

**OUTREACH
ASR Public Workshop
Final Meeting Summary**

**November 13 - 14, 2002
PM**

6:30 PM – 9:00

To: Attendees

From: Everglades Partners Joint Venture (EPJV)

Subject: ASR Public Workshops

Attendees: Attendee lists supplied by Sonshine Communications

Handouts: November 13 & 14, 2002
ASR Project Overview
ASR Fact Sheet
Brochure: Journey
Regional Issues in Aquifer Storage
Estenoz letter from Henry Dean, Executive Director, South Florida Water Management District

The Aquifer Storage and Recovery (ASR) Public Workshops were held November 13, 2002, at the Ft. Myers Service Center of the South Florida Water Management District (SFWMD), 2301 McGregor Blvd., Ft. Myers, FL 33901; and November 14th, 2002 at the Lake Shore Middle School Cafeteria, 425 West Canal Street North, Belle Glade, FL 33430. An Open House was held from 6:30 PM to 7:30 PM each night with the workshop beginning at 7:30 PM.

WELCOME

These workshops were part of a series of four meetings held for the purpose of updating the public on ASR. The previous meetings were held in Ft. Lauderdale, Okeechobee, and Ft. Myers.

Dennis Duke welcomed everyone to the workshop and thanked them for their attendance. He introduced himself as the Program Manager for the U.S. Army Corps of Engineers (Corps) Ecosystem Restoration.

Dennis relayed he would go through a presentation on ASR and then entertain program level questions during the public comment section of the workshop. He also stated that Project Managers from the Corps and SFWMD would be available to address project-specific issues. Any project-specific questions could also be directed to the members of the Project Delivery Team (PDT) attending the meeting this evening.

ASR PRESENTATION

Presentation Outline

- I. Background: Restoring the Everglades**
- II. Aquifer Storage and Recovery – How it works**
- III. ASR's role in CERP**
- IV. Implementation Strategy – ASR Regional Study and ASR Pilot Projects**

Background

The Central & South Florida (C&SF) Project was authorized by Congress in the 1940s to assist the Corps with providing flood control and water supply measures. The flood protection measures work well, but have had some unintended impacts on the environment. These include:

- Too much/too little water for the Everglades/south Florida ecosystem
- Massive reductions in wading bird populations
- Degradation of water quality
- Repetitive water shortages and salt water intrusion
- Declining estuary health
- Billion plus gallons of water per day wasted to tide

In 1992, Congress authorized the Central & Southern Florida Project Comprehensive Review Study (the Restudy). Its primary function was to find a way “to get the water right” through an assessment of the quantity, quality, timing and distribution of water within the ecosystem and thus revert to a more historical flow in the Everglades.

In order to conserve/save this water, several storage options are being considered. These include: surface reservoirs, in-ground reservoirs, and ASR.

ASR - How it Works

ASR involves pumping treated water (water treated to drinking water standards) underground where it will be stored in a confined aquifer and recovered later. The pumped freshwater displaces the brackish water of the Upper Floridian Aquifer, resulting in an underground reservoir of freshwater. Reservoirs, treatment facilities and ASR wells will operate in tandem, capturing water from rainfall, treating it, and then pumping it into the ASR wells before the next rainfall.

Why ASR?

There are significant advantages to ASR compared to traditional storage technologies.

- **Provides multi-year water storage and recovers large volumes of water during droughts when surface water levels are low**
- **Provides water to the ecosystem during droughts**
- **Less water is lost through evaporation**
- **Wells require little land, therefore less land acquisitions**

The Comprehensive Plan calls for 1,665 million gallons per day (mgd) capacity using ASR.

The ASR pilot projects will be located around Lake Okeechobee and adjacent to the Hillsboro Canal south of the Loxahatchee National Wildlife Refuge. Because of their proximity to the Lake, the ASR wells will be able to capture much of the overflow from Lake Okeechobee reducing stress on the lake and the surrounding estuaries, including both the St. Lucie and Caloosahatchee estuaries.

CERP Components

ASR is one of many components that will make CERP successful and will work in tandem with:

- **Surface water storage reservoirs**
- **Stormwater Treatment Areas (STAs)**
- **Reuse Wastewater**
- **Seepage Management**
- **Removing barriers to sheetflow**
- **Operational Changes**

ASR Planning Considerations

During the planning phase of the project, the team will consider what physical impacts may be made to the aquifer by the injected water. Considerations include:

- **Duration of storage and the percentage of stored water recovered**
- **Quality of source water**
- **Water quality changes in the aquifer during storage and any movement in the underground water flow patterns**
- **Impact on other regional Floridian Aquifer users**
- **Potential rock fracturing**
- **Ecological effects of using ASR**

Implementation Strategy

The CERP Pilot Project program includes six projects, which will test the new technology.

Three of these pilot projects are ASR projects:

- **Lake Okeechobee ASR**
- **Hillsboro ASR**
- **Caloosahatchee (C-43) River ASR**

The current status of the projects:

Underway now:

- **Data collection from pilot wells**
- **Evaluation of ongoing per-well capacity**
- **Geochemical considerations**
- **Water recoverability**
- **Assessment of pre- and post-treatment requirements**
- **Consideration of impacts to both the environment and existing aquifer users**

Future work includes:

- **Application for appropriate permits**
- **Design/construction/testing of pilot wells**
- **Evaluation of pilot well performance**

CERP ASR Pilot Projects Schedule

The Project Management Plan (PMP) phase has been completed and the Pilot Project Design Report (PPDR) phase has begun. The schedule reflects time allotted for permitting and the acquisition of other licenses prior to construction start. The ASR projects will reach the construction phase some time in 2005/2006 with completion of the testing cycle sometime in 2009/2010.

ASR Regional Study

The ASR Regional Study is being conducted in order to collect additional data and conduct further analysis (including groundwater modeling) to evaluate the technical feasibility of the regional ASR program.

Status: The Project Delivery Team (PDT) is finalizing the Project Management Plan (PMP). The Committee on Restoration of the Greater Everglades Ecosystem (CROGEE) reviewed the PMP and had several recommendations. The comment period ends for public review of the CROGEE report on November 30, 2002.

CROGEE recommendations include:

- **Ensure the Draft PMP responds to issues raised**
- **Need better approach to adaptive management**
- **Need better task management for more integration, consistency and specific recommendations**
- **Need plan of action if ASR does not work**

ASR Contingency Planning

This plan takes into consideration two scenarios: 1) CERP without ASR and 2) CERP with a 50% success of ASR. Issues to consider if the ASR technology does not work to the level expected include an increase in surface storage options, increased land acquisition, CERP modifications, and alternative cost estimates.

PUBLIC COMMENT 11/13/02 – Ft. Myers

Alexander Graham – an individual

Mr. Graham is concerned that the water confining units used in ASR are not flat, causing wastewater to move at an angle and seep through gaps into the Floridan Aquifer. He believes this wastewater is going into the Everglades National Park, not the ocean.

Dennis Duke, Corps, assured Mr. Graham that the water injected through the ASR process was clean. Any wastewater would be treated, stored on the surface and eventually used for watering lawns, golf courses, etc.

Mr. Graham also asked if water would be analyzed for pathogens.

Shawn Kolmos with the Environmental Protection Agency (EPA) relayed that the team is currently looking at simulated conditions and field-testing to assure inactivation of microorganisms in the water. The EPA is currently assisting in the design of treatment plants in West Palm Beach. Dennis Duke added that the other sponsoring agencies are also offering support in these efforts.

Noel Anders – an individual

Question: Why are so many of the CERP components to restore the Everglades on the east coast?

Answer: Dennis Duke, Corps, explained that most of the damage to the ecosystem has occurred on the east coast due to development, construction, etc. There is more to repair needed there.

Question: How much water will be put in the wells in Ft. Myers?

Answer: Glenn Landers, Corps Project Manager, stated there would be approximately 220 mgd.

Question: How much land does the Corps/SFWMD plan to acquire for the ASR projects?

Answer: Glenn stated that the CERP proposed approximately 20,000 acres for the C-43 reservoir(s). Berry Groves is about 9,000 acres and other lands may need to be acquired in the Caloosahatchee River basin.

Question: What is the percentage of water lost to evaporation?

Answer: Glenn stated that he did not have specific information about evaporation.

Question: Is the Corps researching injection methods?

Answer: Yes, the ASR study includes this.

Question: How is the Corps going to coordinate all of the projects that make up Everglades restoration?

Answer: Dennis Duke, Corps, stated that the sequencing of the 68 components of CERP is being considered now. Current conditions (environmental and technological) are being taken into consideration along with anticipated changes.

Comment – Mr. Anders would like information concerning water quality made available to the public to ensure the Corps, through ASR, does not change the nature (ph) of the water currently in the aquifer. Mr. Anders sited Carrs Topography, which relays that an acidic ph can damage limestone.

Glenn Landers, informed Mr. Anders that the pilot projects address this issue.

Dennis Duke confirmed for Mr. Anders that all project specific information/details concerning ASR is available on the evergladesplan.org website including schedules, implementation plans and PDT meeting minutes.

Anura Karuna-Muni, P.E. – Lee County Natural Resources

Mr. Muni asked if there was any evidence that the bubble created during the ASR injection affects the natural horizontal flow/movement of the water in the aquifer.

Dennis Duke, Corps, relayed that any effects would be insignificant because the natural horizontal movement in the aquifer is minimal, generally less than one foot per year. Lateral movement of water doesn't affect the recovery rate. He assured Mr. Muni that the pilot project and the feasibility study are looking at all adverse reactions to the ASR technology.

Charles Ernst – an individual

Question: What scientific organizations were overseeing the ASR projects and their expected outcomes?

Answer: Dennis Duke, Corps, explained the role of the National Academy of Science (NAS) and the Committee on Restoration of the Greater Everglades Ecosystem (CROGEE) and how it operates to provide scientific overview and technical assessment of the restoration activities and plans.

Question: What information does the modeling study show and what does it show for costs?

Answer: Dennis Duke stated that the sponsoring agencies are working on the development of a regional model to predict ground water flows, characteristics, and the cost associated with cleaning water. Glenn Landers, Corps, stated that the ASR Regional Study contained several models of underground geology to analyze the potential impacts of ASR. Existing ASR models will be used to calibrate future wells.

END OF WORKSHOP

Public comment concluded. Dennis Duke thanked everyone for attending.

PUBLIC COMMENT 11/14/02 - Belle Glade

Jeanne Zokoritch – (L.E.A.F.)

Question: What were the dates that the initial data on ASR was approved?

Answer: Dennis Duke, Corps, stated that the initial accumulation of data (hydrologic) started in 1995 and a second study concerning water usage and population updates took place in 2000.

Teresa Woody – an individual

Ms. Woody wanted to know if Dennis Duke’s PowerPoint presentation would be posted on the web?

Dennis stated that it would be.

Cynthia Laramour – Active Citizens Together Improving Our Neighborhoods, Inc. (A.C.T.I.O.N.)

Comments: Ms. Laramour stated that although Lake Okeechobee is critical to the Everglades restoration, the Belle Glade community should look at the ASR projects in the context of who bears the burden of the proposed projects and who benefits from the projects. She is under the impression that the Belle Glade community will bear the burden for the benefit of others, i.e.: communities in south Florida.

Ms. Laramour commented that the ASR projects contain technology that is uncertain. She stated that she believes the projects would not be slated to be built in the communities currently forecasted if these were wealthy white communities. This action demonstrates social inequity in how the Corps is dealing with those communities involved.

She stated that the largest existing well system contains only 10 wells as compared to the over 300 the ASR projects plan to construct. The Belle Glade community will have to suffer the consequences if the proposed technology goes awry.

Ms. Laramour questioned how the Corps was currently using water supplied from Lake Okeechobee as well as the Floridan Aquifer. How do these uses affect Belle Glade?

Ms. Laramour stated she believes the Corps is presenting only their point of view in these public meetings, that the Corps and SFWMD are “word-smithing.” Some concerns exist that are not being mentioned/addressed by either sponsor.

Ms. Laramour expressed concern for water quality and its affects on human health.

Ms. Laramour pointed out to the audience that new slides had been added to the PowerPoint presentation presented to them that evening. These two slides were not included in the previous three public workshops.

Dennis Duke responded to Ms. Laramour’s claim that the two slides added to the presentation were included to better explain the history of the C&SF project and the background to CERP. He added that the Corps and SFWMD were relying on the public to watch what the two sponsors are doing in Everglades restoration and to help ensure it is

being done right. Mr. Duke added that Lake Okeechobee is an important component of the Everglades restoration and that improvements in water quality are a major goal. The Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) are working together with the Corps and SFWMD to achieve this goal.

Pat Taylor – an individual

Question: Of the 220,000 acres of real estate to be acquired for CERP, how much is already government owned, how much is private property, and how many people will be displaced?

Answer: Dennis Duke, Corps, stated that he did not have specific numbers for Ms. Taylor at this time, but could gather the information and send to her if she would leave her contact information. He did state that of the total amount to be acquired, approximately 50% had already been purchased by the SFWMD.

In addressing the issue of displaced people/households, Mr. Duke stated that the Corps and SFWMD are currently identifying specific impacts and working with state and local agencies/organizations to formulate training programs to assist with job transitioning. Mr. Duke stated that currently mostly agricultural jobs are expected to be lost. At this time it is anticipated that CERP projects will create approximately 6,000 mostly construction/technical jobs.

Question: Of these 6,000 jobs, how many are temporary?

Answer: Mr. Duke replied that these jobs will last the life of the project, so technically they will be temporary. However, the Corps and SFWMD are planning to fill as many jobs as possible from local communities.

Geraldine Shelton – an individual

Question: What types of jobs will be lost by land acquisition?

Answer: Dennis Duke stated most will be agricultural jobs, for example production and collection. Specifically in Belle Glade, sugar cane and cattle industries will be affected.

Question: If there are three sites around Lake Okeechobee for planned ASR wells, how many new jobs will come from these areas?

Answer: Mr. Duke said probably just a handful. However, the footprint for land acquisition is not high around the lake, therefore these areas would be minimally impacted in regards to loss of agricultural jobs. Some prospective jobs will be temporary because

they will exist only during the construction phase of the project. This is years in the future and is being prepared for by the planned state and local training programs.

Question: How will these projects impact the people living around Lake Okeechobee?

Answer: Mr. Duke assured Ms. Shelton that one of the primary goals of the ASR projects is to improve the health of Lake Okeechobee. Plans are being developed to remove sediments as well as phosphorus from the lake. Part of the regulation schedule allows the capture of water outside the lake so water levels won't fluctuate so wildly in the future.

Arcadio Gonzalez – an individual

Question: Mr. Gonzalez was looking for clarification of the permitting process for installing septic tanks. He had to apply for a permit five separate times because the location was close to Lake Okeechobee. Will new homebuilders and buyers be affected by the ASR projects around Lake Okeechobee?

Answer: Dennis Duke, Corps, stated that part of the Corps' regulatory program includes regulations for protecting water quality and the health of the lake. These regulations, to his knowledge, will remain in place to ensure the regulation of nutrients that could be discharged into the lake from various sources like leaking septic tanks.

Mary Kendall – City of Belle Glade

Question: Is the Corps working with local municipalities to ensure the employment of local residents?

Answer: Dennis Duke referred the question to Nanciann Regalado, Corps Outreach Team Leader. Ms. Regalado assured Ms. Kendall that both the Corps and the SFWMD were working with local communities on all issues surrounding the Everglades restoration.

Question: Ms. Kendall stated that Dennis had mentioned a deadline of November 30, 2002 for the CERP projects to commence. Have the local workers who will lose their jobs as a result of this deadline been informed?

Answer: Dennis informed Ms. Kendall that November 30 is simply the deadline for public comment on the ASR study. The CERP projects are still in the planning phase, so any job layoffs that will result from the construction phase are still years in the future.

Cynthia Laramour – A.C.T.I.O.N.

Question: Where can the members of the public get a balanced presentation of the ASR project rather than the Corps and SFWMD perspective?

Answer: Dennis stated that the presentation delivered this evening reflects basic facts of the ASR projects. The Corps and the SFWMD welcome public involvement and comment at all times.

END OF WORKSHOP

Public comment concluded. Dennis Duke thanked everyone for attending.