

SENATE STAFF ANALYSIS AND ECONOMIC IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

BILL: SB 854

SPONSOR: Senator Pruitt and others

SUBJECT: Aquifer Storage and Recovery Wells

DATE: February 22, 2001 REVISED: _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Gee	Voigt	NR	Favorable
2.	_____	_____	AGG	_____
3.	_____	_____	AP	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

I. Summary:

This bill authorizes the Department of Environmental Protection (DEP) to classify and permit aquifer storage and recovery (ASR) wells, if consistent with federal law, and not violative of state ground-water quality standards except as specified in the bill. Such wells may be allowed a zone of discharge for certain pollutants in specified circumstances, and provisions are included to protect public and private drinking water. Standards are provided for permitting, monitoring wells are required, and permits may be required for the domestic use of groundwater in areas near permitted zones of discharge.

This bill creates sections 403.065 and 373.222 of the Florida Statutes.

II. Present Situation:

ASR is the process by which surface or groundwater is injected deep into an aquifer and pumped to the surface at some later time from the same well. Its most beneficial use is the underground storage of excess water during wet periods and its recovery and use in dry periods. ASR can also be used to expand the use of reclaimed water by providing storage for large volumes of water produced by reclaimed, or "reuse," water systems.

ASR wells are classified as Class V injection wells and regulated by the Underground Injection Control (UIC) program under the federal Safe Drinking Water Act. In Florida, the DEP is responsible for implementing the UIC program through its rules, including Chapter 62-528 FAC. A UIC permit must be obtained from the DEP prior to construction or operation of any well associated with an ASR project. The DEP reports that "This fact presents a dilemma in that the Safe Drinking Water Act and UIC program were designed to address injection wells in the context of waste disposal, and to ensure that such disposal does not compromise underground sources of drinking water or public health. ASR, on the other hand, is *not* disposal. It is a means

of storing generally good quality water for future beneficial uses. To the extent the UIC requirements were not created to address this situation, they present obstacles to otherwise viable ASR projects, especially when those projects are not intended to store water already treated to meet drinking water standards. Many other projects, such as those that would store untreated surface waters for future water supply or natural systems augmentation, are made cost-prohibitive because of pre-injection treatment requirements.” Florida’s water management districts (WMD’S) and local governments may also regulate ASR projects. Water injected into an ASR well currently must meet drinking water quality standards or it must be proven that the injected water will not harm existing underground sources of drinking water.

When injected, the introduced water forms a “bubble” within the existing, usually brackish, water comprising the aquifer and does not combine with the existing water, allowing it to be withdrawn at will. There are concerns that untreated injected water could affect the quality of the existing water, in some manner affect the quality of drinking water, or be affected itself by its contact with underground minerals or organisms. A typical ASR well in southeast Florida injects water into the Upper Floridan Aquifer between confining layers of rock.

Florida has seven operating ASR wells used only for drinking water storage; however, 26 ASR construction permits have been issued and 12 construction permits are under review.

The most ambitious use of ASR technology in the world is proposed for the Comprehensive Everglades Restoration Plan (CERP). The CERP will cost at least \$8.2 billion over a 40-year period and is intended to meet the water needs of south Florida’s population, natural systems, and agriculture while maintaining flood protection.

The key to the CERP’s success is ASR technology. The most important element of the CERP is the proposal for approximately 330 ASR wells, most located near Lake Okeechobee. These wells are anticipated to inject as much as 1.7 billions of gallons of water per day into the Upper Floridan Aquifer during wet periods. ASR represents approximately one-fifth of the CERP’s estimated cost. As proposed, ASR wells will store excess water currently sent to tide for retrieval during the dry season, allowing the South Florida WMD to manage its water resources in a more efficient and effective manner. There are major concerns, however, about the impacts of injecting raw water into the aquifer on this scale. Whether there is physical capacity to store the water without harm to the underground environment is unknown, as are the overall impacts to water quality. Pilot projects have been authorized that may provide answers to expressed concerns. The National Research Council recently published a critique of the pilot projects and recommends, among other things, that a regional study precede implementation of the ASR pilot projects. The district reports that it has taken action to resolve some of the problems noted in the report and is preparing a response. District staff indicated that a regional study could be valuable in conjunction with the pilot projects; such a study is unfunded at this time, however.

Recently, the Region 4 administrator of the U.S. Environmental Protection Agency, after reviewing a draft of this legislation, communicated his concerns to the DEP. While recognizing the potential role ASR will play in the CERP and the desire to use the technology elsewhere in the state, the EPA still has grave concerns about the injection of “raw” water into the aquifer. The EPA believes at this time that the issuance of variances to current DEP regulations may be preferable to a legislative approach, until “raw” water ASR becomes a proven technology.

However, the EPA indicated that it remains committed to working with Florida throughout the process of gathering and assessing the necessary information.

III. Effect of Proposed Changes:

Section 1. Section 403.065, F.S., is created to provide a statewide process for permitting ASR wells. Legislative intent is provided that ASR projects not be constrained by inappropriate institutional barriers; the section also requires that ASR wells not endanger drinking water sources, as established in the federal Safe Drinking Water Act, 42 U.S.C., s. 300h. and regulations adopted under the Act. ASR wells must also not violate state groundwater quality standards at the point of discharge, except as provided in the bill.

ASR wells must be allowed a zone of discharge for sodium and secondary drinking water standards if the following requirements are met:

- the native ground water within the proposed zone of discharge is not currently being used as a public or private drinking water supply, nor can any person other than the permit applicant reasonably be expected to withdraw water from the zone of discharge in the future for such use;
- the presence of the stored water will not cause any person other than the permit applicant to treat water withdrawn from the aquifer in any way that would not have been required in the absence of the ASR well;
- the DEP has approved a monitoring plan that specifies the number and location of monitor wells, monitoring parameters, and frequency of monitoring;
- the zone of discharge will not intersect or include any part of a 500-foot radius surrounding any well that uses the injection zone to supply drinking water.

ASR wells must also be allowed a zone of discharge for total coliform bacteria and other biological contaminants demonstrated to die off within the zone of discharge when the applicant for the well permit demonstrates through a risk-based analysis that:

1. The native ground water within the proposed zone of discharge contains no less than 1,500 milligrams per liter total dissolved solids;
2. The native ground water within the proposed zone of discharge is not currently being used as a public or private drinking water supply, nor can any person other than the permit applicant reasonably be expected to withdraw water from the zone of discharge in the future for such use;
3. The presence of the stored water will not cause any person other than the permit applicant to treat water withdrawn from the aquifer in any way that would not have been required in the absence of the ASR well;

4. The DEP has approved a monitoring plan that specifies the number and location of monitor wells, monitoring parameters, and frequency of monitoring;
5. Total coliform bacteria is the only primary drinking water standard other than the standard for sodium that will not be met before injection;
6. Directly or through the use of indicator organisms approved by the DEP, that biological contaminants will experience die-off such that primary drinking water standards will be met at the edge of the zone of discharge and that those contaminants will not pose an adverse risk to human health; and
7. The environmental benefits to be derived from the storage, recovery, and future use of the injected water and the use of the recovered water is consistent with its intended primary purpose.

The DEP may allow a zone of discharge for sodium, total coliform bacteria and other biological contaminants demonstrated to die off within the zone of discharge, and secondary drinking water standards if the total dissolved solids concentration of the native ground water within the proposed zone of discharge is less than 1,500 milligrams per liter and if the requirements of paragraphs 2-7 above are satisfied, and:

- The applicant for the ASR well permit demonstrates that no person, other than the permit applicant, may withdraw water in the future from the zone of discharge for use as a public or private drinking water supply because of legal restrictions imposed by a water management district, state agency, local government, or other governmental entity having jurisdiction over water supply or well construction; and
- The permit applicant provides written notice, including specific information concerning the proposed ASR, to each land owner whose property overlies the zone of discharge.

The bill requires the DEP to revoke the zone of discharge and require the withdrawal of injected water upon a demonstration by any party that the above legal restrictions are no longer in effect and provides that the zone of discharge for an ASR well may not intersect or include any part of a 500-foot radius surrounding any well that uses the injection zone to supply drinking water.

The permit applicant must demonstrate, based on hydrogeological conditions, the vertical and lateral limits of the zone of discharge by providing the DEP with calculations or the results of modeling that include, but are not limited to, reasonable assumptions concerning the expected volume of water to be stored and recovered and reasonable assumptions regarding aquifer thickness and porosity. Compliance with the primary drinking water standards for total coliform bacteria and sodium and the secondary drinking water standards is required at the edge of the zone of discharge. The DEP must specify the vertical and lateral limits of the approved zone of discharge in the permit.

After the ASR well is in operation, groundwater monitoring must demonstrate that biological die-off is occurring, that no exceedances of the primary drinking water standards have occurred

outside the zone of discharge, and that there is no adverse risk to human health from the injection activity. If the applicant fails to make this demonstration, the DEP must require operational modifications, reduction or cessation of injection, partial or full recovery of water, remediation, or other actions necessary to assure compliance at the edge of the zone of discharge and to protect public health.

If drinking water supply wells are present in the injection zone within 2.5 miles of the edge of the zone of discharge, additional monitor wells may be required to detect the possible movement of injected fluids in the direction of the drinking water wells.

The bill requires that monitor wells be sampled at least monthly for the parameters specified in the permit for the ASR well. The DEP may modify the monitoring requirements if necessary to provide reasonable assurance that underground sources of drinking water are adequately protected.

The DEP must make a reasonable effort to issue or deny a permit within 90 days after determining that the permit application is complete. However, the failure of the DEP to issue or deny an underground injection control permit for an ASR well within the 90-day time period will not result in the automatic issuance or denial of the permit and will not prevent the inclusion of specific permit conditions that are necessary to ensure compliance with applicable statutes and rules.

The DEP is authorized to adopt rules for the regulation of ASR wells necessary to administer this section.

Section 2. Section 373.222, F.S., is created. This section provides that, notwithstanding s. 373.219(1), F.S., the governing board of a water management district (WMD) or the DEP must require a permit for the domestic use of ground water from a well that overlies or may influence or be influenced by a zone of discharge for an ASR well approved by the DEP under s. 403.065, F.S. The governing board or the DEP may impose such reasonable conditions as are necessary to assure that such use is consistent with the overall objectives of the district or the DEP and is not harmful to the water resources of the area.

The governing board of the WMD and the DEP are authorized to adopt rules necessary to administer this section.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Economic Impact and Fiscal Note:**A. Tax/Fee Issues:**

None.

B. Private Sector Impact:

There is no direct impact on the private sector at this time, as the number of ASR wells resulting from the enactment of this bill is indeterminate. However, a private utility using an ASR well to store untreated surface water could benefit greatly by not having to treat the water prior to injection. If overall water supply development costs are reduced by the future use of ASR wells, both private utilities and customers could benefit from reduced costs.

C. Government Sector Impact:

There is no direct impact at this time. The DEP would incur the expenses of rulemaking, and may receive new funds from the two \$750 permits required for construction and operation of injection wells. If the bill results in local governments using ASR wells to store significant amounts of untreated water, the local government would likely save money by not having to treat the water prior to injection. Should studies show that ASR technology can be used as proposed in the CERP governmental entities throughout south Florida would receive long-term benefits from the more efficient and effective management of water resources.

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Amendments:

None.