

# ASR, Aquifer Storage and Recovery Wells

April 30, 2009

These Aquifer Storage and Recovery wells are not the typical “deep” wells but rather shallow wells, directly into the Underground Source of Drinking Water (USDW). The deep wells are usually 2 -3 thousand feet below into the “boulder zone”. These ASR wells are 30-65 feet below land surface at the Port and 370-470 feet below in Rockledge... Deep wells that inject sewage wastewater are not good either but these sewage wastewater ASR wells are very new concept, and one that is highly questionable and controversial. Imagine injecting 150 million gallons of partially treated sewage at the Canaveral Port Authority 30-65 feet deep into sand and a little bit of clay. Water (Indian River Lagoon and Atlantic Ocean) surrounds the Port in three sides, and Cocoa Beach and Cape Canaveral are right there!!! What would people and tourists be swimming in if this ASR well goes through? Currents are pushed south down the beach from the Port to the adjacent beaches of Cape Canaveral and Cocoa Beach...

The following is a letter sent by Amy Moser of Save Our Aquifer in Brevard County, Florida to Dr. Katie Tripp with Save the Manatee Club:

**[Save Our Aquifer – Rockledge, Florida](#)**

*Clean water is our most important resource*

***About ASR in Brevard County, Florida***



*In Brevard County, Florida: Rockledge, Cocoa and Cocoa Beach are currently pursuing sewage wastewater Aquifer Storage and Recovery (ASR) wells. The permit for the Port Canaveral ASR well has expired. These municipalities have been convinced by their engineers and various State Agencies that the underground aquifer would serve as an underground storage tank, so that during the two month dry season the municipalities will be able to pump the water back up from the aquifer to sell to the [reclaimed water](#) users to water lawns. [The Science Against ASR Wells](#) spells out the dangers of aquifer injections. This is not a confined aquifer and would not function as an underground storage tank. This is a living aquifer and more akin to an underground river.*

*Injections into Florida's aquifer system, whether for "ASR" or other injection wells (like treated sewage), can result in migration in any direction (horizontally and vertically) into streams, lakes, wetlands, and even Florida's coastal waters. Florida's "ASR" wells and other injection wells (like treated sewage) are constructed near streams, lakes, wetlands, and Florida's coastal waters. Injection wells located close to those surface water resources means that whatever is injected can flow rapidly into those surface waters.*

*Animation and quote from S.T. Bacchus:  
<http://www.floridasos.com/asr/>*



*Aquifer cross-section from Maddox et al. 1992. Florida's Ground Water Quality Monitoring Program: Background Hydrogeochemistry. Florida Geology Special Publication No. 34.*

*What types of things are in sewage wastewater? Sewage wastewater also known as "re-use", "reclaimed" and "recycled" water contains numerous toxic endocrine disruptors, \* microconstituents (definition below), Personal Care Products (PCP's), known carcinogens and drug resistant bacteria and viruses. If the aquifer is injected with contaminated sewage wastewater, it would eliminate any future use of that aquifer. Municipalities are pursuing ASR because they see reclaimed water as a commodity, and because ASR provides a cheap and easy way to deal with overburdened sewage treatment plant systems. The long term health of humans and wildlife should not be compromised by unproven, experimental technology.*

*When you hear the water is treated to "Primary Standards" it*

does not mean the water is potable. Reclaimed water is not permitted for human consumption. Florida Statute, Chapter 62-610.468 requires municipalities to post signs with the universal icon that read "DO NOT DRINK" in neighborhood entrances and areas irrigated



with reclaimed water. Florida Statute, Chapter 62-610, provides strict limitations for the use of reclaimed water.

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Dr. Sydney Bacchus, "Dispelling the Myths" in Rockledge, February 2009

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So what are the Alternatives? Encouraging water conservation in the home to reduce flows to the Sewage Treatment Plant, metering reclaimed water users, building state of the art sewage treatment plant facilities, and funding the construction of storage tanks are safer choices for the re-use of billions of gallons of reclaimed water over the next 40 years. \*microconstituents: Sometimes known as "emerging pollutants of concern," microconstituents are chemicals found in a wide array of consumer goods, including pharmaceuticals and personal care products. Some of the microconstituents are considered to be endocrine disruptors (compounds such as synthetic estrogen, PCBs, dioxin and some pesticides that may interfere with or modify hormone processes within an organism). Usage: In very low concentrations, some places where microconstituents may be

*found are: surface water, ground water, domestic and industrial wastewater and reclaimed water.*

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*A Special Public Hearing was held March 10, 2010. Rockledge City Council allowed public input on the ASR injection well and the agenda item to approve the engineers scope of services totaling \$212,000. The Council narrowly approved (4-3 vote) the motion made by Mayor Larry Schultz and seconded by Georgia Phillips "to approve the scope of services and submit an application for cycle testing to Florida DEP." Coleen Stuart and Frank Forester also voted for the motion. We would like to thank Council members Joe Lee Smith, Richard Blake and Kimberly Prosser for supporting the residents wishes of the Rockledge community and for voting against the motion.*

*The City still has a LONG way to go to meet all the State requirements and prove they meet the applicable Florida Administrative Code Laws. The City will also be required by law to hold at least two more public hearings before any fluid (potable or otherwise) is discharged into the Floridan aquifer in Rockledge. This could take years. SOA will be outlining those hurdles and posting them on this website. PLEASE NOTE: In the near future City employees will be going door to door with a list of questions to ask well owners in order to physically verify all wells in the 1-mile radius. The FDEP construction permit states, "No cycle testing will be allowed in the event there remain any in-use potable wells in the well inventory."*

*Save Our Aquifer will continue to educate the public, elected officials and the permitting agencies about the critical need to protect our Underground Source of Drinking Water. Please stay tuned and let your friends and neighbors know this is not*

*a done deal and we shall continue to defend our water rights and protect this vital Underground Source of Drinking Water from experimental testing.*



See [document](#) (pdf) describing cycle testing and extraction of 78,000,000 gallons of water for irrigation.

For a summary of reasons to oppose the ASR well, read "Science Against ASR," by Jim Egan, Director of the Marine Resources Council of East Florida, located under "Main Articles" to the left. Click [this link](#) for an Excel file of Rockledge's ASR costs to date.

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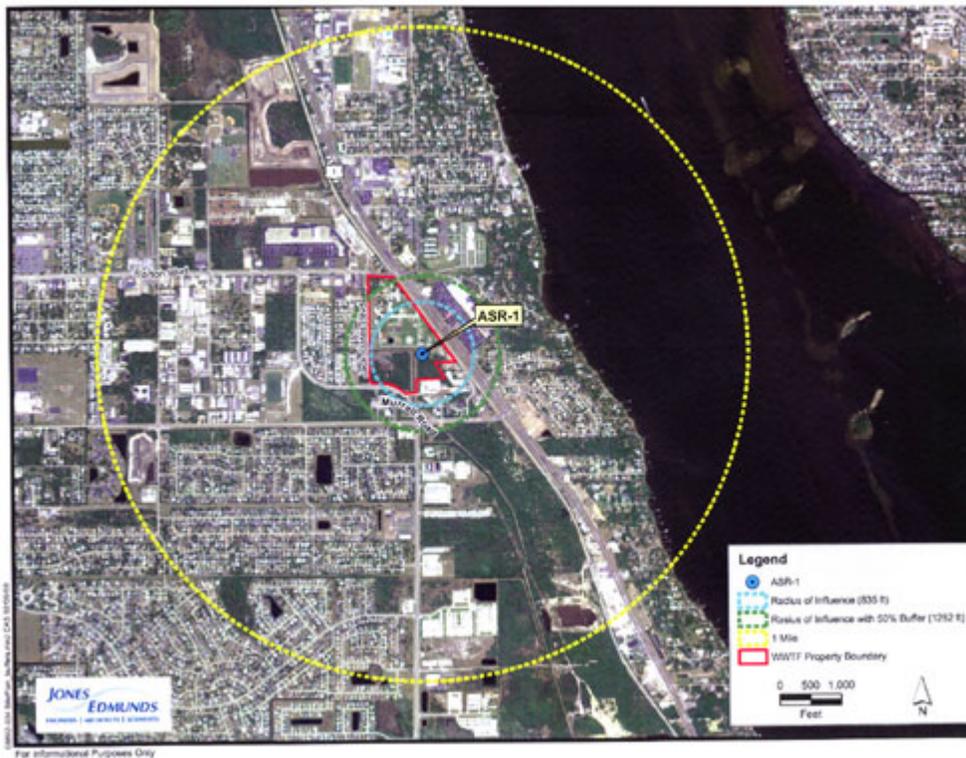
*In 2006, the City of Cocoa cycle-tested an exploratory ASR well using over 10,000,000 gallons of potable water. After 24 hours of storage, results of the test showed that only a portion of the injected water was able to be recovered. The same cycle tests also released arsenic from the underlying limestone aquifer. A water testing laboratory verified arsenic in the recovered water was as high as 64.5 ppb, over 600% higher than the EPA and DEP standard of 10 ppb. The average of eighteen analysis conducted was over 300% higher*



than the set standards. The injection zone of the Rockledge ASR well has been designed to inject directly into the USDW at 370-470 feet below land surface. Rockledge's engineers Jones Edmunds and Associates (JEA) wrote in a May 22, 2008 letter to FDEP, "The static and dynamic flow logs indicate the majority of the flow is entering the borehole between 160 feet and approximately 250 feet below land surface." The video log confirms that this zone is highly fractured with large conduit flow zones. Sonic porosity logs indicate highly variable porosity throughout the borehole with slight decrease below 450 feet." The fact is ASR wells do not sufficiently store water. The aquifer is not a storage tank but an underground river that flows. These municipalities are pursuing ASR wells because they say ASR is the cheapest, most cost effective way to "store" water, but what about the impacts to humans, wildlife, the aquifer, Indian River Lagoon and the Atlantic Ocean that will be harmed by these injection wells? Municipalities have not been required to look at any of these obvious impacts. Risk Assessment [article here.](#)

Who are the facilitators of ASR wells in Florida? The Florida Department of Environmental Protection (FDEP) the permitting agency for injection wells in Florida admits wastewater ASR wells are "experimental." The Saint John's River Water Management District (District) is facilitating these wells by funding grants that have provided millions of dollars for the construction of ASR wells. In 2007, The Water Management District awarded the City of Rockledge two grants totaling \$1,240,570 to help pay for construction of the ASR well. The first District grant totaled \$670,000 and the second grant funneled Florida Forever funds totaling \$570,000 dollars. In 2006, District staff aided ([page 1](#), [page 2](#)) Rockledge City Attorney Joe Miniclear with the language for municipal [well ban ordinance 1414-2006\(page\)](#) which bans all potable water use for

all private wells within a 1-mile radius of the ASR well. The ordinance was passed in September 2006 without any well owners being notified in advance of the ordinance passage.



Florida's political leaders have welcomed fast paced development without properly planning for the increased loads on sewage infrastructure to meet the growing population. Comprehensive Plans are continually changed by municipalities to increase densities. In Rockledge, an estimated 200 million gallons of sewage wastewater is injected 2,700 feet below into the aquifer every year. A Miami Study (Alan Farago essay) showed that sewage wastewater in 3,000 foot deep injection wells is rising up into the Underground Source of Drinking Water (USDW) and fouling drinking water supplies with a toxic stew of ammonia, fecal coliform, and volatile organic chemicals.