

CITRUS/HERNADO
WATERWAYS
RESTORATION
COUNCIL



WEEKI WACHEE RIVER



LAKE LINDSEY



TSALA APOPKA



LAKE ROUSSEAU

REPORT TO THE
LEGISLATURE
2008

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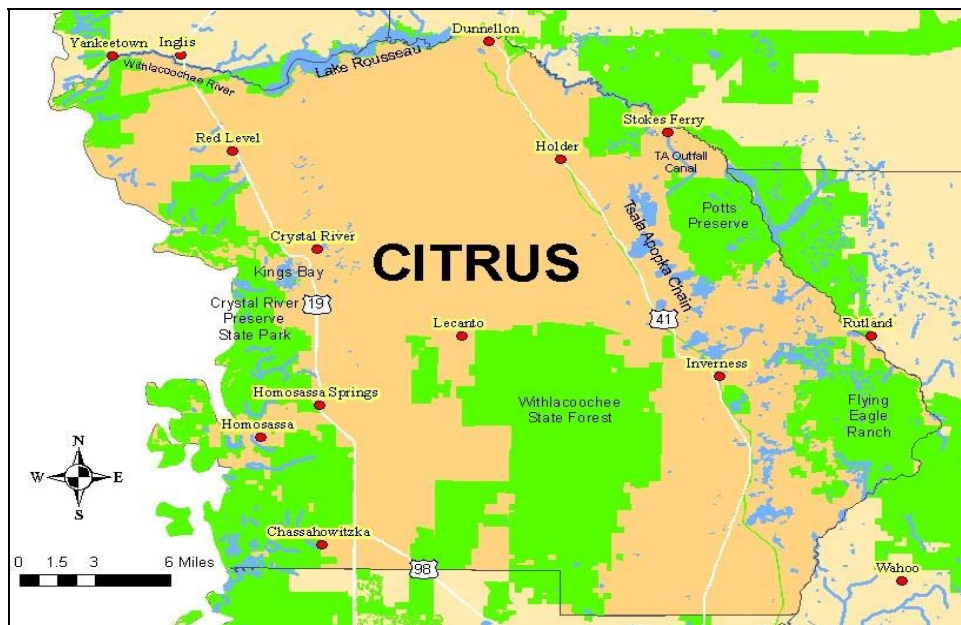
EXECUTIVE SUMMARY

The Florida Legislature passed House Bill 221 and Senate Bill 430 during the 2003 session creating the Citrus/Hernando Waterways Restoration Council (Council) in response to regional concerns for the health of Citrus and Hernando waterways. Provisions of the Legislation required the Council to form two separate County Task Forces to develop plans for the restoration of the Tsala Apopka Chain of Lakes and the Weeki Wachee River and Springs. This legislation was amended in 2006 to expand the focus of the Council and Task Forces to include all waterways within the two counties and to increase the membership of the Council and Technical Advisory Group (TAG). The Council is to develop, review, evaluate and/or recommend plans for lake and river restoration techniques and sport fish population recovery strategies, shoreline restoration, sand and other sediment control and removal, exotic species management, floating tussock management or removal, navigation, water quality, and fish and wildlife habitat improvement. The Legislation also requires that the Council report to the Legislature before November 25 of each year on the progress of the Citrus/Hernando Waterways restoration program and to develop any recommendations for the next fiscal year. This report represents the 2008 plan and recommendations of the Council.

Citrus County

The Council's Citrus County Task Force took public input, received presentations, and discussed shoreline restoration, sediment removal, navigation, water quality, floating tussock removal, and fish and wildlife habitat improvement as they relate to the Tsala Apopka Chain of Lakes, Lake Rousseau, and Crystal River/Kings Bay. The Citrus County Task Force developed goals and objectives and recommended actions for the Tsala Apopka Chain of Lakes

The Florida Fish and Wildlife Conservation Commission (FFWCC) began a sediment study to identify and locate the problem sediment areas within the Lake Tsala Apopka System. The Task Force will take public input to help prioritize the tussock and sediment removal projects following completion of the FFWCC's diagnostic study. In 2008, the Task Force was resourceful and achieved, without additional appropriations, the testing of vegetative control methods (wetland brush/shrub removal) within Flying Eagle and requested priority consideration be given to Flying Eagle marsh for controlled burns in 2009.



Tsala Apopka

Lake Tsala Apopka is the largest freshwater resource in Citrus County. The system is comprised of an interconnected series of vast marshes and open water pools covering nearly 22,000 acres. The lake system is divided into three separate and hydrologically distinct "pools." While these pools are distinct, they are connected with the Withlacoochee River through a vast expanse of marsh lying between the pools and the Withlacoochee River. The Withlacoochee River and Lake Tsala Apopka have been designated as Outstanding Florida Waters (OFW) by the Florida Department of Environmental Protection (FDEP).

The name "Tsala Apopka" derives from the Seminole Indians and signifies "the lake where bass are eaten." This is an accurate description of the chain that is one of the most significant freshwater fisheries in the state. The fisheries resource, which reflects the health of the lake, is important not only to local residents, but historically supported a secondary economy including bait and tackle shops, guide services, motels and fish camps, which have declined in recent years.

Tussock management and sediment accumulation have long been a concern in the Tsala Apopka system. Floating tussocks and organic sediments are excessive and are a fish and wildlife habitat concern because they preclude valuable rooted emergent and native submerged species and affect recreational user access. Increased tussock management and sediment removal activities will benefit the system by improving habitat for fisheries, native aquatic plant life, and recreational use.

Surface water quality in the Lake Tsala Apopka system is generally considered good, supporting a healthy ecosystem. However, increasing trends in nitrogen and phosphorus and gaps in the water quality data network resulted in the Council requesting and receiving funds from the Legislature for water quality monitoring. In 2006, a comprehensive water quality monitoring network was initiated in 20 lakes.

Presently, numerous man-made canals, berms and structures greatly influence hydrologic functioning of the system. These alterations began as far back as the late 1800s and were mostly completed by the 1960s. Current man-made, inter-lake connections and structural features influence lake levels and flows primarily for the benefit of residential development and recreation. Water level goals that target maximum conservation and flood protection do not always provide long-term optimum fish and wildlife habitats, which are naturally dynamic involving benefits from both natural floods and droughts. Natural as well as artificial manipulation of water levels can also influence water quality and marsh vegetative communities. Before any permanent hydrologic reconnections can be made between Tsala Apopka and the Withlacoochee River, it is imperative that agencies gain a better understanding of not only how water historically moved through the system but what happens when these connections are restored, as many of these alterations serve as flood protection.

Historically, the marsh system between Tsala Apopka and the Withlacoochee River was principally comprised of emergent vegetation and lacked the "shrubby" component seen today. In the last 30 years, there has been an increase in woody/shrubby vegetation. The exclusion of deep penetrating fires and water level stabilization appear to be two factors influencing the change in the vegetative communities in the lake and marsh systems.

The Citrus County Task Force developed goals and objectives as well as recommendations for the Tsala Apopka Chain of Lakes to:

- 1) Improve fisheries habitat and recreational user access;

- 2) Maintain or improve water quality;
- 3) Restore historic connections between the lakes and the Withlacoochee River to the greatest extent practicable; and
- 4) Improve marsh habitat between Lake Tsala Apopka and the Withlacoochee River to encourage emergent herbaceous plants.

Crystal River/Kings Bay

Crystal River/Kings Bay is a complex network of more than 30 springs. The discharge from this first magnitude spring system accounts for 99 percent of the fresh water entering the 600-acre Kings Bay. Crystal River/Kings Bay is Florida's second largest spring system, discharging more than 975 cubic feet of water per second. Crystal River, which emerges from the northwest end of Kings Bay, travels westward approximately six miles before entering the Gulf of Mexico.

Recognizing the need to provide some protection of the waters, the state designated Crystal River/Kings Bay as an Outstanding Florida Water in 1983. In 1988, the Southwest Florida Water Management District (SWFWMD) designated the area as a Surface Water Improvement and Management Priority Water Body.

Members of the Citrus County Task Force participated in meetings and heard public comments on the issues, concerns and needs of Kings Bay by various members of the public as well as interest groups including but not limited to the Kings Bay Association and the Kings Bay Working Group. *Lyngbya*, nutrients, bottom sediments/detritus, brackish water intrusion and spring flow were identified to the Task Force as some of the major issues associated with Kings Bay.

Lake Rousseau

Lake Rousseau is a man-made 4,163-acre impoundment of the Withlacoochee River formed by the construction of the Inglis Dam by the Florida Power Corporation in 1909. In the past, the system experienced many of the problems associated with a reservoir including excessive aquatic plant growth, algal blooms, lowered dissolved oxygen, and accumulated bottom sediments. The Lake Rousseau State Recreation Area is an OFW.

Recent studies, however, have shown that Lake Rousseau's water quality is good and is comparable to other regional lakes. The system appears to be driven by rainfall and the input of tannin stained water from the Withlacoochee River. Fish populations in Lake Rousseau are well into recovery and 2006 and 2007 electrofishing samples show excellent spawning success for bass. Natural recovery processes are producing a fishery optimal for this system. Also, continued management of Water Hyacinth has resulted in a decrease in coverage from over 100,000 acres in 1959 to less than 10,000 acres in 1997.

The Task Force heard comments on the issues and concerns in the area of the Withlacoochee River near the Barge Canal from private citizens and the Withlacoochee Area Residents (WAR, Inc.). Recent concerns included drought and reduced flow on the lower part of the river, salt water intrusion of the aquifer, mining, future power plant withdrawals and water supply.

Hernando County

The Council's Hernando County Task Force took public input, received presentations, and discussed shoreline restoration, sediment removal, navigation, water quality, floating tussock removal, and fish and wildlife habitat improvement as they relate to Lake Lindsey, the Weeki Wachee River, Mountain Lake and Hunters Lake. The Hernando County Task Force developed restoration recommendations for these systems.



Lake Lindsey

Lake Lindsey, comprising approximately 137 acres, is located in Hernando County, Florida. The land adjacent to the northern and eastern shore of Lake Lindsey is made up of mostly single-family homes and a church. The land on the southern and western shore is owned by the U.S. Department of Agriculture. There is a public boat ramp on the eastern side of the lake.

Stabilized water levels, exotic vegetation, and development on properties adjacent to Lake Lindsey have contributed to an increase of organic material (muck) deposition. Tussock formations on the southern and northern shores are problematic as well. The resulting accumulation of muck, formation of tussocks, and the encroachment of invasive vegetation on the lake necessitate its removal to enhance the quality of aquatic habitat for fish and wildlife. The organic material associated with tussocks and the encroachment of invasive plants reduces dissolved oxygen levels during decomposition, increases turbidity, promotes more tussock formation, impedes the successful growth of desirable native plants beneficial to fish and wildlife, impedes the successful spawning and recruitment of native fish species, and replaces valuable fish and wildlife habitat.

Weeki Wachee River

The Seminole Indians named the Weeki Wachee River, which translates to “winding waters.” This spring-fed river is located in southwestern Hernando County, where it flows approximately seven and one-half miles from its headspring to the Gulf of Mexico. Recognizing the need to provide some protection of the waters, the state designated the Weeki Wachee River as an Outstanding Florida Water in 2003.

The headspring of the Weeki Wachee River discharges some of the clearest water in the world, and the Weeki Wachee River itself contains a healthy mixture of freshwater, estuarine and saltwater species of fish. The Weeki Wachee River is heavily used for recreation, especially in the summer and early fall. Approximately 30 percent of the Weeki Wachee River’s shoreline is altered for waterfront housing, and most waterfront residents use the Weeki Wachee River for swimming, boating and fishing. Two boat ramps and a county park allow public access to the Weeki Wachee River. Shoreline alterations have allowed sand to accumulate within the Weeki Wachee River bed and impede wildlife access, specifically the West Indian Manatee, to the headwaters. The sand accumulation also creates a navigational risk to the public.

Mountain Lake

Mountain Lake, a 127 acre public lake located near Spring Lake and once popular with local anglers, has been dry for several years because of a sinkhole and dewatering from drought conditions. Approximately three acres of water remain in the center of the lake basin with the remainder being vegetated with dog fennel, para grass, and other invasive terrestrial species common to disturbed or dewatered areas.

Hunters Lake

Hunters Lake, 302 acres, is located in the Spring Hill urbanized area of Hernando County. The lake is served by a public boat ramp and provides a major recreational facility for the area. Access to the lake from the boat ramp has been reduced by the increase of organic material (muck) in the channel and by reduced water levels due to drought. There has also been considerable tussock formation and encroachment of invasive vegetation surrounding the lake. The isolating channel surrounding the Audubon Society bird sanctuary has been compromised by bridging tussocks and invasive vegetation.

Several lakes within the county that once supported robust recreational opportunities for fishing and boating have become unusable from the build up of sediments, and proliferation of non-native plants. Therefore, the Hernando County Task Force recommended that three of the larger lakes in the county be restored for the purpose of improving the fisheries habitat and the Weeki Wachee River have sediment removed to restore wildlife access and navigation.

Restoration Council Recommendations

The Council, both by itself and through its two component Task Forces, reviewed previous studies and reports done on several waterways within each county. The Council established that of the eight restoration issues identified in the enacting legislation, its primary objectives for the identified waterways are:

- fish and wildlife habitat improvement,
- water quality improvement, and
- organic sediment / sand removal

The Council requests the Legislature provide \$100,000 for the Tsala Apopka Chain of Lakes in Citrus County to design and permit prioritized projects (resulting from the FFWCC sediment study currently underway) that improve fish and wildlife habitat. The Council requests the Legislature provide \$200,000 for a stormwater retrofit project (Cutler Spur) in Kings Bay and \$50,000 for an environmental assessment of the Springs Coast which is anticipated to provide the basis for the application of the area into the National Estuary Program or the National Estuarine Research Reserve Program. The Council also requests the Legislature provide \$400,000 for feasibility studies to address sand / sediment control and removal, and fish and wildlife habitat restoration for Lake Lindsey, the Weeki Wachee River, Mountain Lake and Hunters Lake in Hernando County. The FFWCC, City of Crystal River, FDEP, and Hernando County are the lead agencies to implement those projects in Citrus and Hernando counties.

Priority Projects for the Citrus/Hernando Waterways Restoration Council				
Project	County	2008 Legislative Funding Request	Details	Lead Agency(s)
Tsala Apopka Chain of Lakes	Citrus	\$100,000	Sediment Study Phase II	FFWCC
Stormwater Treatment Enhancement for Kings Bay*	Citrus	\$200,000	Cutler Spur Stormwater Improvements	City of Crystal River
Springs Coast Environmental Assessment	Hernando/ Citrus/ Levy	\$50,000	Preparation for Springs Coast NEP/NERR Application	TBD
Lake Lindsey Habitat Restoration	Hernando	\$100,000	Hydraulic Dredging	FFWCC
Mountain Lake Fish and Wildlife Habitat Restoration	Hernando	\$100,000	Herbicide Treatment and Scraping	FFWCC and Hernando County
Weeki Wachee River Fish and Wildlife Habitat Restoration	Hernando	\$100,000	Hydraulic Dredging	FDEP and FFWCC
Hunters Lake Habitat Restoration	Hernando	\$100,000	Organic Sediment Dredging and Tussock Removal	FFWCC and Hernando County
Total		\$750,000		

*Total project cost will be cost shared with the City of Crystal River

Citrus/Hernando Waterways Restoration Council

Enacting Legislation

During the 2003 Florida Legislative Session, Chapter 2003-287, Laws of Florida was passed creating the Citrus/Hernando Waterways Restoration Council. During the 2006 session, the Legislature revised the previous legislation by passing House Bill 341 and Senate Bill 496. The new language revised the membership, powers and duties of the Council. The Legislature, through the Act, required the following:

Representation

The act required the establishment of the Citrus/Hernando Waterways Restoration Council. The Council consists of fourteen voting members as follows: two waterfront property owners from each county with one from each side of the county, an attorney from each county, a member from the Board of Directors of the Chamber of Commerce from each county, an environmental engineer from each county, an engineer from each county, and a person from each county with training in biology or another scientific discipline. Seven of the Council members are appointed by the President of the Senate and seven are appointed by the Speaker of the House of Representatives. The Council members from each county form two separate County Task Forces. In addition, an advisory group to each task force was formed. Members to the advisory group include a member of the FFWCC, FDEP, SWFWMD, Florida Department of Transportation (FDOT), Coastal Rivers Basin Board, Withlacoochee River Basin Board, County Public Works, and the United States Army Corps of Engineers (USACE). All, except the Basin Board Representatives, have training in biology or other scientific discipline.

Table 1. - Citrus/Hernando Waterways Restoration Council Members

Mr. Carl A. Bertoch	Citrus County Task Force
Mrs. Sandra Clodwick	Citrus County Task Force
Mr. Michael Czerwinski	Citrus County Task Force
Mr. Ken Frink	Citrus County Task Force
Mr. Eric Latimer	Citrus County Task Force
Mr. Mike Moberley	Citrus County Task Force
Mr. Wayne Sawyer	Citrus County Task Force
Mr. James E. Adkins	Hernando County Task Force
Mr. Jim F. Griffin, Jr.	Hernando County Task Force
Mr. Charles H. Miller	Hernando County Task Force
Mr. Charles Morton	Hernando County Task Force
Mr. Nicholas Nicholson	Hernando County Task Force
Mr. Norman S. Pallot	Hernando County Task Force
Mr. James L. Polk	Hernando County Task Force

Table 2. Technical Advisory Group Members

Mr. Paul Thomas	FFWCC
Mr. Mark Edwards	Citrus County
Colonel Paul L. Grosskruger	USACOE
Mr. Bruce Hasbrouck	FDOT
Mr. Allen Martin	FFWCC
Mr. Sam Lyons	Coastal Rivers Basin Board
Ms. Judy Ashton	FDEP
Mr. Chris Anastasiou	FDEP
Mr. Bo Rooks	Withlacoochee River Basin Board
Mr. John Burnett	Hernando County
Mr. Philip Rhinesmith	SWFWMD
Ms. Denise Tenuto	SWFWMD

Table 3. Southwest Florida Water Management District Administrative Support

Mark Hammond
Josie Guillen
Veronica Crow
Mark Rials

Duties and Responsibilities

Chapter 2003-287 (amended) specifically charged the Council with the following powers and duties:

1. **Restoration Issues:** Review audits and all data specifically related to lake and river restoration techniques and sport fish population recovery strategies, including strategies for shoreline restoration, sand and other sediment control and removal, exotic species management, floating tussock management or removal, navigation, water quality, and fish and wildlife habitat improvement.
2. **Evaluate Existing Studies:** Evaluate whether additional studies are needed.
3. **Funding:** Explore all possible sources of funding to conduct the restoration activities.
4. **Report to Legislature:** Report to the Speaker of the House of Representatives and the President of the Senate before November 25 of each year on the progress of the program and any recommendations for the next fiscal year.

A copy of the enacting legislation is provided in Appendix A.

Progress of Restoration Program

The Council and its component Task Forces have been meeting on a regular basis since August 16, 2004. Each Task Force along with the respective TAG, met on a regular basis to take public input, receive presentations, and discuss shoreline restoration, sand and other sediment control and removal, floating tussock management or removal, navigation, water quality, and fish and wildlife habitat improvement as they relate to their respective counties. Additionally, each TAG conducted tours of waterways considered for restoration. The Council's recommendations are intended to complement and enhance ongoing efforts by the FFWCC, FDEP, Citrus County, Hernando County, and the SWFWMD as they relate to the Citrus/Hernando Waterways.

**Citrus County Task Force Recommendations
to the
Citrus/Hernando Waterways Restoration Council**

Lake Tsala Apopka Management Action Plan – August 2008

This Lake Tsala Apopka Management Action Plan (Plan) provides the background and scientific basis for strategies and recommendations for improvements to the Tsala Apopka Chain of Lakes in Citrus County. The Plan addresses the four primary management goals adopted by the Citrus County Task Force. These goals include improvements to: fish and wildlife habitats and navigation, water quality, restoration of hydrologic conveyances, and vegetation in marshes connecting the Chain of Lakes to the Withlacoochee River. The Plan's emphasis is on fish and wildlife habitats and recreational navigation in recognition of the existing hydrologic regime, water quality and surrounding natural systems.

Introduction

Lake Tsala Apopka is the largest freshwater resource in Citrus County. The system is comprised of an interconnected series of vast freshwater marshes and open water pools covering nearly 22,000 acres.

Over the last four years, the Citrus County Task met on a regularly scheduled basis to take public input, receive presentations, and discuss shoreline restoration, sediment manipulation and removal, habitat management, navigation, water quality, floating tussock removal, and fish and wildlife habitat improvement as they relate to the Tsala Apopka Chain of Lakes. In 2005, the Citrus County Task Force adopted a set of goals and objectives as a means to chart a course of action. To move this process forward toward making recommendations to the Legislature, the Citrus County Task Force developed a system-wide management action plan to address shoreline restoration, sediment manipulation and removal, habitat management, navigation, water quality, floating tussock removal, and fish and wildlife habitat improvement. The referenced goals are listed below:

1. Improve fisheries habitat and recreational user access;
2. Maintain or improve water quality;
3. Restore historic connections between lakes and the Withlacoochee River to the greatest extent practicable;
4. Improve marsh habitat between Lake Tsala Apopka and the Withlacoochee River to encourage emergent herbaceous plants.

The Citrus County Task Force, with extensive public input, placed priority on restoration of fish and wildlife habitat and recreational user access/navigation. They are not unrelated to each other in that fisheries habitat and vegetation at optimal densities and amounts are nearly identical. Water quality, water level fluctuations and conveyance of water through marshes are all components of optimum fish and wildlife habitats; thus the critical need for goal integration involved in planning long-term management of Tsala Apopka Chain of Lakes.

Goals

Improve Fisheries Habitat and Recreational User Access

The primary goal and objective of the Citrus County Task Force is to improve fisheries habitat and recreational user access by controlling aquatic vegetation, reducing floating tussocks and removing accumulated bottom sediments that impact fish and wildlife habitat. The Citrus County Task Force performance measure is for the tussocks to occupy less than 10 percent of the open water inside the littoral zone fish habitat and to increase the desirable littoral emergent/submerged aquatic vegetation to 30 - 50 percent native species.

Background

Tussocks: Tussock management and sediment accumulation have long been a concern in the Tsala Apopka system. The Tsala Apopka Chain of Lakes Management Plan, funded by the SWFWMD and Citrus County and completed by the University of Florida (UF) in 1999, recommended that aquatic vegetation control be increased to maintain navigation and improve fish habitat. The report also recommended removing muck/sediments to improve the presence of desirable native aquatic plants and thereby improve fish and wildlife habitat. Floating vegetation may become dense and form a tussock; and vast acreages of dense hydrilla contribute greatly to organic material within lakes. The Citrus County Division of Aquatic Services administers an aquatic plant control program which is designed to maintain navigation in canals and areas of highest use by recreational boaters.

In this system, floating tussocks and organic sediments are excessive and plans to reduce them are warranted. Extensive tussocks in marsh areas are a fish and wildlife habitat concern because they physically preclude valuable rooted emergent and native submerged species. Tussocks in open water lake areas are both habitat and navigation management issues.

One of the best ways to reduce future tussocks during drought is to be proactive by reducing their "nursery" or "grow out" areas and the organic detritus upon which the plants thrive and by replacing these areas with more desirable herbaceous emergent vegetation. Removal of these sediments during drought periods, when shoreline sediments are exposed, can be done cost effectively and with little, if any, water quality concerns. These droughts present an opportunity to derive a great public benefit and one which has been a missed opportunity over the past few years of drought. The Task Force discussed the creation of a standardized permit program which would provide an expedited general permit for larger sediment / detritus removal programs when such sediments are exposed and the impacts expected to be minimal.

FDEP, Citrus County, and FFWCC are currently involved in tussock management and sediment removal activities in the Tsala Apopka system. The County and FDEP collaborated to address tussocks that interfere with navigation as part of the designated trail maintenance program. FFWCC has harvested tussocks and scraped sediments in those areas where measurable fish and wildlife benefits could be expected. Increased tussock management and sediment removal activities in the Tsala Apopka Chain of Lakes will benefit the system by improving habitat for fisheries, native aquatic plant life, and recreational use. The additional tussock management and sediment removal activities recommended by the Task Force involve a more comprehensive and system-wide restoration program for the lakes in the three main pools. These actions are in addition to and complement the current activities conducted by FDEP, Citrus County, and FFWCC listed above.

Accumulated Sediment Removal: Because detrimental bottom sediments are not addressed via harvesting floating tussocks, dredging either through scraping of lake bottoms or hydraulic means is the only other viable option to sediment removal.

Hydraulic Dredging: The FFWCC is conducting a diagnostic study to map and quantify the acreage of tussocks and volume of sediment for each lake. Information obtained will be used to prioritize specific lakes and locations within lakes for tussock harvesting and dredging projects. Due to costs of hydraulic dredging, the focus will be on projects within the largest lakes of the three main pools (Lake Henderson, Lake Hernando and Floral City Lake) or equivalent acreages in lakes nearby with easy public access (Todd, Dodd, Tsala Apopka, Little Henderson or Spivey). Sediment bathymetric mapping and the characterization component of the diagnostic effort will provide the basis for prioritizing littoral shelf or deep lake locations, project scope, and disposal options. Cursory information indicates that up to one-third of sediments in the system are associated with these three main pools.

Recommended Actions to Carry Out Action Plan

FFWCC will complete the diagnostic study to quantify sediment accumulation and prioritize lakes based on sediment deposition rate and greatest depth of sediment in littoral zone. Cost estimates will also be developed. The Task Force will take public input to help prioritize the tussock and sediment removal projects following completion of the FFWCC's diagnostic study.

The Task Force requests \$100,000 to initiate design and permitting of prioritized projects to reduce floating tussocks and remove accumulated bottom sediments that impact fish and wildlife habitat. FFWCC will use the funds to initiate design and permitting on those prioritized projects that improve fish and wildlife habitat.

FFWCC will continue efforts to identify and conduct individual, site-specific projects which have measurable objectives benefiting habitats for fish and wildlife or enhance hydraulic dredging projects. All future FFWCC projects depend upon availability of Aquatic Habitat and Restoration Section funding. Citrus County will continue aquatic plant control operations. FFWCC, Citrus County, and the SWFWMD will coordinate to identify potential spoil sites. Permitting and spoil site issues will undoubtedly influence lake priority selection and scope of work on individual lakes.

Recommended Schedule to Carry Out Action Plan

January/February 2009 – FFWCC to complete Diagnostic Survey of Sediment and Vegetation in the Tsala Apopka Chain of Lakes to quantify sediment accumulation and to prioritize areas where enhancement projects would have the greatest fish and wildlife habitat benefits.

July 2009 through June 2010 – FFWCC to contract out permitting and project design for future fish and wildlife habitat enhancement projects.

Maintain or Improve Water Quality

The Citrus County Task Force identified as a priority to maintain or improve water quality by implementing a water quality monitoring and assessment program and implementing water quality improvement projects as appropriate. The Citrus County Task Force performance measures are:

- Dissolved Oxygen*
 - Not < 4.0 mg/l*

- Monthly average >5.0 mg/l *
- Nutrients
- Total Nitrogen <0.3 mg/l
 - Total Phosphorus <0.04 mg/L

*It is expected that during periods of high rainfall when river and swamp flows reduce dissolved oxygen, this goal may not be achievable.

Background

Previous reports and publications have included cursory assessments of water quality. LAKEWATCH manages a long-term, statistically rigorous water quality monitoring program for numerous lakes in the Tsala Apopka chain. When water quality data in the Tsala Apopka Chain of Lakes is combined into the three distinct systems of the Floral City, Inverness, and Hernando Pools, water quality can be assessed on a larger geographic scale. Therefore, water quality monitoring stations have been established at each of the major lakes within each of the three pools (20 lakes) to address gaps in consistency and frequency of data. The purpose of this additional data is to better quantify the inter-relationship between the river and the lakes of Tsala Apopka Chain of Lakes. For example, values for water color and dissolved organic matter, indicative of Withlacoochee River are highest in Floral City Pool and change as water moves north in lakes through canals and/or through marshes. This influence is governed by rainfall and is relatively short in duration. The knowledge of this relationship is vital to understanding and recommending appropriate alterations to hydrologic conveyances.

Surface water quality in the Lake Tsala Apopka system is generally considered good, supporting a healthy ecosystem. There is also some evidence that suggests water quality in general has declined in recent years with increasing trends in nitrogen and phosphorus. SWFWMD initiated an expanded monthly water quality monitoring program in October 2006 for the 20 lakes that comprise the Tsala Apopka system. This frequency will provide needed data for surface water trend analysis and will be used to measure the effects of management activities in the lake chain. The resulting data will be analyzed and presented to the Citrus County Task Force annually.

Recommended Actions to Carry Out Action Plan

No action required by the Citrus County Task Force at this time. The SWFWMD to continue monthly water quality monitoring in 20 lakes of Tsala Apopka chain and continue efforts to correlate system-wide hydrology and water quality indicators. The SWFWMD, FFWCC, FDOT, and Citrus County will continue to identify water quality improvement projects and implement projects which are feasible. Funding for implementation will come from several sources, including the SWFWMD's cooperative funding program, local governments and state grants supported by the Citrus County Task Force.

Restore Historic Connections between Lakes and Withlacoochee River to the Greatest Extent Possible

The Citrus County Task Force identified the need to restore historic connections between the lakes and the Withlacoochee River to the greatest extent practicable as a goal. Many studies and documents exist on the historic hydrologic conditions of the lake system. A recent comprehensive investigation identifying historic hydrologic features was completed as part of the United States Army Corps of Engineers Withlacoochee River Feasibility Study. A support document entitled "Lake Tsala Apopka Watershed Pre-settlement Surface Water Features and

Vegetation" was completed by HDR Engineering Consultants on the hydrologic features and land cover prior to human intervention.

Background

Historically there were a total of eight discernable natural connections between the lake and the Withlacoochee River. Depending on the location within the lake system, these connections primarily conveyed water either into the system or out of the system, but in most all, flow records indicate movement in both directions depending on the Withlacoochee River conditions. The historic conveyances include: the location of the Orange State Canal between Bonnet Lake on the Withlacoochee River to Floral City, the location of the "north/south" berms on the Flying Eagle Property, Dead River/Kettle Island, Moccasin Slough, Long Arm Slough/Potts Preserve, North Turner Camp Road, Sumter/Citrus/Marion County line and Two-Mile Prairie near Holder.

Presently, numerous man-made canals, berms and structures greatly influence the hydrologic functioning of the system. These alterations began as far back as the late 1800s and were generally completed by the 1960s. Current man-made, inter-lake connections and structural features influence lake levels and flows primarily for the benefit of residential development and recreation. Water level goals that target maximum conservation and flood protection do not always provide long-term optimum fish and wildlife habitats, these habitats are naturally dynamic and receive benefits from both natural floods and droughts. Natural fluctuations also influence water quality and marsh vegetative communities.

Options to restore natural systems will be addressed through environmental and engineering analyses, specifically to determine the ability to mimic timing, extent and duration of historic surface water levels into and out of the system.

Several specific restoration projects to address these alterations have been completed or are in the process of being completed by SWFWMD. These include the hydrologic restoration of Long-Arm Slough, Twin Pond Road, and Parsons Point in the Potts Preserve, the installation of culverts along the east/west berm road of the SWFWMD's Flying Eagle property (to rehydrate wetlands in the former MacGregor/Smith Boy Scout property), and the installation of ditch blocks in the Shinn Ditch of the Flying Eagle tract (to rehydrate 1,200 acres of wetlands). Finally, culverts were installed in September 2007 in the north/south berm in the Flying Eagle property to temporarily reconnect the Floral City Pool with the Withlacoochee River through the Dead River flats and provide additional information on flows into and out of the lake.

Before any permanent hydrologic connections can be made between the lake and the Withlacoochee River, it is imperative that agencies gain a better understanding of not only how water historically moved through the system, but what happens when these connections are restored, as many of these alterations serve as flood protection. To achieve this, SWFWMD and FFWCC have committed to fund the Withlacoochee River Watershed Initiative, a multi-year project for the Withlacoochee River Watershed from the Green Swamp to the Gulf of Mexico. The information will be used to address flood protection, natural systems and water supply issues in the basin which includes Tsala Apopka. The project is scheduled to be complete by 2010.

Recommended Actions to Carry Out Action Plan

No action required by the Citrus County Task Force at this time. The SWFWMD will complete a multi-year Withlacoochee River Watershed Initiative. The Withlacoochee River Watershed Initiative will include a feasibility and alternatives analysis of options to restore a more natural hydroperiod in the marshes between the Withlacoochee River and the lakes. Funding for

implementation will come from several sources, including the SWFWMD's cooperative funding program, local governments and state grants supported by the Citrus County Task Force.

Improve Marsh Habitat between Lake Tsala Apopka and the Withlacoochee River to Encourage Herbaceous Plants and Improve Habitat

The goal of the Citrus County Task Force is to improve marsh habitat between Lake Tsala Apopka and the Withlacoochee River and to encourage emergent herbaceous plants. The Citrus County Task Force performance measure is that the overall hardwood and shrub component of marshes (primarily Carolina willow, red maple, wax myrtle during drought periods) be less than five percent.

Background

Historically, the Lake Tsala Apopka marsh system was comprised of emergent vegetation and lacked the forested component seen today. In the last 30 years, there has been an increase in woody/shrubby vegetation including species such as red maple, Carolina willow, and wax myrtle. There are two interrelated reasons for this change in vegetative composition in these marshes. The first and most important is the exclusion of deep penetrating fire from these systems and the second is water level stabilization of the lake.

Marsh or wetland fires are different from upland fires. Wetland systems can experience a "surface burn" when there is standing water or the underlying soils are saturated near the surface. In these cases, when the exposed vegetation is able to ignite, a fire will burn off the exposed vegetation, but the roots and the underlying organic sediments are left intact. The sediment or muck layer continues to build up over time and the change in bottom elevation allows different vegetation to dominate. Extreme fire events, those that are typically associated with extreme droughts and occur once in 100 years or more, not only eliminate the above ground vegetation, but also burn off the accumulated organic matter. These are often referred to as "muck fires" and have been known to burn uncontrolled for years in such places as the Everglades. These events have been suppressed throughout Florida and in the lake system because of the potential harm to humans directly by fire and by the effects of smoke. Because of this, nature's major restoration tool has been eliminated. The selective removal of hardwood species, such as red maple in Flying Eagle, will improve access and recreational opportunities. Furthermore, the use of prescribed fire will assist in maintenance efforts to minimize the increase in woody species. SWFWMD will continue to include the Flying Eagle Marsh area on its controlled burn / prescribed fire schedule.

The stabilization of water levels in the lake has certainly increased the rate of colonization of the marshes by woody species in the lake fringing marshes. Other known alterations that reduce hydroperiods are dewatering activities such as ditching and berming. While it is difficult to determine and quantify exactly how much of this woody vegetation increase is due to dewatering practices, it is well understood how local man-made drainage features (Shinn Ditch) have led to an overall degradation of the system.

Management activities such as prescribed burning and reducing hardwoods would not by themselves necessarily have a benefit to fisheries habitat for the Tsala Apopka system. An integrated approach to ecosystem management that included the restoration of marsh systems through large-scale improvements to historical flow rates and patterns would maintain optimum fisheries habitat in this typically shallow lake-marsh system. Drought conditions historically fostered the benefits of fire. Findings from the Withlacoochee River Watershed Initiative, including feasibility and alternatives analysis, will improve capability to manage these marshes.

Recommended Actions to Carry Out Action Plan

No action required by the Citrus County Task Force at this time. Much of this marsh interface (Potts Preserve and Flying Eagle) between the lake and the Withlacoochee River is owned by the State and managed by FDEP. SWFWMD, however, has an interest in maintaining the marshes in a natural state as it is vital to the health of the adjacent uplands. It closely coordinates prescribed fire in these marshes with the Division of Forestry (the State agency that conducts burning) and the FFWCC. The current burn plan includes all the marshes (sovereign and submerged lands) within the boundaries of these District owned lands.

Stormwater Treatment Enhancement for Kings Bay – August 2008

Introduction

Crystal River/Kings Bay is a complex network of more than 30 springs. The discharge from this first magnitude spring system accounts for 99 percent of the fresh water entering the 600-acre Kings Bay. Crystal River/Kings Bay is Florida's second largest springs system, discharging more than 975 cubic feet of water per second. Crystal River, which emerges from the northwest end of Kings Bay, travels westward approximately six miles before entering the Gulf of Mexico. The Crystal River is a federally designated critical habitat for the West Indian Manatee.

Extensive dredge-and-fill activities beginning in the 1960s altered much of Kings Bay and portions of the Crystal River shorelines. Numerous sea walls and dead-end canal systems were created to provide residential and commercial boat access. These activities changed water circulation and reduced the amount of natural wetlands. From 1970 to 2000, the population of Citrus County grew from 19,196 to 118,085. Currently, nearly 40 percent of the contributing Crystal River/Kings Bay watershed/springshed is urbanized.

Recognizing the need to provide some protection of the waters, the state designated Crystal River/Kings Bay as an Outstanding Florida Water in 1983. In 1989, the SWFWMD designated the area as a Surface Water Improvement and Management (SWIM) Priority Water Body. A SWIM Plan was developed to identify management issues and actions necessary to restore and protect Crystal River/Kings Bay.

Goal

Improve Water Quality

Cutler Spur Boulevard, an old railroad spur, is a roadway that connects West Fort Island Trail to NE 3rd Avenue and is widely used by local residents of the City of Crystal River. Portions of the roadway have canals and wetlands adjacent to them that feed into Kings Bay. Most of the canals discharge within a few hundred feet of Three Sisters Springs, a winter manatee warm water refuge. There are several areas in need of stormwater treatment along Cutler Spur Boulevard.

Cutler Spur Boulevard roadway is paralleled on the east side, just north of Paradise Point Road, by several developments that were built in the 70s, prior to the state's implementation of stormwater rules. The outfalls for these developments lack any form of treatment for stormwater runoff that enters the pristine waterways and canals leading to Kings Bay. More specifically, there is an existing 24" outfall storm water pipe, near a carwash, that discharges storm water runoff without treatment directly into a canal on the west side of Cutler Spur. Additionally, there is a 24" outfall pipe in the rear parking lot of an existing store just south of the car wash that also discharges untreated stormwater into the same canal. Both of these existing outfall pipes discharge untreated storm water into a water system that serves as a passage way for manatees and other aquatic life.

Recommended Actions to Carry Out Action Plan

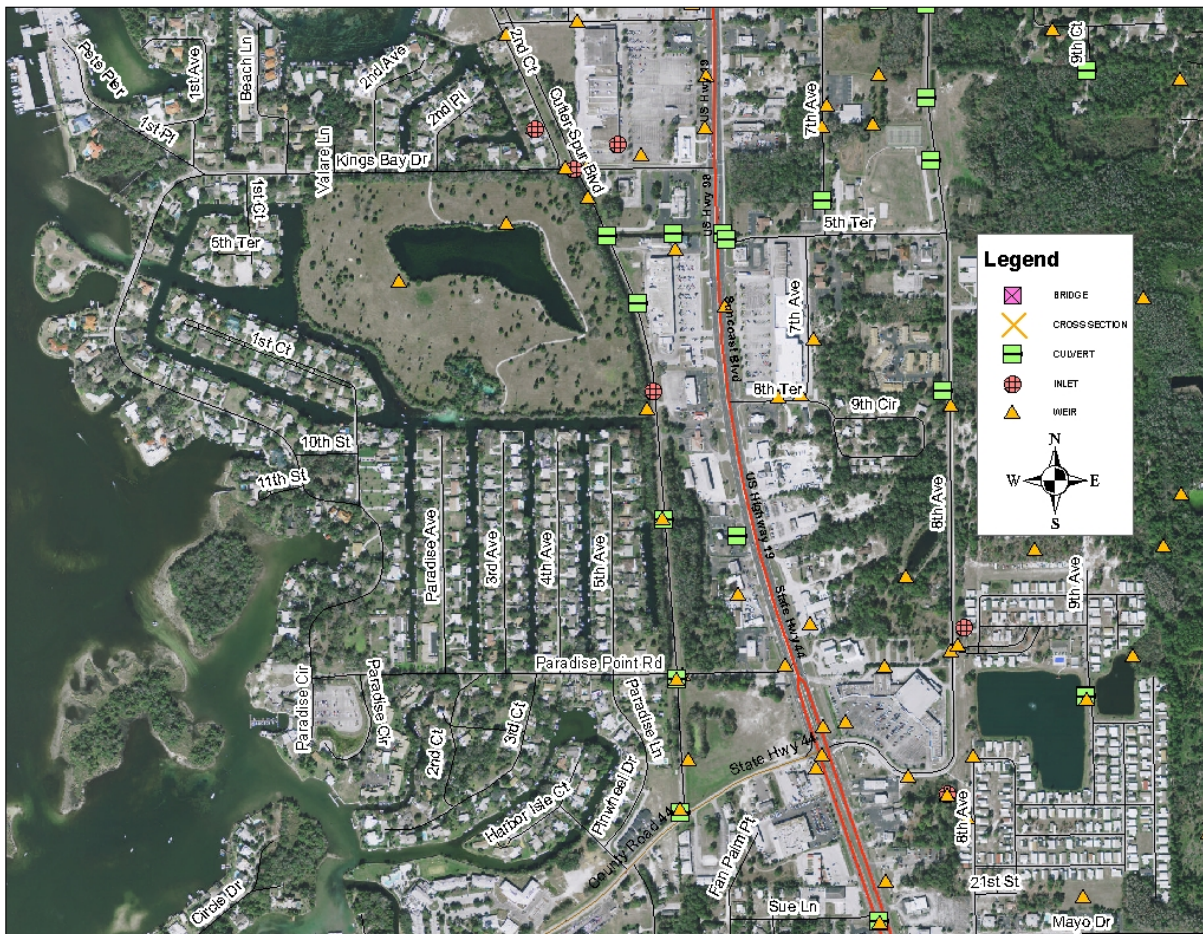
The City of Crystal River will retrofit these outfalls and provide additional stormwater treatment for the roadway corridor. There are several methods of treatment that the city would like to apply to the existing outfalls and roadway corridor. These include a combination of bio-swales, inlet skimmers and treatment areas along Cutler Spur Boulevard. First, the existing outfalls along the back of the shopping centers will need a combination of bio-swales, new inlets and

modifications to the existing 24" storm pipes. Second, the existing inlets attributing to the outfalls described above will need to be retrofitted with storm water skimmers to capture and treat runoff as it enters the inlets. Finally, bio-swale treatment systems need to be constructed along the existing roadway to capture additional stormwater runoff, if practicable.

The Task Force requests \$200,000 to initiate design, permitting and construction of all three treatment options. The total project cost to implement all three treatment options is estimated to be between \$300,000 to \$400,000.

Recommended Schedule to Carry Out Action Plan

July 2009 – City of Crystal River to contract out work associated with the project and begin implementation.



Springs Coast Environmental Assessment – August 2008

Introduction

The Florida Springs Coastal region is well known to be among the most productive fisheries in Florida. Spring fed freshwater rivers mixing with salt water from the Gulf of Mexico create estuaries that provide critical habitat for fish and wildlife. Well developed sea-grass beds are major contributors of organic matter to marine food chains and function as a direct food source for fish, waterfowl, turtles and manatees. These estuaries also stabilize sedimentation and prevent erosion. This coastal area is unique in that the southern end is tropical and the northern end is non tropical, creating a transitional zone that contributes to the unusually large diversity of estuarine flora and fauna in the area as well as a diversity of adjacent upland and wetland habitats within the watershed(s).

The Springs Coast has been impacted by numerous sources of pollution, resulting in a reduction of the natural biodiversity and productivity. Rapidly expanding residential and commercial developments have resulted in increased nutrient loading, sunlight reduction due to turbidity and algae blooms, stormwater runoff and the proliferation of nuisance plants such as Brazilian Pepper and *Lyngbya*. Increasing recreation and commercial use of the waterways continues to increase the pressure on the water resource with the area currently realizing adverse impacts on water quantity and quality, submerged aquatic vegetation, and other water-related resources. Major expansion of coastal mining and plans to build two nuclear power plants add to urgency of this study. The power plants will use up to 130 million gallons of cooling water per day. The water will be taken from and returned to Citrus County.

Goal

Explore All Possible Sources of Funding

The goals of this study are to: 1) assemble a data compendium 2) identify the economic and environmental benefits of the resources and 3) identify and map the natural resources and habitats that are inextricably linked to the resource. This project will not perform new data generation, rather it will identify the existing data and information resources and identify existing or past watershed related monitoring programs and the responsible agencies. It will establish a data “baseline” and bring together information from work that has been done by a variety of agencies and universities such as the FFWCC, SWFWMD, FDEP, Environmental Protection Agency, UF, and others. This project will provide a well thought out plan for the area to be recognized in the National Estuary Program or National Estuarine Research Reserve Program.

The long range objective is to ensure the maintenance of essentially natural conditions. Proper management of these resources will ensure the long term propagation of fish, birds, turtles, manatees and other wildlife.

The area to be evaluated includes the Springs Coast estuaries from the Weeki Wachee River up to Cedar Key, beginning at the springs and extending to the far edge of the coastal grass beds. This coastal range extends beyond Hernando and Citrus Counties, but is logical for the protection of these estuaries.

Recommended Actions to Carry Out Action Plan

The Task Force requests \$50,000 to initiate a study into the economic and environmental benefits of resources from the Weeki Wachee River to Cedar Key.

Recommended Schedule to Carry Out Action Plan

July 2009 - Lead Agency (to be determined) to contract out Springs Coast Environmental Assessment. Approximately 12 months to completion.

Hernando County Task Force Recommendations to the Citrus/Hernando Waterways Restoration Council

Despite a great deal of growth, Hernando County still retains a rural character. Covered by coastal swamps, dense woodlands, lakes, rivers and pastures, the county is rapidly changing as residential development expands. Continued population growth in the county, fueled by the development of the Suncoast Parkway, will continue to create issues between land use and water resource conservation. Of paramount concern is the need to maintain the quality and biological health of the waters and aquatic resources within the county to ensure their continued use and enjoyment for current and future residents.

In 2003, the Florida Legislature enacted legislation (amended 2006) which directed the Hernando County Task Force, as members of the Citrus/Hernando Waterways Restoration Council, to develop plans for the restoration of Hernando County waterways. As part of their plan development, the TAG presented information to the Hernando County Task Force on the status and trends in water quality and flow rates, and on recently completed, ongoing and/or planned activities related to shoreline stabilization, stormwater treatment, debris removal, and the removal of structures within the Weeki Wachee River.

At their July, 2007 meeting, the Task Force received requests for restoration projects from both the general public or federal/state/local agencies. In total seven project proposals were received. The Task Force adopted four of the projects. The three remaining projects, which included bank stabilization in the Withlacoochee River, dredging of a water body with no public access, and improvements to an existing boat ramp, were rejected by the Task Force because they were either on-going maintenance programs or not public resources and therefore not candidates for public funding. No funding was received in 2008 for projects and no additional projects were identified. The Task Force agreed to resubmit the projects identified in 2007 to the legislature for funding in 2008.

This report summarizes goals, strategies, and specific projects designed to restore and/or protect the environmental health of selected waters in Hernando County.

Goals

- Shoreline restoration
- Sand and other sediment control and removal
- Exotic species management
- Floating tussock management or removal
- Navigation, water quality, and fish and wildlife habitat improvement

Lake Lindsey Habitat Restoration

Background

Lake Lindsey (137 ac; 55 ha) is located in Hernando County, Florida in the physiographic region of the Hernando Hammock and Tsala Apopka Basin division of the Ocala Uplift District (Brooks 1981). The mesotrophic lakes geology is dominated by phosphatic sand, silt and clay of the Hawthorne Formation and limestone consisting of skeletons of fossils in a silt to sand size matrix of the Ocala Limestone Formation (Brooks 1981). The land adjacent to the northern and eastern shore of Lake Lindsey is made up of mostly single-family homes and a church. The land on the southern and western shore is owned by the U.S. Department of Agriculture. There is a public boat ramp on the eastern side of the lake.

Stabilized water levels, exotic vegetation and development on properties adjacent to the lake have contributed to an increase of organic material (muck) deposition. Tussock formations on the southern and northern shores are problematic as well. The resulting accumulation of muck, formation of tussocks, and the encroachment of invasive vegetation on the lake necessitate its removal to enhance the quality of aquatic habitat for fish and wildlife. The organic material associated with tussocks and the encroachment of invasive plants reduces dissolved oxygen levels during decomposition, increases turbidity, promotes more tussock formation, impedes the successful growth of desirable native plants beneficial to fish and wildlife, impedes the successful spawning and recruitment of native fish species, and replaces valuable fish and wildlife habitat.

Recommended Actions to Carry Out Action Plan

The Hernando County Task Force recommends hydraulic dredging of organic sediments to restore fish and wildlife habitat to improve sport fish populations, spawning success and angling success with increased local economic benefits. There are approximately 221,000 cubic yards of organic sediment to be removed at a cost of \$11-15 per cubic yard. Initial removal cost estimates range from \$2,500,000 – \$3,500,000.

Weeki Wachee River Fish and Wildlife Habitat Restoration

Background

The Weeki Wachee River, located in western Hernando County, is a spring-fed system that originates in the Weeki Wachee Dune Field. This area, which typically has elevations of 20 m or less, lies within a relic dune system comprised primarily of sand hill vegetation. Down river, the area transitions into a hardwood swamp, and ultimately into a coastal marsh complex. The river runs west approximately 7 km from the main spring boil to the beginning of the associated coastal marsh complex and then another 5 km to the Gulf of Mexico.

Recently completed projects focused on stabilizing the erosion of sand into the river at the Chassahowitzka Wildlife Management Area (WMA) region called “the Bluffs,” as well as a secondary site located south of the WMA’s observation tower. A project to reduce bank erosion of sand at “Buccaneer Bay” beach has been completed. A groin removal project funded by the Coastal Rivers Basin Board, in response to a request for removal of these structures from the Hernando County Port Authority and the Hernando County Parks and Recreation Department was completed as well.

Untreated stormwater discharges directly into the Weeki Wachee River from the parking lot of the Weeki Wachee Springs Attraction, as well as from adjacent portions of U.S. Highway 19. This stormwater input brings with it a substantial amount of suspended sediments and nutrients, as well as an unknown amount of greases, oils and other pollutants frequently associated with roadways and parking lots. A project is being constructed by the SWFWMD that will route the runoff from these areas through a stormwater treatment system that will result in significant reductions in pollutant loads associated with runoff from the immediate watershed, with subsequent improvements to the quality of the water and sediments of the headsprings portion of the river.

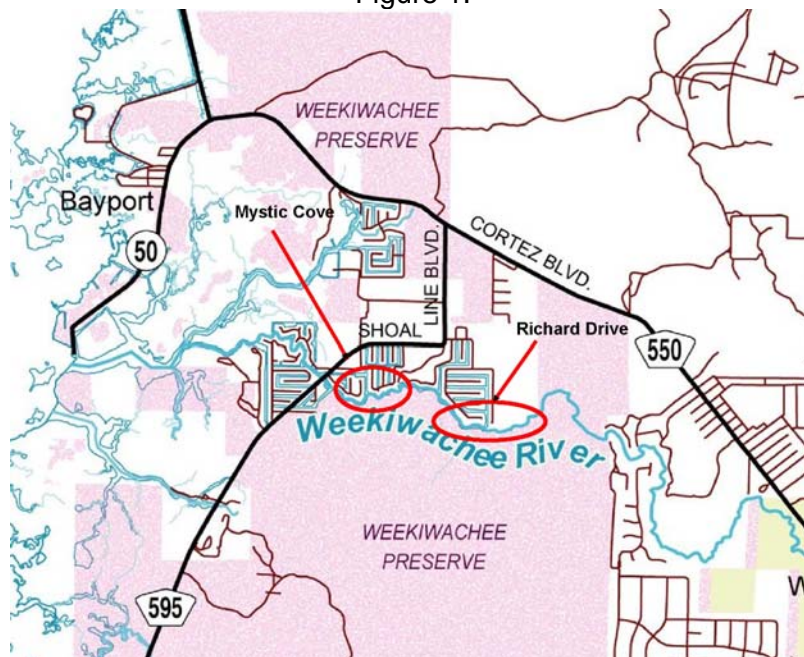
The Weeki Wachee Springs attraction contains an estimated 6,000 cubic yards of organic debris and Lyngbya biomass accumulated in the headspring. This material is easily suspended via flow from the spring's vents and distributed downstream via recreational users. Removal of the sediments and organic material as well as the revegetation of the spring and upper river will take place in 2008.

A recurring complaint from members of the public is that the sand currently in the Weeki Wachee River is excessive, and impacts the navigability of the river for fish and wildlife. Erosion of sand from the riverbanks has caused the river to become shallower than it would naturally be, and as such velocities have been reduced as well as the ability of submerged aquatic vegetation to establish. Aforementioned projects removed primary sources of sand and sediment; however, a significant volume remains within the lower river.

Recommended Actions to Carry Out Action Plan

To restore fish and wildlife habitat (including West Indian Manatee, a protected species) the Hernando County Task Force recommends the removal of shoaling sand in the lower river which has smothered historical limerock river bottom substrate, impeded river flow, and interfered with navigation. Shoal development precludes historical safe and open passage for manatees accessing head-spring wintering areas.

Figure 1.



Two locations including “Mystic Cove” and “Richard Drive” are proposed for study for hydraulic dredging of sand. The amount of sand accumulated is unknown but a reasonable starting cost for dredging based on visual estimates is \$5,000,000.

Mountain Lake Fish and Wildlife Habitat Restoration

Background

A 127 acre public lake once popular with local anglers, Mountain Lake has been dry for several years because of a sinkhole and dewatering from drought conditions. Approximately 3 acres of water remain in the center of the lake basin with the remainder being vegetated with dog fennel, Para grasses, and other invasive terrestrial species common to disturbed or dewatered areas.

Recommended Actions to Carry Out Action Plan

The Hernando County Task Force recommends herbicide treatment of all terrestrial plant material followed by removal and scraping down to natural sand lake bottom by heavy equipment is proposed at a cost of approximately \$2,000,000. Ongoing maintenance will need to be performed until historical water levels return.

Hunters Lake Habitat Restoration

Background

Hunters Lake (302 acres) is located in the Spring Hill urbanized area of Hernando County (see Figure 2) and lies within the Coastal Rivers Basin. The lake is served by a public boat ramp and provides a major recreational facility for the area. Lake levels are monitored by SWFWMD on a monthly basis and water quality studies of the site have been undertaken by Florida LAKEWATCH.

Access to the lake from the boat ramp has been reduced by the increase of organic material (muck) in the channel and by reduced water levels due to drought. There has also been considerable tussock formation and encroachment of invasive vegetation surrounding the lake. The isolating channel surrounding the Audubon Society bird sanctuary has been compromised by bridging tussocks and invasive vegetation.

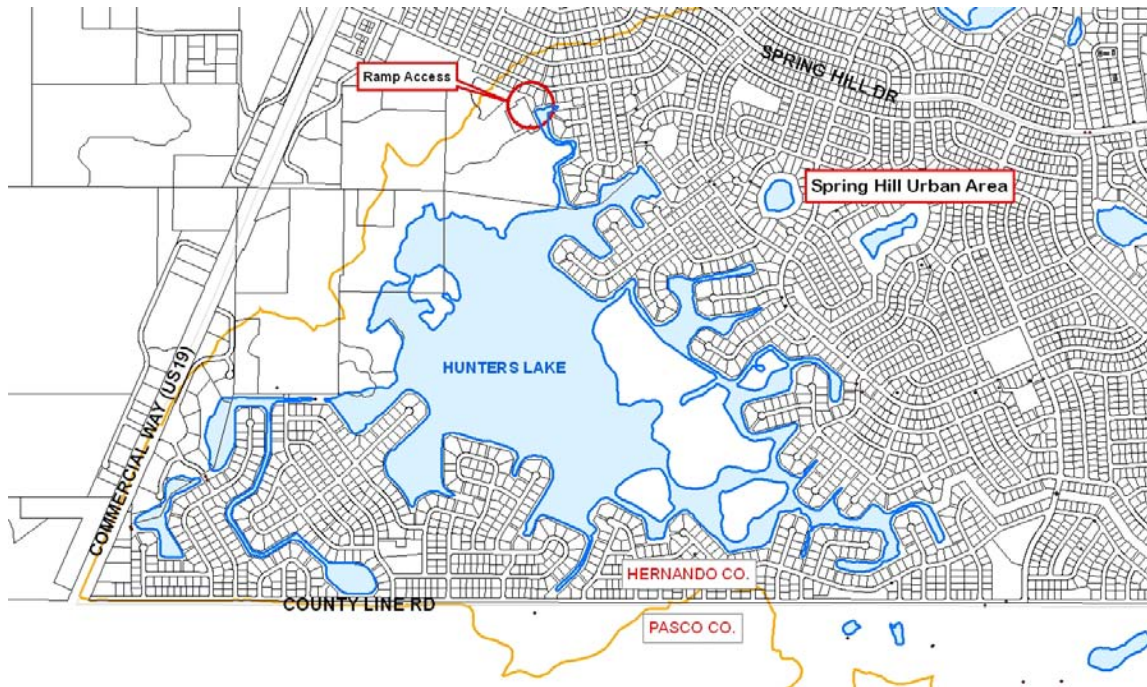
The organic material associated with tussocks and the encroachment of invasive plants reduce oxygen levels during decomposition, increase turbidity, replace valuable fish and wildlife habitat, limit the growth of native plants which are desirable for fish and wildlife and impedes the successful spawning and recruitment of native fish species. Loss of access to this public lake has removed a valuable recreational outlet for the community.

Recommended Actions to Carry Out Action Plan

The Hernando County Task Force recommends the dredging of organic sediments to restore the access channel from the boat ramp to the body of the lake and the removal of tussocks and encroaching invasive vegetation to restore fish and wildlife habitat and isolate the Audubon Society bird sanctuary.

The area of tussock growth is estimated at approximately 100 acres and approximately 12,000 cubic yards of organic sediments must be removed in the access channel. The project cost is estimated at \$5,250,000. Ongoing maintenance will need to be performed until historical water levels return.

Figure 2.



Restoration Issues

Ancillary costs for each project are dependent upon conditions identified during the first step of project implementation, the feasibility study. These conditions and associated costs include: material analysis (e.g., possible contaminants, composition, and volume determination), material marketability and handling, staging/spoil area(s), hauling and transportation, permitting processes and pre-applications, and determination of land acquisitions as needed.

Step two will include project design and permitting, which is broken down into surveys, hydrologic studies, geotechnical investigations, engineering, and other associated activities as they arise. Step three is project implementation, the construction phase.

Project Costs

Project	Expected Cost	2008 Legislative Funding Request	Project Partner
Lake Lindsey Habitat Restoration	\$3,500,000	\$100,000	FFWCC
Weeki Wachee Manatee Habitat Restoration	\$5, 000,000	\$100,000	FDEP and FFWCC
Mountain Lake Restoration	\$2, 000,000	\$100,000	FFWCC and Hernando County
Hunters Lake Restoration	\$5,250,000	\$100,000	FFWCC and Hernando County
Total	\$15,750,000	\$400,000	

Literature Cited

Brooks, H.K. 1981. Physiographic divisions of Florida; map and guide. Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida

Appendix A- Legislation

CHAPTER 2003-287

House Bill No. 221

An act relating to water management; creating the Citrus/Hernando Waterways Restoration Council; providing for membership, powers, and duties; providing for separate county task forces; providing for a report to the Legislature; providing for an advisory group to the council; requiring the Southwest Florida Water Management District to act as lead entity for the purpose of providing staff and administrative support for the council; providing for a Citrus/Hernando Waterways restoration program; providing an effective date.

WHEREAS, the waterways of Citrus and Hernando Counties are of historic, hydrological, and ecological significance, and

WHEREAS, most of these Citrus/Hernando waterways are Outstanding Florida Waterways or are in the application process, and

WHEREAS, the Citrus/Hernando waterways are plagued by fluctuating water levels and sedimentation increasing nitrate levels and sand movement causing blockage of natural springs and excessive growth of aquatic plants, which are degrading their water quality and recreational value, and

WHEREAS, despite their current problems, the Citrus/Hernando waterways continue to provide wildlife habitat for fish, birds, and game and offer recreational opportunities for the residents of Citrus and Hernando Counties and visitors to the area, and

WHEREAS, the renewable economic potential of the Citrus/Hernando waterways is significant, and

WHEREAS, the Southwest Florida Water Management District and the Fish and Wildlife Conservation Commission, along with other state, regional, and local entities, have developed proposals to restore portions of the Citrus/Hernando waterways, NOW, THEREFORE,

Be It Enacted by the Legislature of the State of Florida:

Section 1. (1) The Citrus/Hernando Waterways Restoration Council.— There is created within the Withlacoochee and Coastal Rivers Basin Boards of the Southwest Florida Water Management District a council to be known as the Citrus/Hernando Waterways Restoration Council. The council shall be coordinated by representatives of the following agencies: the Florida Fish and Wildlife Conservation Commission, the Department of Environmental Protection, and the Southwest Florida Water Management District. The council is subject to the provisions of chapters 119 and 120, Florida Statutes.

(2) Members of the council shall consist of 12 voting members with 6 appointed by the President of the Senate and 6 appointed by the Speaker of the House of Representatives. The council shall consist of representatives as follows:

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- (a) A waterfront property owner from each county.
 - (b) An attorney from each county.
 - (c) A member of the Board of Directors of the Chamber of Commerce from each county.
 - (d) An environmental engineer from each county.
 - (e) An engineer from each county.
 - (f) A person from each county with training in biology or another scientific discipline.
- (3) The council members from each county are to form two separate county task forces from the council to review and make recommendations on specific waterways. The Hernando County Task Force shall develop plans for the restoration of the Weeki Wachee River and Springs. The Citrus County Task Force shall develop plans for the restoration of the Tsala-Apopka Chain of Lakes.
- (4) There shall be a technical advisory group to the council and the two county task forces which shall consist of one representative each from the Southwest Florida Water Management District, the Department of Environmental Protection, the Department of Transportation, the Fish and Wildlife Conservation Commission, the Coastal Rivers Basin Board, the Withlacoochee River Basin Board, and the United States Army Corps of Engineers, each of whom shall be appointed by his or her respective agency and each of whom, with the exception of the representatives from the Withlacoochee River Basin Board and Coastal Rivers Basin Board, shall have had training in biology or another scientific discipline.
- (5) Immediately after appointment, the council shall meet and organize by electing a chair, a vice chair, and a secretary, whose terms shall be for 2 years each. Council officers shall not serve consecutive terms. Each council member shall be a voting member. Additionally, the two county task forces shall elect a chair and a secretary, whose terms shall be for 2 years each.
- (6) The council or the county task forces shall meet at the call of their respective chairs, at the request of six members of the council or of the respective task force, or at the request of the chair of the governing board of the Southwest Florida Water Management District.
- (7) The council shall have the powers and duties to:
- (a) Review audits and all data specifically related to lake and river restoration techniques and sport fish population recovery strategies, including data and strategies for shoreline restoration, sand and other sediment control and removal, exotic species management, floating tussock management or removal, navigation, water quality, and fish and wildlife habitat improvement, particularly as they may apply to the Citrus/Hernando waterways.
 - (b) Evaluate whether additional studies are needed.

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(c) Explore all possible sources of funding to conduct the restoration activities.

(d) Report to the Speaker of the House of Representatives and the President of the Senate before November 25 of each year on the progress of the Citrus/Hernando Waterways restoration program and any recommendations for the next fiscal year.

(8) The Southwest Florida Water Management District shall act as lead entity for the purpose of providing staff and administrative support to assist the council in carrying out the provisions of this act.

(9) Members of the council shall receive no compensation for their services but are entitled to be reimbursed for per diem and travel expenses incurred during execution of their official duties as provided in section 112.061, Florida Statutes. State and federal agencies shall be responsible for the per diem and travel expenses of their respective appointees to the council, and the Southwest Florida Water Management District shall be responsible for per diem and travel expenses of other appointees to the council.

Section 2. The Citrus/Hernando Waterways restoration program.—

(1) The Fish and Wildlife Conservation Commission and the Southwest Florida Water Management District, in conjunction with the Department of Environmental Protection, pertinent local governments, and the Citrus/Hernando Waterways Restoration Council, shall review existing restoration proposals to determine which ones are the most environmentally sound and economically feasible methods of improving the fish and wildlife habitat and natural systems of the Citrus/Hernando waterways.

(2) To initiate the Citrus/Hernando Waterways restoration program recommended by the Citrus/Hernando Waterways Restoration Council, the Fish and Wildlife Conservation Commission, with assistance from the Southwest Florida Water Management District and in consultation and by agreement with the Department of Environmental Protection and pertinent local governments, shall develop tasks to be considered by those entities for the enhancement of fish and wildlife habitat. These tasks shall include the following:

(a) An evaluation of different methodologies for removing the extensive tussocks and buildup of organic matter along the shoreline and of the aquatic vegetation in the lake.

(b) The conduct of any additional studies as required by the Citrus/Hernando Waterways Restoration Council.

(3) Contingent on the Legislature's appropriating funds for the Citrus/Hernando Waterways restoration program and in conjunction with financial participation by federal, other state, and local governments, the appropriate agencies shall, through competitive bid, award contracts to implement the activities of the Citrus/Hernando Waterways restoration program.

Section 3. This act shall take effect upon becoming a law.

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Approved by the Governor July 14, 2003.

Filed in Office Secretary of State July 14, 2003.

4

CODING: Words ~~stricken~~ are deletions; words underlined are additions.

Appendix A- Legislation

CHAPTER 2006-43

Senate Bill No. 496

An act relating to the Citrus/Hernando Waterways Restoration Council; amending section 1 of ch. 2003-287, Laws of Florida; revising the membership, powers, and duties of the council; revising the membership of the separate county task forces of the council; providing an effective date.

Be It Enacted by the Legislature of the State of Florida:

Section 1. Subsections (2), (3), and (4) of section 1 of chapter 2003-287, Laws of Florida, are amended to read:

Section 1.

(2) Members of the council shall consist of ~~14~~ 12 voting members with ~~7~~ 6 appointed by the President of the Senate and ~~7~~ 6 appointed by the Speaker of the House of Representatives. The council shall consist of representatives as follows:

(a) Two A waterfront property owners ~~owner~~ from each county, one of whom must be a property owner from the east side of the county and one of whom must be a property owner from the west side of the county.

(b) An attorney from each county.

(c) A member of the Board of Directors of the Chamber of Commerce from each county.

(d) An environmental engineer from each county.

(e) An engineer from each county.

(f) A person from each county with training in biology or another scientific discipline.

(3) The council members from each county are to form two separate county task forces from the council to review and make recommendations on specific waterways. The Hernando County Task Force shall develop plans for the restoration of the waterways in Hernando County Weeki Wachee River and Springs. The Citrus County Task Force shall develop plans for the restoration of the waterways in Citrus County Tsala-Apopka Chain of Lakes.

(4) There shall be a technical advisory group to the council and the two county task forces which shall consist of one representative each from the Southwest Florida Water Management District, the Department of Environmental Protection, the Department of Transportation, the Fish and Wildlife Conservation Commission, the Coastal Rivers Basin Board, the Withlacoochee River Basin Board, the public works department of each county, and the United States Army Corps of Engineers, each of whom shall be appointed by his or her respective agency and each of whom, with the exception

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Appendix A - Legislation

of the representatives from the Withlacoochee River Basin Board and Coastal Rivers Basin Board, shall have had training in biology or another scientific discipline.

Section 2. This act shall take effect upon becoming a law.

Approved by the Governor May 30, 2006.

Filed in Office Secretary of State May 30, 2006.