

Project Name: C&SF: CERP Aquifer Storage and Recovery Regional Study
A/k/a ASR Regional Study
Project ID: 1203 (CERP Project WBS # 44)
Lead Agency: USACE / SFWMD
Authority: Programmatic Authority
Funding Source: Federal/State

Strategic Plan Goal(s) Addressed: 1-A.2

Measurable Output(s): Peer Reviewed Technical Data Report

April 1999 (Restudy) Project Synopsis: Not described.

Current Project Synopsis: While the CERP Restudy did not directly call for an ASR Regional Study, the USACE and the SFWMD agreed that a coordinated central data collection and regional modeling effort was required to address the large-scale ASR implementation issues under the CERP. The ASR Regional Study described in the PMP was completed in 2015.

The study investigated regional and technical issues governing the feasibility of full-scale ASR implementation; and its potential effect on water levels and water quality within the aquifer systems, and on existing water users, surface-water bodies, and the flora and fauna that inhabit them. This study will conduct critical ASR-related research and develop scientific data required to help determine the scientific and engineering feasibility of large-scale ASR implementation as proposed in the CERP.

State and Federal scientists, engineers, and stakeholders proposed a list of significant uncertainties related to hydro-geologic processes, geotechnical evaluations, ecosystem effects and ASR operation and performance. The ASR pilot facilities are the platforms used to conduct scientific and engineering studies addressing the uncertainties identified with using the technology at the scale envisioned under the CERP. Objectives of the ASR Regional Study are to acquire a comprehensive understanding of the characteristics of the Floridian Aquifer system, its ability to support ASR as envisioned in the CERP, and to identify any limitations to applying full scale ASR. With this information, optimum implementation of regional ASR water storage and recovery can be determined. Goals of the ASR Regional Study include:

- Addressing outstanding issues of a regional nature that cannot be adequately addressed by the authorized ASR Pilot Projects.
- Reducing uncertainties related to full-scale CERP ASR implementation by conducting scientific studies based on existing and newly acquired data, evaluate the potential effects on water levels and water quality within the aquifer systems, as well as existing users, surface-water bodies, and the flora and fauna that inhabit them.
- Developing a regional groundwater model of the Floridian Aquifer System (FAS) and conduct predictive simulations to evaluate the technical feasibility of the proposed 333-well CERP ASR system, or if determined to be unfeasible, identify an appropriate magnitude of ASR capacity with minimal impact to the environment and existing users of the FAS.

The Restudy envisioned the ASR facilities to be constructed and store as much as 1.6 billion gallons of freshwater per day to ensure water for the Everglades, improve conditions in Lake Okechobee and agriculture and to protect urban wells located near the coast from saltwater intrusion.

An interim report (June 2008) summarized efforts, including the pilots and other testing between 2003 and 2007.

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Groundwater modeling of the envisioned CERP ASR wells (333) operations strategy was completed in FY13, and reviewed by the IMC in FY13. Geotechnical data collection is complete, and is currently being interpreted. Groundwater and surface-water quality data and ecotoxicological data were obtained at two ASR pilot systems during operational testing was completed in July 2013. Incorporation of all acquired data into an Ecological Risk Assessment is under review. The Lake Okeechobee ASR pilot project Technical Data Report encompassing Lake Okeechobee and Hillsboro ASRs is complete.

In May 2015, the ASR Regional Study Technical Data Report was completed. The ASR Regional Study incorporated and evaluated the results of the pilot projects and eleven years of scientific and engineering investigations. The National Research Council convened a committee of experts to review of the report. The committee agreed with the ASR Regional Study findings that no “fatal flaws” have been discovered, but many uncertainties remain before large-scale ASR should be implemented.

Based on the study's findings, phased implementation of CERP ASR should proceed with continued modeling, testing and expansion of the existing pilots and construction of additional multi-well systems. Projects in the planning phase may consider incorporating ASR into alternatives, or as an aspect of planning alternatives, in conjunction with a reservoir. Additionally, if future ASR systems are implemented, they should proceed in a phased approach (utilizing up to 5 ASR wells) to provide interim restoration benefits and new iterations of groundwater and ecological models should be developed.

Further work on ASR planning and implementation will occur either as a component of a project, as a new project, or under existing pilot project authorizations.

Current Status: Complete

Est. Cost: \$25,271,000

NOTE: In addition to the ASR projects, the CERP April 1999 Restudy cost estimate included a total of approximately \$128,000,000 for ASR-related Planning, Engineering and Design studies for the six (6) proposed ASR components. Funding was provided from a redistribution of the established CERP ASR design estimates from these related projects.

Project Schedule:

2003 Start - Technical Design Report
 2015 Study completed

Detailed Project Budget Information (rounded):

ASR Regional Study	Obligations Thru FY 2014
USACE	\$13,921,000
SFWMD	\$11,279,000
TOTAL	\$25,200,000

Hyperlink:

[http://www.saj.usace.army.mil/Missions/Environmental/EcosystemRestoration/AquiferStorageandRecovery\(ASR\)RegionalStudy.aspx](http://www.saj.usace.army.mil/Missions/Environmental/EcosystemRestoration/AquiferStorageandRecovery(ASR)RegionalStudy.aspx)

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Source: Original project description summarized from the *Central and Southern Florida Project Comprehensive Review Study (Restudy) (1999)*. Cost estimate information is updated to actual expenditures include all federal expenditures through FY14.

<u>CERP ASR SYSTEM LOCATIONS BY BASIN</u>	<u>NUMBER OF WELLS</u>	
	<u>PLANNING ESTIMATE</u>	<u>MODEL SIMULATIONS</u>
Lake Okeechobee	200	139
Caloosahatchee	44	27
L-8 Basin	10	8
C-51 Basin	34	24
Central Palm Beach County	15	14
Hillsboro	30	20
TOTAL	333	232

