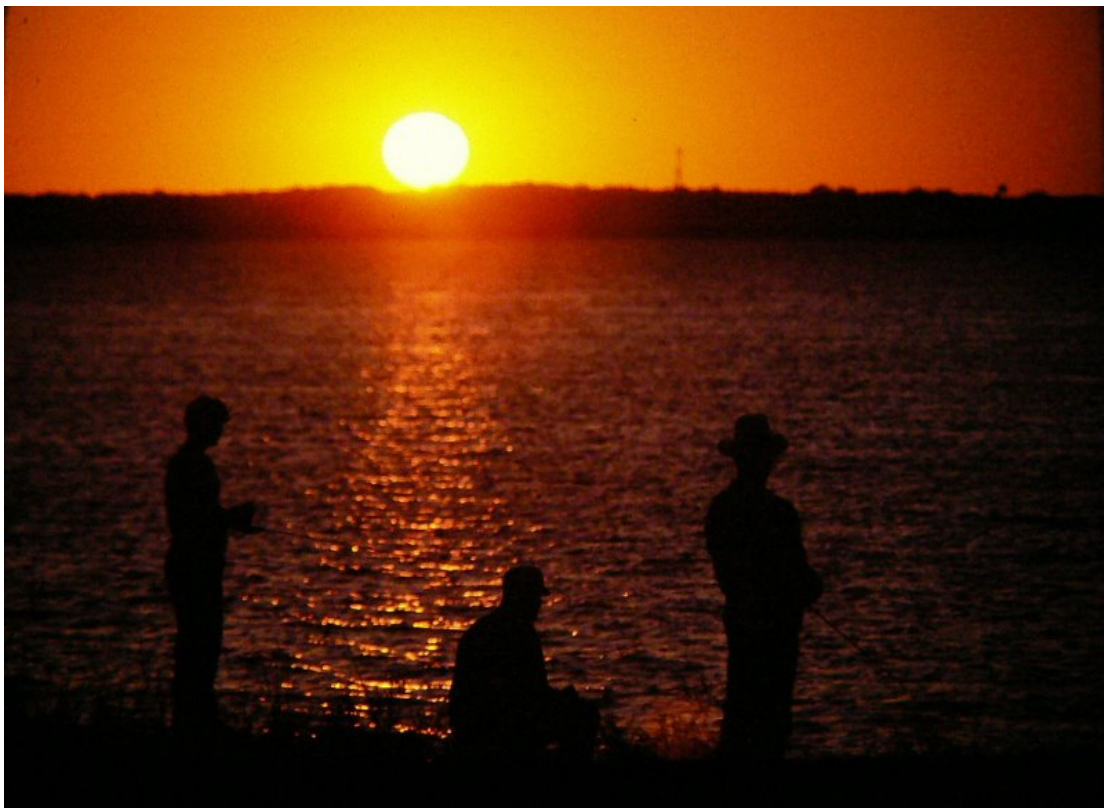




## **Biennium Report**

**July 26, 2008**



*The St. Johns River defines Jacksonville's history, culture, economy, character, and, ultimately, its future.*

*~ Mayor John Peyton*

# CONTENTS

<b>INTRODUCTION</b>	<b>4</b>
<b>STATUS OF RIVER ACCORD REMEDIES</b>	
Nitrogen Fertilizer: City Ordinance Amendments	9
Nitrogen Reduction Through Improved Wastewater Treatment, Increased Re-Use and Collaboration	10
River Accord Memorandum of Understanding	13
Funding Status All Projects	14
Long Range Prognosis	14
Septic Tank Failure Area Phase Out	16
Septic Tank Enforcement	18
Stormwater Management	19
Improving River Access	22
State of the River Report	24
Water Quality Monitoring System	27
<b>THE FUTURE</b>	
Planning for Growth	31
Basin Management Action Plan	35
Lower St. Johns River Basin Program	37
<b>CLOSING</b>	<b>40</b>

## INTRODUCTION

The St. Johns River defines Jacksonville's history, our culture, our economy, our character, and ultimately, our future.

Today, the river faces significant challenges. Residents have recently witnessed a harmful algal bloom that choked segments of the river, requiring the state health department to issue warnings that the river was unhealthy for humans.



*Mayor John Peyton, Fred Odom (WSEA), Greg Strong (FDEP) and Kirby Green (SJRWMD) sign The River Accord on July 27, 2006.*

Meanwhile, 55 of Duval County's 71 tributaries have bacteria levels so elevated that they are deemed unsafe for fishing and swimming.

That's why Mayor John Peyton and other key partners are investing in the river's future through *The River Accord: A Partnership for the St. Johns*, a 10-year, \$700 million initiative to begin restoring the health of the Lower St. Johns River Basin.

The partners contributing to the improvement of the river include:

- City of Jacksonville
- St. Johns River Water Management District (SJRWMD)
- JEA
- Water Sewer Expansion Authority (WSEA)
- Florida Department of Environmental Protection (FDEP)
- Clay County Utility Authority
- City of Jacksonville Beach
- St. Johns County Utility
- City of Atlantic Beach
- City of Neptune Beach
- Clay County
- Town of Orange Park
- City of Green Cove Springs
- City of Palatka
- Town of Hastings
- Putnam County
- St. Johns County

Together, these partners will commit \$700 million to reduce the amount of nitrogen discharged into the river by:

- phasing out old-technology wastewater treatment plants
- improving other wastewater treatment plants and building pipelines necessary to reuse treated wastewater for irrigation of lawns, parks and golf courses
- eliminating failing septic tanks
- capturing and treating stormwater before it enters the river.

JEA will contribute \$200 million toward the *Accord*; the SJRWMD, up to \$150 million; the City, \$150 million. The remaining \$200 million will be sought from various federal and state sources. These investments will be the largest in the Lower St. Johns River Basin's history.

Ten key issues, and their remedies, for significant nitrogen reduction were identified in white papers developed relating to the *Accord*. Summarized below, these discussions of the individual yet interrelated problems and remedies were published on the City of Jacksonville's Web site in 2006 at [www.coj.net/Mayor/River+Accord/River+Accord+White+Papers.htm](http://www.coj.net/Mayor/River+Accord/River+Accord+White+Papers.htm).

### **Nitrogen - Fertilizer**

One factor that has led to the river's harmful algal blooms is that the level of nutrients entering the river has simply surpassed the St. Johns' ability to naturally process them. While there are many sources of these nutrients, one comes directly from residential lawns – fertilizers. Even though a large amount of fertilizer application occurs on public and commercial properties, such as parks and golf courses, excess or improper application of fertilizers by residential users or professional lawn services introduces a significant amount of nutrients into the river.

### **Nitrogen Reduction through Improved Wastewater Treatment, Increased Reuse and Collaboration**

Since 2000, JEA has voluntarily reduced the amount of nitrogen it discharges into the St. Johns River by nearly 50 percent. JEA will continue to reduce the amount of nitrogen it discharges into the river by increasing reclaimed water use, retiring the remaining old-technology treatment plants and upgrading its large current-technology treatment plants.

### **Phasing out Septic Tanks in Areas with High Failure Rates**

There are approximately 85,000 septic tanks throughout Duval County. Many of these septic tanks are failing and polluting the St. Johns River and its tributaries. In addition to creating unacceptable public health risks, failing septic tanks can inhibit private investment and economic development. Twenty-two areas in Duval County have been designated as septic tank failure areas by the Duval County Health Department. These areas account for approximately 21,000 (or 25 percent) of the city's septic tanks.

### **Septic Tank Enforcement Program**

Properly installed and maintained septic systems are an effective means of sewage management. However, current regulatory requirements only address the installation of septic systems. Only recently has any attempt been made to include operation and maintenance in the routine management of septic tanks. Most operational failures directly affect the homeowner and are therefore identified and corrected promptly. The detection of functional failures, however, generally occurs when the quality of an adjacent water body degrades and a search for potential sources indicates one or more failing septic systems.

### **Planning for Growth**

At current levels, the Lower St. Johns River Basin is exceeding the permitted amount of pollutants to still meet state and federal water quality standards. Meeting these standards and

meeting water supply demands will only become more challenging as regional growth increases. Nearly 1,000 people per day move to Florida. What's more, the number of proposed developments of regional impact (DRI) planned for Northeast Florida is substantial, and in some respects, daunting. This extreme growth will have quantifiable impacts on natural resources that will need to be addressed through appropriate resource management planning.

### **Stormwater Management**

The quality of runoff entering the Lower St. Johns River Basin and its tributaries from the City's Municipal Separate Storm Sewer System (MS4) is materially important to the overall health of the St. Johns River and must be improved significantly.



*Turbidity from runoff during the storm on July 17, 2008. This source is exempt from City of Jacksonville regulation under state law.*

*The runoff passed through the city-owned system, which is in violation of the city's National Pollutant Discharge Elimination System permit.*

### **Water Quality Monitoring System**

Turbidity, cloudy water due to suspended solids (including small biological life), is another key measure of water quality. Turbidity affects aquatic plant growth, smothers substrate and, in some cases, is severe enough to kill fish. Sources of high turbidity include heavy rain, floods, high winds, dredging operations, pollution, watershed development and poor land use practices that lead to increased levels of erosion organic matter and nutrients. Other important water quality variables include dissolved oxygen, electrical conductivity (salinity), pH, temperature, depth and chlorophyll concentration.

### **Improving Access**

Studies have shown that while Jacksonville is deserving of its moniker, The River City, there are currently inadequate opportunities for residents to enjoy the river and its tributaries. To address these needs *The River Accord*, along with its Preservation Project partners, proposes weekend access, park improvements, additional boat ramps, a visitor center and marina retention, where possible.

### **State of the River Report**

A team of faculty members from the University of North Florida and Jacksonville University will publish an annual *State of the River Report* for river stakeholders. This independent evaluation of the health and restoration progress of the Lower St. Johns River Basin also will be available to the public in an abbreviated printed version and online in its entirety.

## Program Accountability

To ensure the initiative meets its goals, *The River Accord* features a steering committee composed of representatives from partnering agencies. The committee meets quarterly and produces written annual reports to the mayor of Jacksonville, the Jacksonville City Council and the governing boards of the JEA, SJRWMD and WSEA.

### ***TMDL and BMAP Team***

The team responsible for developing and implementing the Total Maximum Daily Load (TMDL) and the Basin Management Action Plan (BMAP) serves as *The River Accord* steering committee.

### ***Annual Report***

This report addresses accountability for *The River Accord*. The current status of the 10 key components is described in the following pages.



## STATUS OF THE RIVER ACCORD REMEDIES

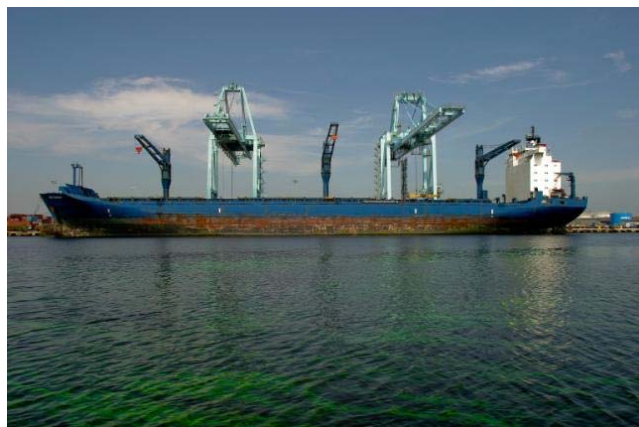
In the summer of 2006, natural resource agencies, utilities and the Office of the Mayor developed a strategy for addressing the St. Johns River's water quality problems. The result was *The River Accord*. The status of the components of the *Accord* is summarized below.

Under Section 303(d) of the Federal Clean Water Act, states are required to submit a list of waters that do not fully meeting their applicable water quality standards. As a part of this requirement, the State of Florida listed the St. Johns River as not meeting nutrient standards, and because of that action, a Total Maximum Daily Load (TMDL) was adopted for the river.

Discharge of nitrogen and fecal coli form are two of the problems addressed by TMDL standards. Several of *The River Accord* provisos are targeted at addressing these two problems.

### Nitrogen-Fertilizer: City Ordinance Amendments

The level of nutrients entering the St. Johns has surpassed the river's ability to process them, leading to harmful algal blooms.



*Algae bloom at JaxPort*

There are many sources of these nutrients, one of which comes directly from residential lawns in the form of fertilizers.

Generally, turf grass fertilizers contain phosphorous, nitrogen and potassium in various degrees and combinations. When applied in excess or inappropriately, these nutrients flow directly into waterways and stormwater systems or penetrate the aquifer.

Improper turf grass fertilization can also negatively impact surrounding plants.

On July 22, 2008 the city adopted a new law (Ordinance 2008-028), regulating both the application and storage of fertilizers. The ordinance addresses the impact of fertilizers and the resulting nutrients discharged to the St. Johns River. The standards of the ordinance include:

#### ***Commercial applicators***

The newly adopted ordinance requires that all persons applying fertilizer as part of a landscape maintenance service shall:

- Be trained in Florida Green Industries Best Management Practices (BMPs) for Protection of Water Resources in Florida.
- Comply with the BMPs
- Maintain training records for staff
- Maintain adequate records demonstrating compliance with the fertilizer application restrictions

### ***Low maintenance zone***

Property owners must establish and maintain a low maintenance area of 10 feet from the edge of all surface waters, streams, ponds, flooded retention areas, flooded drainage ditches and standing water on landscapes.



- The low maintenance zone shall remain untreated if a broadcast fertilizer without spreader deflector shields is used.
- If applying liquid fertilizer or using a spreader deflector shield, the untreated area may be reduced to three feet.
- The ordinance contains exceptions for newly sodded lawns, damaged lawns, sod plugs or sprigs, fertigation systems and in specified circumstances, licensed pest control operators.

### ***Storage***

The ordinance provides BMPs requirements for the storage of commercial fertilizers. Those include:

### ***Retail***

Retail facilities will distribute literature provided by the city to customers purchasing lawn and landscape products. Garden centers are strongly encouraged to have at least one managerial person trained in BMPs to provide the advice to customers.

### ***Golf Courses***

Golf courses are required to follow the provisions of the FDEP's *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses*.





### ***Landscaping Paradigm Shift***

The FDEP will coordinate its efforts with the SJRWMD, the University of Florida Institute of Food and Agricultural Sciences (IFAS) and any other interested agency to assist in public education efforts.

### ***Stakeholder Participation***

The City of Jacksonville Environmental Quality Division held discussions with a number of stakeholders to develop an effective strategy for nitrogen reduction. Altogether, direct solicitation of comments was sent to 1,500 stakeholders including:

- Jacksonville City Council
- Waterways Commission
- City of Jacksonville Planning and Development Department
- St. Johns Riverkeeper
- IFAS
- Agriculture Department
- Beaches municipalities
- Media
- “Mow and blow” lawn care companies
- Green industries

### ***Enforcement***

The three elements of the ordinance’s implementation are:

- Public education
- Warning
- Enforcement via fines

### ***Irrigation Ordinance***

Data suggests that 50% of Northeast Florida's groundwater is being used for irrigation purposes. This contributes to waste and excess runoff of nutrients into the river. In light of this fact, city government realized the need to enact landscape irrigation requirements that will reduce the impact to the Floridan Aquifer - our drinking water supply.

Ordinance 2008-030 was adopted on July 22, 2008 and will help to preserve our local water supply through conservation.

The ordinance’s requirements were drafted to reflect the SJRWMD's model water conservation ordinance. The landscape irrigation requirements provide for residential and non-residential addresses to irrigate on scheduled days.

The irrigation conservation requirements may be enforced by the Code Enforcement Division of the City of Jacksonville, the Sheriff's Office and any state law enforcement officer.

**No watering  
10 a.m. to 4 p.m.**



**Year round restrictions:**

- Odd addresses water on Wednesday and Saturday
- Even addresses water on Thursday and Sunday
- Non-residential water on Tuesday and Friday
- Apply  $\leq \frac{1}{2}$ " each watering day

**Recommended winter restrictions:**

- Effective December through February
- Apply  $\leq \frac{3}{4}$ " one time per week

**Nitrogen Reduction through Improved Wastewater Treatment,  
Increased Re-Use and Collaboration**

Since 2000, JEA has voluntarily reduced the amount of nitrogen it discharges into the St. Johns River by nearly 50 percent. JEA will continue to reduce the amount of nitrogen it discharges into the river by increasing reclaimed water use, retiring the remaining old-technology treatment plants and upgrading its large current-technology treatment plants. These initiatives will allow JEA to accommodate additional flows from continuing growth in the community while simultaneously reducing the amount of nutrients discharged to the river.



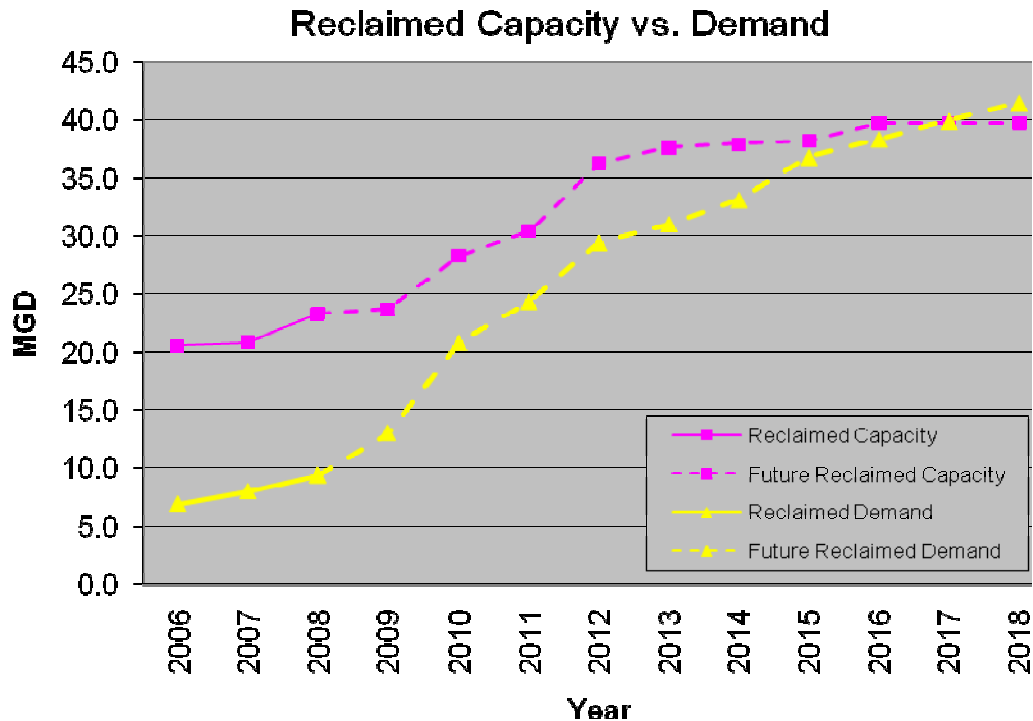
JEA's five regional wastewater treatment plants were built between 1960 and 1990 to replace many inefficient smaller plants and eliminate sewage flowing directly into the St. Johns River and its tributaries. Although the plants were originally never intended to reduce nitrogen to low levels, today more than 75 percent of the nitrogen is removed in the treatment process as a result of plant upgrades. Ongoing upgrades will increase that percentage to more than 90 percent.

As part of its *River Accord* commitments, JEA has embarked on a 10-year, \$160 million program to implement advanced nitrogen removal at its five major regional plants, which provide a discharge in the range of 3-5 mg/l of nitrogen.

On July 6, 2007, JEA and the SJRWMD signed an agreement under which the parties committed to equally invest a combined \$250 million to dramatically expand JEA's ability to deliver reclaimed water. The increased use of reclaimed water will not only result in a reduction in nitrogen discharged to the river, but also reduce water withdrawals from the Floridan Aquifer, preserving it for future generations of growth. To date, JEA has received more than \$3 million from the SJRWMD as reimbursement for projects approved and funded under this agreement.

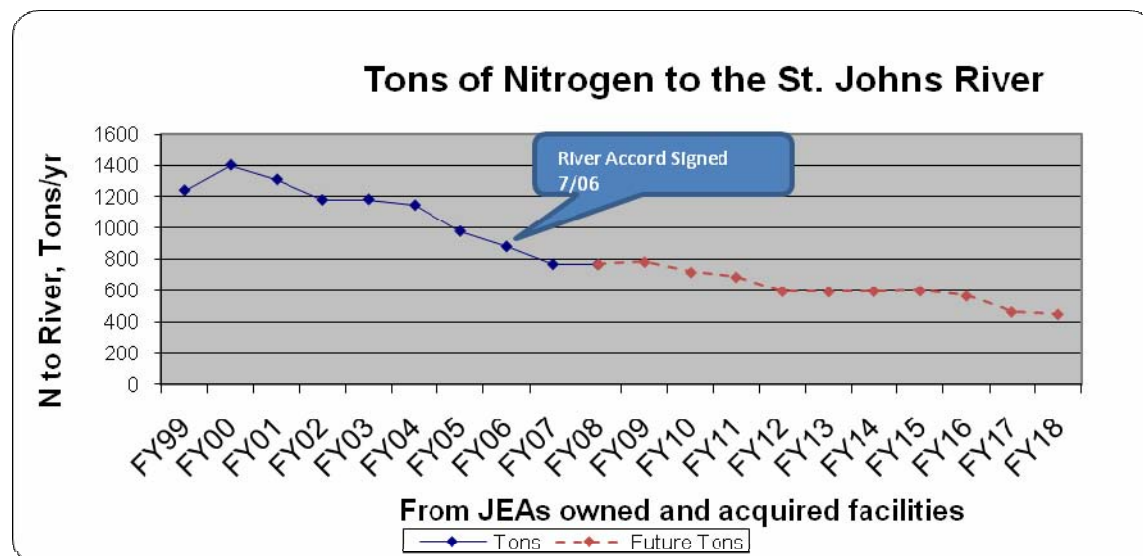
In FY 2006, JEA reused approximately 9 percent of its total treated wastewater. In FY 2008, that total is expected to more than double to 19 percent. By 2018, JEA forecasts it will reuse 66 percent of the total wastewater flow.

JEA's forecasted reuse capacity and demand figures through 2018 are shown in the chart below:



In 2018, after full implementation of *The River Accord* treatment and reuse projects, it is estimated that JEA will have reduced the discharge of nitrogen into the river by 68 percent from 2000, even accounting for a 33 percent increase in the volume of wastewater needing to be treated by 2018. In the same period, JEA will have reduced the pounds of nitrogen discharged per million gallons per day (MGD) of treated wastewater by 75 percent.

The current and forecast loadings into the river are detailed in the graph below.



Since the signing of *The River Accord*, the following progress has been made with respect to wastewater treatment:

- Completion of a \$5.5 million improvement project at the Mandarin Wastewater Treatment Plant
  - The project involved modifying the treatment train to achieve higher levels of nitrogen removal, as well as modifying the filtration and disinfection systems to increase reuse capacity.
- Completion of a \$14 million improvement project at the Southwest Wastewater Treatment Plant
  - The project involved construction of a 100-foot clarifier and modifications to the aeration basins to enhance treatment and improve the plant's ability to remove nitrogen.
- Completed detailed design and contract approval of a \$26 million improvement project at a third regional wastewater treatment plant, Arlington East
  - Construction is set to begin in the summer of 2008. The project will involve construction modifications to improve the nutrient removal capability of the plant.
- Decommissioned two of the six remaining old-technology wastewater treatment plants -- Woodmere and San Pablo
- JEA spent \$64 million to date on *River Accord* projects, which include \$34M on collection and treatment projects to reduce the concentration of nitrogen discharged into the river, and \$30 million on projects that provide reclaimed water to customers through reclaimed water storage, pumping and distribution efforts.

Water reuse is the method of using reclaimed (highly-treated) wastewater effluent. Historically, reclaimed water was not considered to be an economically feasible effluent disposal option. Reduction of nitrogen discharged to the river through reuse is often less cost effective than similar methods of reduction through treatment. Nevertheless, it is recognized that implementation of reuse techniques can lower nitrogen discharge levels even further and serve as an important alternative water supply, reducing demands on the potable water aquifer. The following reuse milestones have been achieved since the signing of *The River Accord*:

- North of river:
  - Construction has begun on an expanded distribution system with storage to expand reuse at the Northside and St. Johns River Power Park generating plants and to meet anticipated increased industrial demand for reuse.
- South of river:
  - Installation of major reclaimed water transmission lines and interconnects is underway. This will allow the transfer of available reclaimed water from the Arlington East and Mandarin regional treatment facilities to satisfy growing demand in southern Duval and northern St. Johns Counties. The designed expansion of the Arlington East reclaimed water treatment will increase capacity from 2 MGD to 6 MGD. The Mandarin reclaimed water treatment capacity was upgraded from 2.5 MGD to 5.7 MGD. Blacks Ford Water Reclaim Facility was upgraded to 100 percent reuse capacity (3 MGD).



Since the signing of *The River Accord*, the net impact of the wastewater treatment and reuse improvements described above has included the following:

- Removal of an additional 110 tons/year total nitrogen (TN) from river. The year 2000 baseline loading from all JEA facilities was >1400 tons/year TN. Current loading is now <771 tons/year TN.
- Increased reuse capacity of plants in the Lower St. Johns River basin from 18 MGD to 23.9 MGD.
- Increased system-wide delivery of reclaimed water from 6.5 MGD in June 2006 to more than 13 MGD in June 2008.

#### ***The River Accord Memorandum of Understanding***

- A Memorandum of Understanding (MOU) between the St. Johns River Water Management District (SJRWMD), JEA and the City of Jacksonville pursuant to *The River Accord* was executed in July 2007.
- The MOU established a framework for the SJRWMD and JEA to jointly invest up to \$250 million on a 50/50 cost-share basis with a goal of obtaining up to 70 percent of planned reuse capacity. It also provides for potential joint investment in nitrogen reductions above advanced wastewater treatment levels at the Buckman Wastewater Treatment Facility if reuse is not determined to be feasible at that location.
- The MOU also recognizes the city's commitment to invest up to \$150 million in stormwater and septic tank projects.

#### **Funding Status: All Projects**

- The SJRWMD's first year's allocation of funds for all planned reuse and treatment projects are under contract. Project partners include JEA, Clay County Utility Authority and the City of Jacksonville Beach.

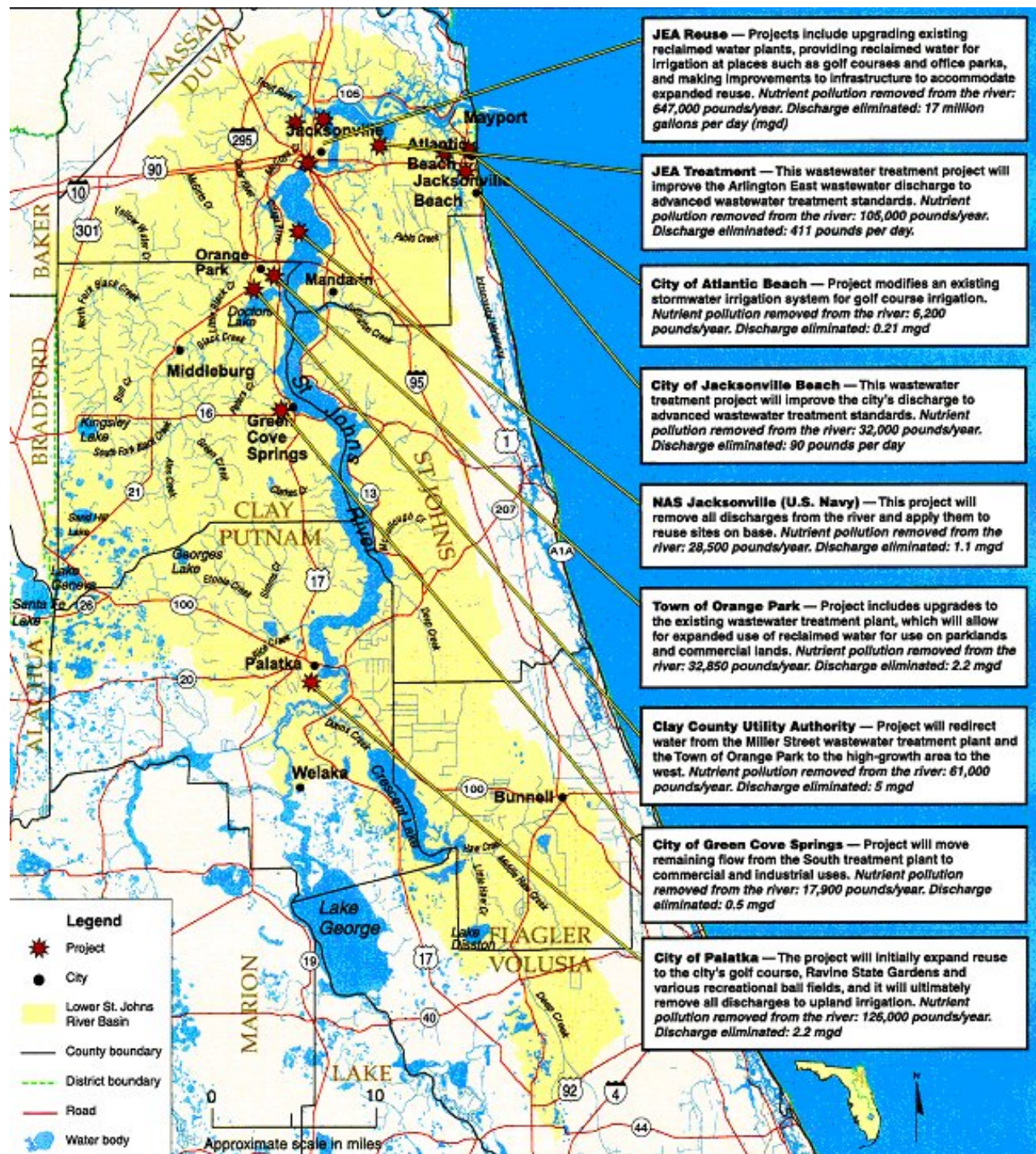
- This contracted work commits a total of \$43.4 million in cost-share funding, consisting of SJRWMD ad valorem (\$31.4 million) and state appropriations (\$12 million from FY 2005/06 and FY 2006/07), to 19 improvement projects (17 reuse projects and 2 wastewater treatment projects).
- Planned FY 2008/09 contracted work will commit an additional \$2 million of SJRWMD ad valorem cost-share funds to two more projects. Partners include Naval Air Station Jacksonville and the City of Atlantic Beach.
- Upon completion of these projects, the Lower St. Johns River Basin Reuse and Treatment Projects Initiative will eliminate 1.6 million pounds of nitrogen load into the St. Johns River annually and will divert 32 MGD of wastewater flow from the river to beneficial reuse.
- SJRWMD staff executed a \$14.72 million contract with the City of Jacksonville to convert failed septic areas to the central sewer system.

### Long-Range Prognosis

- The long-range plan is to divert at least an additional 51.5 MGD of wastewater to beneficial reuse (82.5 MGD total representing 64 percent of projected flow in 2025) through multi-party, regional projects employing the balance of the District's cost-share ad valorem funds (\$117 million) and/or state funds, as available.
- Regional projects and costs are being determined through cooperatively funded work between JEA, Clay County Utility Authority, St. Johns County Utilities and the SJRWMD. Results are complete for the area west of the river, and the area east of the river will be complete in September 2008.



Similar projects have been established throughout the Lower St. Johns River Basin. The map below details those projects.



## Septic Tank Failure Area Phase-Out

The WSEA has provided sewer connections to 350 properties. (Not all of these were considered "failing.") Current projects consist of 600 service connections in Lincoln Villas and Oakwood Villa Estates.

Under a contract with the SJRWMD, a state appropriation of \$14,720,000 is devoted primarily to sewer extension, but also includes enforcement by the Duval County Health Department and connection assistance by the City of Jacksonville Utility Tap-In Program (UTIP).

WSEA (Independent Authority)	\$ 14 million
UTIP (City/Community Services Department)	\$ 200,000
Duval County Health Dept (state agency)	\$ 325,000
Contract for microbiology monitoring of tributaries	\$ 145,000*
Public outreach (City of Jacksonville)	\$ 50,000

*\*Being transferred to FDEP*

The WSEA portion of the contract will fund sewer extension to 515 septic systems located in the Oakwood Villas Estates. An additional 85 properties in Lincoln Villas will receive sewer service at the property boundary. Construction has started on Oakwood Villas Estates, and design work has begun in Lincoln Villas. Both are scheduled for completion by the end of 2009.



After sewer extensions become available, homeowners have one year to connect or obtain a deferral.

Failure to connect within that time frame will lead to enforcement by the City of Jacksonville.

The table below illustrates the distribution, connection and need for enforcement. These are not limited to the WSEA project areas.

### Septic Tank Failure Area Phase-Out Projects

Phase	Number of Septic Tanks	Connected	Deferrals	UTIP	Other
Burkholder Circle	13	11			
Glynlea 1C	246	215	3	12	
Glynlea 2	106	100	0	2	
Lake Forest 1	103	58		13	
Lake Forest 2A	46	23	5	3	
Lake Forest 2B	119	49	4	6	
Murray Hill Phase 1	216	195	4	3	
Murray Hill Phase 2	281	249	6	5	6



### Septic Tank Failure Area Phase-Out Projects (Continued)

Phase	Number of Septic Tanks	Connected	Deferrals	UTIP	Other
Murray Hill B Phase 3 Part 1	125	103		5	10
Murray Hill B Phase 3 Part 2	66	61			
Murray Hill B Phase 4 Part 1	122	82	6		4
Murray Hill B Phase 4 Part 2	52	48	1		
Murray Hill Phase 5	228	158	5	27	2
Pernicia	228	183	6		
<b>Totals</b>	<b>1951</b>	<b>1535</b>	<b>40</b>	<b>76</b>	<b>22</b>

Of the eligible but not connected septic tanks, the following enforcement actions were taken.

- 376 *Notices to Correct* issued
- 110 *Cease and Desist* citations issued

UTIP offers deferred payment loans to assist low- to moderate-income residents citywide with water and sewer line connection fees, associated plumbing costs and septic tank, drain field and well repairs or replacement. UTIP has received \$200,000 in state funding to assist homeowners in meeting septic tank closure and sewer connection.

Additionally, public service announcements will be created to assist in educating homeowners about septic tank environmental and health impacts and the need for proper maintenance or connection.

### Septic Tank Enforcement

Of the \$14,720,000 in state funds addressed in the previous section, \$345,000 is earmarked for the Duval County Health Department to inspect septic tanks and identify those requiring correction or connection to sewer lines.

The main objectives of the Septic Tank Enforcement Program are:

- To protect the surface waters of the Lower St. Johns River and its tributaries through the enforcement of the State of Florida statutes, rules and regulations governing Onsite Sewage Treatment Disposal Systems (OSTDS); and
- To protect the public's health by identifying and repairing all failing septic systems that are currently or have the potential for direct or indirect pollution of the St. Johns River and its tributaries

The program assures that:

- All new and repaired OSTDS adequately handle residential and commercial building plumbing wastewater.
- This wastewater does not create sanitary nuisance conditions.

- No potential exists for the degradation of surface water or groundwater quality.

OSTDS includes standard septic tank and drain field systems, as well as alternative systems (such as mounds and other approved types) typically located on the property where the wastewater is being generated. Adequate and safe OSTDS installation and use is achieved through the promulgation of effective administrative rules, research, training of regulatory personnel, training and licensing of septic tank contractors, and by conducting thorough site evaluations, permitting and inspection of system installation.

The Septic Tank Enforcement Program implements the Florida Statutes 381, 386 and Chapter 64E-6 of the Florida Administrative Code, which governs regulation of OSTDS in Duval County/ Jacksonville, Florida.

- The program monitors, reviews, tracks, records and enforces the compliance of state statutes, rules, regulations and local ordinances pertaining to OSTDS in residential and commercial areas directly or indirectly connected to the St. Johns River and its tributaries.
- The program involves site evaluations, inspections, review of engineering plan designs, and construction reviews of septic tank/ drain field systems, including repairs to existing and abandoned systems. Information related to monitoring, surveillance, management and enforcement activities are updated and recorded on a daily basis.
- This information is a vital part of the link between the Duval County Health Department and other local, state and federal agencies. Agencies within this link include, but are not limited to the SJRWMD, FDEP, the City of Jacksonville Municipal County Code Compliance Division and JEA.



Program accomplishments since the launch of *The River Accord* include:

- Developed an eight-point criteria and point system for prioritization of 28 septic tank failure areas in Duval County.
- Designated six neighborhoods as creating a sanitary nuisance which required all septic systems in each designated area to be phased out and replaced with central sewer services by JEA.
- Performed more than 13,000 site investigations and documented areas with suspected failing septic tank and drain field systems directly or indirectly connected to the St. Johns River and its tributaries.
- Participated in workshops for the development of procedures, priorities and itineraries to investigate suspected areas with failed septic tank and drain field systems.
- Prepared more than 2,300 administrative and/or legal actions involving OSTDS in violation with Chapter 381 and 386, Florida Statutes and Chapter 64E-6 of the Florida Administrative Code (FAC) associated with polluting the St. Johns River and its tributaries.
- Investigated more than 2,400 OSTDS-related complaints involving malfunctioning OSTDS and pollution by direct or indirect sewage discharge into the St. Johns River or its tributaries.
- Conducted door-to-door rapid block surveys on a routine basis to identify failed septic tank areas with the potential for direct or indirect discharge into the St. Johns River or its tributaries.
- Issued more than 2,300 repair permits and inspected all repair work performed on OSTDS within designated septic tank failure areas to ensure compliance with all Florida statutes and administrative codes.
- Provided educational material and services to homeowners to ensure proper operation and maintenance of septic systems.

A city ordinance on septic tank maintenance and inspection was introduced in 2006. It has been deferred and will be withdrawn for revision. It is anticipated that the ordinance will be amended and reintroduced in the fall of 2008.

## **Stormwater Management**

Since the summer of 2006, the City of Jacksonville has strengthened its stormwater management program to more fully address the needs of the St. Johns River. It has focused on improvements through participation in basin management planning, implementation of dedicated funding for stormwater projects, improved floodplain management and specific stormwater projects to address drainage and nutrient concerns in the basin.

The City of Jacksonville has been an active member in the Lower St Johns River Basin (LSJRB) Basin Management Action Plan (BMAP) Executive Committee since its inception in 2005. The BMAP provides the framework for project implementation in the LSJRB to meet the TMDLs necessary to improve river health.

Through its participation in the LSJRB BMAP Executive Committee, the city has provided input on the basin-wide actions needed to reach the collective goal of a healthy St. Johns River. The

goals set forth in the LSJRB BMAP will provide the guidance necessary to inform the city's future stormwater management actions.

In September 2007, the City of Jacksonville authorized the implementation of the Jacksonville Stormwater Utility. This entity is responsible for the assessment and collection of a stormwater fee applied to residential and non-residential properties based on the parcel's impervious area, and the administration of those funds to implement stormwater management projects. The implementation of a dedicated stormwater funding source will enable the city to reliably prioritize and fund long term implementation plans for stormwater management projects.

Complimenting the implementation of the Jacksonville Stormwater Utility, the city is currently updating its Master Stormwater Management Plan (MSMP). The MSMP Update includes detailed modeling of more than 60 tributaries in the LSJRB, identification of water quality, flooding and drainage related issues in each sub-basin, and prioritization of projects to address these issues.

Along with the nutrient reduction goals set forth in the LSJRB BMAP, the MSMP will provide the roadmap for implementing successful stormwater management projects that address larger scale drainage and water quality issues for the St. Johns River and its tributaries.

Since 2006, the city has completed or initiated 18 stormwater management projects (outlined in the table below). These projects represent a combination of drainage, flood control, water quality and erosion control projects throughout the county.

In some instances, these projects have provided stormwater management to areas that previously received no water quality treatment.

The Children's Way pump station opened July 17, 2008. Funded by the Jacksonville Stormwater Utility, the pump addresses the recurring problem of flooding in the San Marco area.



As the city moves forward with implementing additional stormwater management projects, the MSMP and nutrient reduction goals identified in the LSJRB BMAP will direct the scale and location of these efforts.



<b>PROJECT</b>	<b>Drainage Basin</b>	<b>Status</b>	<b>Treatment</b>
Hugh Edwards Road Drainage	Cedar River	Design	Erosion Control
Melba/Green Street	McCoys Creek	Bidding	Wet Detention
Newtown Drainage main trunk-line improvement (Myrtle & Beaver)	McCoys Creek	Design	Flood Control Only
Orange Picker Road Drainage (Flynn to Brady)	Orange Pickers Basin	Completed	Flood Control Only
Pine Forest/Larsen Acres	New Rose Creek	Bidding	Wet Detention
Pinedale Area	Cedar River	Bidding	Wet Detention
Putnum/Hudnall Area Drainage	Little Pottsburg Creek	Under Construction	Wet Detention
Riverview Area Drainage (North)	Trout River	Completed	Wet Detention
Riverview Area Drainage (South)	Ribault River	Design	Flood Control Only
Sherwood Forest Area Drainage	Trout River	Completed	Flood Control Only
V. C. Johnson Drainage	Trout River	Completed	Wet Detention
Venetia Terrace Drainage	Ortega River	Design	CDS Unit
Woodland Acres/Oakwood Villa Area Drainage Phase 1	Strawberry Creek	Under Construction	Wet Detention
Sandalwood Canal	Hogpen Creek	Under Construction	Erosion Control and Wet Detention
103rd St Regional Stormwater Facility	McGirts Creek	Under Construction	Wet Detention

In addition to the capital improvement projects detailed in the table above, the City of Jacksonville is pursuing legislation to improve management of the floodplains in Duval County. Acting as a Cooperative Technical Partner (CTP) with the Federal Emergency Management Agency (FEMA), the city is in the process of updating the Flood Insurance Rate Maps (FIRMs) for Duval County. These maps, which have not been updated since 1989, will provide the basis for revised ordinances for floodplain management. Proactive floodplain management of this type allows effective management of development within the floodplain, which contributes to both water quantity and water quality for the subject water bodies.

Through participation in basin management planning, implementation of dedicated funding for stormwater projects, improved floodplain management and specific stormwater projects to address drainage and nutrient concerns in the basin, the City of Jacksonville has taken an active roll in stormwater management in the Lower St Johns River Basin.

## Improving River Access

Past studies have shown that there are inadequate opportunities for residents to enjoy the St. Johns River and its tributaries in Jacksonville.

To address these needs *The River Accord*, along with its Preservation Project partners, proposes:

- Pelotes Island Nature Preserve on Clapboard Creek
  - Proposal: Open the preserve to the public on weekends
  - Status: Discussions are ongoing.

### Huguenot Memorial Park

- Proposal: \$1.3 million to improve one of the city's busiest parks
- Status: Final negotiations are underway to acquire contiguous 10 acres to buffer creek, river, and marsh from development while preserving traditional public access to Haulover Creek



- Cedar Point Preserve on the Northside
  - Proposal: New boat ramp, visitor center, trails and an overlook at Machaba Balu, the Nature Conservancy's 9,000-acre preserve.
  - Status: Construction of a phase I parking lot to open up the existing trail system is underway. The Cedar Point boat ramp is currently in the permitting phase with the National Park Service. Plans are being finalized in cooperation with the Florida Park Service to establish trailhead access to more than 4 miles of hiking trails on the Cedar Point property. Parking area and trail access should be established by the fall of 2008.
- Marinas
  - Proposal: Partner with private businesses and non-profits to keep marinas open and available to the public.
  - Status: As of this report date, no progress.
- Palms Fish Camp on Heckscher Drive
  - Proposal: Restaurant and boat ramp parkings
  - Status: Restaurant is currently under construction and additional boat ramp parking under design.
- Pumpkin Hill Creek Florida Forever project
  - Proposal: Acquire critical pieces of land for water quality and improved access to the river's tributaries.
  - Status: Florida's Acquisition and Restoration Council (ARC) approved the expansion. The Pumpkin Hill Creek project has been re-ranked by ARC as a Priority B, meaning no state funds will be available for acquisitions in the area until 2010. However, the North Florida Land Trust has agreed to try to acquire some of the properties in the most critical watersheds until state funds are available.
- Reddie Point Preserve in Arlington

- Proposal: Build a fishing pier and dock that will allow boaters to tie up and tour the property.
- Status: Fishing pier and dock construction is underway. Completion expected in the fall of 2008. Upland development of parking, restrooms and trail system under design.
- Betz Tiger Point Preserve (adjacent to Pumpkin Hill Creek)
  - Status: Design is complete for phase I amenities to include a parking area, walking trail, boardwalk and canoe/ kayak tie-ups; to be submitted for construction contract bidding.



*Fishing Timucuan Preserve*

#### Timucuan Multi-Use Trail:

- Proposal: Eventually this will be a 15 mile multi-use/multi-partnership trail linking Hanna, Huguenot, Kingsley and the Talbot Islands State Parks all the way up to Amelia Island.
- Status: Phase I (Little Talbot segment) completed in 2005; second phase (Big Talbot segment) design is complete and should go to construction contract bid in fall 2008. Remaining segments in various stages of design

- Dutton Island Preserve
  - Status: Recreational amenity development completed in spring 2008. Includes parking area, hiking trails, picnic tables and estuary overlooks.
- Sister's Creek kayak/canoe launch
  - Status: Under design; boat ramp resurfacing completed.
- Wade B. Stevens Boat Ramp
  - Status: Resurfacing to commence July 2008.
- Castaway Island Preserve
  - Proposal: Trail expansion and estuary overlooks.
  - Status: Design complete; to be submitted for construction contract bidding.



*Castaway Kayak Trail*



*Castaway Hiking Trail*

- River Taxi

- From Kingsley to Ft. Caroline
  - Proposal: Open a river taxi service that will run from Ft. Caroline National Memorial on the St. Johns River to Sister's Creek Marina to Kingsley Plantation.
  - Status: City is currently working with the National Park Service (NPS) to put out a request for proposals to provide the service. COJ/NPS agreement in process of execution.
- Ft. Caroline to Palms Fish Camp to Pelotes Island.
  - Proposal: Open a river taxi service that will run from Ft. Caroline National Memorial on the St. Johns River to Palm's Fish Camp to Pelotes Island.
  - Status: No progress to report.
- Julington-Durbin Creeks Preserve in Mandarin
  - Proposal: Construct parking, trails, an overlook and a restroom.
  - Status: Parking and trails are open. Restroom to be provided by developer as part of DRI.
- Ribault River Preserve (Expansion):
  - Proposal: Acquire and expand a neighborhood preserve to provide recreational amenities and buffer protection for the Ribault River.
  - Status: 2.2 acres have been acquired on the south bank of the Ribault River utilizing a grant from Florida Communities Trust. The site has been extensively cleaned-up, under brushed and opened as a park in June 2007. Restoration of the fishing pier and development of additional amenities are in design.

## State of the River Report

After 2003, there was no continuing reporting mechanism to provide information to stakeholders and the public concerning the health of the Lower St. Johns River Basin. This information is essential in order to document improvements in response to restoration efforts that will be implemented in the lower basin.

A team of faculty members from the University of North Florida and Jacksonville University has developed the first annual *River Accord State of the River Report* to provide independent evaluation of the health and restoration progress of the Lower St. Johns River Basin. The report is being released in conjunction with the second anniversary of *The River Accord* and the 10<sup>th</sup> anniversary of the river's designation as an American Heritage River on August 6, 2008.

The first step of this project involved the review and evaluation of past and present data taken from the St. Johns River. The project team analyzed key variables to determine the water quality, environmental health and biological balance of the lower basin.

The project team has developed the first annual draft of the *State of the River Report* based on their analysis of various data sources. From the full report, a report summary, or "report card," has been developed that cites the key findings of the full report. Both the full report document and the abbreviated format are available for distribution and will also be posted for public viewing on Jacksonville University and University of North Florida websites.

Data parameters used by the project team include: biochemical oxygen demand, dissolved oxygen, nutrients, turbidity, chlorophyll-a (algal concentrations), bacteria, toxic compounds and marine life counts.

Additionally, the project team will continue to evaluate measurable factors that affect environmental quality in the Lower St. Johns River Basin, such as buffer land area, wetland area, submerged vegetation, land use and development activities, point source pollutant loadings and stormwater management practices.



To assure that the *State of the River Report* is a fair assessment of the river's health, and that the report is widely accepted by all stakeholders, the project team submitted the draft report for an extensive review process.

In June 2008, the draft report was submitted to an expert panel for review. The role of the expert panel was (and for future years, will be) to evaluate:

- 1) The validity and completeness of the data used in the report;
- 2) The interpretation of the data; and
- 3) How well the document meets the project goals of informing stakeholders and the public about the overall health of the river.

The panel is composed of individuals with expertise and experience in various disciplines to address the multifaceted nature of the data and its interpretation. Once the draft report has undergone a stringent technical review by the expert panel, it will be presented to the public and to stakeholders who have a significant interest in the river's quality.

For example, the draft report was submitted for review by the City of Jacksonville, JEA, the FDEP, the SJRWMD, the St. Johns Riverkeeper, the St. Johns River Alliance, the city's Environmental Protection Board, the North Florida Branch of the Sierra Club and others.



A much abbreviated list of initial draft findings is contained in the three tables below.

	<b><i>Indicator</i></b>	<b><i>Preliminary Results</i></b>
<b>WATER QUALITY</b>	<b>Biological Oxygen Demand (BOD) and Dissolved Oxygen (DO)</b>	Occurs at very low levels during the summer
	<b>Nutrients (Nitrogen and Phosphorus)</b>	Stable yet continuously exceed water quality criteria
	<b>Turbidity &amp; Total Suspended Solids</b>	Improving over time
	<b>Chlorophyll-<i>a</i> &amp; Harmful Algal Blooms</b>	Do not know enough about <i>Microcystis</i> and related cyanobacteria
	<b>Bacteria (<i>Fecal coliform</i>)</b>	Unacceptable levels in a number of creeks
	<b>Fisheries</b>	Most species stable for past ~13 yrs. Uncertain future for catfish & blue crabs
	<b><i>Indicator</i></b>	<b><i>Preliminary Results</i></b>
<b>AQUATIC LIFE</b>	<b>Submerged Aquatic Vegetation (SAV)</b>	Declining in southern section of river
	<b>Wetlands</b>	Poor but improving
	<b>Macrobenthic Invertebrates</b>	Many areas dominated by pollution tolerant species
	<b>Threatened &amp; Endangered Species</b>	Bald Eagle & Wood Stork success
	<b>Nonindigenous Aquatic Species</b>	Conditions worsening
	<b><i>Indicator</i></b>	<b><i>Preliminary Results</i></b>
<b>AQUATIC LIFE</b>	<b>Submerged Aquatic Vegetation (SAV)</b>	Declining in southern section of river
	<b>Wetlands</b>	Poor but improving
	<b>Macrobenthic Invertebrates</b>	Many areas dominated by pollution tolerant species
	<b>Threatened &amp; Endangered Species</b>	Bald Eagle & Wood Stork success
	<b>Nonindigenous Aquatic Species</b>	Conditions worsening

## Water Quality Monitoring System

Under Section 303(d) of the Federal Clean Water Act, states are required to submit lists of waters not fully meeting their applicable water quality standards. As a part of this requirement, the State of Florida listed the St. Johns River as not meeting nutrient standards, and because of that action, a Total Maximum Daily Load (TMDL) was adopted for the St. Johns River.

### *Lower St Johns Water Quality*


In general, the trophic status and trends of the SJRWMD water bodies measured at the 192 ambient monitoring sites demonstrated that the SJRWMD has been making positive long-term progress in protecting and restoring its water bodies in spite of the population growth and other changes that put increasing pressure on the District's water resources. Decreasing trends of



limiting nutrients (nitrogen and phosphorous) and other related constituents (turbidity and total suspended solids) were detected in the project areas, especially in the Upper Ocklawaha River (Lake Apopka) and Indian River Lagoon basins.

Ambient water quality monitoring is an integral part of the SJRWMD's mission to protect and manage water resources. Other kinds of water quality data collected include:

- Operational data related to project operations
- Loading data to determine pollutant load reduction goals (PLRGs) and total maximum daily loads (TMDLs)
- Event data for unpredicted events like fish kills and algae blooms
- Experimental data related to planned manipulations

	<p>Ambient water quality data reflects the current state of water resources. Data from 192 stations located throughout the SJRWMD were analyzed and summarized to present trophic status (productivity) of the water bodies in the ambient network (48 lakes, 68 estuaries, 62 streams, 13 black water streams and one spring).</p>
<p><i>SJRWMD Water Quality Monitoring Staff</i></p>	

The following water quality constituents were summarized:

- Total Nitrogen (TN) and Total Phosphorus (TP), nutrients which regulate vegetation and phytoplankton (algae) growth
- Color, turbidity, and Total Suspended Solids (TSS), which regulate vegetation and phytoplankton growth by reducing light intensity
- Chlorophyll *a* (Chl\_*a*), which indicates phytoplankton biomass
- Total Organic Carbon (TOC), which indicates overall productivity of the basin and water body

*Data from the District's Environmental Database were used for the assessment (1990 to 2004)*

The District analyzed for both the current status and the long-term trends. The status of these selected constituents was based on the median values calculated using the most current five years of data (1999 to 2004).

Statistical trends were evaluated using 15 years of data (1990 to 2004). Sites were rated as having increasing, decreasing or stable trends, or insufficient data for trend assessment.

The overall results are summarized in the table below.

Basin	Basin Average based on 5-year median values						
	TN (µg/L)	TP (µg/L)	Color (PCU)	Turbidity (NTU)	TSS (mg/L)	Chl_a (µg/L)	TOC (mg/L)
Upper St. Johns River Basin	1,650	86.33	225	4.33	6.79	11.891	29.06
Middle St. Johns River Basin	1,427	96.75	153	5.28	10.73	17.138	21.18

In addition, the results were presented on maps, bar and pie charts, and cumulative frequency distribution graphs. The presentation from the March Projects and Lands Committee meeting is posted at the District Web site.

The Lower St. Johns River Basin program of the SJWRMD is in the drainage area for the portion of the St. Johns River extending from the confluence of the St. Johns and Ocklawaha rivers near Welaka to the mouth of the St. Johns River at Mayport.

Excessive nutrients that feed algal blooms are a major problem for the lower St. Johns River and other water bodies in the basin. The primary sources of these nutrients include stormwater runoff from developed and agricultural areas in the basin and discharges from numerous domestic wastewater treatment plants upstream from and in the basin.

### ***Resource Monitoring and Assessments***

This SJRWMD project will regularly and consistently assess and monitor the quality of the lower basin water and its natural systems. Among the activities included in this project is water quality monitoring in the main stem of the river as well as in its tributaries.

In addition to regular periodic monitoring, the project also monitors special events, such as significant rainfall, to determine the impact of stormwater runoff on the health of the river. Biological components are also monitored. By monitoring submersed aquatic vegetation, plankton and benthic communities, as well as water quality, a complete picture of river health can be obtained.

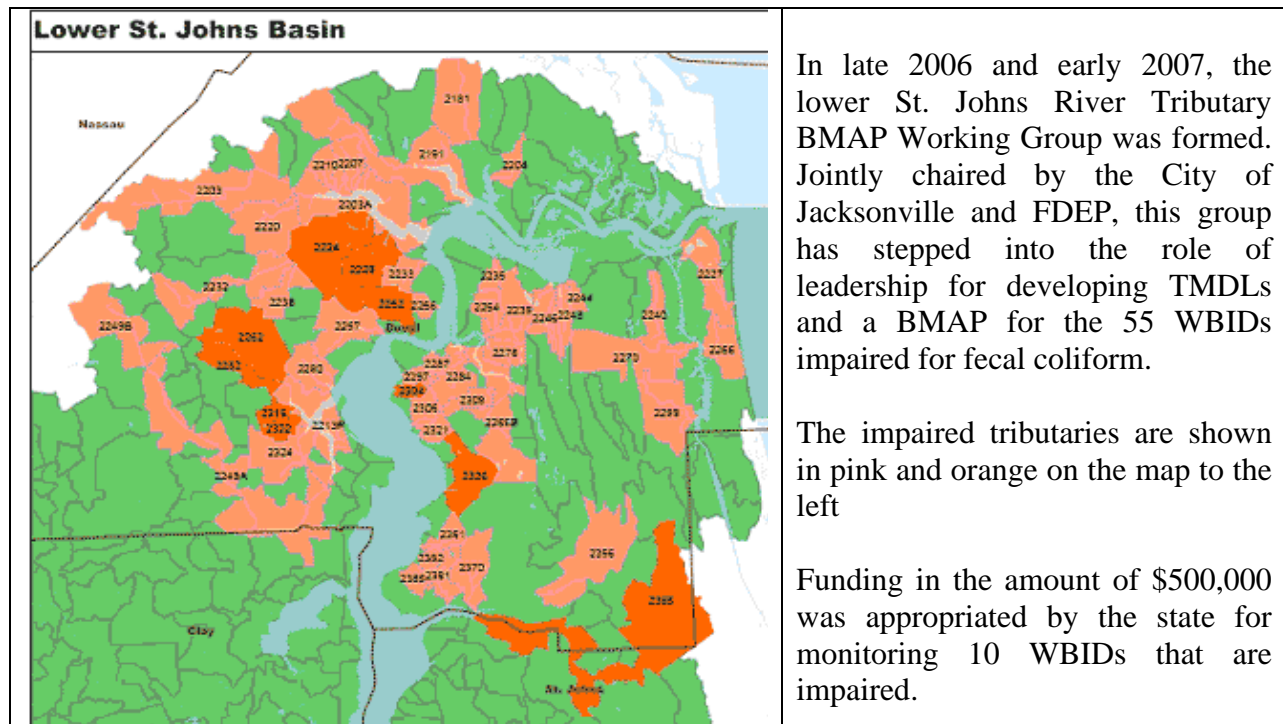
### ***Tributary Assessment***

Fifty-five tributaries in Duval County, Florida have been identified as impaired for fecal coliform bacteria.

An interagency work group Tributary Assessment Team (TAT) comprised of FDEP, City of Jacksonville Environmental Quality Division and Public Works Department, DCHD and JEA has been formed to study the affected Water Body Identifications (WBIDs) and develop a Basin Management Action Plan (BMAP) for bringing the waterways into compliance for fecal coliform bacteria. The TAT originally formed in 2005 and with a private contractor developed "Tributary Pollution Assessment Manual" (The Manual), completed in 2006.

The Manual become the template as each new WBID impaired for fecal coliform is assessed. In 2005 and 2006, six impaired WBIDs were evaluated during the process of writing The Manual.

Since 2006, TAT members have continued sampling WBIDs as determined by the TAT and to form the basis for development of individual TMDLs and a BMAP.



Under arrangements with SJRWMD and FDEP, sampling and analysis should begin in fall 2008. Reconnaissance and ground truthing could start a few months earlier.

- Implement (with assistance from TAT members) a comprehensive fecal coliform pollution assessment for 10 WBIDs as directed by the lower St. Johns River Tributary BMAP Working Group using procedures detailed in The Manual.
- Create WBID specific reports with specific recommendations to be incorporated into the fecal coliform BMAP.
- Evaluate WBIDs and field verify sampling locations, land-use and other relevant conditions for technical reports as needed.

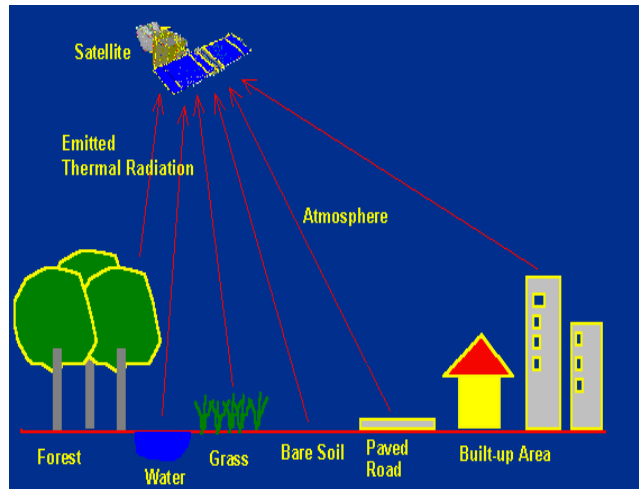
The FDEP will implement (with assistance from TAT members) a comprehensive fecal coliform pollution assessment for 10 WBIDs, as directed by the lower St. Johns River Tributary BMAP Working Group, using procedures detailed in The Manual. Create field-verified WBID specific reports with specific recommendations to be incorporated into the fecal coliform BMAP.

### ***Microbiology Laboratory***

The City of Jacksonville's Environmental Quality Division shall modify existing laboratory space to create an efficient workspace for fecal coliform and E. Coli analysis. Funds may be used for construction, equipment, supplies and salaries for staff or services of private contractor. Final JEA signature of the contract is imminent as of July with construction anticipated by the end of 2008.

## ***Thermal Imaging***

The FDEP shall manage a contract for the services of thermal imaging of approximately 10 local waterways that are yet to be determined. Start of work awaits SJRWMD board approval in August.



Infrared Thermography, thermal imaging or thermal video, is a type of infrared imaging science. Since infrared radiation is emitted by all objects based on their temperatures, thermography makes it possible to "see" one's environment with or without visible illumination.

When viewed by thermographic camera, warm objects stand out well against cooler backgrounds; humans and other warm-blooded animals become easily visible against the environment, day or night.

*Source: Wikipedia*

The final report will consist of coordinates for each thermal hot spot. Hot spots will be mapped on U.S. Geological Survey quad sheets, a black and white picture of the actual hot spots, with each hot spot labeled. The report will identify potential illicit discharges to surface waters using aerial thermal imaging, thus helping to eliminate sources of fecal coliform bacteria.

# THE FUTURE –

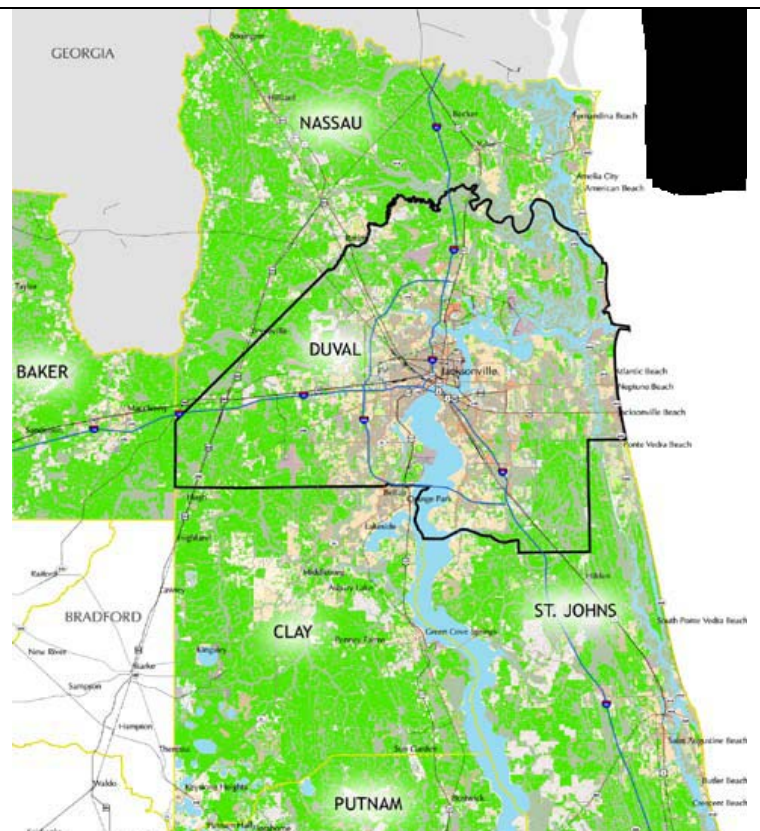
## Planning for Growth

The City of Jacksonville is one of only a handful of consolidated city/county governments in the nation. Geographically, the city encompasses 840 square miles, with only the three Jacksonville Beach communities and Baldwin representing independent municipalities. Consolidation has given Jacksonville a distinct advantage in dealing with growth management. Issues that would normally require cooperative agreement among a number of independent jurisdictions and capital budgets can be addressed by one consolidated government.

To accommodate our future population growth, Jacksonville must protect our natural environment as well as set aside sufficient vacant land to allow for residential, commercial and industrial development.

An analysis of vacant land prepared for the Growth Management Task Force Land Use Committee indicates that if development continues in the current low density pattern, the vacant land currently available for these uses will be exhausted by the year 2030.

If these projections are correct, the City of Jacksonville faces the prospect of build-out in a short 25 years.



How a city plans for its physical development greatly affects the well-being of every resident. Jacksonville was founded in a spirit of optimism, energy and entrepreneurship, and at this point in time, stands poised to become one of the great cities in the South. But greatness doesn't happen by accident. It must be planned.

The city must address transformational issues, such as improving public transportation, providing incentives to encourage urban development that promotes transit accessibility, social interaction, and built-in walkability that will promote better health and lifestyle habits. In addition, the city must make everything we do more environmentally-sensitive by being mindful of *how it is designed* and *how it functions* in the real world, and continue to seek clarity and simplicity in our regulatory and permitting processes.



The planning process must foster progress, not impede it. It must aspire to build consensus, both at the neighborhood level and the citywide level, allowing communities to envision their collective goals and feel there is a real chance to achieve them.

Planning for the next 25 years and beyond is more critical now than at any other time in the history of the City of Jacksonville. For that reason, the City of Jacksonville Growth Management Task Force chose to title its report and recommendations “Horizon 2030”.



“Horizon 2030” focuses on 10 principles for managing Jacksonville’s growth and provides some key recommendations for the following:

- Build a vision with Maximum Public Participation
- Capitalize on the City’s Uniqueness (Sense of Place)
- Promote Mixed-Use Villages
- Commit to Transit
- Redevelop the Major Road Corridors
- Adequately Fund Transportation
- *Revitalize the River*
- Save Space for Industry
- Plan for Schools
- Improve Regional Collaboration



### ***Revitalizing the River***

The river defines the community, and the health of the river and its tributaries is central to the city's quality of life and economic development. The riverfront is the foundation of Jacksonville's downtown revitalization and provides the city its unique sense of place.

In Jacksonville, most of the waterfront shoreline is privately-owned. To enhance its "sense of place" it will be important to improve the interactive relationship between citizens and the river. The river is a *regional* natural system with regional problems. Currently, an over-abundance of nitrogen in the Lower St. Johns River Basin exceeds the amount the river can assimilate.



A sign of these excessive nutrients is the periodic algal blooms (green coloration) seen over the years, most recently during the summer of 2005.

### ***Key Committee Recommendations***

- The FDEP, Northeast Florida Regional Council, SJRWMD, St. Johns River Alliance, JEA and leadership representatives from all local governments that border the St. Johns River should be organized to develop and implement a **River Restoration Plan**.
- The city should seek to ensure the coordination with the Florida Department of Health (FDOH) and Duval County Health Department in development and implementation of a **septic tank ordinance** to assess septic tank performance.
- In conjunction with JEA's Master Plan, the city should develop a **wastewater and stormwater master plan** to examine strategic timing of, strategy for and implementation of technology upgrades for the city's stormwater systems and JEA's existing wastewater treatment systems to implement tertiary-level wastewater treatment and reuse.
- **Require reclaimed water and/or stormwater reuse** in new developments that are identified as cost-effective in the wastewater and stormwater master plan.

- Develop an overall **Vision Plan for the River** to identify locations where the city should acquire riverfront access for boat ramps, parking, public parks and buffer zones along the river to accommodate a growing population and an increasing desire for river access.



### ***Federal Fiscal Interest in Local Infrastructure***

On June 12, 2008 Mayor John Peyton addressed the U.S. Senate Committee on Banking, Housing and Urban Affairs regarding federal interest in local infrastructure needs. Among the needs the mayor highlighted was the need for septic tank phaseout.

Jacksonville is consistently ranked among the “Top 10 Places to Live” by *Money* magazine, as well as one of the “Hottest Cities in America” for business expansion and relocation by *Expansion Management* magazine. In addition, it was rated among the “Best Cities for Doing Business” by *Inc.* magazine. But with this growth come needs, starting with major capital investments in new roads and sewers that must be built while still paying for all the maintenance and repair of older, existing infrastructure in our urban core.

For example, the water quality of the river is gravely threatened by failed septic systems that will require major investment to replace with sewer connections. There are approximately 85,000 septic tanks in Jacksonville, and the DCHD and Environmental Resource Management Department has thus far declared 22 failure areas in neighborhoods around the city. Approximately 21,000 septic tanks in these areas remain unaddressed, and up to 17 additional failure areas could be identified in the coming months.

In 2003, Jacksonville established the WSEA as an independent authority of the City to help finance water and/or sewer infrastructure in neighborhoods. The cost of connecting to a central sewer system is at least \$15,000 per home. The city already has provided \$80 million, and the state has granted \$14 million for this purpose. Nevertheless, it will cost up to \$400 million to address the remainder of currently declared septic tank failure areas, and a total of \$800 million if additional failure areas are designated. Additionally, nearly \$200 million in wastewater treatment plant improvements are required along the St. Johns River.

There is no local or state funding source that can address a need of this magnitude. Florida’s Clean Water State Revolving Loan Fund (CWRF) is insufficient to fund projects at this scale. In FY 2007, the total State CWRF allocation was approximately \$36 million. In fact, the potential \$800 million total cost of the septic tank project nearly equals the total amount of Florida’s CWRF from FY 1989 through FY 2006.

The Mayor advocated the adoption of financing models like the National Infrastructure Bank to help major metropolitan areas such as Jacksonville address the critical challenges facing our nation's aging infrastructure by leveraging resources in a more efficient and effective manner, and enabling more local resources to be allocated to local responsibilities.

### **Basin Management Action Plan (BMAP)**

The implementation plan for achieving water quality standards is called a Basin Management Action Plan (BMAP). When multiple stakeholders must make reductions to achieve the water quality target, it is often necessary to describe the responsibilities of each entity, to explain how their activities will relate to their permits, to establish a monitoring plan to measure progress and to outline how progress will be tracked. The BMAP document establishes the responsibility of all the organizations that are making improvements and conducting monitoring.



*"Together we have committed to a concrete set of actions to reduce pollution in the streams, river, and lakes throughout the basin."*

*~ Mimi Drew  
DEP Deputy Secretary*

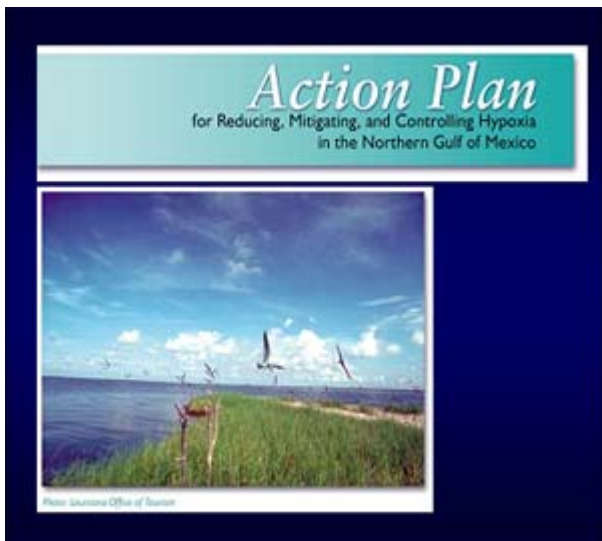
In the Lower St. Johns Basin, there are several BMAPs underway. The *nutrient* BMAP for the main stem of the river will be completed in fall 2008. Once adopted by the Secretary of the FDEP, the BMAP is an enforceable plan that requires all the stakeholders to make the reductions outlined in the document and to meet the schedule for those reductions.

The BMAP links these reduction requirements to federal permits for industrial and wastewater discharges and to urban stormwater permits. The main stem BMAP also includes significant reductions from agriculture, forestry and aquaculture operations. All of the major sources of nutrients to the river are responsible for making reductions to meet the water quality target

In addition to the *main stem* BMAP, there are major efforts to identify and remove sources of bacterial contamination in the tributaries. There are 55 tributaries that are verified as impaired for bacterial contamination. This type of contamination is considered to be a threat to the health of humans that come in contact with these creeks and streams. Sources of bacterial contamination include faulty septic tank systems, illegal discharges from homes and businesses, sanitary sewer overflows and leaking sewer systems, pet waste and wildlife.

Currently, each tributary that does not meet standards for bacteria is being assessed one-by-one for the potential contamination sources in that area. The number of septic tanks and failure areas are being documented, the location of sewer lines and infrastructure are being mapped, the

numbers of pets are being estimated and the water quality data are being analyzed. This information is being used for a tributary BMAP to address these problems.



*Sample BMAP publication from the Florida Panhandle*

The BMAP will also include the efforts that will help reduce contamination specific to each tributary. Projects such as looking for and removing failing septic tanks, fixing leaking sewer pipes and lift stations, finding and removing illegal discharges and educating the public about picking up pet waste will be documented. The tributary BMAP will also include a monitoring plan and tracking system to chart progress and to determine what efforts are working. The first tributary BMAP is scheduled to be complete in summer 2009 for an initial group of tributaries that are the most contaminated.

While the first BMAP is being adopted, additional tributaries will be assessed and analyzed, and BMAPs will be adopted for those too.

The BMAPs will ensure that reductions are made to pollutants that enter rivers and streams until water quality standards are met. Every five years, the BMAPs will be reevaluated and revised as needed. The BMAPs identify all the sources of contamination for a specific area and they outline a specific plan to make reductions to meet water quality standards. The BMAP to address nutrients in the main stem includes the following actions:

- Total reductions of approximately 5,767,729 pounds per year of nitrogen (3,399,642 pounds per year of nitrogen in the marine section; 2,368,087 pounds per year of nitrogen in the freshwater section; and 219,991 pounds per year of phosphorus in the freshwater section).
- Decreasing or capping industrial discharges at 2003 levels
- Decreasing domestic wastewater discharges by approximately 48 percent by upgrading treatment plants and sending water to reuse systems for use as irrigation or other beneficial uses
- Improving stormwater treatment by approximately 50 percent through the use of regional treatment areas, baffle boxes, street sweeping and other management techniques to reduce nutrients
- Public education about the use of lawn fertilizers, protection of storm drains and proper litter disposal
- Installing best management practices at farms, dairies, plant nurseries, forestry and other operations

All of these actions are important to achieving major reductions to nutrient concentrations in the river. When the nutrients are decreased, algal blooms and fish kills will subside and the river will be a healthy place for fish and other wildlife to live.

The BMAP for the tributaries is in the process of being drafted, so not all the projects are identified yet. The organizations that will be conducting projects to improve the tributaries include the City of Jacksonville, JEA, Florida Department of Transportation, DCHD and the WSEA. The types of projects that are anticipated to be in the tributary BMAP include:

- Inspection and location of failing septic systems
- Identification and removal of illicit discharges to the tributaries and stormwater system
- Monitoring, repair and replacement of faulty sewer infrastructure
- Improvements at marinas and boater education to prevent accidental or intentional waste discharges
- Prevention programs to educate residents and business about the sewer system
- Policies and ordinances to improve septic system maintenance
- Additional assessment efforts to locate sources of bacterial contamination which can be difficult to find

The goal of the tributary BMAP is to reduce bacterial contamination in all the Lower St Johns tributaries so it is once again safe for people to boat, swim and enjoy this priceless natural resource.

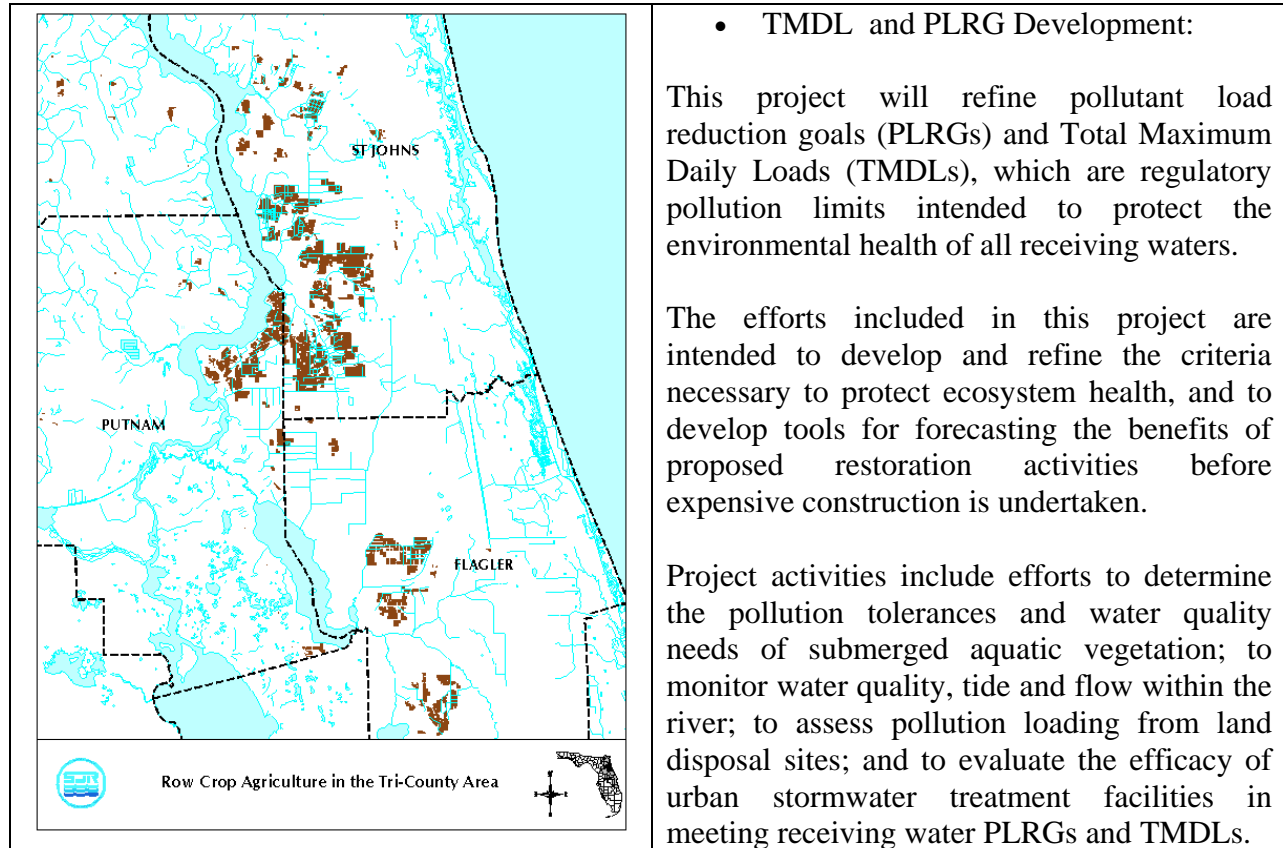
### **Lower St. Johns River Basin Program**

The Lower St. Johns River Basin program of the St. Johns River Water Management District is the drainage area for the portion of the St. Johns River extending from the confluence of the St. Johns and Ocklawaha rivers near Welaka to the mouth of the St. Johns River at Mayport. Excessive nutrients that feed algal blooms are a major problem for the lower St. Johns River and other water bodies in the basin. The primary sources of these nutrients include stormwater runoff from developed and agricultural areas in the basin and discharges from numerous domestic wastewater treatment plants upstream from and in the basin.

### ***Tri-County Agricultural Area BMP Development and Implementation***

This voluntary project will provide a monetary incentive to farmers to implement verified BMPs and to compensate farmers for any potential increase in cost or risk that may result while the farmers adjust to the new technology. This project will be shifting to phase II during this fiscal year and will consist of three-year agreements to provide reductions in nitrogen and phosphorus through the use of controlled-release fertilizers and other BMPs. The project provides cost-share funds for agricultural practices, which will sustain profitable crop yields that have potential water conservation, runoff and water quality benefits.





- **Tri-County Agricultural Area Regional Stormwater Treatment, Project 3:**
  - This project will regionally treat stormwater from the east side of Deep Creek near the town of Hastings. This type of treatment will aid in-field BMPs in an overall effort to significantly decrease the amount of nutrients entering the St. Johns River, which will assist in meeting the nutrient TMDL. A number of large-scale regional treatment facilities are proposed for the tri-county agricultural watershed, and future implementation is being evaluated due to increasing construction costs, increasing conversion of agricultural lands to nonagricultural uses and increasing use of control-release fertilizers.
- **Tri-County Agricultural Area Regional Stormwater Treatment, Yarbrough:**
  - This project will treat storm water from the west side of the Deep Creek watershed to help meet PLRGs and TMDLs.
- **Tri-County Agricultural Area Regional Stormwater Treatment, Edgefield:**
  - This project will treat storm water from the Dog Branch watershed to help meet nutrient TMDLs.
- **St. Johns River Nutrient Discharge Reduction:**

- This project will provide for engineering analyses and conceptual designs of project alternatives to reduce blue green algal blooms in the upstream segment of the Lower St. Johns River Basin.
- Tri-County Agricultural Area Regional Stormwater Treatment, Deep Creek, Southwest Masters:
  - This project will treat stormwater from the middle area of the Deep Creek watershed to help meet nutrient TMDLs.

## CLOSING

For the last 400 years, the human race has had a profound effect on the St. Johns River Basin and for the most part, this effect has contributed to the river's deterioration.

It began in a rush of post-revolutionary industrialization, when steamers and railroad development opened the interior of the basin to a flood of newcomers, eager to make homes and businesses on the banks of the St. Johns River.

Attempts to control growth have spanned from the days when most of the population lived in forts (Fort Caroline, Fort Matanzas and Fort Castillo) to the current day, when residents sprawl from one end of the county to the other. For the most part, much of these attempts have been unsuccessful. Planning, legislation and permitting have been unable to keep up with the tremendous influx of new residents, with smart growth falling behind before the ink is dry on revised legislation.

In addition, the capacity of the river was exceeded rather quickly. However, it is only in recent years that the full effect of this radical population growth has been realized. These include:

- Wetland and habitat loss
- Drainage and runoff
- Erosion and sedimentation
- Wastewater discharge
- Nutrient deposition

Reversing the impacts to achieve a sustainable level will require investments in the billions of dollars and will require personal lifestyle changes for all the people living in the basin. Cost will only increase with neglect. If there ever is to be a restored river, the time to act is now.

The power of *The River Accord* is in the capital investments it proposes: advanced wastewater treatment, septic tank phase-out, reuse of renovated wastewater and stormwater management. However, even those will fail if the collective community does not rethink its cultural paradigm.

Prior to the last century, most people did not own the place where they lived. With urbanization, ownership became the American Dream. Post-World War II, the concept of a green oasis called a neighborhood was born in earnest. The concept of "green" meant grass, not a diverse habitat. Trees were mowed and native vegetation dug up or plowed under to maximize lot platting.

For the new generation of residents, the expertise and discipline to manage that green resource - a singular and individual version of the American Dream - was not part of the mortgage package. However, the desire to simply "own" has been supplanted by the desire to create and sustain. Florida-Friendly alternatives and Green Best Management Practices were developed to fill that void between objective and practice.

The passage of irrigation and fertilizer ordinances in 2008 represents affirmative government action to promote enlightened urban environment husbandry. However, the legislature's attempt

to promote similar efforts failed because it frustrated rather than promoted implementation in the local arena.

It did, however, promote debate and along with it, consciousness raising. *The Florida Consumer Fertilizer Task Force Final Report* also provided good discussion and widely supported approval of BMPs. Green Industries, IFAS and FDEP have partnered to produce BMPs applicable to golf courses, green industries and residential green management.

The Jacksonville ordinances not only embraced those practices but they also reached out to retail suppliers of fertilizers to give IFAS-trained plant selection and fertilizer application advice to all customers, commercial *and* residential.

With these new ordinances officially on the books, Jacksonville's government will become a community leader in green initiatives relating to energy conservation and water usage. This will include outreach to homeowners' associations whose covenants and restrictions promote Florida unfriendly plant selection and maintenance practices.

There is still a gap in nitrogen management locally as a result of state preemption of pesticide regulation at the local level: a pesticide mixed with a fertilizer is considered a pesticide. Consequently, that makes Weed and Feed exempt from fertilizer regulation, although it is the most purchased consumer lawn care product.

Early discussions with the Department of Agriculture are not producing a remedy, but those discussions must continue for obvious reasons.

It is good to have a plan like TMDLs, BMAPs and *The River Accord*. It is even better to have the will to see it through. That will take years of commitment which must continue into the next city administration and next consumer generation. While good governance can lead the way, only true, individualistic ownership of the St. Johns River will create lasting change.



**Compiled February through July 2008 with contributions from:**

- **Florida Department of Environmental Protection**
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- **JEA**
- **Water and Sewer Expansion Authority**
- **City of Jacksonville**
  - **Recreation and Community Development Development**
  - **Environmental Quality Division**
  - **Public Works Department and CDM, Inc.**
  - **Office of the Mayor**