turbidity	NTU	36	1.969	13	0.1
Zinc	ug/L	12	3.741	16.33	0.96
FAKA UNION (SOUTH SEGMENT)					
Alkalinity	mg/L	15	239.867	282	138
Ammonia	mg/L	46	0.019	0.18	0.01
Arsenic	ug/L	15	1.083	2.34	0.23
BOD	mg/L	44	2.200	5.1	2
Cadmium	ug/L	15	0.060	0.06	0.06
Calcium	mg/L	15	118.180	137	66.7
Carbon- Total Organic	mg/L	45	15.084	63.5	5.2
Chloride	mg/L	15	150.247	1144	11
Chlorophyll a	mg/m3	42	5.495	52.3	3
Chromium	ug/L	8	0.431	0.61	0.07
Coliform Fecal	cfu/100 ml	46	31.087	410	1

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Color	PCU	46	58.152	150	10
Copper	ug/L	15	0.476	2.62	0.15
Hardness- Calculated	mg/L	15	331.333	464	199
Iron	ug/L	13	191.792	370	55.3
Lead	ug/L	15	0.169	0.97	0.06
Magnesium	mg/L	15	8.842	37	4.2
Nitrate-Nitrite (N)	mg/L	46	0.007	0.036	0.002
Nitrite (N)	mg/L	46	0.002	0.005	0.002
Nitrogen- Total Kjeldahl	mg/L	41	0.761	2.328	0.059
Orthophosphate (P)	mg/L	44	0.005	0.017	0.004
Pheophytin	mg/m3	44	3.120	5.4	3
Phosphorus- Total	mg/L	43	0.019	0.071	0.005
Residues- Filterable (TDS)	mg/L	40	838.650	4492	113
Residues- Nonfilterable (TSS)	mg/L	45	2.667	9	2
Silica (SiO2)	mg/L	15	3.887	5.6	1.9
Sulfate	mg/L	15	32.327	84.8	14
Turbidity	NTU	45	0.856	3.8	0.1
Zinc	ug/L	15	2.327	5.83	0.96
FAKAHATCHEE STRAND					
Alkalinity	mg/L	9	184.333	288	115
Ammonia	mg/L	28	0.034	0.1	0.01
Arsenic	ug/L	8	0.896	1.45	0.32
BOD	mg/L	25	2.124	4.9	2
Cadmium	ug/L	9	0.060	0.06	0.06
Calcium	mg/L	9	83.678	136	49.3
Carbon- Total Organic	mg/L	28	23.654	52.5	11.9
Chloride	mg/L	9	225.211	597	29.1
Chlorophyll a	mg/m3	26	4.496	23.5	3
Chromium	ug/L	5	0.784	2.08	0.28
Coliform Fecal	cfu/100 ml	27	74.185	400	1
Color	PCU	28	107.679	150	40
Copper	ug/L	9	0.468	1.36	0.15
Hardness- Calculated	mg/L	9	272.778	433	169
Iron	ug/L	8	127.700	194	48.6
Lead	ug/L	9	0.182	0.38	0.06
Magnesium	mg/L	9	15.507	36.4	5.2

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Nitrate-Nitrite (N)	mg/L	28	0.007	0.055	0.002
Nitrite (N)	mg/L	28	0.002	0.003	0.002
Nitrogen- Total Kjeldahl	mg/L	27	1.036	2.084	0.059
Orthophosphate (P)	mg/L	28	0.005	0.015	0.004
Pheophytin	mg/m3	27	3.341	10.4	3
Phosphorus- Total	mg/L	28	0.025	0.232	0.006
Residues- Filterable (TDS)	mg/L	25	2102.000	18663	285
Residues- Nonfilterable (TSS)	mg/L	27	2.630	8	2
Silica (SiO2)	mg/L	9	3.600	5.9	1
Sulfate	mg/L	8	42.138	206	1
Turbidity	NTU	27	1.196	8.9	0.3
Zinc	ug/L	9	2.580	7.38	0.96
GORDON RIVER EXTENSION					
Alkalinity	mg/L	8	256.625	443	180
Ammonia	mg/L	24	0.218	0.701	0.01
Arsenic	ug/L	8	3.171	4.98	1.84
BOD	mg/L	23	2.287	3.7	2
Cadmium	ug/L	8	0.060	0.06	0.06
Calcium	mg/L	8	119.900	160	88.8
Carbon- Total Organic	mg/L	22	15.559	53.3	11.5
Chloride	mg/L	8	412.875	1253	157
Chlorophyll a	mg/m3	22	10.636	48.1	3
Chromium	ug/L	5	1.576	3.54	0.43
Coliform Fecal	cfu/100 ml	20	141.550	980	1
Color	PCU	24	71.250	150	30
Copper	ug/L	7	3.494	6.53	0.15
Hardness- Calculated	mg/L	8	405.875	676	293
Iron	ug/L	8	157.975	310	83.2
Lead	ug/L	8	0.114	0.22	0.06
Magnesium	mg/L	8	25.925	72	10.6
Nitrate-Nitrite (N)	mg/L	24	0.167	0.364	0.024
Nitrite (N)	mg/L	24	0.028	0.068	0.002
Nitrogen- Total Kjeldahl	mg/L	24	0.996	1.95	0.479
Orthophosphate (P)	mg/L	24	0.046	0.14	0.009
Pheophytin	mg/m3	23	3.530	6.9	3
Phosphorus- Total	mg/L	24	0.103	0.618	0.041

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Residues- Filterable (TDS)	mg/L	20	1238.850	4856	427
Residues- Nonfilterable (TSS)	mg/L	24	3.458	10	2
Silica (SiO2)	mg/L	8	6.750	9.1	4.9
Sulfate	mg/L	7	163.429	600	57.6
Turbidity	NTU	24	1.496	4	0.5
Zinc	ug/L	7	3.239	5.06	1.12
IMMOKALEE BASIN					
Alkalinity	mg/L	4	157.250	214	80
Ammonia	mg/L	9	0.094	0.45	0.01
Arsenic	ug/L	4	0.995	1.24	0.82
BOD	mg/L	9	2.489	6.4	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	66.350	83.6	35.3
Carbon- Total Organic	mg/L	9	14.089	18.8	8
Chloride	mg/L	4	20.650	28.7	17
Chlorophyll a	mg/m3	7	3.429	5.3	3
Chromium	ug/L	3	0.267	0.37	0.21
Coliform Fecal	cfu/100 ml	9	112.000	500	2
Color	PCU	9	101.111	200	30
Copper	ug/L	4	0.250	0.51	0.15
Hardness- Calculated	mg/L	3	185.333	233	97
Iron	ug/L	4	157.525	240	67.1
Lead	ug/L	4	0.120	0.26	0.06
Magnesium	mg/L	4	4.253	5.8	2.2
Nitrate-Nitrite (N)	mg/L	9	0.017	0.05	0.002
Nitrite (N)	mg/L	9	0.002	0.003	0.002
Nitrogen- Total Kjeldahl	mg/L	8	0.961	1.58	0.56
Orthophosphate (P)	mg/L	8	0.127	0.32	0.02
Pheophytin	mg/m3	8	3.375	5.2	3
Phosphorus- Total	mg/L	8	0.164	0.41	0.036
Residues- Filterable (TDS)	mg/L	8	237.375	307	103
Residues- Nonfilterable (TSS)	mg/L	9	3.778	18	2
Silica (SiO2)	mg/L	4	6.125	13.2	1
Sulfate	mg/L	4	2.500	7	1
Turbidity	NTU	9	0.878	3	0.3
Zinc	ug/L	4	2.225	2.84	0.96

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
NAPLES BAY (COASTAL SEGMENT)					
Alkalinity	mg/L	14	203.000	227	172
Ammonia	mg/L	37	0.222	4.95	0.01
Arsenic	ug/L	14	3.923	8.28	1.93
BOD	mg/L	35	2.126	3.5	2
Cadmium	ug/L	14	0.060	0.06	0.06
Calcium	mg/L	14	114.093	180	81.7
Carbon- Total Organic	mg/L	36	13.097	52.3	7.3
Chloride	mg/L	14	2893.929	7397	86.2
Chlorophyll a	mg/m3	36	6.892	34	3
Chromium	ug/L	8	0.910	1.67	0.31
Coliform Fecal	cfu/100 ml	34	144.353	1400	17
Color	PCU	35	49.286	100	5
Copper	ug/L	13	13.308	63.28	1.13
Hardness- Calculated	mg/L	14	761.214	1784	238
Iron	ug/L	11	205.364	440	87
Lead	ug/L	14	0.239	1.67	0.06
Magnesium	mg/L	14	115.669	324	7.6
Nitrate-Nitrite (N)	mg/L	38	0.066	0.189	0.002
Nitrite (N)	mg/L	38	0.006	0.021	0.002
Nitrogen- Total Kjeldahl	mg/L	37	0.819	1.47	0.4
Orthophosphate (P)	mg/L	38	0.022	0.055	0.004
Pheophytin	mg/m3	37	3.419	7.7	3
Phosphorus- Total	mg/L	37	0.058	0.462	0.019
Residues- Filterable (TDS)	mg/L	30	5673.367	21169	405
Residues- Nonfilterable (TSS)	mg/L	38	4.789	23	2
Silica (SiO2)	mg/L	14	6.450	8.5	3.3
Sulfate	mg/L	13	366.162	930	29.3
Turbidity	NTU	38	1.324	2.1	0.1
Zinc	ug/L	12	3.184	6.85	0.96
NORTH GOLDEN GATE					
Alkalinity	mg/L	18	201.333	264	101
Ammonia	mg/L	58	0.049	0.2	0.01
Arsenic	ug/L	19	1.300	2.27	0.23
BOD	mg/L	56	2.016	2.8	2
Cadmium	ug/L	19	0.060	0.06	0.06

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Calcium	mg/L	19	92.189	125	46.7
Carbon- Total Organic	mg/L	58	20.428	53.9	0.5
Chloride	mg/L	19	45.953	98.1	18
Chlorophyll a	mg/m3	50	4.954	19.2	3
Chromium	ug/L	6	1.012	1.98	0.59
Coliform Fecal	cfu/100 ml	54	26.167	120	1
Color	PCU	58	132.845	400	10
Copper	ug/L	19	0.531	2.31	0.15
Hardness- Calculated	mg/L	19	249.053	338	135
Iron	ug/L	19	746.211	1130	313
Lead	ug/L	19	0.166	0.95	0.06
Magnesium	mg/L	19	4.595	6.3	2.78
Nitrate-Nitrite (N)	mg/L	57	0.070	0.186	0.002
Nitrite (N)	mg/L	58	0.005	0.012	0.002
Nitrogen- Total Kjeldahl	mg/L	53	0.919	2.314	0.17
Orthophosphate (P)	mg/L	57	0.009	0.033	0.004
Pheophytin	mg/m3	56	3.323	11.9	3
Phosphorus- Total	mg/L	57	0.041	0.47	0.004
Residues- Filterable (TDS)	mg/L	47	352.085	534	58
Residues- Nonfilterable (TSS)	mg/L	58	2.759	17	2
Silica (SiO2)	mg/L	19	5.937	12.6	2.2
Sulfate	mg/L	19	22.242	39.4	1
Turbidity	NTU	58	2.814	10.4	0.6
Zinc	ug/L	19	2.564	10.93	0.96
OKALOACOOCHEE SLOUGH					
Alkalinity	mg/L	7	89.429	129	61
Ammonia	mg/L	22	0.046	0.52	0.01
Arsenic	ug/L	7	0.986	1.3	0.68
BOD	mg/L	20	2.075	3.5	2
Cadmium	ug/L	7	0.060	0.06	0.06
Calcium	mg/L	7	35.914	49.5	21.8
Carbon- Total Organic	mg/L	22	23.736	41.9	15.4
Chloride	mg/L	7	30.800	44.2	25
Chlorophyll a	mg/m3	17	3.129	4.8	3
Chromium	ug/L	5	0.184	0.3	0.11
Coliform Fecal	cfu/100 ml	21	90.333	800	7

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Color	PCU	22	144.091	250	50
Copper	ug/L	7	0.150	0.15	0.15
Hardness- Calculated	mg/L	6	111.517	154	73
Iron	ug/L	7	168.157	250	50.1
Lead	ug/L	7	0.074	0.12	0.06
Magnesium	mg/L	7	5.979	7.5	4.4
Nitrate-Nitrite (N)	mg/L	22	0.009	0.042	0.002
Nitrite (N)	mg/L	22	0.003	0.005	0.002
Nitrogen- Total Kjeldahl	mg/L	20	1.380	2.47	0.38
Orthophosphate (P)	mg/L	22	0.016	0.069	0.004
Pheophytin	mg/m3	20	3.000	3	3
Phosphorus- Total	mg/L	21	0.064	0.473	0.012
Residues- Filterable (TDS)	mg/L	18	192.111	339	2
Residues- Nonfilterable (TSS)	mg/L	22	2.045	3	2
Silica (SiO2)	mg/L	7	5.171	10.8	1
Sulfate	mg/L	7	1.814	4.5	1
Turbidity	NTU	22	0.545	1.1	0.3
Zinc	ug/L	7	1.324	2.44	0.96
ROOKERY BAY (INLAND EAST SEGMENT)					
Alkalinity	mg/L	4	228.000	246	190
Ammonia	mg/L	12	0.021	0.04	0.01
Arsenic	ug/L	4	0.823	1.14	0.57
BOD	mg/L	11	2.000	2	2
Cadmium	ug/L	4	0.063	0.07	0.06
Calcium	mg/L	4	134.650	151	98.6
Carbon- Total Organic	mg/L	12	13.292	16.8	10.6
Chloride	mg/L	4	121.750	146	86
Chlorophyll a	mg/m3	10	3.200	4.8	3
Chromium	ug/L	2	0.585	0.68	0.49
Coliform Fecal	cfu/100 ml	12	21.417	79	1
Color	PCU	12	68.333	150	25
Copper	ug/L	4	0.255	0.52	0.15
Hardness- Calculated	mg/L	4	385.750	434	282
Iron	ug/L	4	228.925	500	42.7
Lead	ug/L	4	0.083	0.13	0.06
Magnesium	mg/L	4	11.975	13.8	8.7

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Nitrate-Nitrite (N)	mg/L	12	0.065	0.225	0.002
Nitrite (N)	mg/L	12	0.003	0.01	0.002
Nitrogen- Total Kjeldahl	mg/L	12	0.849	2.274	0.43
Orthophosphate (P)	mg/L	12	0.005	0.01	0.004
Pheophytin	mg/m3	12	3.000	3	3
Phosphorus- Total	mg/L	12	0.045	0.387	0.01
Residues- Filterable (TDS)	mg/L	11	610.091	792	2
Residues- Nonfilterable (TSS)	mg/L	12	2.000	2	2
Silica (SiO2)	mg/L	4	5.375	7.9	2.8
Sulfate	mg/L	4	113.425	137	91.2
Turbidity	NTU	12	1.017	2.6	0.5
Zinc	ug/L	4	2.663	5.56	0.96
ROOKERY BAY (INLAND WEST SEGMENT)					
Alkalinity	mg/L	4	229.750	250	186
Ammonia	mg/L	12	0.080	0.27	0.01
Arsenic	ug/L	4	1.265	2.08	0.64
BOD	mg/L	12	2.067	2.4	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	115.800	139	87.2
Carbon- Total Organic	mg/L	12	10.283	14.3	8.2
Chloride	mg/L	4	84.875	98.6	75.7
Chlorophyll a	mg/m3	10	4.210	11.7	3
Chromium	ug/L	3	0.810	1.64	0.35
Coliform Fecal	cfu/100 ml	10	17.500	56	1
Color	PCU	12	36.250	50	20
Copper	ug/L	4	2.320	5.01	0.49
Hardness- Calculated	mg/L	4	321.500	382	243
Iron	ug/L	4	256.250	382	145
Lead	ug/L	4	0.095	0.14	0.06
Magnesium	mg/L	4	7.633	8.43	6.1
Nitrate-Nitrite (N)	mg/L	12	0.119	0.201	0.048
Nitrite (N)	mg/L	12	0.008	0.02	0.003
Nitrogen- Total Kjeldahl	mg/L	12	0.722	1.46	0.455
Orthophosphate (P)	mg/L	12	0.007	0.017	0.004
Pheophytin	mg/m3	12	4.025	13.8	3

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Phosphorus- Total	mg/L	12	0.057	0.452	0.01
Residues- Filterable (TDS)	mg/L	10	482.300	579	382
Residues- Nonfilterable (TSS)	mg/L	12	5.000	18	2
Silica (SiO2)	mg/L	4	3.600	5.4	1
Sulfate	mg/L	4	45.500	53.2	34
Turbidity	NTU	12	3.392	14.8	0.7
Zinc	ug/L	4	2.170	5.39	0.96
SILVER STRAND					
Alkalinity	mg/L	4	82.500	104	58
Ammonia	mg/L	12	0.450	1.287	0.13
Arsenic	ug/L	4	0.840	0.91	0.68
BOD	mg/L	12	2.742	7.6	2
Cadmium	ug/L	4	0.060	0.06	0.06
Calcium	mg/L	4	38.575	45.2	24.1
Carbon- Total Organic	mg/L	12	21.217	25.6	17.8
Chloride	mg/L	4	23.550	26.7	18.4
Chlorophyll a	mg/m3	10	3.630	7.5	3
Chromium	ug/L	3	2.317	2.74	2.08
Coliform Fecal	cfu/100 ml	12	136.417	400	4
Color	PCU	12	154.167	250	100
Copper	ug/L	4	5.208	9.95	1.37
Hardness- Calculated	mg/L	3	113.000	136	79
Iron	ug/L	4	944.500	1310	706
Lead	ug/L	4	0.795	1.57	0.06
Magnesium	mg/L	4	5.225	5.6	4.5
Nitrate-Nitrite (N)	mg/L	12	0.893	1.862	0.211
Nitrite (N)	mg/L	12	0.030	0.088	0.011
Nitrogen- Total Kjeldahl	mg/L	11	1.373	2.197	0.059
Orthophosphate (P)	mg/L	11	0.202	0.31	0.006
Pheophytin	mg/m3	11	3.982	8	3
Phosphorus- Total	mg/L	11	0.402	0.538	0.316
Residues- Filterable (TDS)	mg/L	10	204.400	264	122
Residues- Nonfilterable (TSS)	mg/L	12	7.417	17	2
Silica (SiO2)	mg/L	4	4.225	9	1
Sulfate	mg/L	4	5.575	10	2.9
Turbidity	NTU	12	11.275	24.2	0.6

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Zinc	ug/L	4	5.993	6.87	4.01
TAMIAMI CANAL					
Alkalinity	mg/L	12	186.917	222	162
Ammonia	mg/L	35	0.048	0.178	0.01
Arsenic	ug/L	12	0.613	0.92	0.23
BOD	mg/L	30	2.033	3	2
Cadmium	ug/L	12	0.060	0.06	0.06
Calcium	mg/L	12	77.558	89.3	64
Carbon- Total Organic	mg/L	36	10.600	34.2	4.5
Chloride	mg/L	12	15.508	26.6	10
Chlorophyll a	mg/m3	32	3.606	10.7	3
Chromium	ug/L	10	0.364	0.59	0.21
Coliform Fecal	cfu/100 ml	31	86.452	250	2
Color	PCU	36	34.028	100	5
Copper	ug/L	12	0.444	1.6	0.15
Hardness- Calculated	mg/L	12	204.833	236	173
Iron	ug/L	11	109.727	176	28.7
Lead	ug/L	12	0.139	0.38	0.06
Magnesium	mg/L	12	2.739	4.83	1.96
Nitrate-Nitrite (N)	mg/L	36	0.019	0.141	0.002
Nitrite (N)	mg/L	36	0.002	0.008	0.002
Nitrogen- Total Kjeldahl	mg/L	32	0.494	0.99	0.059
Orthophosphate (P)	mg/L	36	0.010	0.03	0.004
Pheophytin	mg/m3	36	3.114	5.6	3
Phosphorus- Total	mg/L	36	0.019	0.045	0.004
Residues- Filterable (TDS)	mg/L	30	240.500	565	108
Residues- Nonfilterable (TSS)	mg/L	36	2.444	8	2
Silica (SiO2)	mg/L	12	2.892	4.3	1.6
Sulfate	mg/L	9	4.633	33.7	1
Turbidity	NTU	36	0.497	1.4	0.2
Zinc	ug/L	12	2.496	9.65	0.96
TEN THOUSAND ISLANDS					
Alkalinity	mg/L	8	243.125	262	204
Ammonia	mg/L	24	0.025	0.063	0.01
Arsenic	ug/L	8	1.118	1.68	0.6
BOD	mg/L	21	2.010	2.2	2

APPENDIX F

FY10 Summary Statistics

WBID	Units	Count	Mean	Maximum	Minimum
Cadmium	ug/L	8	0.060	0.06	0.06
Calcium	mg/L	8	114.388	143	80
Carbon- Total Organic	mg/L	24	14.192	54	7.4
Chloride	mg/L	8	534.875	1808	31
Chlorophyll a	mg/m3	22	3.459	8.5	3
Chromium	ug/L	5	0.556	0.8	0.21
Coliform Fecal	cfu/100 ml	22	64.136	453	1
Color	PCU	24	51.333	150	10
Copper	ug/L	8	0.570	2	0.15
Hardness- Calculated	mg/L	8	417.750	725	222
Iron	ug/L	7	122.229	220	68.4
Lead	ug/L	8	0.145	0.51	0.06
Magnesium	mg/L	8	32.063	89.4	5.3
Nitrate-Nitrite (N)	mg/L	23	0.011	0.038	0.002
Nitrite (N)	mg/L	24	0.002	0.004	0.002
Nitrogen- Total Kjeldahl	mg/L	22	0.694	1.59	0.147
Orthophosphate (P)	mg/L	24	0.007	0.019	0.004
Pheophytin	mg/m3	23	3.187	5.6	3
Phosphorus- Total	mg/L	24	0.013	0.026	0.006
Residues- Filterable (TDS)	mg/L	21	3720.667	24774	265
Residues- Nonfilterable (TSS)	mg/L	23	2.826	10	2
Silica (SiO2)	mg/L	8	4.413	5	3.6
Sulfate	mg/L	7	60.586	195	1
Turbidity	NTU	23	0.617	1.7	0.3
Zinc	ug/L	8	1.826	3.26	0.96