EXECUTIVE SUMMARY

Introduction

The City of Marco Island is a 15.6 mi^2 area located in southern Collier County about 20 miles south of Naples and is the largest Barrier Island within southwest Florida's Ten Thousand Islands. Major development activities on Marco Island were initiated in the early 1960s which included dredging of the extensive canal system. Currently, the City has over 100 miles of internal and external waterways which are used extensively by residents and visitors for a variety of recreational activities.

In recent years, citizens have become concerned about declining water quality, both visually and chemically, in the extensive canal and waterway system which is an integral part of the City and provides direct access to off-shore waters for many residents. Marco Island has been listed by the Florida Department of Environmental Protection (FDEP) as impaired for nutrients (nitrogen) based upon annual geometric mean total nitrogen concentrations exceeding 0.30 mg/l during 2017 and 2018. The FDEP priority for TMDL development for Marco Island is "medium" which means that TMDL development is likely 5-10 years away. Off-shore areas southeast of Marco Island are also listed as impaired for total nitrogen, as well as total phosphorus and fecal coliform, due to exceedances of the applicable criteria for these parameters in recent years.

Current Study

During October 2019, the City issued a Request for Proposal (RFP #19-033: Consulting Services for Nutrient Source Evaluation and Assessment) which solicited proposals from qualified consultants to evaluate nutrient sources and provide recommendations for water quality improvement. ERD was selected by the City, and a Scope of Work and project schedule were developed and approved by the City Commission. Work efforts were initiated on this project by ERD during April 2020.

A field monitoring program was conducted by ERD from April-November 2020 to identify ambient water quality characteristics and collect hydrologic and water quality data for use in developing hydrologic and nutrient budgets for the waterways. A detailed evaluation of sediment characteristics in Marco Island waterways was also conducted which included physical and chemical characterization of surficial sediments and evaluation of internal nutrient recycling. This study collected 600 individual samples of rainfall, runoff, groundwater seepage, and sediment nutrient release, with more than 5,300 individual lab analyses and more than 4,200 field measurements to identify nutrient sources.

Historical Water Quality Characteristics

Marco Island Waterways

Limited water quality monitoring has been conducted within the Marco Island waterways since approximately 2001. At that time, the City chose 12 monitoring locations which were spatially distributed over the island to include primary waterways and drainage basin areas with monitoring frequencies ranging from monthly, to bi-monthly, to quarterly. A more intensive bi-monthly water quality monitoring program was initiated in 2007, and in 2015, two additional sites were added and sampling was changed to a monthly collection interval at all 12 sites. These efforts have generated a large amount of good quality data.

Overall, water quality characteristics in Marco Island waterways have been relatively consistent at most sites from 2015-2020, although statistically significant increases in values over time have been observed for total nitrogen, chlorophyll-a, and Secchi disk depth at the Barfield Bridge site; for total nitrogen and total phosphorus at the Collier Bridge site; and for total nitrogen at the McIlvaine site. Overall, mean total nitrogen concentrations in Marco Island waterways from 2015-2020 have been moderate to elevated in value, with virtually all measurements exceeding the water quality criterion of 300 μg/l.

Annual mean total phosphorus concentrations in Marco Island waterways have been low to moderate in value, with concentrations at 11 of the 14 monitoring sites less than or equal to the applicable criterion of 46 μg/l for total phosphorus. Exceedances of the criterion for both total nitrogen and total phosphorus have been consistently observed at the Landmark and Swallow monitoring sites, each of which is located in upstream portions of a relatively stagnant canal system.

Enterococci counts at a majority of the Marco Island monitoring sites are well below the FDEP criterion for this parameter of 35 cfu/100 ml. However, substantial exceedances of the Enterococci standard have been observed at the Olde Marco and Swallow monitoring sites, suggesting possible sewage impacts at these sites. The Olde Marco district has a privately owned and operated collection system. Sewage from Old Marco Lane North is collected by North Marco Utilities and pumped to the City wastewater facility for treatment.

Off-Site Waters

In addition to the historical monitoring conducted by the City of Marco Island (discussed in the previous section), a large amount of historical monitoring data has been collected by other agencies, such as Collier County, the South Florida Water Management District (SFWMD), FDEP, and the Florida Department of Health (FDOH) in off-island waters although multiple monitoring sites have also been included within the Marco Island waterways.

From 2015-2020, off-shore sites surrounding Marco Island exhibited annual geometric mean (AGM) values for total nitrogen which exceeded the NNC of 300 μg/l during 28 of the 30 annual periods of data available at SFWMD and FDEP monitoring sites. Exceedances of the NNC for total phosphorus were observed during 9 of the 27 annual periods (33%), with exceedances of the NNC for chlorophyll-a during 3 of the 27 annual periods. Exceedances in Enterococci counts have also been observed on the northwest shoreline of the island, particularly in recent years.

Off-shore areas provide the baseline water quality for Marco Island waterways and reflect water quality characteristics which would be present if no additional inputs occurred from Marco Island. Marco Island can, and does, add to existing concentrations but cannot reduce nutrient levels below the existing elevated levels. NNC criteria cannot be met in Marco Island waterways until the baseline water quality meets NNC.

Current Water Quality Characteristics

A monthly surface water quality monitoring program was conducted in Marco Island waterways and off-shore waters by ERD from April-September 2020 at 17 fixed monitoring locations. The surface water monitoring sites were selected to provide general information on ambient water quality characteristics, evaluate horizontal and vertical water quality variability, and assist in identifying potential significant loading sources. Six separate monitoring events were conducted at each of the 17 sites.

Water quality monitoring conducted by ERD indicated a well mixed water column at all on- and off-shore monitoring sites within the top 4-5 m of the water column. However, areas deeper than 4-5 m, particularly in upstream portions of the canals, were characterized by anaerobic conditions with large increases in conductivity near the water-sediment interface. These conditions suggest poor circulation and relatively stagnant conditions in upstream areas. Chemical characteristics of surface water samples collected by ERD are similar to long-term historical values measured in Marco Island waterways. Waterway samples suggest an enrichment in concentrations for nutrients and chlorophyll-a, compared with off-shore waters, which increases with increasing distance upstream within the waterways. No significant differences were observed in water quality characteristics between incoming and outgoing tidal events, although concentrations of nutrients and chlorophyll-a were often higher under outgoing tidal conditions.

Watershed Characteristics

A delineation of contributing drainage basin areas for Marco Island was conducted by ERD as part of this project. The main island is divided into 5 sections, referred to as Sub-basins 1-5, which are bisected in an east-west direction by San Marco Road and in a north-south direction by Bald Eagle Drive and S. Heathwood Drive, although the north-south separation is not as definitive as the east-west separation. The northeast section is further sub-divided into areas which discharge to Factory Bay and areas which discharge to Marco Bay. Each of the 5 sub-basins discharges through the respective canal systems to open tidal water. Sub-basin 1 discharges to Collier Bay and Marco Bay. Sub-basin 2 discharges to Factory Bay and ultimately to Marco Bay, with Sub-basin 3 discharging to East Marco Bay, Sub-basin 4 discharging to Caxambas Bay, and Sub-basin 5 discharging to Roberts Bay and ultimately to Caxambas Bay.

Under current conditions, the Marco Island drainage basin is dominated primarily by medium-density residential, multi-family residential, commercial, recreational, and highway land uses. In addition to the developed land use categories listed previously, the drainage basin also includes open spaces, forests, wetlands, and fresh and saltwater ponds. Soils within the drainage basin are well-drained with a rapid infiltration rate.

Stormwater

Marco Island has constructed an extensive stormsewer system to collect and discharge runoff generated during rain events. Most stormsewer systems are relatively short in length and discharge surface runoff into the nearest canal system or open water. Overall, the Marco Island stormsewer system has 1,864 stormsewer inlets with 1,324 of the current inlets (71%) retrofitted with inlet filters manufactured by Suntree which are designed to remove leaves, litter, and solid debris. The inlets are periodically cleaned and serviced by City personnel.

Currently, Marco Island has 393 stormsewer outfalls, with the vast majority discharging to the canal system. Only one of the outfalls discharges directly to the Gulf of Mexico, with 7 outfalls discharging to Barfield Bay, 10 outfalls discharging to Roberts Bay, 2 outfalls discharging to Caxambas Bay, and 5 outfalls discharging to Collier Bay. Most areas use a system of grassed swales to convey surface runoff, and a large portion of the generated runoff volume infiltrates into groundwater. Most of the larger developments have stormwater treatment systems consisting of dry ponds, but treatment systems are not present in residential areas.

Sewage Disposal

Currently, disposal of sanitary sewage on Marco Island occurs almost exclusively using a central sewer collection system. According to the Water and Sewer Department (W&SD), only approximately 20-21 on-site treatment systems remain on the island, and the remaining systems will be phased out by 2024.

Collected raw sewage is transported through an extensive network of underground sewer mains to a sewage treatment facility located south of Factory Bay near the intersection of E. Elkcam and Windward Drive, referred to as the Marco Island Reclaimed Water Production Facility (RWPF). The facility provides treatment for wastewater generated on Marco Island along with portions of the Isles of Capri and Goodland. The average daily sewage inflow to the plant from 2011-2020 has been 2.20 MGD compared with a capacity of 4.92 MGD.

Reuse Irrigation

Virtually all sewage treated at the Marco Island wastewater treatment plant becomes reuse irrigation and, according to the W&SD, the demand often exceeds the availability. During these conditions, raw water from the City's primary drinking water source is used to augment the reuse system either directly or indirectly. Reuse irrigation is applied to 229.99 acres of area golf courses at a rate of 0.56 inch/week and to 398.96 acres of public access areas, both on and off island, at a rate of 0.88 inch/week. Reuse irrigation contains concentrations of total nitrogen which are an order of magnitude higher in concentration than adjacent waterways and concentrations of total phosphorus which are 2 orders of magnitude higher.

Hydrologic Inputs

Average annual hydrologic budgets were developed for the waterways associated with Sub-basins 1-5 which include inputs from direct precipitation, stormwater runoff, irrigation, and groundwater seepage. Hydrologic losses are calculated for evaporation and outflow to adjacent tidal waterbodies.

The largest annual hydrologic input to the 5 waterways is groundwater seepage which contributes 60-72% of the total annual hydrologic inputs. Direct precipitation is the second most significant hydrologic input in Sub-basins 1, 2, 4, and 5, with irrigation (consisting of both reuse and potable sources) comprising the second most significant inflow in Sub-basin 3. Inputs of stormwater runoff are minimal in terms of the annual hydrologic budgets, contributing only 4-7% of the annual volumetric inflows. Hydraulic residence times in the waterways are relatively long, ranging from 5-11 months.

Nutrient Inputs

Marco Island waterways receive nutrient inputs from a variety of sources which include bulk precipitation, stormwater runoff, irrigation, shallow groundwater seepage, and internal recycling. Chemical characteristics of bulk precipitation, stormwater runoff, reuse irrigation, and groundwater seepage, along with inputs from internal recycling, were measured by ERD during the period from April-November 2020, and information from each of these sources is used to generate annual average nutrient budgets for total nitrogen and total phosphorus for the waterbodies in the 5 sub-basin areas.

Measured concentrations of nutrients in bulk precipitation were low in value and similar to samples collected in other coastal areas in South Florida. Five automated stormwater monitoring sites were installed in multiple different land uses and in areas with and without reuse irrigation, and a total of 60 stormwater and baseflow samples were collected. Concentrations of total nitrogen were highest in areas with extensive reuse irrigation and residential areas with a high level of landscape maintenance. Reuse samples were characterized by elevated concentrations of both total nitrogen and total phosphorus. Groundwater seepage contained moderate to high concentrations of total nitrogen and total phosphorus, with a large volumetric influx. Sediment release experiments indicated large release of nutrients from waterway sediments under both aerobic and anaerobic conditions.

Nitrogen Loadings

The most significant annual mass loadings of total nitrogen to Marco Island waterbodies originates from sediment nutrient release which contributes 61-77% of the annual nitrogen loadings, depending upon sub-basin. The second most significant nitrogen loading to Marco Island waterbodies is groundwater seepage which contributes 15-30% of the estimated annual loadings. Combined together, sediment nutrient release and groundwater seepage contribute approximately 90% or more of the annual nitrogen loads for most sub-basins.

Annual mass loadings of total nitrogen from stormwater runoff to Marco Island waterbodies are low in comparison to other sources, contributing only 3-9% of the annual nitrogen inputs. The smallest annual contribution of total nitrogen originates from bulk precipitation which contributes 1.4-3.9% of the annual nitrogen loadings, depending upon the particular sub-basin. Areal nitrogen loadings to the 5 waterbodies range from 9.3-25.8 g N/m^2-yr which are somewhat higher than relatively undisturbed estuary systems.

Phosphorus Loading

On an average annual basis, the most significant loadings of total phosphorus to Marco Island waterbodies originates from sediment nutrient release which contributes 42-72% of the annual phosphorus loadings, depending upon sub-basin area. Groundwater seepage is the second most significant loading source for phosphorus in Sub-basins 1, 2, 3, and 4, contributing 18-42% of the annual phosphorus loading to adjacent waterbodies. However, for Sub-basin 5 waterways, stormwater runoff is the second most significant loading source, contributing 24% of the annual phosphorus loading to this waterway.

Stormwater runoff is the third most significant phosphorus source to Sub-basins 1, 2, 3, and 4, contributing 7-13% of the annual phosphorus loadings. Groundwater seepage is the third most significant phosphorus loading to Sub-basin 5. Phosphorus loadings to Marco Island waterbodies from bulk precipitation are relatively minimal, contributing only 2-4% of the annual average phosphorus inputs.

Stable Isotope Analyses

Analyses of stable isotopes of Oxygen (O) and Nitrogen (N) were conducted on 235 samples of bulk precipitation, runoff, reuse irrigation, golf course pond, and groundwater seepage. The isotopic data make a strong case for landscaping and reuse irrigation activities as the dominant sources of nitrogen in groundwater seepage inflows to Marco Island waterways. Nitrogen inputs to runoff and baseflow appear to be impacted by a variety of sources, including rainfall, fertilizer, and reuse activities, although the isotope data suggest that landscaping activities may be a more significant source to runoff than reuse irrigation, while reuse appears to impact baseflow characteristics.

Water Quality Management Philosophy

Marco Island is surrounded by multiple bays and channels which receive inflows from large wetland areas located west of US 41, and these inflows are often colored and contain elevated nutrient concentrations. When these inflows combine with tidal waters, the resulting water quality characteristics represent baseline water quality in off-shore areas surrounding Marco Island. This water moves into and out of the extensive canal system with each tidal cycle and creates baseline minimum water quality in the island waterways. When the tidal water enters the waterway canals, nutrient concentrations are enhanced by watershed inputs from precipitation, runoff, irrigation water, and groundwater seepage. It would be virtually impossible to improve waterway quality to levels less than present in the off-island inflows, and the baseline conditions cannot be improved without significant regional projects to improve the characteristics of upland inflows to the off-shore waters.

Both Marco Island waterways and off-shore waters are currently listed as Impaired Waters by FDEP, with Marco Island waterways listed as impaired for nitrogen and off-shore water listed as impaired for nitrogen, phosphorus, and fecal coliform bacteria. Since the baseline water entering the waterways is already impaired, Marco Island waterways will continue to be impaired until the impairment is addressed in the off-shore waters. Even if Marco Island eliminated all inputs of water and nutrients to area waterways, the water quality impairment within the waterways would remain since the incoming water is already impaired. Both historical and current monitoring efforts indicate an enrichment in nutrients within the waterways compared with off-shore waters, and the water quality management options discussed in this report are designed to reduce the enrichment processes to prevent further degradation of inflows after entering the canal systems.

Recommended Management Options

Nutrient loadings to Marco Island waterways originate from a variety of sources, including sediment nutrient recycling, groundwater seepage, stormwater runoff, reuse irrigation, and bulk precipitation. A discussion of each of these inputs is provided in this report. A summary of recommended management options is given below with details provided in the main report.

Internal Recycling

The largest annual nutrient loading to the waterways originates from internal recycling. Given the large cost for sediment removal and lack of research on effects of alum and other sediment treatments in marine environments, the only feasible management option is to improve water quality within the waterways to the extent possible by reducing nutrient loadings from other sources and create a well-mixed and aerobic water column in all areas. Sediment nutrient release occurs at a faster rate when lower portions of the water column become anaerobic, and this release can be minimized, but not eliminated, by maintaining aerobic conditions throughout the water column in all areas.

Stormwater Management

Direct stormwater runoff contributes a small portion of the annual loadings to waterways since virtually all runoff is infiltrated into groundwater through the highly permeable soils. Options were discussed for installation of swale blocks to increase runoff retention, and installation of a denitrification bed beneath existing swales which should be implemented during routine maintenance activities. Continuation of the existing system of inlet filter systems is also recommended.

The City currently relies on water management criteria implemented by SFWMD for construction of stormwater management facilities for development. However, SFWMD provides an exemption from stormwater criteria for single-family homes, and most homes on the island have no stormwater treatment. It is recommended that the City consider adding stormwater management requirements for future homes or re-development. Proven LID systems such as rain gardens can be easily incorporated into the landscape and not recognizable as a stormwater treatment system. Some systems also incorporate a filter media to improve removal of nutrients.

Seepage Inflows

Nutrient loadings from groundwater seepage constitute the second largest source of nitrogen to the waterways and reflect the combined inputs from direct rainfall, infiltrated runoff, irrigation water, and excess fertilizer applications. An option is presented for a denitrification wall to intercept the seepage and convert soluble nitrogen to a gaseous form. The denitrification option should be implemented to existing seawalls during replacement or repair projects, and incorporated into seawalls for all new development.

Reuse Irrigation

Reuse irrigation is currently being applied at rates which exceed the ability of turfgrasses to provide uptake of the water and nutrients, and results in a large amount of the reuse leaching past the root zone into groundwater. The volume of currently applied reuse irrigation which exceeds the evapotranspiration requirements of the vegetation is 12% (526 million gallons/yr or 1.44 MGD) of the total annual seepage volume entering waterways and a much larger percentage of the annual mass loading due to the much higher nutrient concentrations compared with other inputs. The average daily reuse application from 2011-2020 is 1.84 MGD, so 78% (1.44 MGD/1.84 MGD) of the applied reuse irrigation passes through the soil and enters groundwater with little change in concentration. The geomean total nitrogen reuse nitrogen concentration from 2012-2021 is 8.72 mg/l. Even if a 50% reduction in concentration is achieved during movement through groundwater, the additional nitrogen loading from excess reuse is 8,312 kg/yr which is 40% of the total annual nitrogen loading from groundwater in all sub-basins combined.

Alternative methods of reuse disposal should be evaluated, and reuse should be applied only as needed to meet evapotranspiration requirements. If reuse were applied only as needed, the groundwater nitrogen impacts would be substantially reduced, resulting in a visible improvement in waterway water quality.

The reuse irrigation system should also be inspected routinely to identify areas of over-spray or broken irrigation heads. An educational program should be developed to inform residents about nutrient loadings in reuse and potential water quality impacts from excessive use.

Reuse irrigation is also used on the golf course, but the water is stored in a surface pond prior to application. Nutrient reduction occurs within the pond which reduces the nutrient loading to concentrations similar to urban runoff in other parts of Florida which reduces potential groundwater impacts. However, at the irrigation rates indicated by annual reuse summary forms provided to FDEP, the irrigation rates also exceed evapotranspiration requirements, although not to the extent observed by reuse application in other public areas, and irrigation reduction should be considered to match evapotranspiration requirements.. Nutrient loadings from reuse irrigation should be considered in fertilizer applications.

Canal Recirculation

Both historical and current data collected by ERD indicate areas of dead-end canals with poor water quality resulting from lack of tidal flushing. These areas are easily identified on aerial photographs. General options are provided for improving recirculation by interconnecting canal sections on the north and south sides of San Marco Rd. Existing culverts, if present, should be located and cleaned, and the results should be monitored. If the culverts do not exist or do not provide sufficient recirculation, then additional culverts should be installed. A hydraulic study is recommended to identify optimum locations for additional interconnections.

Street Sweeping

Street sweeping is a low-cost alternative for reducing pollutants entrained in runoff. A limited street sweeping program is currently conducted by the City by a private contractor, with sweeping conducted only in intersections and along Collier Blvd. The City has approved purchase of a regenerative air sweeper in the 2022 budget, and the City should use this to increase sweeping to all roadways in Marco Island.

Fertilizer Ordinance

The Fertilizer Ordinance adopted in 2016 appears to contain many of the necessary elements to minimize water quality impacts from fertilizer applications, and fines are proposed for violations of the Ordinance. However, there are currently no personnel assigned to monitor infractions. Enhanced enforcement of this Ordinance is recommended, with repeat offenders losing the right to perform services on the island. The City should develop a voluntary educational program with local fertilizer retailers to inform residents of the fertilizer summer ban.

Public Education

Public education is a powerful and often ignored tool to inform residents about the link between watershed activities and water pollution in the waterways. Most people will alter behavior if they understand the consequences of unintended actions. Opportunities, such as pamphlets, billing inserts, billboards, and public meetings, should be used to educate residents.

Stormwater Utility

The City currently has no dedicated funding source for water quality improvement projects other than general revenues. Adoption of a Stormwater Utility is recommended to provide additional funding sources. A Stormwater Utility is often required by FDEP or local governments to qualify for certain funding grants, and the cost of the Utility could easily be recovered several times over through these grants.

Regulatory Impacts of Impairment

Marco Island waterways have been designated as Impaired by FDEP, and implementation of a TMDL will be initiated within the next 5-10 years. However, FDEP has developed an alternative assessment category, designated as 4e, which allows the responsible entity to conduct an independent evaluation of nutrient sources and management options. ERD recommends that the City pursue this designation to maintain control of the restoration process.

Water Quality Monitoring

The current monthly water quality monitoring program in the Marco Island waterways generates a large amount of useful data and should be continued. Water quality data will become even more important in the future as water quality improvement projects are initiated. The City should engage a qualified water quality consultant to review data and provide annual reviews and updates. Recommendations are provided for enhancing the existing program.

Good News

Multiple options are discussed in this section for reducing nutrient loadings to Marco Island waterways. The field evaluations indicated that groundwater seepage is a large source of loading to surface waters, and reuse irrigation and landscaping activities are the primary loading sources to groundwater. Landscaping activities can be modified at low cost through aggressive educational programs. Reuse impacts can be minimized through low to moderate cost options such as off-island customers and alternative disposal methods such as aquifer recharge which already exists. Modification of impacts from reuse and landscaping is capable of providing measurable improvements in water quality at low costs to the City, and ERD recommends that these issues take priority in management activities.

Management Options Summary

A summary of recommended water quality management options for Marco Island is given in Table ES-1. It is recommended that the management options be implemented as funding sources and opportunities become available.

TABLE ES-1

RECOMMENDED MANAGEMENT OPTIONS FOR MARCO ISLAND

ISSUE	RECOMMENDATION	COST ($)
Internal Sediment Nutrient Recycling	Sediment removal is prohibitively expensive; most feasible option is to reduce the rate of nutrient release by improving water quality by managing other sources to maintain aerobic conditions in waterways	189,820,000
Stormwater Management	a. Install shallow swale blocks in swales to increase retention of runoff	$300/swale block
	b. Install denitrification beds beneath existing swales during maintenance or regrading projects.	8,400/100 ft for media
	c. Continue current inlet filter system to assist in removing solids and debris from waterways	Included in current program
	d. Consider stormwater management requirements for single-family homes such as rain gardens	Low
Seepage Management	Install denitrification beds adjacent to seawalls during repair or replacement; add to new seawalls during construction	27,000 per 100 ft of seawall
Reuse Irrigation	a. Evaluate alternative methods for reuse disposal which do not increase loadings to groundwater or surface water	Unknown
	b. Conduct routine inspection and repair of the reuse irrigation system to prevent areas of overspray	
	c. Provide an educational program to inform residents about nutrients contained in reuse irrigation and potential water quality impacts	
Golf Course	a. Evaluate potential reduction in irrigation rates	Unknown/Low
	b. Reduce fertilizer applications to account for nutrients in irrigation	
Recirculation	a. Locate and clean existing interconnecting culverts, if present	Unknown/High
	b. Conduct a hydraulic study to identify optimum areas for interconnecting culverts to increase recirculation	
	c. Install additional culverts, as necessary	
Street Sweeping	City to purchase regenerative air sweeper in 2022; increase sweeping to all City streets.	Low
Fertilizer Ordinance	a. Assist retailers with educational signage regarding summer season ban	Low
	b. Increase enforcement and revoke license from repeat offenders	
	c. Modify ordinance to require consideration of nutrients in reuse	
Public Education	a. Conduct public education program to inform residents of link between personal activities and water pollution	Low
	b. Conduct a dedicated educational program regarding responsible fertilizer use.	
Stormwater Utility	Adopt a Stormwater Utility to provide a dedicated funding source for water quality improvement projects	Unknown/Low
Regulatory Issues	The City should submit documentation for a 4e designation which would allow the City to control the process rather than FDEP	Low
Water Quality Monitoring	a. The City should continue the current monthly monitoring program to provide documentation on water quality improvements; improvements are recommended to enhance the existing program	Low
	b. Contract with a qualified water quality consultant to conduct annual reviews of data and trends and provide guidance on implementation of water quality improvement projects	