



The Droplet

Florida Water Environment Association
Integrated Water Resources Committee

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In this Issue

Page

- **Technical: Dispersed Water Management for Agricultural Sites** 1
- **Opinion: The Importance of Agriculture in Water Supply Planning and Management** 2
- **Committee News & Information** 4
- **IWRC Calendar of Events** 4

Technical: Dispersed Water Management for Agricultural Sites

The Florida Ranchlands Environmental Services Project (FRESP) is a public-private partnership between the South Florida Water Management District (SFWMD), the Florida Department of Agriculture and Consumer Services (FDACS), the Natural Resources Conservation Service (NRCS), the World Wildlife Foundation (WWF), and agricultural landowners. Projects are jointly funded by SFWMD, FDACS and WWF.

The program was developed in 2005 and has the goals of improving water quality to the Northern Everglades, retaining water on agricultural lands, rehydrating wetlands, and contributing to the economic stability of ranches. These goals are accomplished by paying private landowners to use dispersed water management to control water on their land. Dispersed water management refers to shallow water retention by private landowners. This retention will attenuate slugs of runoff to downstream areas and allow for some water quality treatment.

Dispersed water management has a number of features that make it attractive to private landowners, local governments, and agencies charged with improving water quality:

- Projects can be designed and constructed in relatively short time frames.
- The land used by the project is not transferred from the landowner – it stays on the tax rolls.
- The projects are contracted for a fixed time period. After the initial contract has expired, a new agreement can be reached to extend the project, or the project area can revert back to previous ranching activities.
- The projects are flexible and are designed to meet the specific needs of the local area.
- Ranching activities may be able to continue on the project site without adversely impacting the project benefits.
- The projects can include wetlands/habitat restoration aspects.
- The projects will hold back water.
- The projects provide an additional income source to the rancher.

(Continued on page 3)

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Further information about FRESP is available on the program website (www.fresp.org).

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Opinion: The Importance of Agriculture in Water Supply Planning and Management

When looking at the now infamous pictures of earth taken from space, it is hard to imagine that water supply would be a resource management challenge. After all, Earth is the "blue planet", right? Four-fifths of its surface is covered with water. We all know, however, that looks can be deceiving - what those pictures can't tell you is that only about 2.8% of all water is fresh and only a quarter of that is available for human use. Seven tenths of one percent of all the water on the planet sustains all humans and other terrestrial animals and plants. The long-term availability of fresh water is indeed a global issue.

Earlier this year world population passed the 7 billion mark. By 2050 it is projected to grow to 9 billion. Estimates from the World Health Organization suggest that 70% of the population in 2050 will live in urban areas. Because urban dwellers tend to eat more protein and processed foods, the WHO predicts that food production will have to increase 70% to feed all those urban dwellers. Globally, agriculture uses 69% of all fresh water down from 90% just a few decades ago. It won't get more in the future. Agriculture will have to continue to dramatically increase production while decreasing water use.

American agriculture feeds the world. As Americans we have access to the safest, most abundant and affordable food supply available – a luxury often taken for granted. Agriculture in Florida is a \$100 B industry. We grow nearly 300 commodities and employ 750,000. 83% of the fresh water used for Florida agricultural irrigation is for the production of food. Agricultural water use in Florida has been flat or slightly declining over the last decade while production has increased. This year, for the first time, domestic public supply water use exceeded agricultural water use. Those two water use lines will never cross again. Domestic supply is projected to grow by roughly 25% by 2030 while agricultural demand will remain largely flat.

How do we assure that there will be enough water for all users in the future? More and more frequently we read about, or experience first-hand, glaring examples that suggest we may be using precious fresh water resources at a rate faster than mother nature can supply: sink-hole formation and dry well complaints in the Dover/Plant City area 2 years ago; record low groundwater and spring flow levels in the Suwannee River Water Management District; and a large area of central Florida where traditional ground water sources may be over-allocated. The Ogallala aquifer, the largest fresh water aquifer in the world, which stretches from South Dakota to New Mexico, is estimated to be able to sustain current withdrawals for only another 50 years. What will happen to the U.S. grain belt production when ground water is no longer available for irrigation? We can't manage extreme weather events but successful water supply planning and alternative water supply development will take thoughtful cooperation among all reasonable and beneficial users. Now, more than ever, we must work together to continue to increase water conservation programs that focus on using the lowest quality water suitable to meet a particular need. Florida agriculture has embraced modern efficient irrigation systems and Florida's domestic waste water reuse program is one of the best in the world. The water resource management challenges we face today will not be easily solved, but continuing to work together to identify and fund solutions is the only reasonable course of action.

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Dispersed Water Management

(Continued from page 1)

Dispersed water management can be achieved by using a variety of features, such as ditches, berms, control structures, impoundments, pump stations, etc. The water management features used for a specific project will depend on the site conditions and the goals of the project. To date, the FRESP program has funded the design and construction of eight pilot projects. The author has designed two of these pilot projects– the Lightsey XL Ranch and the Rafter T Ranch sites in Highlands County. These two sites used different approaches to managing water.

The Lightsey XL Ranch is a 3000+ acres site with a series of ditches/canals that drain water to a central slough. A series of 17 flashboard risers and 19 ditch weirs were installed to provide up to 135 ac-ft of storage. Water tolerant grasses were planted in the fields that would be temporarily flooded by the structures. The temporarily flooded areas allow for additional infiltration and uptake of phosphorus by the grasses. The site does not require any significant amount of active management and water quality sampling is ongoing to quantify the success of the project.

The Rafter T Ranch is a 5000+ acre ranch on the west side of Arbuckle Creek with a series of ditches and canals that drain to the creek. This project is a more actively managed system with flashboard risers, berms, impoundments, and pump stations to store and manage water on the ranch. The site includes four water management areas that can store up to 1200 acre-feet of water. As with the Lightsey site, water tolerant grasses were planted on the areas temporarily flooded to provide feed for the ranching activities and to allow for additional uptake of phosphorus. The control structure elevations for the water management areas are modified during the year to mimic a more natural hydroperiod and promote re-hydration of existing wetlands.

The water quality benefits of both projects are in the process of being quantified by analysis of data from the ongoing sampling program. The SFWMD expects to expand the program later this year by partnering with additional ranches.

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Open Supervising and Entry-Level Engineering Positions

Parsons Brinckerhoff currently has two full-time job openings in its Orlando, Florida office. Positions as a Lead/Supervising Engineer with at least 10 years of experience in Water Resources or Environmental Engineering (ID#15980) and a Water Resources Engineer with 0-2 years of experience (ID#15981) are both available. Full job descriptions and online applications are available at www.pbworld.com. Search the job IDs provided above for more information.



Committee News & Information

Next Integrated Water Resources Conference – Your Ideas Welcome!

The FWEA Integrated Water Resources Committee (IWRC) welcomes your suggestions for topics to be included in the next FWEA Integrated Water Resources Conference. Topics currently under consideration include resource restoration, rainwater harvesting, asset management for water resources, decision support systems for water resources, and integrated management strategies for domestic wastewater and stormwater utilities. Send your suggestions to IWRC Chair Leslie Gowdish at leslie.gowdish@atkinsglobal.com.

Newsletter Advertising, Sponsorship and Feedback

To advertise or become an official sponsor of The Droplet, or to offer your feedback regarding topics that are of interest to you, topics that you would like to see discussed in the newsletter in an upcoming issue or any general comment about the newsletter. Please email your thoughts to Alonso Griborio at agriborio@hazenandsawyer.com and Lee Smith at lsmith@ectinc.com.

IWRC Membership

If you would like further information about the IWRC or are interested in possibly becoming a member, feel free to email any of our officers (see contact information in left margin) or visit our website at http://www.fwea.org/integrated_water_resources_com.php.

IWRC Goals and Focus

The goals of the IWRC are:

- To further the dialogue between water professionals throughout Florida to meet our growing needs in all areas of water resources.
- To provide timely, high-quality information and education on water as a valuable resource that can be used to meet current and future water resources and water supply challenges throughout Florida.
- To provide rewarding leadership opportunities to water professionals at all levels of experience.

The focus of the IWRC encompasses the following areas of water resources practice:

- | | |
|---|--|
| <ul style="list-style-type: none"> • water quality • watershed and stormwater management • water supply • water conservation and reuse • ecological and hydrologic restoration | <ul style="list-style-type: none"> • groundwater recharge • hydrologic and hydraulic modeling • funding and grant opportunities • regulations and policies |
|---|--|

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IWRC Calendar of Events

<u>Date</u>	<u>Description</u>
August 29, 2012	IWRC Teleconference – Planning for next Conference
September 4, 2012	IWRC Monthly Teleconference
October 2, 2012	IWRC Monthly Teleconference
November 6, 2012	IWRC Monthly Teleconference