

NAS Jacksonville Heading for Zero Waste Discharge

Environmental Partnerships with City, State & Local Country Club Deliver Results

A PAIR OF projects at Naval Air Station (NAS) Jacksonville over the last 15 years have significantly reduced the effluent discharge from the base into the St. Johns River, and diverted the use of potable water for irrigation at the base and a neighboring golf course.

NAS Jacksonville is located on nearly four miles of the St. Johns River in Northeast Florida. The station has long been recognized for its productive relationship with the State of Florida and local environmental regulatory agencies and the Northeast Florida community, especially

regarding the mutual goal to improve the water quality of the river.

In 1992, NAS Jacksonville completed a four million dollar renovation of its wastewater treatment plant to produce effluent water that met state standards for high-level disinfection.



The NAS Jacksonville golf course is irrigated with a combination of captured stormwater and water reclaimed from the installation's wastewater treatment plant.

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The reuse water is held in a retention pond before being pumped to the base golf course.



This renovation included removal of industrial wastes from entering the wastewater treatment plant, thereby creating a total domestic wastewater treatment facility. At the same time, the state was in discussion with area golf courses in an effort to get them to limit the use of groundwater for irrigation purposes. In 1994, the Timuquana Country Club, a private club on the northern border of NAS Jacksonville, entered into a discussion with the commanding officer of NAS Jacksonville regarding using the station's highly treated wastewater to irrigate the club's private golf course. Representatives of the Timuquana Country Club and NAS Jacksonville saw the opportunity to develop a tremendous environmental partnership that would benefit the river, groundwater, and the long term operations of the golf course. In 1998, the station and club signed an agreement for the club to connect to the station's dechlorination

system and divert approximately 200,000 gallons a day to irrigate its golf course. The country club paid all costs for the design, permitting and construction of the reuse pipeline and retention pond, in exchange for receiving the water at no cost.

This partnership prevents 10,000 pounds of nutrients per year from being discharged to the St. Johns River, as well as 73 million gallons of potable water per year from being removed from the Floridan Aquifer. It has also saved the club over \$200,000 compared to the cost of purchasing water from the local utility. According to Chris Neff, golf course superintendent for the Timuquana Country Club, the use of effluent reuse water has also resulted in a 25 percent reduction in fertilizer use. Neff comments, "We have an excellent relationship with NAS Jacksonville personnel on coordination of supply issues and maintenance requirements at the wastewater treatment plant."

Under the Clean Water Act, states are required to develop lists of impaired waters, or waters that fall below a state's own water quality standards. For each impaired body of water, the law requires that a state establish priority rankings and develop Total Maximum Daily Load (TMDL) calculations for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can

The Basics About the St. Johns River

THE ST. JOHNS River is Florida's longest river and its primary commercial and recreational river, running 310 miles from the marshes of the Indian River to the Atlantic Ocean east of Jacksonville. It's distinctive in that it is one of the few rivers in the United States that flows south to north. The river's width varies from unnavigable at its source to more than two miles wide. The total drop of the river is less than 30 feet, or about one inch per mile, making it one of the "laziest" rivers in the world. Because of this low flow, the St. Johns River is particularly susceptible to pollution.

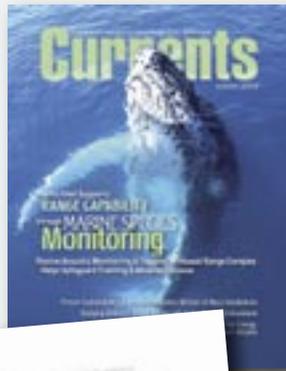


Wood Storks are one of the endangered species that continue to thrive on and around the NAS Jacksonville golf course.

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For More Information

FOR MORE INSIGHTS into the Navy's sustainability efforts, read our article entitled "Proven Sustainability Approaches Advance Mission at Navy Installations: Efforts Include Energy & Water Conservation, Green Building Management Practices" in the winter 2014 issue of *Currents*. To subscribe to the magazine or browse the *Currents* archives, visit the Department of the Navy's Energy, Environment and Climate Change web site at <http://greenfleet.dodlive.mil/currents-magazine>.



receive and still meet water quality standards. In 2002 the state, Navy and municipalities on the lower St. Johns River basin formed a committee to establish the TMDL for their portion of the river. Based on the committee's discussions, the state issued permits to the Navy and municipalities in 2004 with allocations on reductions of total nitrogen discharge to the river by 2015. NAS Jacksonville decided that rather than spend over eight million dollars upgrading its wastewater treatment plant to meet the reduced nutrient discharge requirement, it would spend approximately four million dollars expanding the wastewater reuse system to its own golf course and spray fields in the southern area of the station. In 2007, based on an application written by NAS Jacksonville, the City of Jacksonville obtained a \$175,000 grant from the state to design the expansion. In 2010 NAS Jacksonville obtained a \$1.8 million Navy energy conservation grant to construct a portion of the expansion. The City of Jacksonville received a matching \$1.8 million grant from the state to construct the remainder.

"The nutrient loading to the St. Johns River has been reduced because of the strong partnership between the Department, the City of Jacksonville and the Naval Air Station," states Florida Department of Environmental Protection Secretary Herschel T. Vinyard Jr. "By committing to minimizing wastewater discharge and maximizing reuse, we are ensuring that the residents of Jacksonville have access to a clean, healthy St. Johns River."

In 2012, the station completed its portion of the project with a two-mile direct bore purple pipe to a 10-acre reuse





A juvenile bald eagle in its nest on the NAS Jacksonville golf course.

Christine Bauer

pond next to the golf course. (Purple is the universal color for non-potable water in the state of Florida.) In 2013, the city completed connection of the pond to the station golf course, resulting in reduction of 18,000 pounds of nutrients per year discharged to the river and 37 million gallons of potable water per year removed from the Floridan Aquifer. The wooded areas of the golf course are home to dozens of bird and mammal species, including such threatened and endangered species as the Wood Stork, American Alligator and Sherman's Fox Squirrel.

"The health of the St. Johns River is vital to Jacksonville's economy and quality of life," said Jacksonville Mayor Alvin

Brown. "We appreciate the Navy's partnership and commitment to improve water quality through its wastewater reuse project. It helps make our community an even more attractive place for people to live, work and visit."

When the city completes a two-mile expansion of the purple pipe to spray fields in the southern area of the station in late 2014, not only will over 54,000 pounds of nutrients a year will be diverted from the river, this important part of the base will also be nourished and enhanced.

When complete, the station will become the first major utility in Northeast Florida to reach zero discharge. This achievement is the direct result of a strong long-term commitment by the State of Florida, City of Jacksonville, Timuquana Country Club and NAS Jacksonville to work closely together to meet a common goal and is an example for other military installations, states and communities to follow. [↴](#)

CONTACTS

Kevin Gartland
Naval Air Station Jacksonville
904-542-5789
DSN: 942-5789
kevin.gartland@navy.mil

Jay Caddy
Naval Air Station Jacksonville
904-542-6440
DSN: 942-6440
gerald.caddy@navy.mil



The pumping station at the NAS Jacksonville wastewater treatment plant.