

# FLORIDA SPRINGS COUNCIL RAISES CONCERNS ABOUT DRAFT NORTH FLORIDA REGIONAL WATER SUPPLY PLAN

December 6, 2016



Following is a press release just out from the Florida Springs Council, the largest group of springs protectors in Florida.

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FLORIDA REGIONAL WATER SUPPLY PLAN

FOR IMMEDIATE RELEASE

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GAINESVILLE, FL – The Florida Springs Council (FSC)—an independent nonprofit coalition of 39 non-governmental organizations representing over 155,000 Floridians—has requested a thorough re-write of the draft North Florida Regional Water Supply Plan released in October 2016. The Council's comments highlight the plan's failure to meet legal requirements for the restoration of protective flows and levels on the Ichetucknee and Santa Fe rivers. The Council also provided substantial comments related to water conservation and aquifer re-charge.

The Suwannee River and St. Johns River water management districts (WMDs) collaborated on the draft plan, which provides estimates of water use and availability through 2035 for 14

counties (over 8,000 square miles) in North Central Florida. The plan creates a new Water Use Caution Area that encompasses areas of both districts and recognizes that the area's springs and rivers are currently subjected to significant harm due to excessive groundwater pumping.

"Florida law requires that this plan provide reasonable assurances that the water management districts can meet projected water demands and provide for recovery of the minimum flows and levels on the Lower Santa Fe and Ichetucknee rivers," said FSC President Dan Hilliard. "This plan fails because it relies on questionable and unscientific assumptions about the amount of recovery that can be achieved. The plan doesn't include information about priorities and funding for recovery of those rivers and their associated springs, it doesn't provide sufficient incentives for water conservation, and it doesn't include long-term regulatory strategies. We don't believe that establishment of a new Water Resource Caution Area alone qualifies as a regulatory strategy."

The only recovery strategy legally mandated as part of the Water Resource Caution Area is the reuse of domestic wastewater when that reuse is determined to be feasible. The Florida Springs Council believes that a sizable reduction in groundwater pumping is necessary for springs recovery and that universal water fees are the most effective tool to promote water conservation.

"Water conservation has always been the priority of the Council because it's the cheapest and easiest fix and because we know that water use permits, best management practices and establishment of minimum flows and levels have not halted ongoing damage to our springs and rivers," Hilliard explained. "Setting effective water use fees would require each WMD to estimate a cap on total water withdrawals, to monitor all water users, and to establish progressive fees while taking care to

avoid unintended consequences for smaller family or 'legacy' farmers."

The formal comments by the Council also emphasize the need for sustainable water recharge and the need to avoid use of brackish water that could result in additional saltwater intrusion into the drinking water aquifer.

For more information about the Council's comments, call Dan Hilliard at 352-527-0023 or Heather Obara at 386-454-2427. A copy of the Council's comments can be found below and at [www.SpringsForever.org](http://www.SpringsForever.org).

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North Florida Regional Water Supply Plan (NFRWSP) Review

Comments Reviewed by the Florida Springs Council (FSC)

The Florida Springs Council is a consortium of thirty-nine springs-focused organizations that represent over 155,000 Floridians. The mission of the FSC is to ensure the regional, state, and federal conservation, preservation, protection, and restoration for future generations of Florida's springs, spring runs, and groundwater in the Floridan aquifer that sustains those natural systems and provides our drinking water.

The following organizations are members of the Council:

1,000 Friends of Florida

Alachua Audubon Society

Audubon Florida

Center for Biological Diversity

Center for Earth Jurisprudence

Chassahowitzka Civic Association, Inc.

Florida Clean Water Network Florida Defenders of the  
Environment Florida Federation of Garden Clubs, Inc.

Florida Paddling Trails Association

Florida Wildlife Federation

Friends of Lake Apopka

Friends of the Wekiva River

Friends of Warm Mineral Springs

Hernando Environmental Land Protectors Homosassa River Alliance

Howard T. Odum Florida Springs Institute

Ichetucknee Alliance

Kings Bay Springs Alliance

Nature Coast Unitarian Universalist Fellowship Water Task Force

Oklawaha Valley Audubon Society

Orange Audubon Society

Our Santa Fe River

Paddle Florida

Putnam County Environmental Council

Rainbow River Conservation

Santa Fe Lake Dwellers Association

Save the Manatee Club

Sea to Shore Alliance

Sierra Club Florida

Silver Springs Alliance

Springs Eternal Project

St. Johns Riverkeeper

Suwannee/St. Johns Sierra Club

Villages Environmental Discussion

Volusia Blue Spring Alliance

Wakulla Springs Alliance

Withlacoochee Aquatic Restoration

WWALS Watershed Coalition

The following comments are submitted by the Council on behalf of its member organizations.

# Executive Summary

The Plan is a regional water supply plan that must comply with Section 373.709(2), Florida Statutes. The

Plan also will adopt the second phase of the recovery strategy for the Lower Santa Fe and Ichetucknee

Rivers and Priority Springs (LSFI) MFLs and must therefore comply with Section 373.0421(2), Florida

Statutes. Several of the priority springs protected by the LSFI MFLs are first magnitude springs (e.g., Santa Fe Rise, Treehouse Spring, Columbia Spring, Devil's Ear Spring, July Spring, Ichetucknee Head Spring, and Blue Hole). Therefore, the Plan and Recovery Strategy must meet the requirements of Section 373.805(4), Florida Statutes as well.

The Plan and Recovery Strategy fail to meet the requirements of Sections 373.709(2) and 373.0421(2) because the Plan fails to provide reasonable assurances that sufficient projects will be implemented to meet projected demand while providing the needed recovery of the LSFI MFLs. The Plan also fails to include important information Section 373.805(4) requires regarding priorities and funding for the recovery projects. The Plan and Recovery Strategy do not provide reasonable assurances that the LSFI MFLs will be recovered as required.

The Plan provides insufficient motivations and incentives for conservation. This Plan was to include longterm regulatory strategies, but only proposes designation as a Water Resource Caution Area. This designation requires reuse of domestic wastewater in certain circumstances when it is determined to be feasible, but does not fund or require reuse of domestic effluent. The designation does not address recovery strategies

other than reuse of domestic wastewater. At a minimum, FSC urges Florida's legislature and water management agencies to implement universal water fees as a strong inducement to conserve water.

The pumping of brackish water is unsustainable and self-destructive. It should be avoided. Rather, FSC advises that new demands be met through aquifer recharge using treated wastewater that has been cleansed by recycling through constructed wetlands.

## **The Plan's Critical Sufficiency Analysis Relies on a Non-Scientific Assumption and Suffers Fatal Textual Errors**

The Plan includes a "Sufficiency Analysis" addressing whether the Plan and LSFI Recovery Strategy could meet the regional water supply planning requirements of Section 373.709(2), Florida Statutes by including sufficient water resource development projects (WRDPs) and water supply development projects (WSDPs) to meet projected demands without causing unacceptable water resource impacts. Plan pp. 40-41. In this case, such project options must, along with conservation, provide recovery of LSFI MFL flows as well.

- 373.0421(2), Fla. Stat.

The Plan assumes each 4.48 mgd of implemented water resource



development projects (WRDPs) and water supply development projects (WSDPs) will result in 1 cfs recovery for the LSFI MFLs. (p. 40) This assumption is used to convert listed WRDP and WSDP options (with impacts measured in million gallons per day) to projected LSFI MFL flow recovery (in cfs). Thus, this conversion factor is critical to an understanding of whether the Plan includes adequate project options to meet projected 2035 demand for water and to bring about recovery of the LSFI MFLs.

The Plan provides no discussion, explanation or analysis of the selection of the one-size-fits-all 4.48 mgd assumption regarding WRDP and WSDP benefit to flows and recovery of the LSFI MFLs. The impact of WRDPs and WSDPs is largely a function of the net change in groundwater pumping at a particular location attributable to the project, and the distance between the location where the net change would occur and the location of the MFL point of compliance. In general, the beneficial impact is directly proportional to the reduction in pumping, and inversely proportional to the square of the distance from the pumping location to the MFL point of compliance. So, in general, the further the project is from the gages used to monitor the LSFI MFLs, the less impact will be measured at the gages. A generic one-size-fits-all proportionality for calculating recovery attributable to projects is unscientific and not appropriate, even for planning-level analysis.

Indeed, using the NFSEG Model, the text at p.41 explains that 60.19 mgd of projects provided only 8.4 cfs of recovery. This is 7.165 mgd per cfs of recovery. It is possible the reference to 60.19 mgd is a typographical error that should read 65.19 mgd, the amount of the WRDPs shown in Table 6, Chapter 7. (p. 49) If 65.19 mgd was modeled and resulted in 8.4 cfs of recovery, then the ratio is 7.76 mgd of projects to 1 cfs of recovery. Either modeled ratio is widely divergent from the 4.48 mgd assumption.

The Plan provides no analysis relevant to the huge discrepancy between assumed and modeled flow recovery. Using the 4.48 mgd assumption, there could be about 11 mgd surplus in the Plan after covering the 2035 demand, after conservation, and after the LSFI MFL flow recovery. If 7.76 mgd or 7.165 mgd is used instead of 4.48 mgd as the conversion factor, the Plan does not meet the requirements of Sections 373.709(2) and 373.0421(2), Florida Statutes. The Plan is much less than clear on this issue and errors in the text of page 41 regarding quantities and the two project option tables defy clarity. This discrepancy and textual errors must be explained and the sufficiency analysis of project benefit to LSFI MFL flows must be addressed properly.

The Plan should analyze and report on NFSEG modeling scenarios in which the WRDP and WSDP options are evaluated for their effect on flows at the LSFI MFL gages. Ultimately all projects in the Plan should be modeled to determine whether the Plan, including all projects, meets the sufficiency requirements of Sections 373.709(2) and 373.0421(2), Florida Statutes. Without more than a naked and unexplained assumption of 4.48 mgd per 1 cfs recovery, the Plan does not provide reasonable assurances of meeting these requirements.

## **Additional Plan Deficiencies**

The projects necessary to recover groundwater flows, by law, should be included in the Water Resource Development Project list. §373.709(2), Fla. Stat. In this Plan, the WRDP list is not sufficient to recover even the 2010 deficit condition of 17 cfs below the LSFI MFLs. The Plan should explain why the Plan must also rely upon projects on the WSDP list to restore the recovery deficit.

The Plan lacks the priority listing of each WRDP and WSDP

required by Section 373.805(4)(b), Florida Statutes. The Plan also lacks required information for each project regarding the estimated cost of and the estimated date of completion; and “the source and amount of financial assistance to be made available by the water management district for each listed project, which may not be less than 25 percent of the total project cost unless a specific funding source or sources are identified which will provide more than 75 percent of the total project cost.” §373.805(4)(c) and (d), Fla. Stat.

The Plan also lacks “An estimate of each listed project’s benefit to an Outstanding Florida Spring;” and “An implementation plan designed with a target to achieve the adopted minimum flow or minimum water level no more than 20 years after the adoption of a recovery or prevention strategy.” See §373.805(4)(e) and (f), Fla. Stat.

The Plan lacks “an assessment of how the regional water supply plan and the projects identified in the funding plans prepared pursuant to sub-subparagraphs [§373.709(2)] (a)3.c. and (b)2.c. support the recovery or prevention strategies for implementation of adopted minimum flows and minimum water levels. . . .” §373.709(2)(k), Fla. Stat. The Plan must specify which WSDPs support recovery of flows at LSFI MFL gages, and how they support flow recovery.

The Plan lacks an adequate funding strategy. The Plan includes only a catalog of potential funding options, not a “funding strategy for water resource development projects, which shall be reasonable and sufficient to pay the cost of constructing or implementing all of the listed projects.” §373.709(2)(d), Fla. Stat. Finally, the Plan lacks any analysis of whether the funding strategy is reasonable and sufficient for all projects. *Id.*

# Failure to Adopt Further Regulatory Recovery Strategies

The LSFI Recovery Strategy, Appendix G, at p.36 explains:

## *Phase II Regulatory Strategies*

*The development of long-term strategies to address the impacts of regional groundwater trends and water use patterns is critical to achieving the recovery of minimum flows in the Lower Santa Fe Basin. As such, the Department, SRWMD, and SJRWMD, will develop long-term recovery measures concurrently with the development of the North Florida Regional Water Supply Plan. This will assist the Districts and the Department in refining the Recovery Strategies and future regulatory measures to address regional groundwater impacts to the Lower Santa Fe and Ichetucknee Rivers. (underline added)*

The LSFI Recovery Strategy at Page 20 adds that this:

*Phase II of the Recovery Strategy will focus on the implementation of the recommendations in the North Florida Regional Water Supply Plan, the adoption of long-term regulatory measures, and the identification and execution of any necessary water resource development and alternative water supply projects. (underline added)*

This Plan was to include long-term regulatory strategies, but only proposes designation of the Plan area as a Water Resource Caution Area. This designation requires reuse of domestic wastewater in certain circumstances when it is determined to be feasible, but does not fund or require reuse of domestic effluent. The designation does not address recovery strategies other than reuse of domestic wastewater.

No other regulatory recovery strategies are included in the Plan. Without further regulatory changes, there are few real legal compunctions on the implementing parties to implement the projects, and the Districts have limited leverage to bring about conservation. The Plan should analyze and explain why the implementation of further regulatory recovery strategies has been abandoned.

For the foregoing reasons, the Plan does not demonstrate or provide reasonable assurances that the Lower Santa Fe and Ichetucknee River MFLs will be met within the planning horizon, nor whether recovery pursuant to the Plan will be "as soon as practicable." §373.0421(2), Fla. Stat.

FSC would also note that the Plan fails to address the reality that the amount of water permitted in the planning area currently far exceeds the amount that is actually used. The difference between permit allocations and pumping cannot be accurately determined directly because metering of water use is spotty in the planning area. However, it has been reported that in the SRWMD, the amount of water permitted may exceed the amount pumped by as much as a factor of 2. This excess availability of permitted water is an enormously important factor in 20-year water planning, and the Districts are remiss in ignoring it. What would be the value of this planning exercise if permittees decided, over the next 20 years, to pump all of their permitted quantities, or even three-quarters of their allocation? The Districts should have an aggressive program in place to meter water use and to take back unused allocations over time. Otherwise, surprises in water usage could pop up, rendering this planning exercise useless.

# Greater Incentives for Conservation Are Needed

On balance, the Plan is to be commended for acknowledging the potential benefit of conservation, which has always been the first priority of FSC. Beginning on page 51, the Plan outlines eight “Water

Conservation Project Options”, and the first option to be noted is the successful implementation of tiered billing rates by some regional utilities. Tiered rates are a proven incentive to conserve, in contrast to the failure of consumptive use permits (CUPs) to remedy excessive pumping. Implementing universal water use monitoring and fees deserves far more emphasis than that given to them in the Plan. Conservation, as it now stands is almost entirely voluntary. Even CUPs are de-facto voluntary, because so many permitted wells are unmetered. This is an area in which further regulatory strategies are needed and sorely lacking in this Plan.

Because tiered water fees have proven to elicit greater conservation in the North Florida region, FSC strongly urges that they be extended to all users – domestic self-supply, agriculture and commercial/industrial/mining, as well as urban users. Such expansion will, of course, require significant changes in infrastructure, administration and legal status. Setting an effective schedule of fees will require first that a cap be estimated and placed on total withdrawals in each District. Afterwards the infrastructure to monitor all users must be implemented. Significant advances in the technologies of flow measurement, data reporting and recording render this task less expensive than it would have been in the past. A preliminary schedule of fees (which could be distinct for each

class of users) must be established that will progressively tax users according to increasing use. FSC would recommend that the impacts of tiered water pricing should be carefully studied before such pricing is established, so that unintended consequences for smaller users, including small agricultural operations, can be avoided. This rate structure can subsequently be amended to optimize the distribution of water among users while not exceeding the regional cap.

Many may object to the imposition of fees as a new form of taxation. It should be pointed out, however, that ad-valorem taxes are already being collected to support the Districts. The task of setting fees, monitoring usage and collecting charges could be assigned to the Districts, which could be partly or wholly supported by the collected fees, while any excess could go to funding water conservation and aquifer/spring restoration projects.

FSC wishes to stress that water fees enjoy a proven record of success, whereas CUPs, BMPs and even minimum flows and levels (MFLs) have failed to halt the progressive degradation of Florida's water resources. While the costs and effort necessary to institute universal water fees are not insignificant, neither do they proportionately exceed efforts elsewhere in the United States to create reliable future supplies of water; and Florida, more than most of these other areas, is critically dependent on secure supplies of water.

## **The Plan Should Discourage Pumping Brackish Water**

FSC objects to the prominence the Plan gives to the desalination of brackish water. For example, this source is listed first

among the suggested Water Resource Development Project Options (p. 47). Pumping and reverse osmosis treatment of brackish groundwater should be avoided at all possible costs, for at least two reasons. First, saline intrusion is irreversible over any practical time frame. Once a well goes saline, the slow diffusion time among the less channelized regions of the karst substrate insures that it will be decades, if not centuries, before a saline well runs fresh again. Secondly, pumping a brackish well accelerates the rate of saline intrusion. That is, the well becomes progressively more saline and the water costlier to treat.

The Plan portrays saline intrusion as a problem confined to the coastal and riverine portions of the North Florida region. This perspective is short-sighted, because saltwater underlies the entire Floridan aquifer, and excessive pumping will cause salt everywhere to migrate to higher levels in the karst substrate. Furthermore, a given drop in the potentiometric surface of the aquifer has the effect of raising the underlying salt water interface by a factor as much as 40 times greater than that drop. In particular, withdrawals from the Lower Floridan Aquifer must be reduced, because pumping from that depth will cause a disproportionate vertical rise in the proximate saline interface.

Regarding the rate of saline intrusion, FSC finds the analysis of this problem (beginning on page 27) to be overly optimistic. The Plan assumes that salt concentrations will rise in linear fashion, but vertical saline profiles are usually sigmoidal in nature. That is, increase is slow and almost linear, but a "log-phase" ascent soon ensues as the saline "front" approaches. Hence, a linear analysis will significantly overestimate the time required for saline intrusion. The arrival of the front can at times be episodic, as happened during the drought of 2012 with the sudden intrusion into the well supplying Cedar Key.



These reservations against pumping brackish water do not necessarily pertain to the desalination of seawater, so long as the concentrate from the process is returned to the sea. But this remedy is extremely costly, both energetically and financially – treatment of brackish water is some 10-fold more expensive than extraction from the Upper Floridan Aquifer. Although desalination of seawater might provide a few localities with water for drinking and bathing, it is economically infeasible to sustain agriculture or industry. If the entire Floridan Aquifer System were to turn brackish, Florida could evolve toward a dry-island Caribbean economy.

## **The Plan Should Emphasize Sustainable Recharge**

The Plan emphasizes reclaimed water as a primary AWS. While it does mention aquifer recharge, it fails to accord that option the priority it deserves and thereby overlooks a potentially significant and highly economical AWS. Figure 14 (p. 21), for example, shows approximately 108 mgd of treated wastewater in the region that is simply “disposed”. Most of that water could be returned to the aquifer at low cost through treatment by constructed wetlands, as has been amply demonstrated at several sites in Florida (e.g., Sweetwater and Kanapaha in Gainesville and Green Cay in Boynton Beach). Treated wastewater is supplied at one end of an artificial wetland and allowed to percolate horizontally across the wetland. The water at the other end is low in nutrients and xenobiotics and can be re-injected into the aquifer. FSC has had discussions with JEA urging the utility to implement such treatment on the large amount of their treated wastewater that now flows into the ocean. Similar recharge is appropriate for other locations in the North Florida region and

taken together could resupply a substantial fraction of the 117 mgd projected demand. FSC strongly recommends the adoption of this method of recharge throughout the North Florida region.

## Conclusions

FSC submits that the Plan is not sufficient to meet the requirements of Sections 373.709(2) and 373.0421(2), Florida Statutes. Most critically, the Plan depends upon an unscientific and highly questionable assumption regarding the recovery to be derived from the projects listed in the Plan. The basis of the assumption and its selection instead of a modeling analysis is not substantiated. Because of the stated discrepancy between modeled and assumed recovery benefits of listed projects, the Plan does not provide reasonable assurances that sufficient projects are listed in the Plan.

The Plan fails to include critical information required for recovery strategies for Outstanding Florida Springs, including details regarding priorities and commitments regarding funding. Further, without any coercive and/or regulatory strategies, the Plan and particularly the funding plan do not meet statutory requirements.

FSC does commend the NFRWSP for highlighting the severe problems facing water supply in the North Florida region and appreciates the re-focusing of attention away from increased pumping of the overstressed Upper Floridan toward other alternative water supplies. This is an acknowledgement from the State that the Upper Floridan Aquifer is already over-pumped. In fact, we would like to see the NFRWSP go beyond its call to limit pumping to an active program to decrease current pumping rates.

FSC supports the Plan's call for further water conservation,

although we would recommend use of different mechanisms, especially the implementation of tiered water fees. This method deserves far more emphasis than it has been given in the Plan. It has proven to be effective in the public-supply sector (JEA, GRU) and holds great promise for becoming the major tool for conserving water throughout the State. The Plan should include a regulatory strategy to move conservation from a voluntary aspiration to a regulatory compunction.

FSC recommends against any pumping of brackish water, as this option only accelerates the decline of Florida's vital water resources. FSC also advocates, as the primary method for meeting the region's increasing water resource demands over the next 20 years, the polishing and subsequent recharge of cleansed wastewater to the Upper Floridan Aquifer by constructed wetlands.