



## INDIAN RIVER COUNTY, FLORIDA DEPARTMENT OF UTILITY SERVICES

**Date:** October 24, 2018

**To:** Jason E. Brown, County Administrator

**From:** Vincent Burke, P.E., Director of Utility Services

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**Subject:** Surface Water Supply Topic

### DESCRIPTIONS AND CONDITIONS:

On October 23, 2018, the Indian River County Board of County Commissioners (BCC) requested staff obtain more details on a rate adjustment to facilitate the potential for a surface water supply to serve a portion of the future potable water needs of the residents of Indian River County.

### ANALYSIS:

The County currently operates two nanofiltration Water Treatment Plants (WTPs) that are supplied by a total of 16 production wells constructed into the Upper Floridan Aquifer (UFA). The expansion of the North County WTP, completed in 2009, provided the County with an installed treatment capacity that exceeds the Consumptive Use Permit (CUP) allocation to supply the facility. Under the CUP, the County is restricted to an annual average withdrawal of 12.84 million gallons per day (MGD) combined raw water withdrawal from the 16 production wells, yet there is ample treatment capacity at both water treatment plants (approximately 21 MGD finished water) to serve the County for the next ten (10) years. Currently the Indian River County Department of Utility Services (IRCDUS) is pursuing a modification to the CUP allocation to be in-line with the WTPs' capacity. Therefore, the County has not programmed any surface water treatment reservoir projects in the five-year capital improvement horizon. However, the County has previously evaluated potential options for an alternative source of water other than the UFA.

In 2007, IRCDUS developed an Alternative Water Supply Master Plan, which included an evaluation of a fresh surface water/reservoir component. Also, in 2014 and 2015, IRCDUS undertook two (2) surface water supply evaluations. One was located in the north part of the unincorporated Indian River County and the other in the south. The three studies evaluated pros/cons, opinion of probable cost and recommendations. In addition to cost, any property purchased for a surface water reservoir, at a minimum, will require the following criteria evaluated:

- Land Use, Zoning and Off-site Improvements
  - ✓ Existing/future land use and zoning
  - ✓ Special development regulations

- ✓ Rights-of-way
- ✓ Off-site improvement requirements
- Environmental Considerations
  - ✓ Wetlands
  - ✓ Threatened and endangered species
- Geotechnical Investigation
  - ✓ Soil exploration and suitability for structure support
  - ✓ Observed and estimated water table elevations
  - ✓ Suitability for fill
  - ✓ Permeability tests
- Permitting Evaluation
  - ✓ Federal, state and local criteria
  - ✓ Site access
  - ✓ Setbacks
  - ✓ Uplands conservation
  - ✓ Landscape requirements
- Vulnerability and Security
  - ✓ Wildlife
  - ✓ Debris, algae and invasive aquatic vegetation
  - ✓ Vandalism and acts of terrorism

The following table outlines some of the typical pros and cons of a surface water supply reservoir/ treatment.

<b><i>Fresh Surface Water/Reservoirs</i></b>	
<b>Pros</b>	<ul style="list-style-type: none"> <li>• Fresh surface water resources can be abundant particularly if located near main canals</li> <li>• Diversification of supply sources</li> <li>• Potential diversion of runoff to the Indian River Lagoon depending on the siting of reservoir</li> <li>• Potential reduced TMDL loadings to the Lagoon</li> <li>• Reduced long-term demand on stressed UFA</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>• Different membrane treatment technology may be required</li> <li>• May require long transmission lines</li> <li>• May impact minimum flows and levels in the St. Johns River?</li> <li>• Operational guidelines for the water conservation areas will be a constraint on available supply</li> <li>• Exposure/vulnerability to contaminants and vandalism/acts of terrorism</li> <li>• Costly treatment plant</li> <li>• Source water will require protection</li> <li>• Evaporative losses</li> <li>• Operational expense</li> <li>• Land acquisition required</li> </ul>

The following tables show the opinion of probable cost based on two studies.

2014 – Alternative Water Supply Analysis from CDM Smith Study

Additional Demand (mgd)	Reservoir Size (acres)	Land Acquisition Cost (\$ millions)	Capital Cost (\$ millions)	Total Annual O&M Cost (\$ millions)	Unit Production Cost (\$/1,000 gal)
3.74	44	0.6	80	2.2	5.17
5.02	64	0.76	81	3.1	4.37
10.82	132	1.42	104	3.2	2.41

2015 – Osprey Marsh Expansion Analysis from CDM Smith Study

Additional Demand (mgd)	Reservoir Size (acres)	Land Acquisition Cost (\$ millions)	Capital Cost (\$ millions)	Total Annual O&M Cost (\$ millions)	Unit Production Cost (\$/1,000 gal)
5.0	48	1	89	5.2	5.69

Prior to moving forward with the acquisition of any parcel or parcels, staff would strongly recommend conducting a due diligence study such as the one done for the Osprey Marsh Expansion. Beyond land use requirements, environmental considerations, geotechnical investigation, vulnerability, and security, the due diligence should also include the following:

- Modeling to determine available volume of water in canal system; potentially a pilot study;
- Negotiations with the various drainage districts to secure withdrawal permits and pump station/transmission piping ROW; pre-application meetings with regulatory agencies; emergency discharge before/after hurricane or heavy rainfall event;
- Negotiations with property owners; final site selection; preparation of purchase agreements; ROW agreements for pipelines;
- Preliminary design of the reservoir, piping and treatment;

The nature of a study such as this is complicated, expensive and time intensive. A critical challenge faced by utilities contemplating these emerging water supply options is that they appear to be quite expensive relative to the current water supply source. The key question is whether there are benefits associated with these options that justify the added financial expense. Finding new and affordable sources of potable water and improving the management of existing supplies are among the most fundamental challenges facing utilities.

It may be more prudent to await the results of the CUP modification request (in progress) to determine the best path forward. The County currently has sufficient capabilities to physically produce over 20 MGD which would be more than enough water production should the regulatory allowance be given.

**FUNDING:**

Staff has not budgeted any funds for land acquisition, detailed design, and construction of a surface water reservoir/treatment facility. Typically, rate making practice requires reasonable relationships between benefits, costs and charges for services; as such, it would be outside practice norms to set rates without these relationships. The general practice when addressing future utility funding requirements is

for the utility to first identify the capital requirements and associated timetable through engineering studies, including a capital program funding study. The capital program funding feasibility study identifies appropriate funding sources for each project, availability of existing funds, and, if required, rate adjustments. In setting rates, it is important to understand the type of capital improvement to be funded (i.e. water, wastewater, reclaimed water, expansion, upgrade, replacement and renewal (R&R) or a combination) along with its impact on operations and operating and maintenance (O&M) expenses. Therefore, funds for such a study can be derived from capital funding if a project were to come to fruition. Capital fund revenues are generated from impact fees. Furthermore, new growth has created the need for the expansion or construction of the facilities, and that new growth will benefit from the expansion or construction of the facilities. If this project does not come to fruition, then consultant expenses will be derived from operating funds.

**RECOMMENDATION:**

Staff recommends the Board of County Commissioners consider the following:

- Authorize staff to complete the Consumptive Use Permit modification process. Once that process has been completed, authorize staff to explore additional locations to handle surface water supply reservoir/treatment needs at the time it is forecast that additional water capacity will be needed.

**ATTACHMENT(s):**

Staff Report for the 83-Acre Due Diligence Report & Opinion of Probable Cost from the February 16, 2016 BCC meeting.