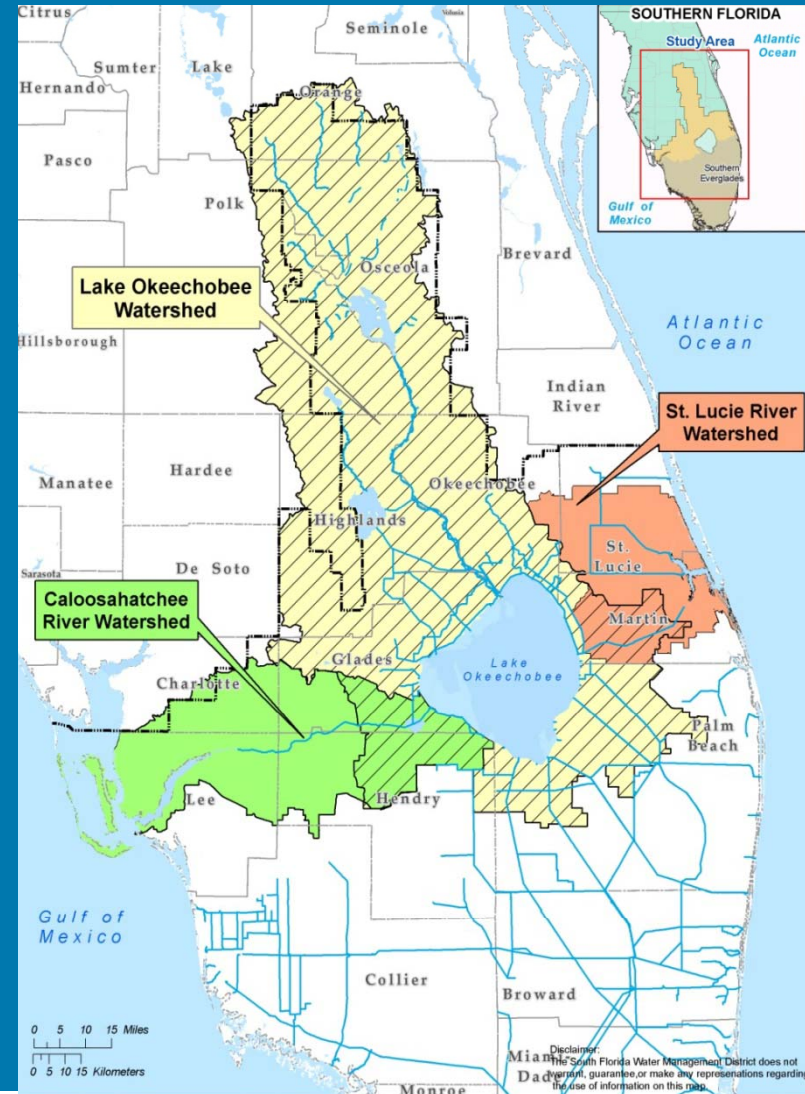


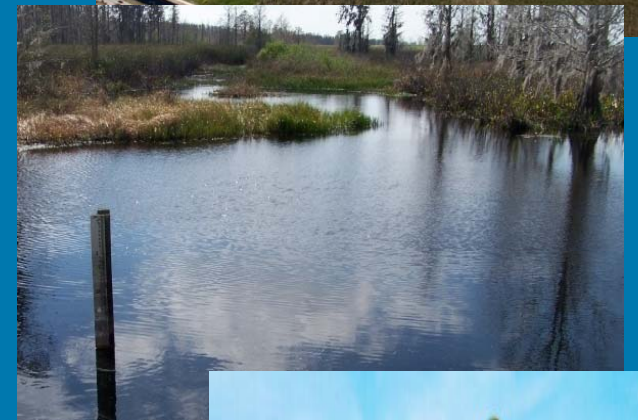
Northern Everglades and Estuaries Protection Program Legislation (2007)

- Required development of Plans to identify water quality and storage projects in three northern watersheds
 - Lake Okeechobee Watershed Construction Project Phase II Technical Plan- by February 1, 2008
 - Caloosahatchee and St. Lucie Rivers Watershed Protection Plans- by January 1, 2009



Northern Everglades and Estuaries Protection Plans - Storage

- Developed all three Protection Plans through public planning process
- Storage
 - Plans identified storage targets for each watershed
 - Lake Okeechobee - 900,000 to 1,300,000 ac-ft
 - Caloosahatchee - 400,000 ac-ft
 - St. Lucie - 200,000 ac-ft
 - Combination of regional storage, dispersed storage, and ASR
 - Lake Okeechobee target is being reevaluated through River of Grass initiative



Northern Everglades Dispersed Water Storage & Treatment

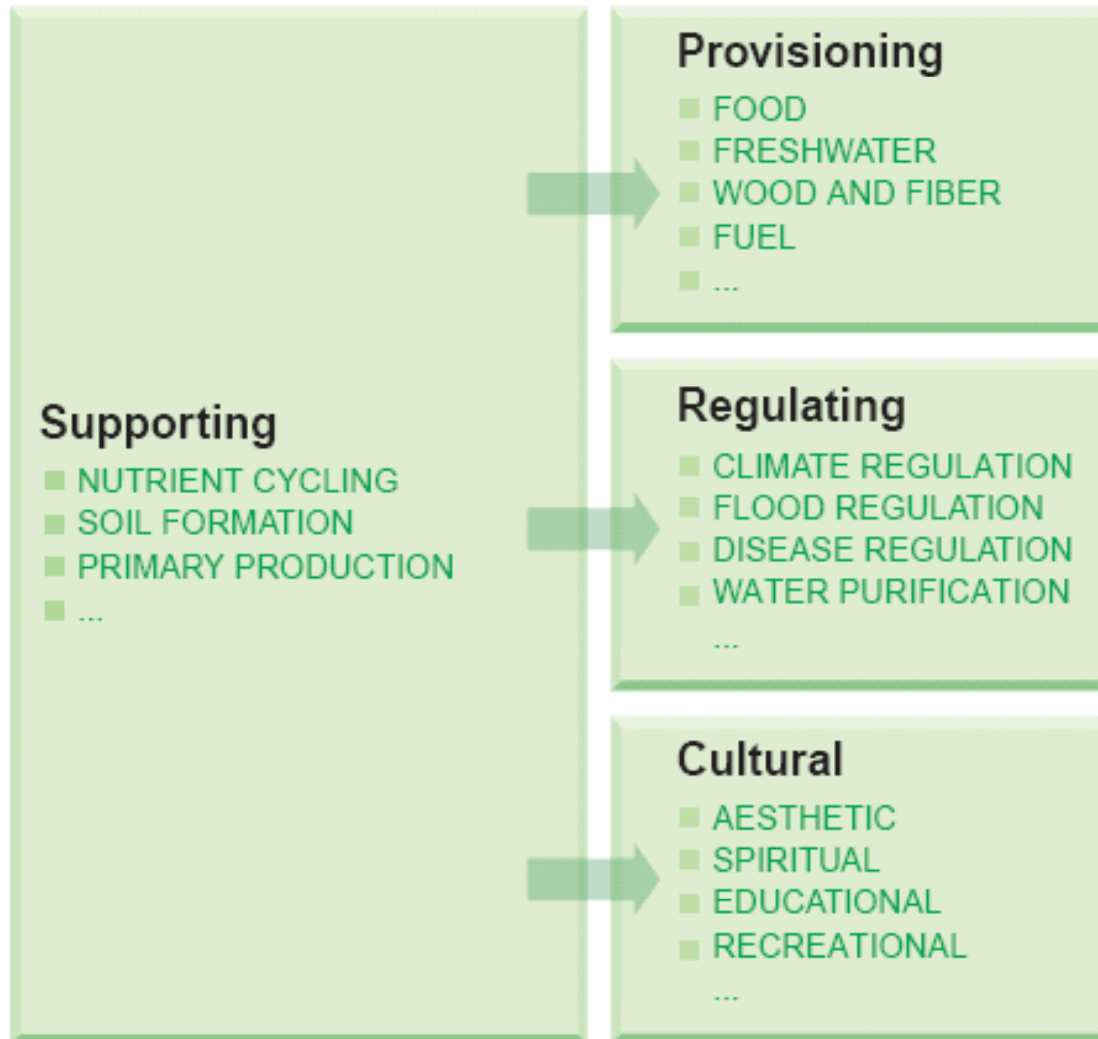
- 3 approaches (Cost-share, easements, and payments for services)
- Support from LOWRAC, WRAC, SFWMD Governing Board for Dispersed Water Storage & Treatment approaches moving toward implementation if resolution of outstanding program development issues (T&E, Wetlands, Price Discovery, Above & Beyond required BMPs can be achieved.

Evaluation of Ecosystem Services

Ann Redmond, Hilary Swain,

What are ecosystem services?

ECOSYSTEM SERVICES

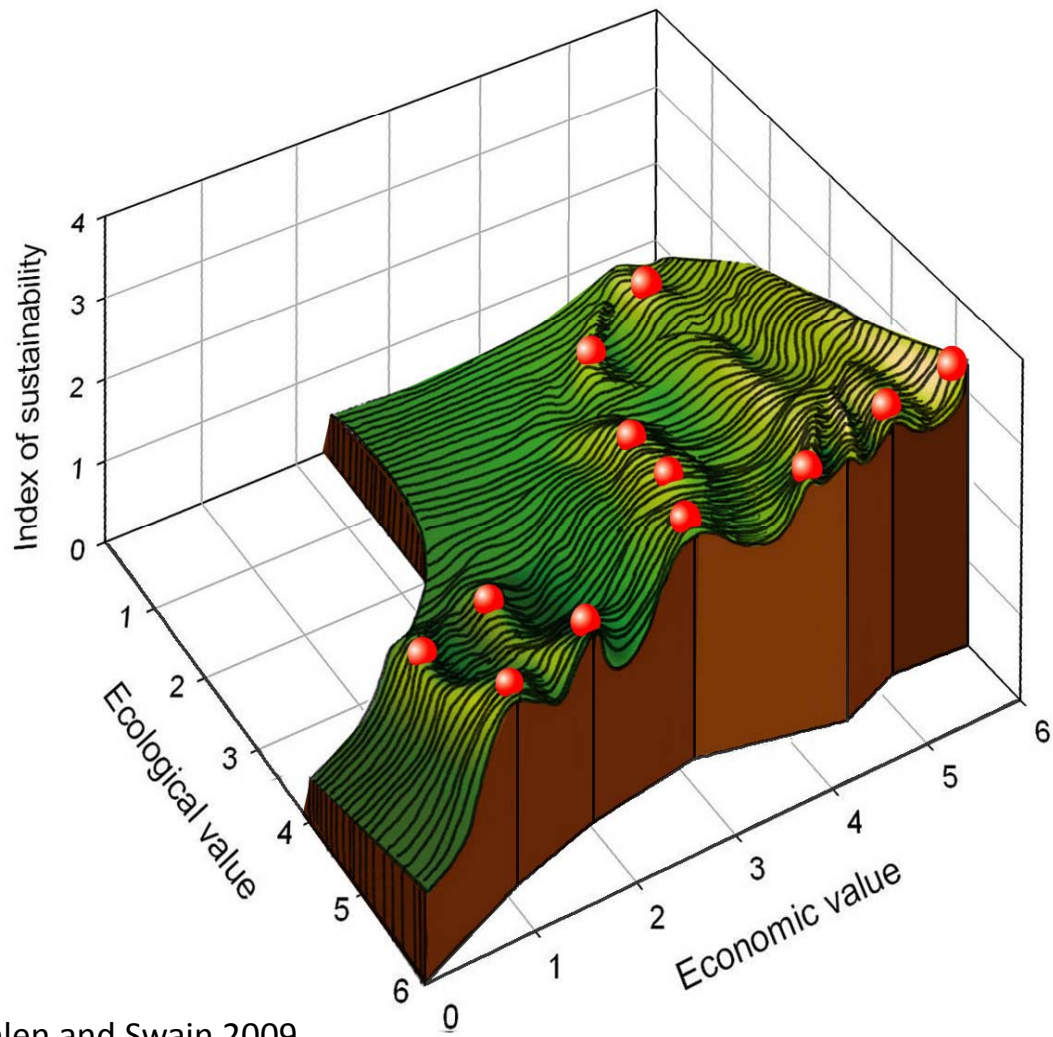


Ecosystem services are the benefits “people” obtain from ecosystems

Millennium Ecosystem Assessment

<u>Benefits</u> Landowner	<u>Disservices</u> Landowner
<u>Benefits</u> For public	<u>Costs</u> For Public

CONCEPTUAL MODEL FOR INTEGRATING ECOLOGICAL AND ECONOMIC SUSTAINABILITY IN SUBTROPICAL GRAZING LANDS



Bohlen and Swain 2009

Bohlen and
Swain 2009



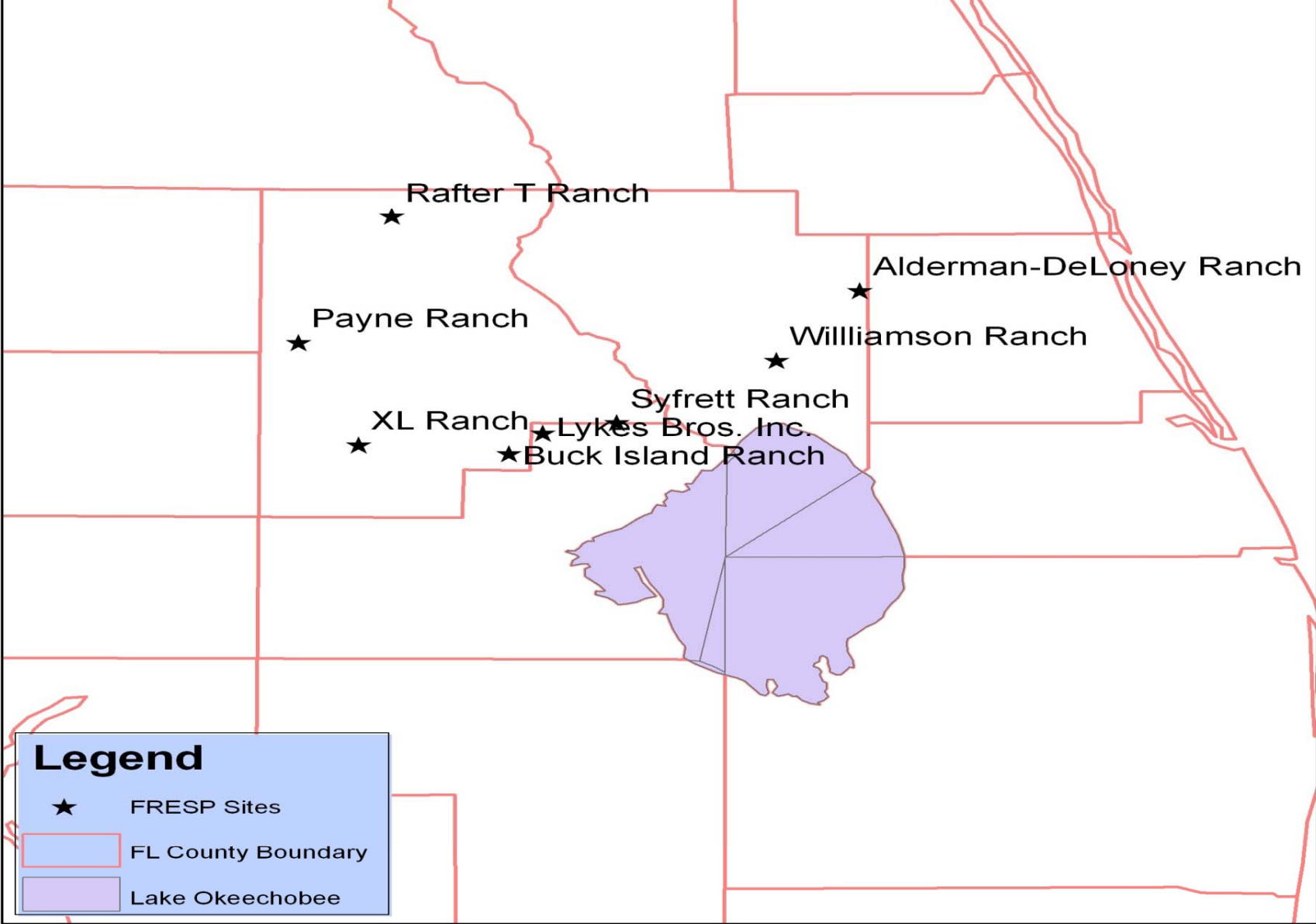
Market-based Payments for Ecosystem Services

FRESP Florida Ranchlands Environmental Services Project, Bohlen et al 2009

- Fixed term contracts between agency-buyers and rancher-sellers for “option” to retain water
- Payments made to rancher-sellers for water and P retention services
 - Ranchers choose how and level of service, providing incentive to innovate.
 - Payments are made when required documentation is provided that assures services were provided given rainfall.
- Agency-buyers select ranchers from pool based on service potential, and cost per unit
- Environmental services are a commodity to create profit for the rancher

FRESP Ranch Pilot-Project Participants

Sarah Lynch World Wildlife Fund



Prepared on May 13, 2008 at MacArthur Agroecology Research Center (MAERC) by Nitin Singh of World Wildlife Fund (WWF), for the Florida Ranchlands

0 5 10 20 30 40 50



**Lykes Bros. Inc.
Sarah Lynch World Wildlife Fund**

Nutrient Reduction Project

**Off-site water from Indian Prairie Canal run through
existing 2,500 acre marsh/wetland**



Lykes West Waterhole Marsh – Results 2009

Sarah Lynch World Wildlife Fund

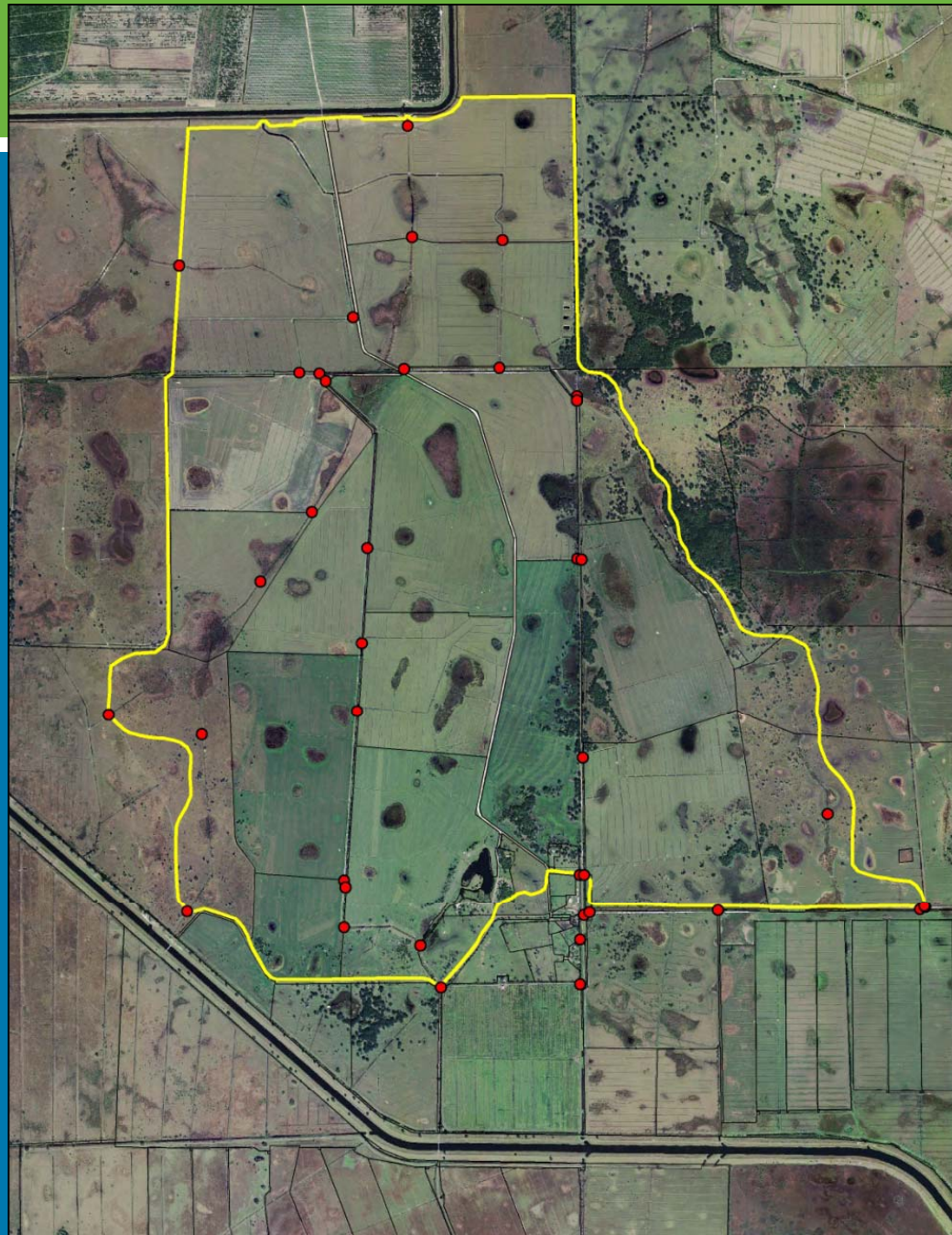
- Existing freeze protection impoundment was modified to treat water for P removal during the warm rainy season.
- Water and P inflow and outflow were monitored for July 2008 -May 2009 period (P balances analyzed to quantify P load reduction from the C-40 canal.
- Pumped in-flow occurred over 11 weeks.
- The Lykes impoundment, as operated during the pilot phase, removed 3282 kg of P (3.2 kg P/ha) which resulted in a P treatment efficiency of 55%.

Buck Island Ranch

**Water Retention Project –
modified drainage**

3700 acre improved pasture

Bohlen and Shukla 2009



FRESP WMA Acres, WMA Influenced Acres and Estimates of Potential Water Retention

Sarah Lynch, World Wildlife Fund

	WMA Acres	WMA Influenced Acres	PWRM 2008 Estimate of Total Retention Post WMA Ac Ft	PWRM Estimate of Incremental Retention Post WMA Ac Ft
BIR	3748	3748	6895	2479 ³

³ PWRM Estimate of 375 ac-ft of retention for Basin B20 (567 acres) extrapolated to 3,748 acres

Partners implementing FRESP Florida Ranches Environmental Services Program



Participating Florida Ranchers



NRCS Natural Resources Conservation Service

