Lower St. Johns River Basin

Initiative

Fiscal Year 2008–2009
St. Johns River Water Management District

Lower St. Johns River Basin
State Funding Initiative
Fiscal Year 2008–2009

St. Johns River Water Management District
Palatka, Florida

2007

Contents

Lower St. Johns River Basin

Fiscal Year 2008–2009

Introduction—The District

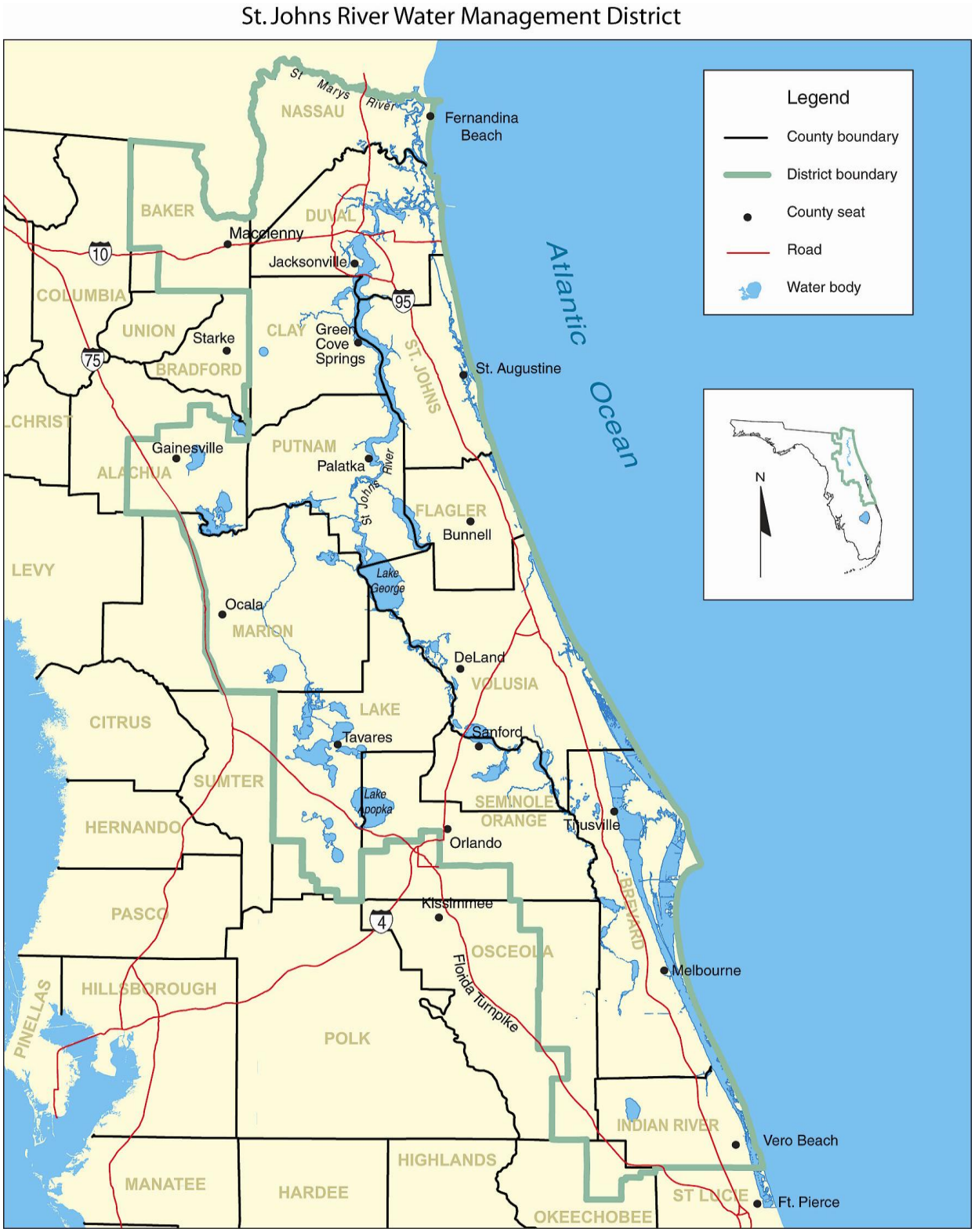
Water is Florida's most important natural resource and is central to our quality of life. The mission of the St. Johns River Water Management District is to ensure the sustainable use and protection of water resources for the benefit of the people of the District and the state of Florida.

Within the District boundaries are the longest river in the state, the St. Johns; more than one-third of the state's 7,700 lakes, including the second largest lake, Lake George; and the Indian River Lagoon, one of four Florida estuaries in the National Estuary Program.

The rapid growth of Florida's population has increased efforts on water resource development and restoration. Partnerships with other governmental agencies, organizations, and the public are a key element to successful implementation of projects aimed at protecting and restoring our water resources. The District recognizes the benefits of working cooperatively with others and that many projects require input and resources from numerous organizations.

The District has established partnerships with many federal agencies over the years. The U.S. Environmental Protection Agency has provided funds for the National Estuary Program and the Nonpoint Source Management Program. The U.S. Army Corps of Engineers has provided technical expertise and funding through several different programs. Hydrologic data collection and scientific analysis have progressed in cooperation with the U.S. Geological Survey.

The District has formed a partnership with the U.S. Department of Agriculture under the Wetlands Reserve Program, the Farmland Protection Program, the Rural Utilities Service, and the Environmental Quality Incentives Program. In addition, the U.S. Department of Commerce has provided funding for economically disadvantaged communities in the District for public works projects, including water and sewer infrastructure related to designated Surface Water Improvement and Management areas.


St. Johns River Water Management District
Legend
County boundary
District boundary
County seat
Road
Water body
N
Atlantic Ocean
St Marys River
NASSAU
Fernandina Beach
BAKER
DUVAL
Macclenny
Jacksonville
10
95
COLUMBIA
UNION
Starke
CLAY
Green Cove Springs
75
BRADFORD
ST. JOHNS
St. Augustine
CHRIST
Gainesville
PUTNAM
Palatka
ALACHUA
St Johns River
FLAGLER
Bunnell
LEVY
Lake George
Ocala
MARION
DeLand
VOLUSIA
LAKE
CITRUS
Tavares
Sanford
SUMTER
Lake Apopka
SEMINOLE
ORANGE
Titusville
HERNANDO
Orlando
PASCO
Kissimmee
4
BREVARD
OSCEOLA
Melbourne
Florida Turnpike
HILLSBOROUGH
PINELLAS
POLK
INDIAN RIVER
Vero Beach
HIGHLANDS
MANATEE
HARDEE
ST LUCIE
Ft. Pierce
OKEECHOBEE

Introduction—The Lower St. Johns River Basin

The Lower St. Johns River Basin (LSJRB) has a total area of 1,763,172 acres and includes all or part of Clay, Duval, Flagler, Putnam, St. Johns, and Volusia counties. The estuarine portion of the St. Johns River flows north from Welaka to the river's mouth at Mayport. This stretch of the river is tidally influenced and is an important breeding and feeding area for a variety of fish and wildlife. The lower St. Johns River is a designated priority water body of the 1987 Surface Water Improvement and Management Act.

Many factors threaten the health of the lower St. Johns River. As urban growth increased, so did the discharge of treated wastewater and storm water from urban areas. This increase in discharge has contributed to a steady decline in the river's water quality. Farming also has had an impact on the river in the form of agricultural runoff. All of these factors contribute to algal blooms, which prevent the sunlight from reaching aquatic plants. Algal blooms ultimately affect the manatee and fish populations that depend on the aquatic plants for food and habitat. Blooms of some algae species have a direct impact on fish and other wildlife.

Historical Overview

Early settlers were attracted to the shores of the St. Johns River by the ready access to transportation. Over time, land along the river was altered to support farming and for the construction of cities and, later, for industries. Municipal and industrial waste was initially discharged into the river without treatment, and urban stormwater runoff increased as the area developed. Since the late 1950s, a series of water quality problems has been identified that relate to both point and nonpoint pollution sources.

The first extensive attempt to address point-source pollution came with the advent of the Federal Water Pollution Control (Clean Water) Act of 1972. During the 1970s, five sewer-service districts were established within the city of Jacksonville and treatment of domestic effluent was elevated to the secondary treatment level. During that same period, scientists recognized that tributaries, in particular, have difficulty assimilating excessive amounts of pollutants. As a result, criteria were developed that require large developments in areas where central service is not available to use "package plants" to treat wastewater before discharging it into tributaries. Beginning in 1984, new developments were required to provide stormwater treatment through stormwater management systems (e.g., retention areas). In 1992, the city of Jacksonville developed a master stormwater plan to help improve water quality in the lower river. This master plan is being updated while implementation of the original plan continues.

The St. Johns River Water Management District (SJRWMD) and local partners are allocating extensive financial resources to restoring the LSJRB. Viable and cost-effective restoration options have been determined through scientific means; therefore, stakeholders have identified restoration options in the LSJRB and have made significant progress in improving water quality in the Upper St. Johns River Basin and the Upper Ocklawaha River subbasin. These successes afford SJRWMD the ability to shift resources to the LSJRB to cost-share with partners (city of

Jacksonville, JEA [water and sewer utility], and other local governments) to improve water quality over a 10-year restoration period. State funding to assist this $700 million effort, known as the River Accord, is important. The 2007 legislative appropriation of $12 million and the SJRWMD $15 million commitment will be used to sponsor reuse and septic tank remediation projects.

Citizen Involvement

In 1997, business, government, and environmental representatives from north Florida made a pledge to restore and enhance the lower St. Johns River by outlining a 5-year plan known as the "River Agenda." This group of individuals began working toward the six goals established to protect this vital resource and has successfully accelerated the restoration of the lower St. Johns River.

In 2003, a riverwide summit was held and new priorities were established, including priorities for the lower river. Additionally, a working group created a St. Johns River Restoration Strategy (report) and formed a framework for the St. Johns River Alliance, which will, in part, participate in the river's restoration.

In the summer of 2006, under the leadership of Jacksonville Mayor John Peyton, the "River Accord" was announced, with the primary partners—city of Jacksonville, JEA (water and sewer authority), SJRWMD, Florida Department of Environmental Protection (FDEP), and U.S. Environmental Protection Agency (EPA), in conjunction with smaller local governments and utilities—committing to a $700 million program to exceed the total maximum daily load (TMDL) nutrient allocation for the lower St. Johns River, which is to significantly improve water quality and to provide approximately 70 million gallons per day in reuse to augment freshwater being used for irrigation.

Also, the District is working with growers in the tri-county agricultural area (TCAA) to improve the quality of stormwater runoff and decrease the amount of irrigation discharge from farms. The TCAA includes St. Johns, Putnam, and Flagler counties. Agricultural best management practices (BMPs) are being implemented in an effort to reduce nitrogen, phosphorus, and suspended solids in farm discharges while sustaining profitable crop yields.

Agricultural areas have an impact on water quality reaching the St. Johns River.

Key Efforts

- Completed initial improvements to the majority of wastewater treatment facilities in the LSJRB, thereby lowering nutrient loads to the river and starting distribution of reclaimed water
- Implemented BMPs with farmers in the TCAA
- Developed an LSJRB Restoration Plan, allocating $43.2 million to reduce pollution from urban and suburban areas, to rehabilitate degraded aquatic habitats and to reduce pollution from agricultural areas
- Adopted nutrient TMDLs (based on the model developed for establishing

pollutant load reduction goals), in which the allocation of loads is being negotiated to improve the health of the river

- Supported the development of basin management action plans (BMAPs) for nutrient impairments in the main stem of the lower St. Johns River and fecal coliform impairments in tributaries of the lower St. Johns River. Initiative funding is targeted for subprojects that implement the BMAPs and reduce loads.
- Developed and funded a project list, in conjunction with local partners, the near-term (1–3 year) nitrogen reductions and reuse subprojects; certain efforts have already received committed funding that will contribute to measurable reductions of nitrogen discharges to the river
- Executed a memorandum of understanding among the city of Jacksonville, JEA, and the SJRWMD to establish a funding relationship for the implementation of wastewater treatment plant improvements, reuse projects, and stormwater retrofits projects

This sign is one of the many techniques used in a public awareness campaign to instill a sense of ownership and responsibility for personal actions affecting the river.

- Implemented the "It's Your River" public education campaign to raise awareness about impairments in the lower St. Johns River and the importance of personal actions that affect the river

Lower St. Johns River Basin Partners

SJRWMD has formed cooperative partnerships with federal, state, regional, county, and city governments; citizen support groups; environmental organizations; and other nonprofit institutions. The list of partners includes the EPA; the U.S. Army Corps of Engineers; the U.S. Department of Agriculture; the U.S. Geological Survey; the FDEP; the Florida Department of Agriculture and Consumer Services; the Florida Fish and Wildlife Conservation Commission; the city of Jacksonville; JEA; Jacksonville Water and Sewer Expansion Authority; the Clay County Utility Authority; Clay, Flagler, Putnam, and St. Johns counties; Green Cove Springs; Hastings; Orange Park; Palatka; Welaka; Bunnell; the TCAA BMPs Committee; the Northeast Florida Growers Exchange; the Duval County Public Health Department; the University of Florida's Institute of Food and Agricultural Sciences; the St. Johns River Alliance; Jacksonville University; University of North Florida; the TMDL Stakeholders Group and Executive Committee; and the Lower St. Johns River Tributaries BMAP group.

SJRWMD Governing Board 1- to 3-Year Priorities

For the Lower St. Johns River Basin, the goal is to protect and restore basin surface waters to Class III or better water quality and to protect and restore associated natural systems. In working toward this goal, the SJRWMD Governing Board has established the following priorities.

- Implement TCAA BMPs and regional stormwater management

- Assist FDEP with TMDL development and implementation
- Partner with state and local governments to implement reuse to meet TMDL and water supply objectives
- Evaluate Lake George impacts on water quality in the LSJRB

Total for This Basin

Funding package total (FY 2008–2009):	$50,000,000


Lower St. Johns River Basin
JEA wastewater treatment plant projects
Neptune Beach wastewater treatment plant project
Sandalwood Canal/Hogpen Creek project
Atlantic Beach wastewater treatment plant project
State Road A1A stormwater treatment facility
Durkeeville/Moncrief Creek project
Hogans Creek project
NAS Jacksonville reuse project
Town of Orange Park wastewater treatment plant project
Loch Rane/Bel-med project
Green Cove Springs projects
Tri-county agricultural area projects
Mayport
Jacksonville
Orange Park
Mandarin
Middleburg
Green Cove Springs
Palatka
Welaka
Bunnell
Lake George
Lake Disston
St. Johns River
Intracoastal Waterway
NASSAU
DUVAL
BAKER
BRADFORD
CLAY
PUTNAM
ST JOHNS
ALACHUA
FLAGLER
VOLUSIA
LAKE
Legend
Approximate location of project
Approximate location of discharge reduction projects
Town or city
Lower St. Johns River Basin
County boundary
District boundary
Road
Water body
0
10
Approximate scale in miles
N

Capital Subprojects

Discharge Reduction and Reuse Initiative

Priority Rating: 1A
Budget Request: $25,000,000
Partners: Florida Department of Environmental Protection (FDEP), local governments, and respective utilities
Core Missions: Water quality/ surface water resource protection, water supply
Funding Administration: St. Johns River Water Management District (SJRWMD)
Description: The requested funding will be used to meet or exceed the nutrient total daily maximum load (TMDL) that has been established for the Lower St. Johns River Basin (LSJRB). This subproject will improve wastewater discharges to the river and maximize reuse. The Lower St. Johns TMDL Executive Committee and Utilities Working Group—composed of local, state, and federal agencies; local utilities; and stakeholders—are guiding the development of the best management practices that will codify this subproject.

Example endeavors include the following:

- Atlantic Beach wastewater treatment plant (WWTP) improvements
- Neptune Beach WWTP improvements
- Town of Orange Park WWTP improvements
- JEA reuse and WWTP improvements projects
- NAS (Naval Air Station) Jacksonville full reuse—no discharges to the St. Johns River
- Regional transmission systems for reuse water

Local partners will provide the necessary funding match.

Tributary Remediation—City of Jacksonville

Priority Rating: 1B
Budget Request: $12,000,000
Partners: City of Jacksonville, JEA, Duval County Health Department, and Jacksonville Water and Sewer Expansion Authority
Core Mission: Water quality/ surface water resource protection
Funding Administration: FDEP
Description: The requested funding will be used to reduce bacteria levels in degraded tributaries by providing sanitary sewer lines in failing septic tank areas, and improving sanitary sewer and stormwater infrastructure, eliminating or repairing failing septic systems, eliminating illicit discharges, and implementing agricultural best management practices (BMPs). Because of surface water quality violations that have been documented, FDEP has designated 54 LSJRB tributaries as impaired or not meeting the designated use as Class III surface waters for fecal coliform bacteria. As a result, TMDLs have been developed for 10 of these tributaries.

This project will assist in meeting the adopted TMDLs and will assist the city in implementing corrective measures for reducing bacteria in its tributaries.

Local partners will provide the necessary funding match.

Tri-County Agricultural Area Water Quality Protection Cost-Share Program—Phase 2

Priority Rating: 2
Budget Request: $400,000
Partners: Local growers

Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to share the cost of implementing in-field agricultural BMPs that have been defined and shown to be effective by the U.S. Environmental Protection Agency (EPA), SJRWMD, and area growers. This phase of the cost-share program will apply new BMP standards for the use of controlled-release fertilizers and phosphorus, in addition to the phase 1 focus on nitrogen reduction from potato and cabbage crops. Once fully implemented, these BMPs are estimated to reduce nutrient loadings of nitrogen and phosphorus entering the river system—nitrogen by 26% and phosphorus by 11%. These nutrient loadings are associated with agricultural operations within the tri-county agricultural area (TCAA—Putnam, St. Johns, and Flagler counties). These funds will provide an economic incentive for voluntary implementation of the prescribed BMPs by area growers and will help offset the financial risks associated with the adaptation of new farming practices and technologies. To qualify for participation in this phase, each grower must commit to BMP implementation for 3 years.

Tri-County Agricultural Area Regional Stormwater Treatment

Priority Rating: 3
Budget Request: $3,000,000
Partners: Local growers, the Florida Department of Agriculture and Consumer Services, and the U.S. Department of Agriculture
Core Missions: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used for the design and construction of regional agricultural stormwater treatment facilities in the TCAA. The implementation of in-field BMPs is expected to significantly decrease the amount of nutrients entering the St. Johns River. However, in subbasins where a large percentage of the land is in agricultural use, regional treatment will be needed to meet total maximum daily loads (TMDLs) for phosphorus and nitrogen. A number of large-scale regional treatment facilities (10–15) are proposed for this watershed. The TCAA is composed of approximately 36,000 acres of row crops, primarily potatoes and cabbage.

Sandalwood Canal Regional Stormwater Treatment Facility

Priority Rating: 4
Budget Request: $1,000,000
Partner: City of Jacksonville
Core Missions: Water quality/ surface water resource protection, flood protection
Funding Administration: SJRWMD
Description: The requested funding will be used to construct a regional stormwater treatment facility and channel improvements to address water quantity and water quality problems. This subproject will provide in-channel improvements to reduce chronic erosion problems and to provide flood control and will improve a highly erosive man-made watercourse—Sandalwood Canal. This subproject will provide flood control benefits and will reduce instream velocities. Significant erosion in the canal has deposited sediments in Hogpen Creek. This subproject will significantly reduce sediment loading and dredging needs. Part of the nutrient removal capacity for these facilities has been used as compensatory treatment for roadway projects in the project area. The remaining capacity for the stormwater facilities not associated with roadway projects should remove 880 pounds of total nitrogen, 1,700 pounds of total phosphorus, and 100 tons of total suspended solids annually.

The local partner will provide the necessary funding match.

Implementation of Master Stormwater Management Plan—Gum Street Watershed

Priority Rating: 5
Budget Request: $900,000
Partner: City of Green Cove Springs
Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to construct a stormwater system for the Gum Street watershed. It will reduce annual loadings to the lower St. Johns River by 585 pounds of nitrogen, 390 pounds of phosphorus, and 3,206 pounds of suspended solids. This watershed is highly urbanized; therefore, the system will include an exfiltration (under the road) and end-of-pipe features.

The local partner will provide the necessary funding match.

Hogans Creek

Priority Rating: 6
Budget Request: $400,000
Partners: City of Jacksonville and U.S. Army Corps of Engineers (USACE)
Core Missions: Water quality/ surface water resource protection, flood protection
Funding Administration: SJRWMD
Description: The requested funding will be used to assess and to design the restoration of degraded urban stream (Hogans Creek) habitat by creating wetlands, enhancing the littoral zone, and removing sediment in association with a project between the city of Jacksonville and USACE. Restoration activities being proposed are improvements to the channel and excavation of littoral marshes to restore hydrologic conditions necessary for shallow water habitat. At these sites, filtration of overland flows would reduce the amount of sediments and pollutants. In addition, during peak flows water could be stored in the channel.

The local partner will provide the necessary funding match.

Implementation of Loch Rane/ Bel-med Regional Stormwater Treatment—Water Quality Enhancements

Priority Rating: 7
Budget Request: $950,000
Partner: Clay County
Core Missions: Water quality/ surface water resource protection, flood protection
Funding Administration: SJRWMD
Description: The requested funding will be used to finish construction of stormwater treatment facilities in conjunction with the two major ditches that convey residential, commercial, and highway runoff from the Loch Rane/ Bel-med area into the Ortega River. This area includes 3,128 acres of residential and commercial land without current stormwater treatment. Additionally, the subproject will address the continued sediment deposition in approximately 350 acres of environmentally sensitive wetlands owned by the Audubon Society of Florida. Without the proposed subproject, the wetlands would continue to receive suspended sediment from the upstream tributary area, eventually resulting in it being completely silted in. The stormwater master plan for the Loch Rane/ Bel-med area recommends retrofit work at the total cost of $6,132,918. Benefits of this subproject include improved water quality, reduced sedimentation, and reduced residential flooding.

The local partner will provide the necessary funding match.

Durkeeville West Stormwater Treatment Facility

Priority Rating: 8
Budget Request: $363,000

Partner: City of Jacksonville
Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to reconstruct stormwater collection and treatment infrastructure for a 185-acre drainage basin around the community of Durkeeville. In addition, two wet detention ponds will be constructed along Moncrief Creek. These ponds will serve 106 acres of the drainage basin, which receives no stormwater treatment and is a mix of medium density residential land use and industrial land use. About 1,850 feet of the creek will be graded and a new box culvert will be installed under 26th Street. No new impervious surfaces, curbs, or gutters will be added to the infrastructure. This subproject will remove 657 pounds of nitrogen and 159 pounds of phosphorus from Moncrief Creek.

Local partners will provide the necessary funding match.

Implementation of Master Stormwater Management Plan—Clay Street, Walburg Street, and Ferris Street Watersheds

Priority Rating: 9
Budget Request: $1,105,000
Partner: City of Green Cove Springs
Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to construct stormwater systems in the watersheds of Clay Street, Walburg Street, and Ferris Street and will be used to purchase a vacuum street sweeper. These systems will reduce annual loadings of nitrogen, phosphorus, and suspended solids to assist in meeting the nutrient TMDL for the lower St. Johns River. These watersheds are highly urbanized; therefore, the system will include an exfiltration (under the road) and end-of-pipe features. When practical, traditional swales and wet detention ponds will be used.

The local partner will provide the necessary funding match.

State Road A1A Stormwater Treatment Facility

Priority Rating: 10
Budget Request: $3,732,000
Partners: City of Jacksonville Beach and Florida Department of Transportation
Core Missions: Water quality/ surface water resource protection, flood protection
Funding Administration: SJRWMD
Description: The requested funding will be used to treat stormwater runoff, provide attenuation, and control erosion in the area of State Road (SR) A1A and SR 212, in Jacksonville Beach, north to Hopkins Creek in Neptune Beach. A weir and pump station will be constructed along the drainage channel of Hopkins Creek east of Penman Road to allow treatment and holding of storm water. This subproject would use available public vacant land along the drainage channel for stormwater treatment. In addition, the drainage channel will be dredged for the removal of sediments to improve treatment of stormwater, to attenuate the flow, and to provide drainage for the area. The drainage channel will be bulk-headed to mitigate erosion and improvements will be made to culvert road crossings. This subproject will reduce nitrogen loading by 430 pounds, annually.

The local partner will provide the necessary funding match.

Assessment Subprojects

Refinement of TMDLs and Other Management Tools

Formerly: "PLRG and TMDL Development and Implementation"
Priority Rating: 1
Budget Request: $650,000
Partners: City of Jacksonville, U.S. Geological Survey, FDEP, USACE, Duval County Public Health Department, and other agencies as appropriate
Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to refine management tools, such as TMDLs, for the lower St. Johns River. The St. Johns River is an extremely complex ecosystem; although it is a river and an estuary, it often exhibits environmental characteristics typically associated with lake systems. Consequently, the way it reacts to and processes pollutants is not clearly understood. To develop realistic restoration goals and to develop workable restoration strategies and management tools, monitoring and assessment subprojects need to be performed and specifically designed to help resource professionals properly manage the river.

The following efforts were determined by the LSJRB Technical Advisory Committee to be the most critical for providing needed scientific information. These efforts include developing viable indices of biological health for both the freshwater and saltwater portions of the LSJRB estuary, an assessment of factors controlling marine algal blooms, determining critical submersed aquatic vegetation thresholds, establishing standards for adequate vegetative buffer zones for nutrient input reduction, determining the effects of land use changes on the river's ecosystem health, assessing nonconventional toxic substances and their affects on the river biota, monitoring of cyanotoxins, and acquiring geographic information systems land use data for TMDL and resource assessments.

Tributary Assessment—City of Jacksonville

Priority Rating: 2
Budget Request: $500,000
Partners: City of Jacksonville, JEA, Duval County Health Department
Core Mission: Water quality/ surface water resource protection
Funding Administration: SJRWMD
Description: The requested funding will be used to complete assessments on 33 of the 54 tributaries, which are referred to as impaired or not meeting the designated use as Class III surface waters for fecal coliform bacteria. As a result, TMDLs have been developed for 10 of the tributaries and 54 TMDLs are expected to be adopted by the end of 2008. The assessments will be conducted to determine the source of the unacceptable bacteria levels and recommend remediation options to meet required TMDLs.

Local partners will provide the necessary funding match.

St. Johns River Water Management District
4049 Reid Street • P.O. Box 1429
Palatka, FL 32178-1429
On the Internet: *www.sjrwmd.com*