



# Watershed Planning - ERP and Section 404 Perspectives

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July 23, 2014

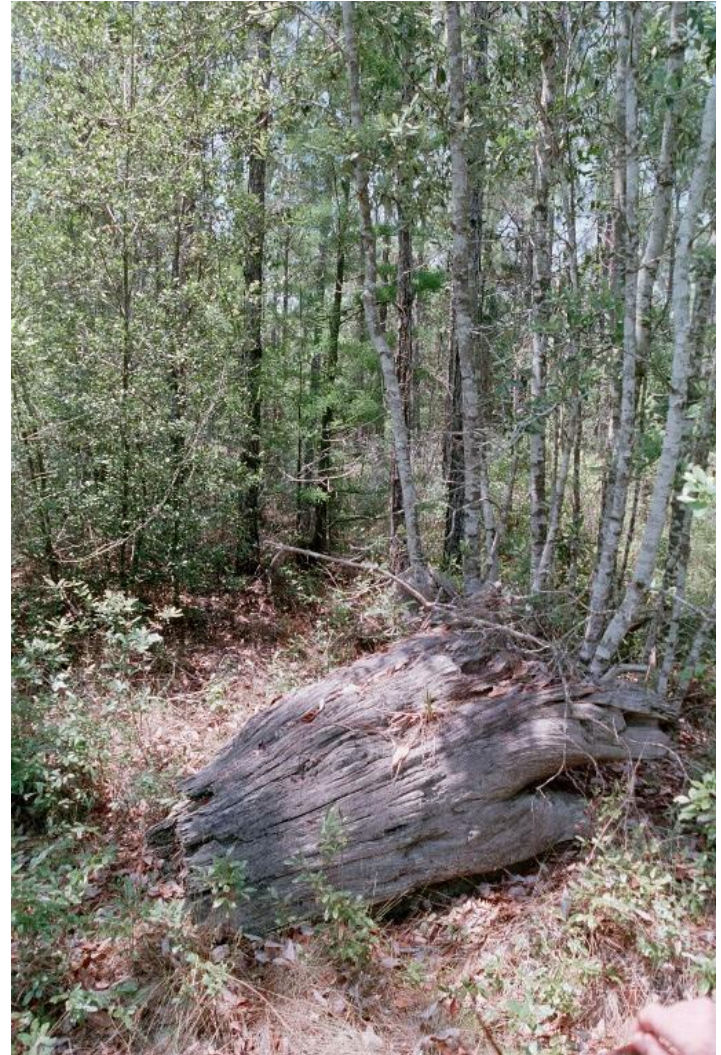
**Brown** AND  
**Caldwell**

# Watersheds are getting a lot of attention

- Watershed Approach
  - ERP Permitting
  - Wetlands Mitigation – Sec. 404 Clean Water Act (CWA)
  - Stream Mitigation – Sec. 404 CWA
- Water Quality & Nutrients – Sec. 402 CWA
- Integrated Watershed Approach
  - NPDES Permitting
  - Wastewater Permitting
- Overlaps with watersheds
  - Species – Sec.s 7 & 10 Endangered Species Act
    - Aquatic – watershed-based
    - Non-Aquatic – habitat based (not watershed-specific)

# Why a Watershed Approach?

- Magee *et al.* (1999) found that both natural and mitigation wetlands in Portland, Oregon had been degraded due to hydroperiod alteration and land use changes in rapidly urbanizing areas.



# Watershed Approaches in Florida

- “A Watershed approach would Improve permit decision-making.” NRC 2001
  - Why? - “Wetland functions must be understood within a watershed framework in order to secure the purposes of the Clean Water Act.” (p. 3)
- This has been Florida’s way of doing business for many years.



# Watershed Approach to Managing Florida's Water Resources



**Northwest Florida  
Water Management  
District**

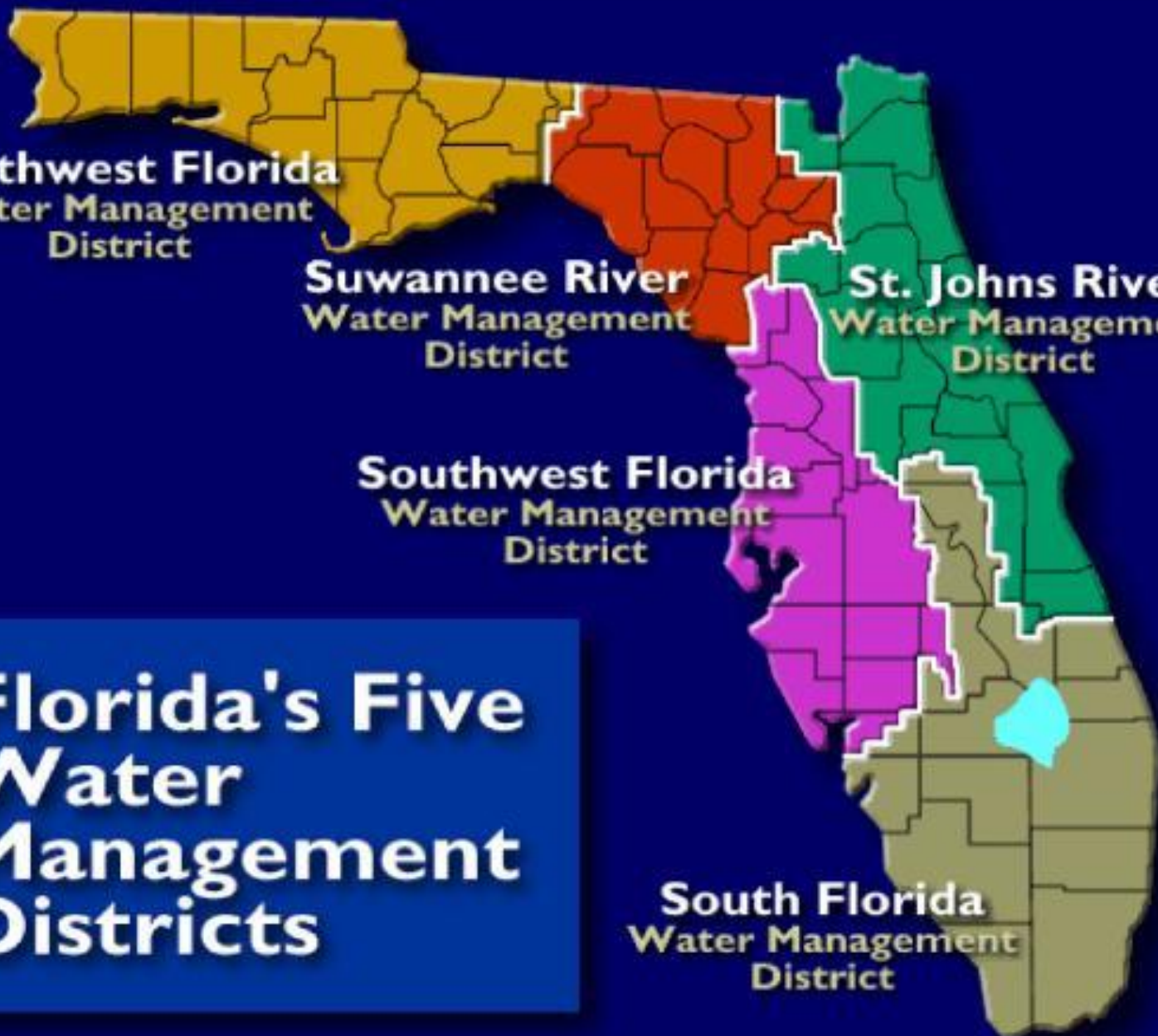
**Suwannee River  
Water Management  
District**

**St. Johns River  
Water Management  
District**

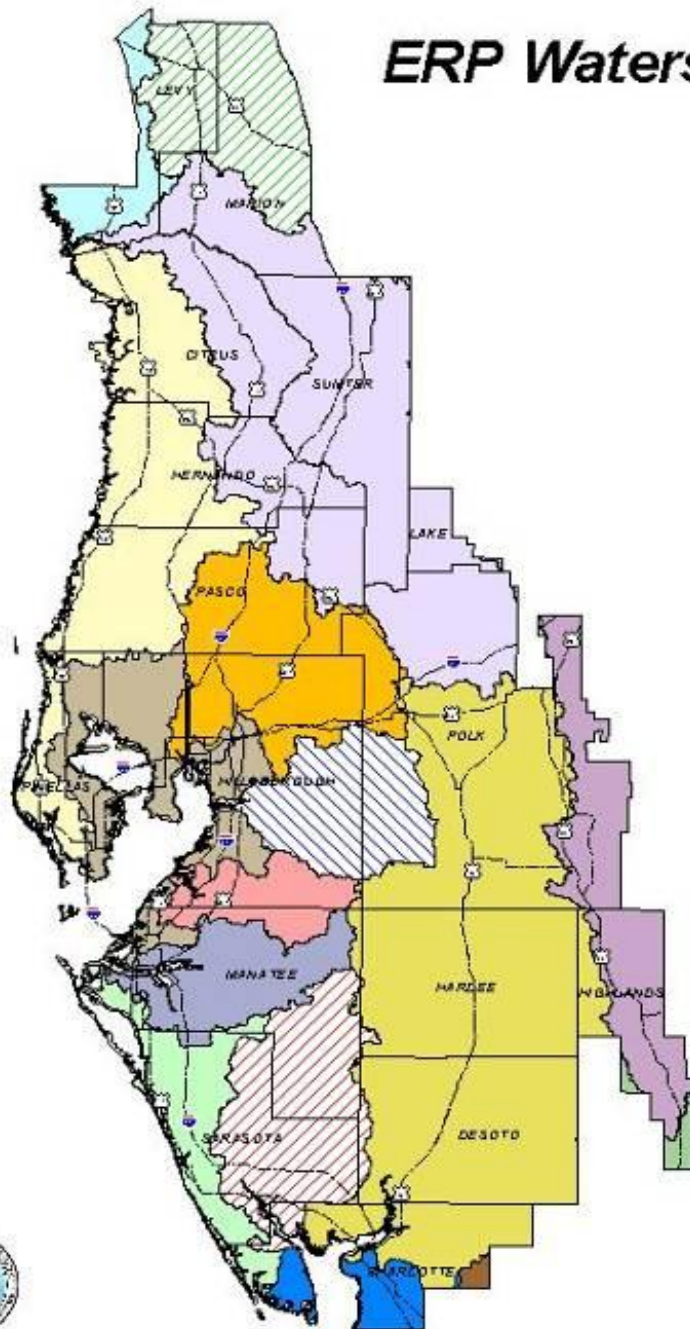
**Southwest Florida  
Water Management  
District**

**South Florida  
Water Management  
District**

**Florida's Five  
Water  
Management  
Districts**



# ERP Watersheds/Basins in the S.W.F.W.M.D.



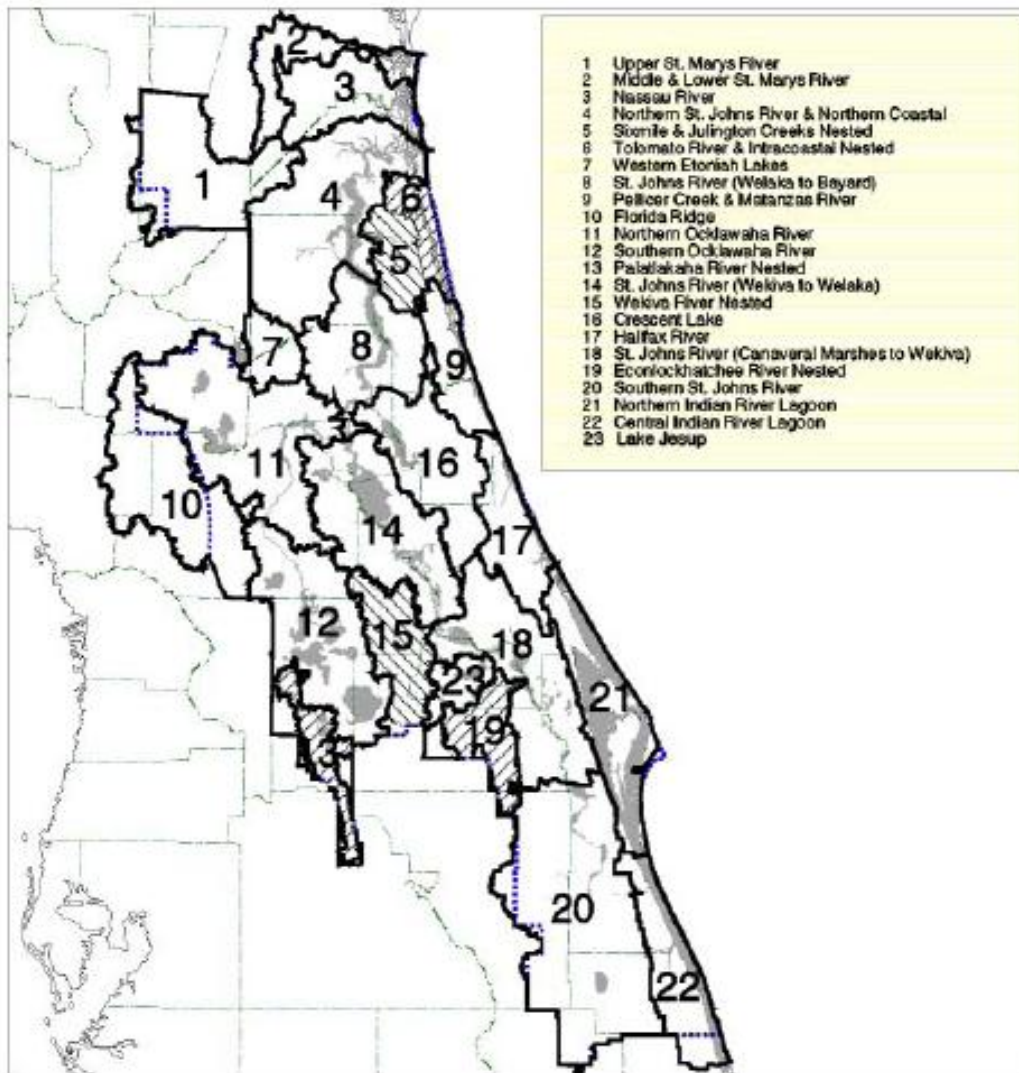
## Watersheds

- ALAFIA RIVER BASIN
- CALOOSA HATCHEE RIVER BASIN
- CHARLOTTE HARBOR DRAINAGE
- FISHEATING CREEK BASIN
- HILLSBOROUGH RIVER BASIN
- KISSIMMEE RIVER BASIN
- LITTLE MANATEE RIVER BASIN
- MANATEE RIVER BASIN
- MYAKKA RIVER BASIN
- OCKLAWAHA RIVER BASIN
- PEACE RIVER BASIN
- SARASOTA/LEMON BAY DRAINAGE
- TAMPA BAY AND COASTAL AREAS
- UPPER COASTAL AREAS
- WACCASASSA RIVER BASIN
- WITHLACOOCHIE RIVER BASIN

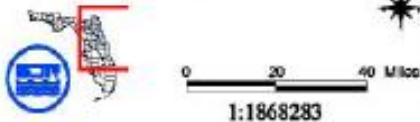


# St. John's River WMD

- Ecologically-based drainage basins
- Drainage divides as basin boundaries
- Nested basins for significant habitats



**Figure 12.2.8-1**  
Drainage Basins for  
Cumulative Impacts Evaluation



**NOTE FOR NESTED BASINS:**

The five "hatch-shaded" basins above are designated as nested basins which means that these areas are both individual basins and part of larger basins. The effect of this designation is that, for impacts that are outside of a nested area, but within the larger basin of which it is a part, mitigation in the nested area will be considered to be in the same drainage basin for cumulative impact review purposes. For impacts that are located within a nested area, mitigation that is located outside of the nested area but within the larger basin of which it is a part will be considered to be outside of the drainage basin for cumulative impact review purposes.

# Watershed Approach- **Federal** Mitigation Rules

§332.3/230.93 (c)(1)

*“The district engineer must use a watershed approach to establish compensatory mitigation requirements in DA permits to the extent appropriate and practicable.”*

*Where an applicable watershed plan is available, the watershed approach should be based on the existing plan.*

*Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources.”*

# Federal Mitigation Rule

- “Watershed” is mentioned 192 times
- §332.3/230.93 General Requirements
- Watershed approach
  - – Consistent with plan or principles
  - – Considerations and information needs
- • Absence of watershed plan/approach
  - – On-site/in-kind
  - – Off-site/out-of-kind
  - – “near”

# Watershed Approach- Federal Mitigation Rules

- §332.3©/230.93© General Requirements
  - (1) “Ultimate goal ... is to maintain and improve the quality & quantity of aquatic Resources within watersheds through strategic selection.”
  - (2) Consider landscape position & resource type for functioning & sustainability of aquatic Resources in watershed

# Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (2)(i) Consider:
  - Habitat requirements of “important species”
  - Habitat loss or conversion trends
  - Sources of watershed impairment
  - Current development trends
  - Requirements of other regulatory & non-reg. programs

# Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (2)(ii) Locational factors (hydrology, surrounding land use)
- (2)(iii) may want/need to inventory historic & existing aq. resources & PRIORITIZE aquatic resources that are important for maintaining & restoring watershed function.

# Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (3) Information needs- includes:
  - *Current trends habitat loss*
  - *Past cumulative impacts*
  - *Development trends*
  - *Presence & needs of sensitive species*
  - *Site conditions that bolster/hinder performance*
  - *Local goals & priorities*

# Florida's Watershed Approach

- Mitigation banking - §373.4135 & .4136, FS
- Regional offsite mitigation areas – §373.4135, FS
- DOT Mitigation - §373.4137, FS
- Wildlife Corridors under various planning processes
  - DRI's - §380.06, FS (*formerly*)
  - Sector Planning - § 163.3177(11)(b) & 163.3245, FS
  - Rural Land Stewardship - § 163.3177(11)(d), FS

# All watershed studies have to start somewhere

- What are the over-riding ecosystem services and watershed issues?
  - Loss of flood storage?
  - Habitat corridors?
  - Fishery reductions?
  - Pollinator losses?
  - Poor water quality?
  - Flashy runoff due to impervious surfaces
  - Channelized stream corridors
  - Lack of open space
  - Nutrients -> water quality degradation
  - Low biodiversity
  - Safe outdoor spaces
  - *Etc. ....*

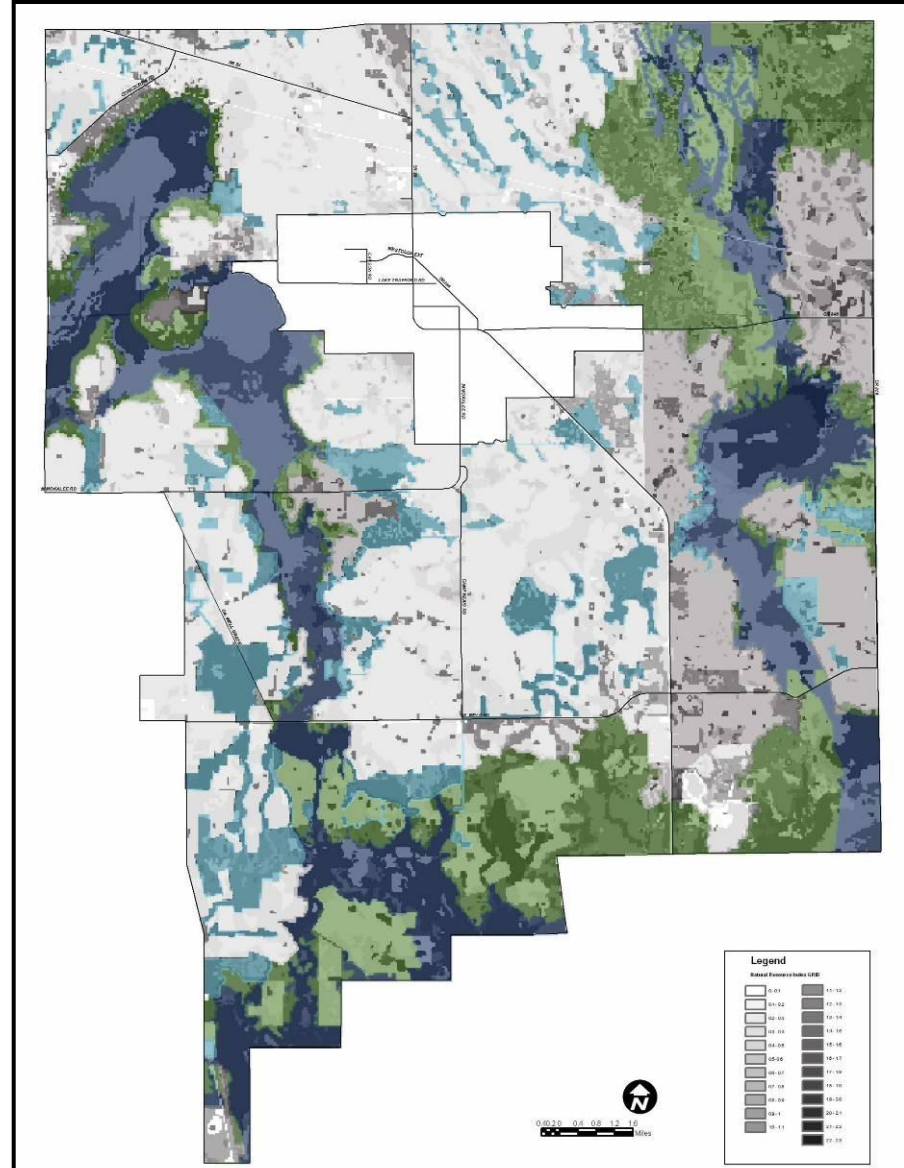
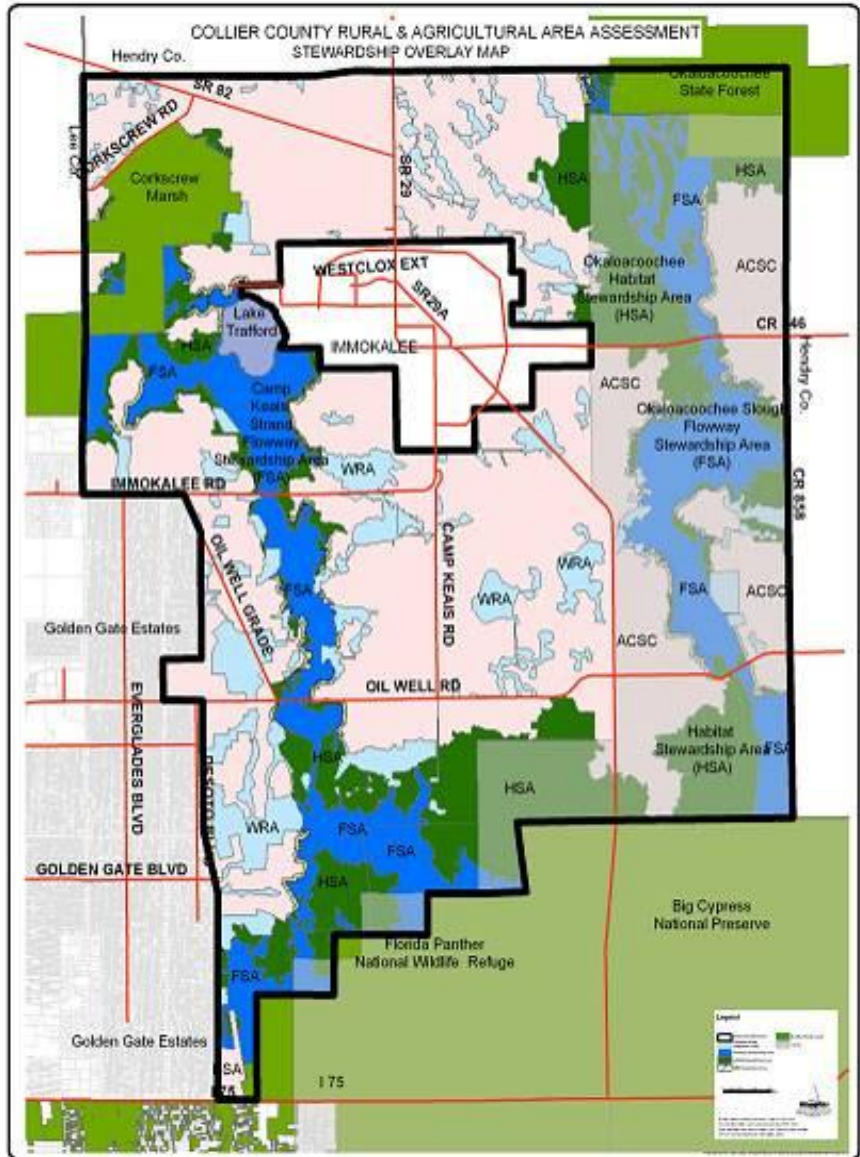
# Tampa Bay's Watershed Plan



- Example used by NRC, 2001
- The management plan for 2006 with specific strategies for addressing the five priority problems identified in Tampa Bay:
  - water and sediment quality;
  - bay habitats;
  - fish and wildlife;
  - dredging and dredged material management; and
  - spill prevention and response



# Collier County Rural Land Stewardship



Entire Study Area

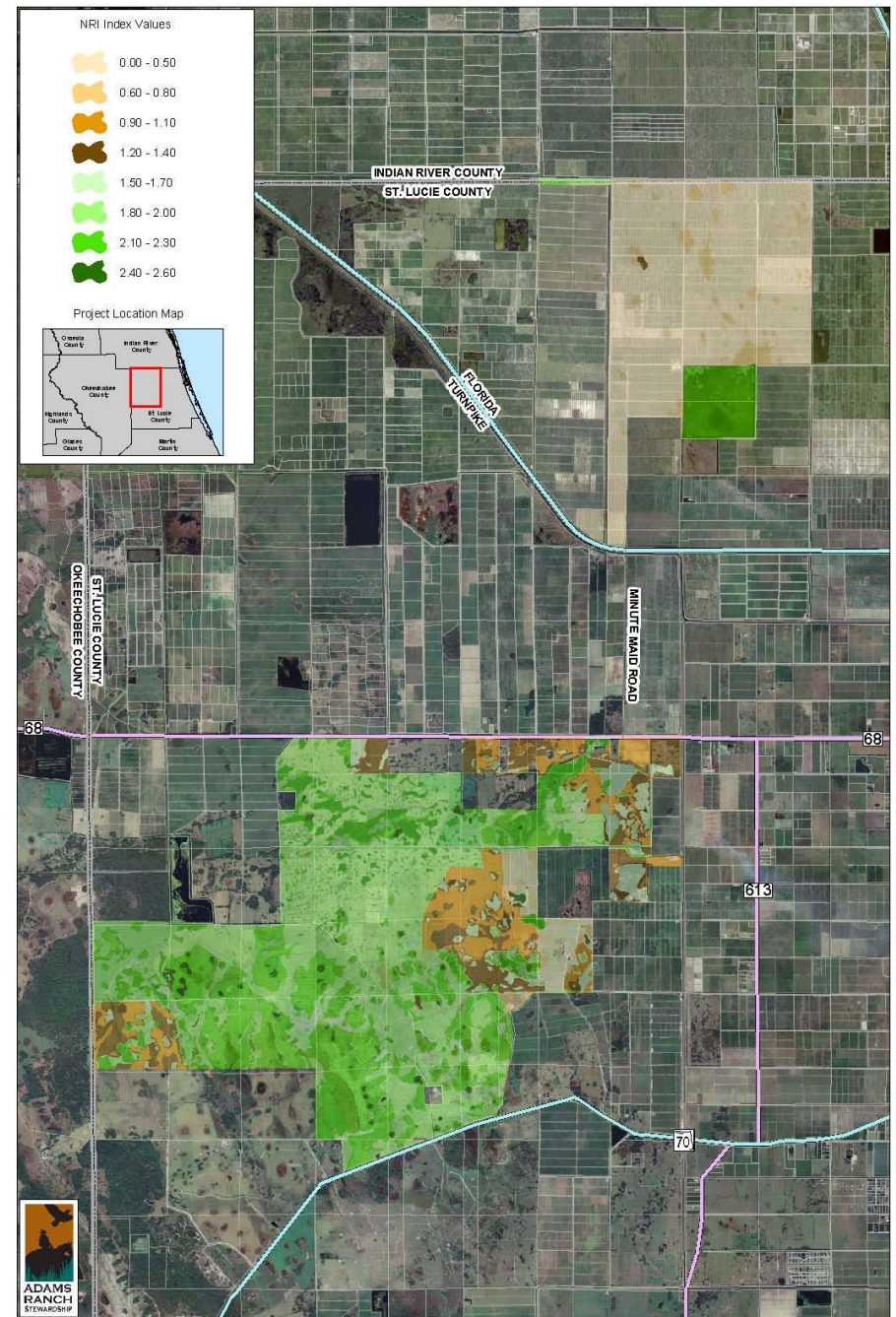
# St. Lucie County RLS Natural Resource Index

Based on:

- Habitat Values
- Water Quality & Quantity
- Soil Values
- Agriculture

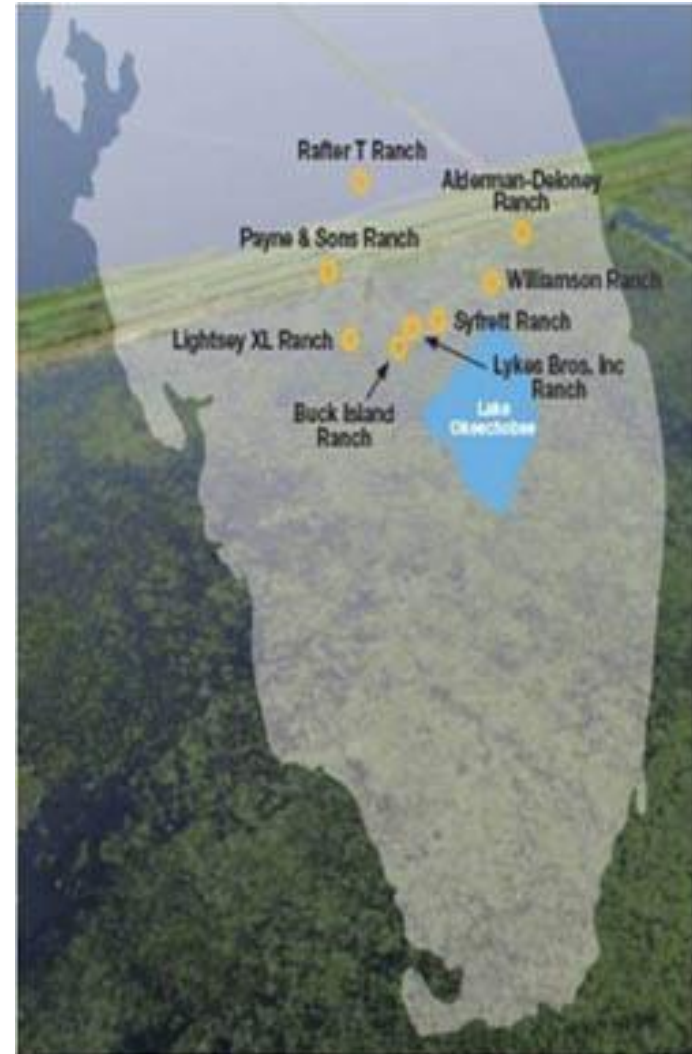
Secondarily encompassed:

- Air quality regulation
- Climate regulation
- Erosion regulation
- Water purification
- Pest regulation
- Pollination
- Natural hazard regulation
- Water regulation
- Disease regulation
- Carbon sequestration

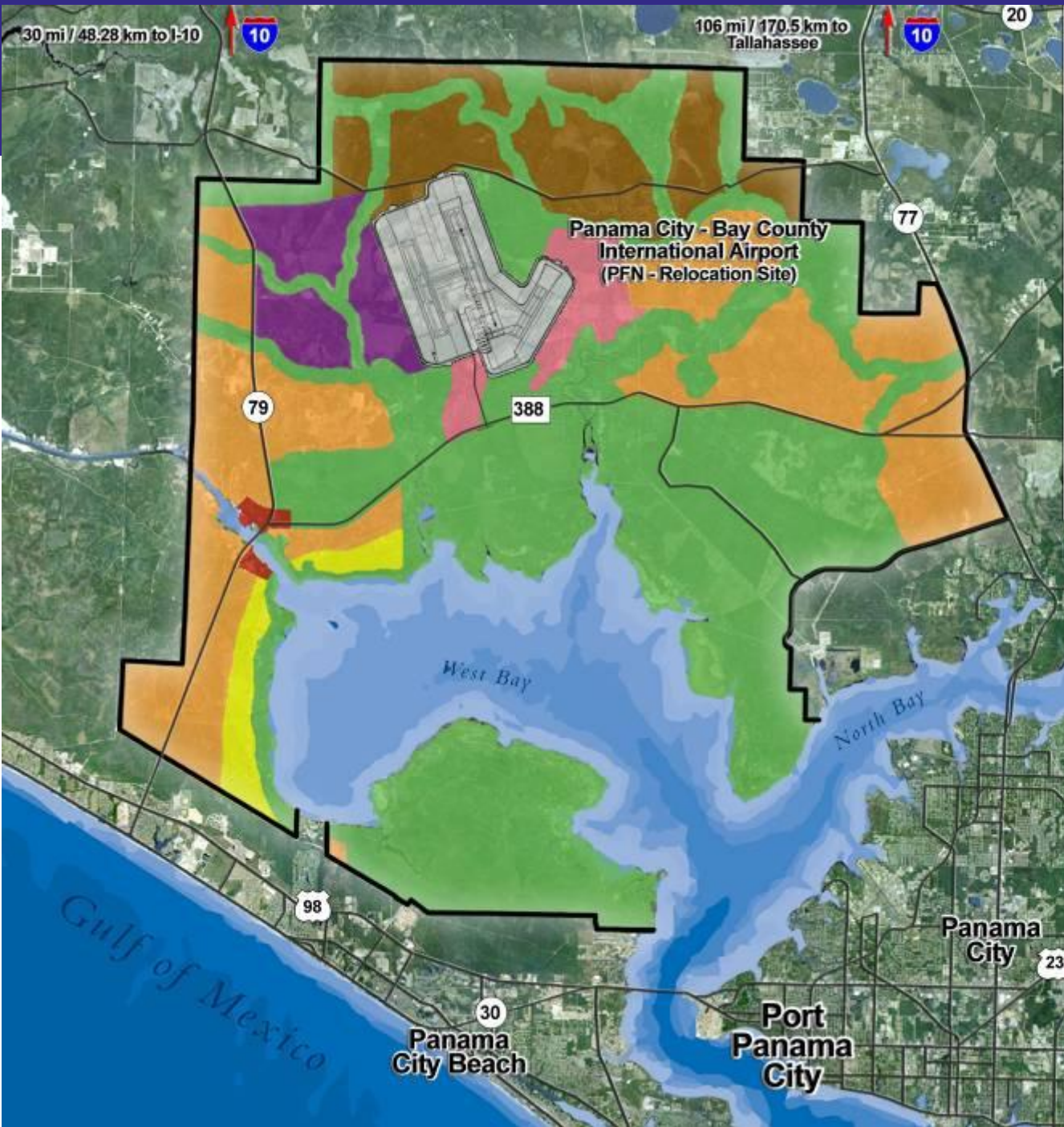


# Florida Ranchlands Environmental Services Project – “FRESP”

- Dispersed Water Management using ranchlands
- Reduce the volume and rate of flow to Lake Okeechobee
- Help keep the Lake within a preferred stage envelope in both wet and dry years
- Reduce damaging discharges to the estuaries
- Contribute to achievement of the Lake Okeechobee TMDL for total phosphorus & other WQ criteria
- Reduce nutrients entering the estuaries
- Provide for habitat enhancement for multiple species at a watershed scale
- Create a new revenue for ranchers



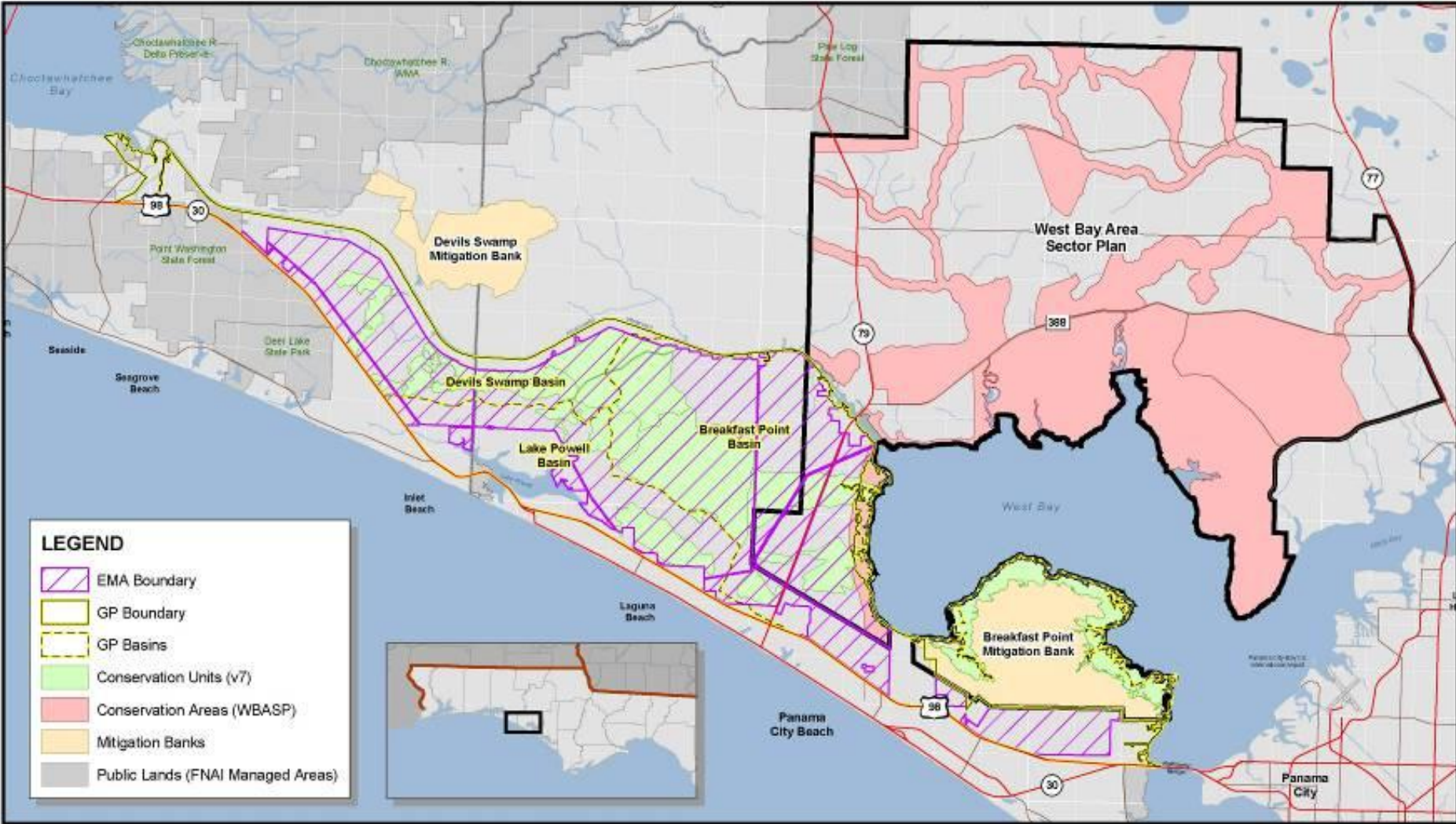
Graphic from <http://www.fresp.org/>



## WestBay Sector Plan

- Agricultural / Timberland
- Airport / Industrial
- Business Center
- Preservation Area
- Low-Impact Residential
- Regional Employment Center
- WestBay Center
- Village Center (Residential)

# St. Joe Ecosystem Management Agreement & Regional General Permit



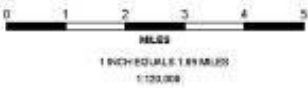
**LEGEND**

- EMA Boundary
- GP Boundary
- GP Basins
- Conservation Units (v7)
- Conservation Areas (WBASP)
- Mitigation Banks
- Public Lands (FNAI Managed Areas)

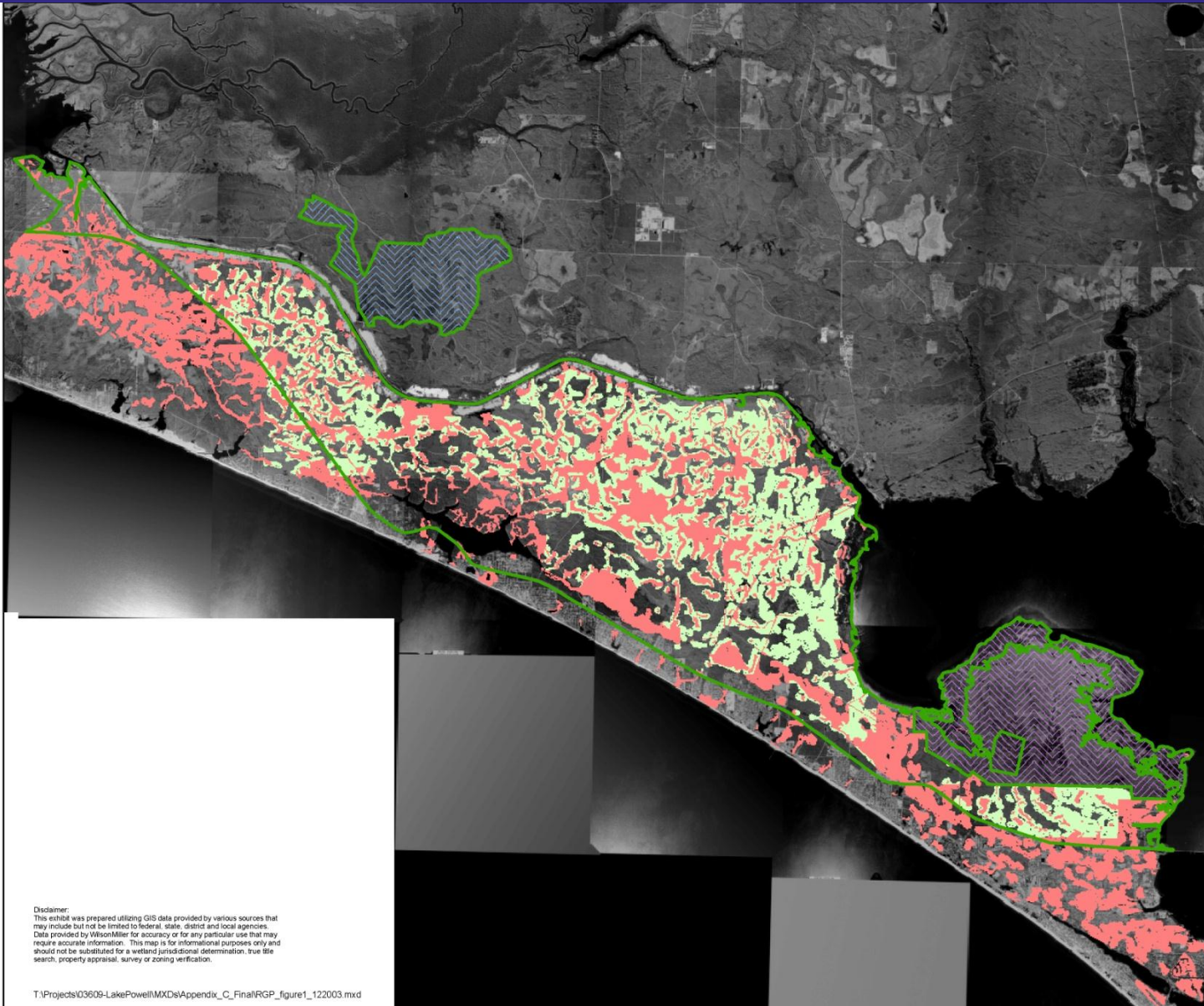


EXHIBIT 04

## MITIGATION STRATEGY



# GIS Modeling of Ecosystem/Watershed Condition

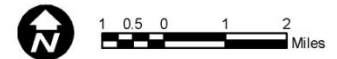


**Figure 1**

**High and Low Quality Wetlands  
within the  
West Bay to East Walton  
Study Area**

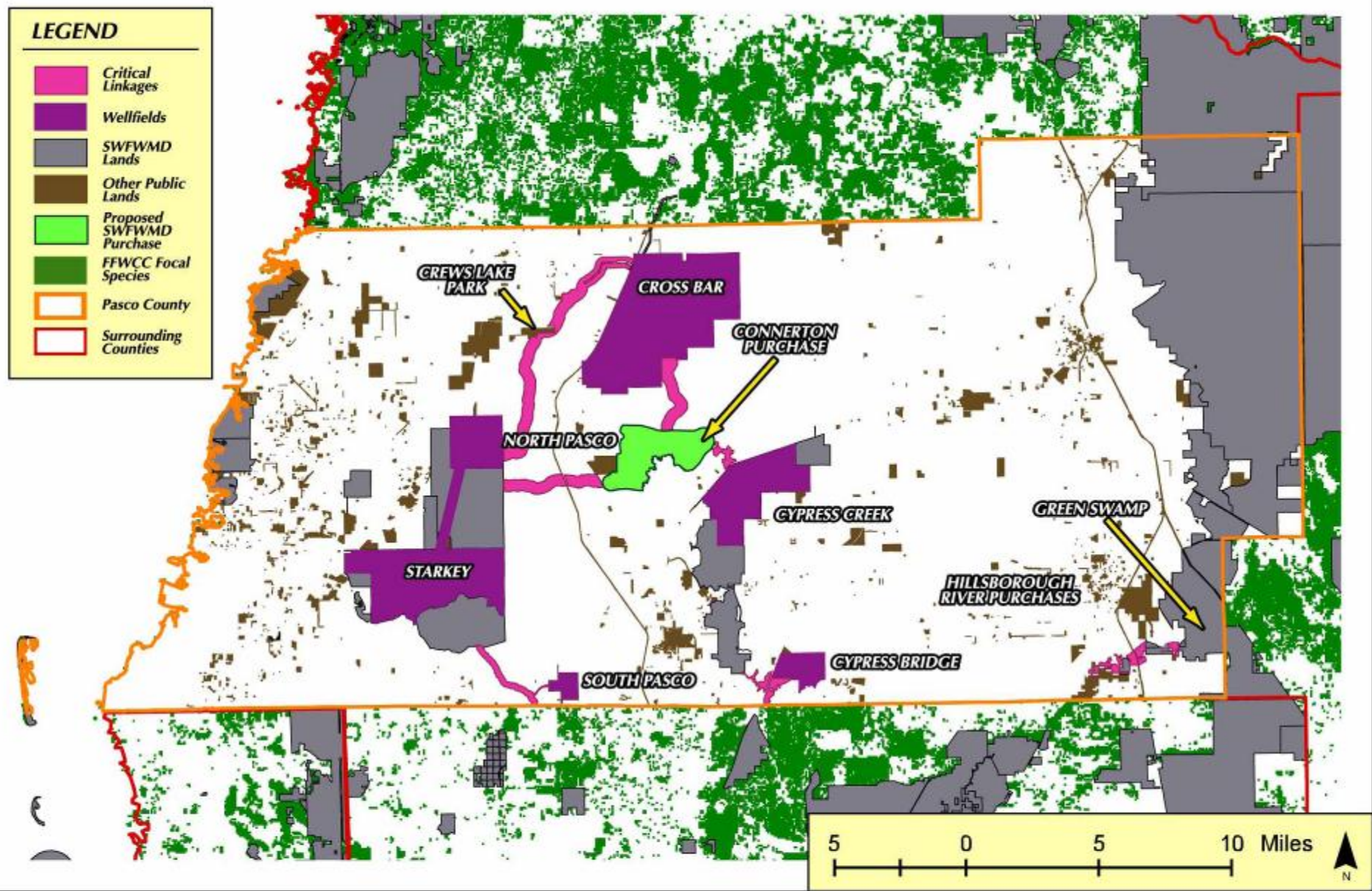
**Legend**

-  Devil's Swamp Mitigation Bank
-  Breakfast Point Mitigation Bank
-  Study Area
- Wetland Quality**
-  High Quality
-  Low Quality



Disclaimer:  
This exhibit was prepared utilizing GIS data provided by various sources that may include but not be limited to federal, state, district and local agencies. Data provided by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey or zoning verification.





Source: Glattig Jackson and Pasco County

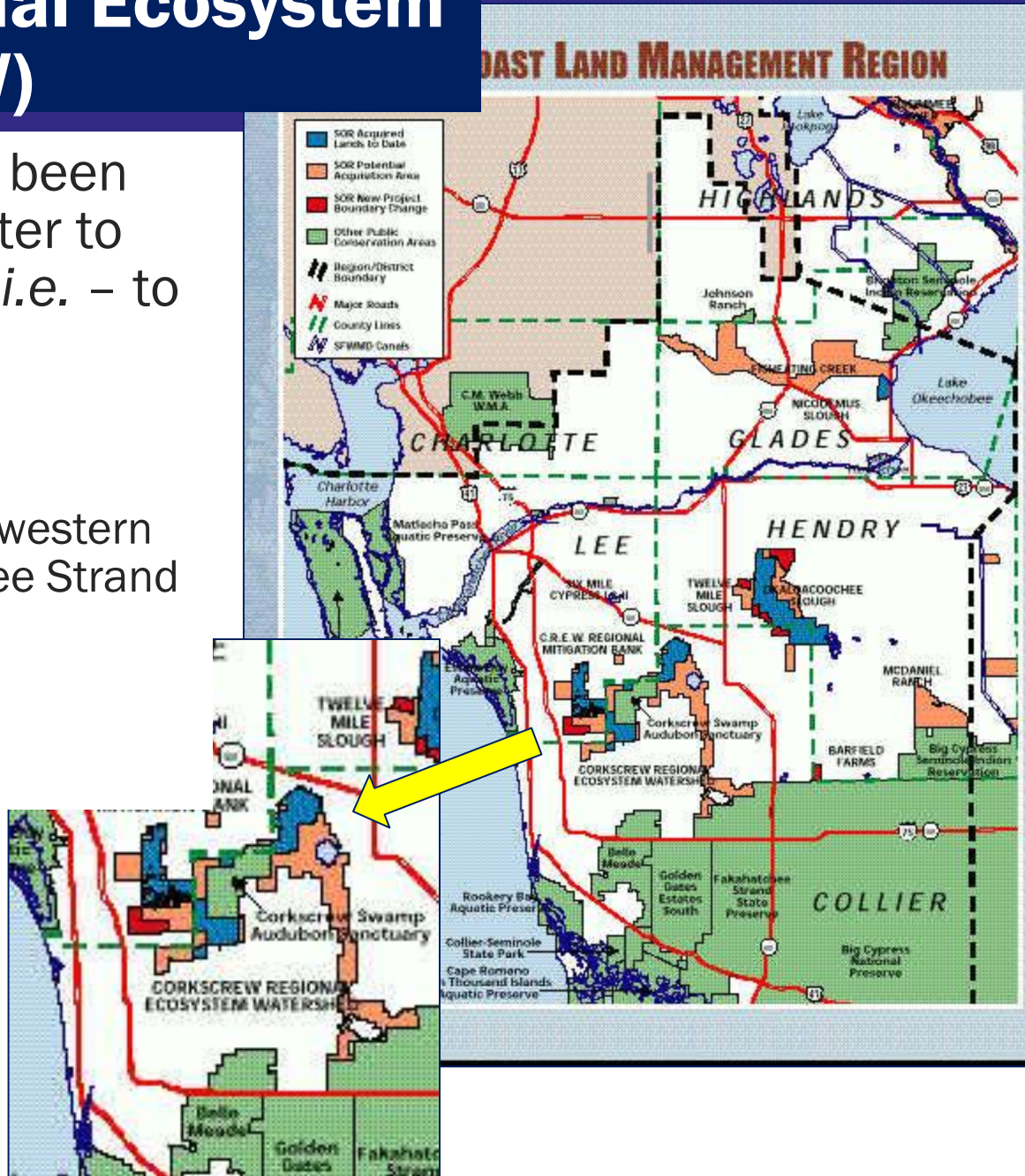


**Pasco County, Florida**

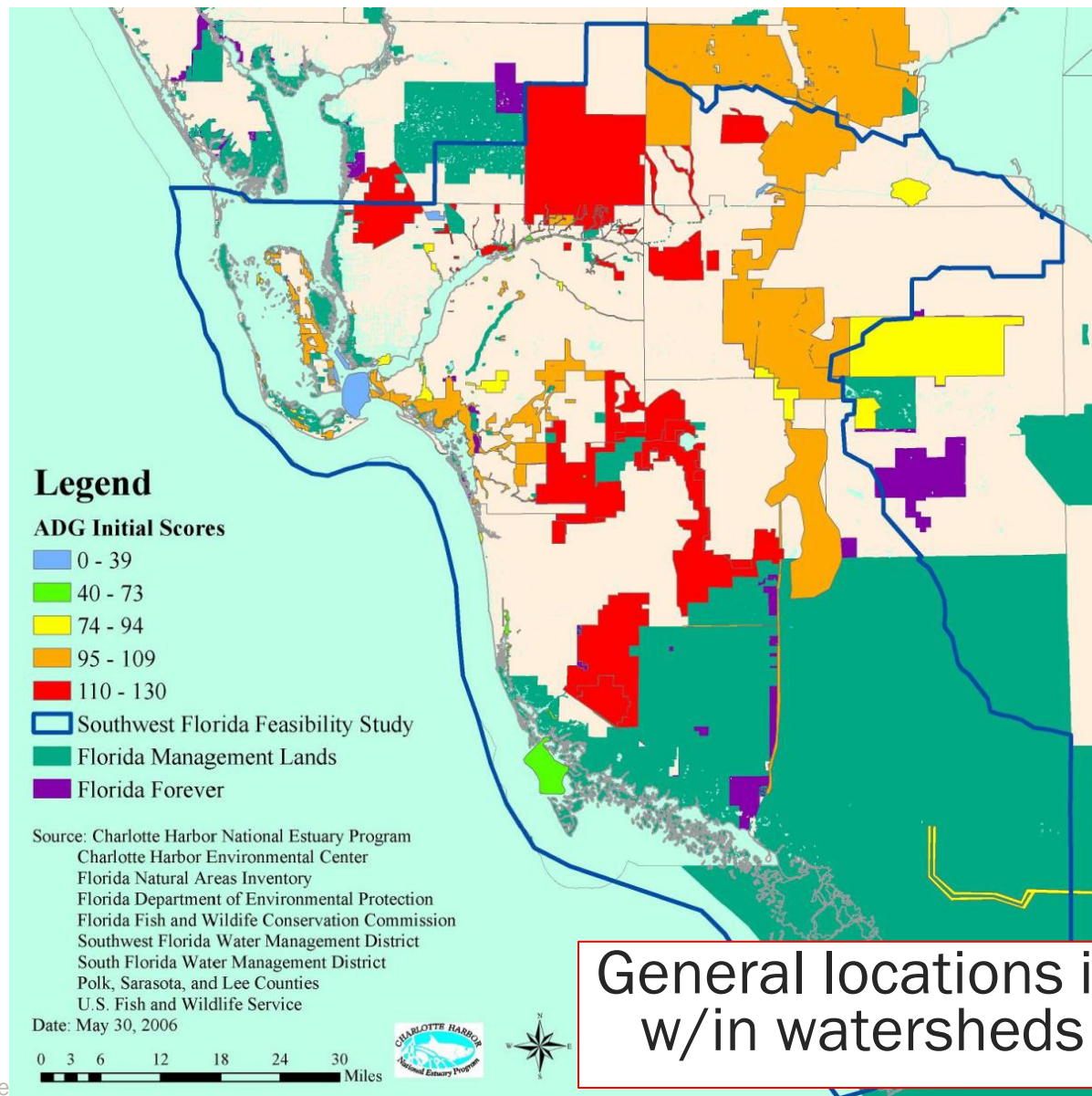
**Figure 7**  
**Critical Linkages (Corridors) of Wildlife Habitat**  
**Between Existing Public Lands**

# Corkscrew Regional Ecosystem Watershed (CREW)

- Watershed divides had been cut through to send water to the gulf MORE quickly (*i.e.* – to drain lands). Result:
  - Drained lands
  - Flashy runoff
  - Freshwater starvation in western Everglades & Fakahatchee Strand
  - Flooding to the west
  - Habitat corridor shifts
  - Altered freshwater flows to Florida Bay
- Long Term plan made to restore historic flow patterns & processes

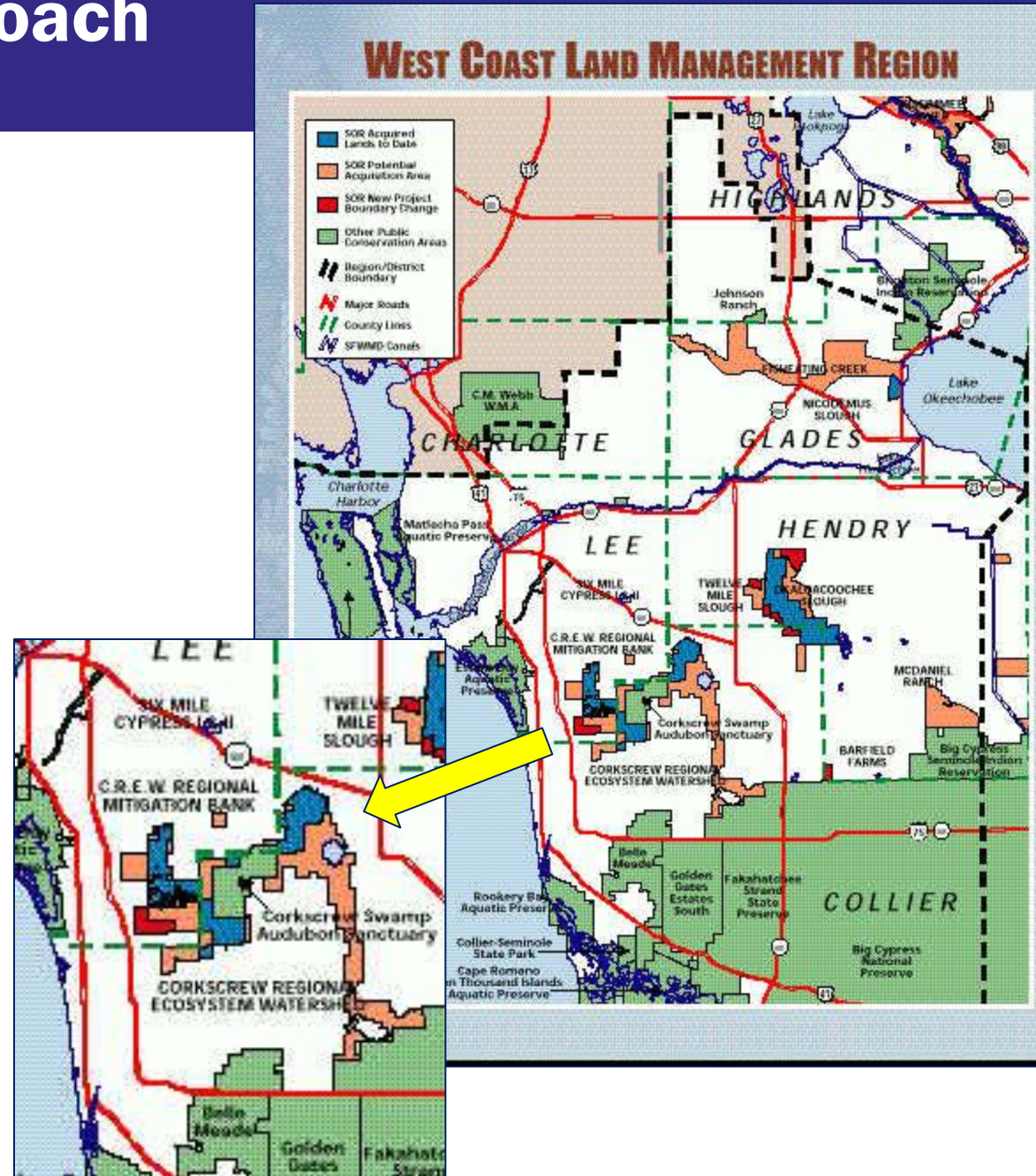


# CREW - Regional Restoration Group Scoring



# Watershed Approach @ CREW

- Audubon's Corkscrew Swamp Sanctuary
- South Florida Water Management District land acquisition
- State of Florida land acquisition
- Local land trust land acquisition
- Two wetland mitigation banks
  - 1 private
  - 1 public



# EPA-funded Watershed Approach Project for Section 404 projects

- 5-step process
  1. Identify watershed needs – *the most often overlooked aspect*
  2. Identify measurable outcomes
  3. Identify potential sites
  4. Assess the potential of sites to sustainably meet watershed needs
  5. Prioritize sites, areas, and desired outcomes
- ***Addressing Step 1 will lead to the most effective results***






Benson Creek, Arkansas

**WATERSHED APPROACH  
ADVISORY COMMITTEE  
CONFERENCE CALL #4**

April 24, 2012 12-1:30 ET

# EPA-funded Watershed Approach Project for Section 404 projects

- Watershed needs identified in existing plans, reports, or analyses, such as:
  - CWA 303(d)/305(b) reports and related TMDLs
  - CWA 319 watershed plans
  - USACE Watershed Assessments/Plans
  - CZMA Coastal Zone Management Plans/Measures
  - State Wildlife Action Plans/Comprehensive Wildlife Conservation Strategies
  - State and local flood management and flood hazard mitigation plans



Benson Creek, Arkansas

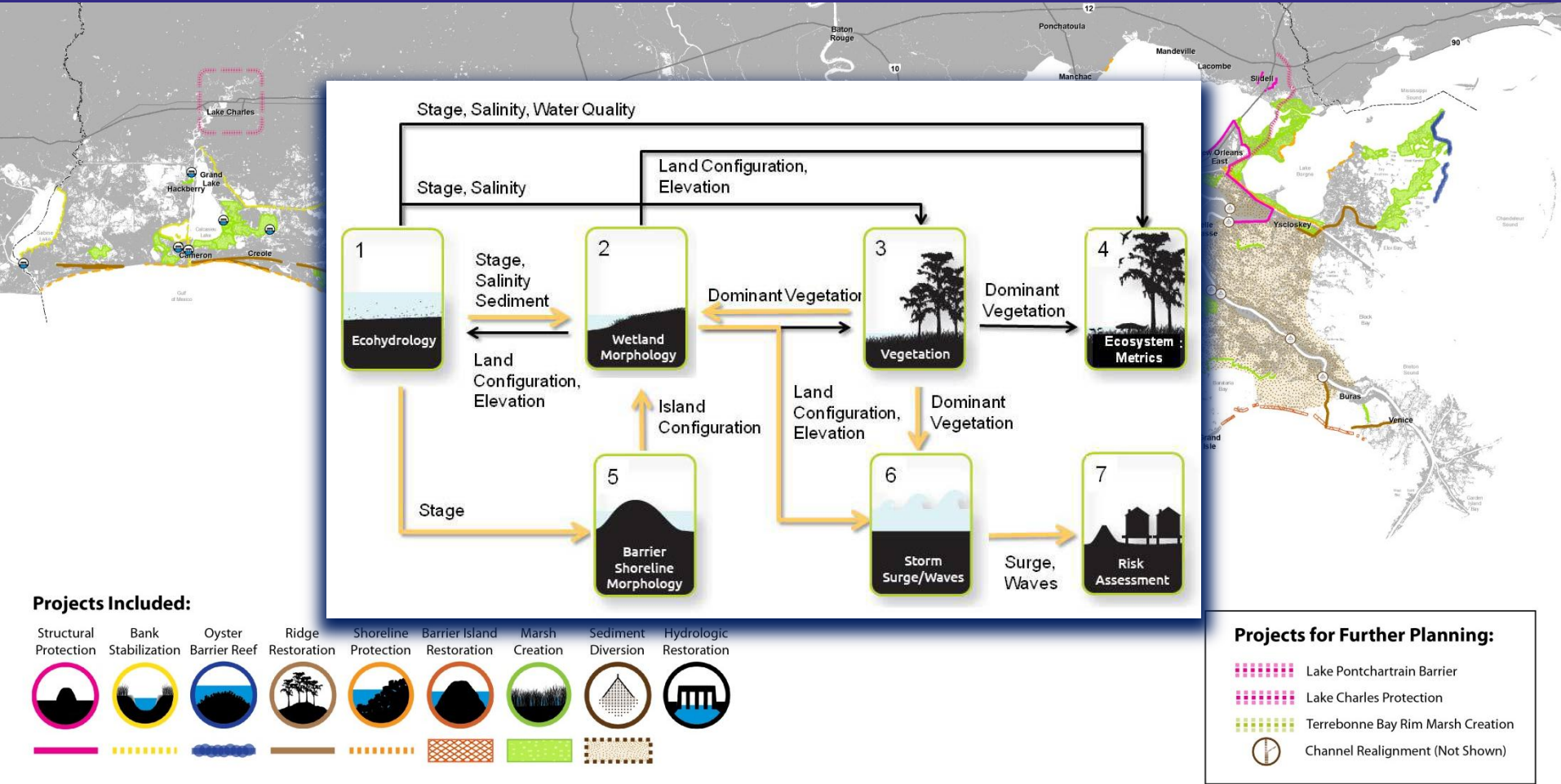
**WATERSHED APPROACH  
ADVISORY COMMITTEE  
CONFERENCE CALL #4**

April 24, 2012 12-1:30 ET

# Approaches around the US



# Louisiana Coastal Restoration and Protection Master Plan



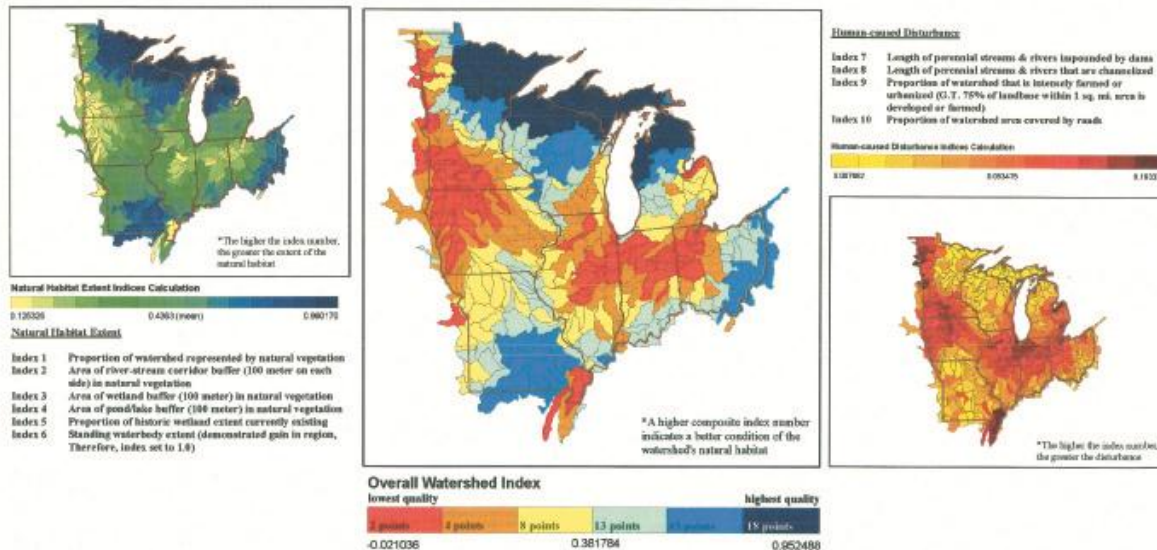
- Watershed-informed decision framework
- Goal to ensure a sustainable working coast, 3 major watersheds, Analytic models integrated across the coastal environment

# USFWS Watershed-based Assessment of "Natural Habitat Integrity"

Existing data (NWI, land use/land cover, and aerial imagery) used to produce a relatively inexpensive overview of the condition of a watershed.

- Very cost-effective and rapid method for describing the condition of a watershed.
- The approach includes metrics for assessing
  - condition of buffers around wetlands and waterbodies
  - extent of "natural habitat" in a watershed (vs. development)
  - historic wetland area relative to current acreage.

## An Evaluation of Watershed Health in Region 3



## Watershed Analysis: Non-Prescribed outcomes

# Watershed-Level WI Study by TNC & ELI

- Water quality objectives to be met via wetland restoration
- Map current functioning wetlands
- Use GIS to assess low functioning or non-functioning (former) wetlands

Watershed Analysis: Non-Prescribed outcomes

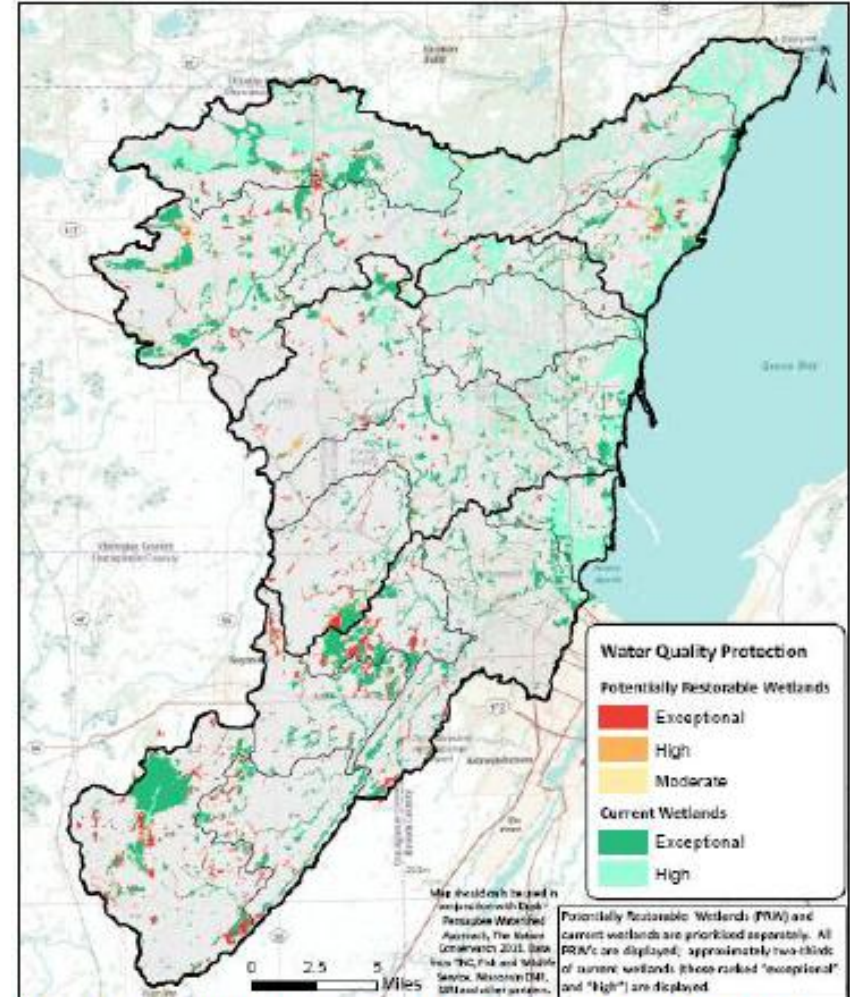


Figure 3: Water quality suitability analysis based on WET, TNC-ELI Duck-Pensaukee, WI watershed approach pilot

# Potentially restorable wetlands - WI

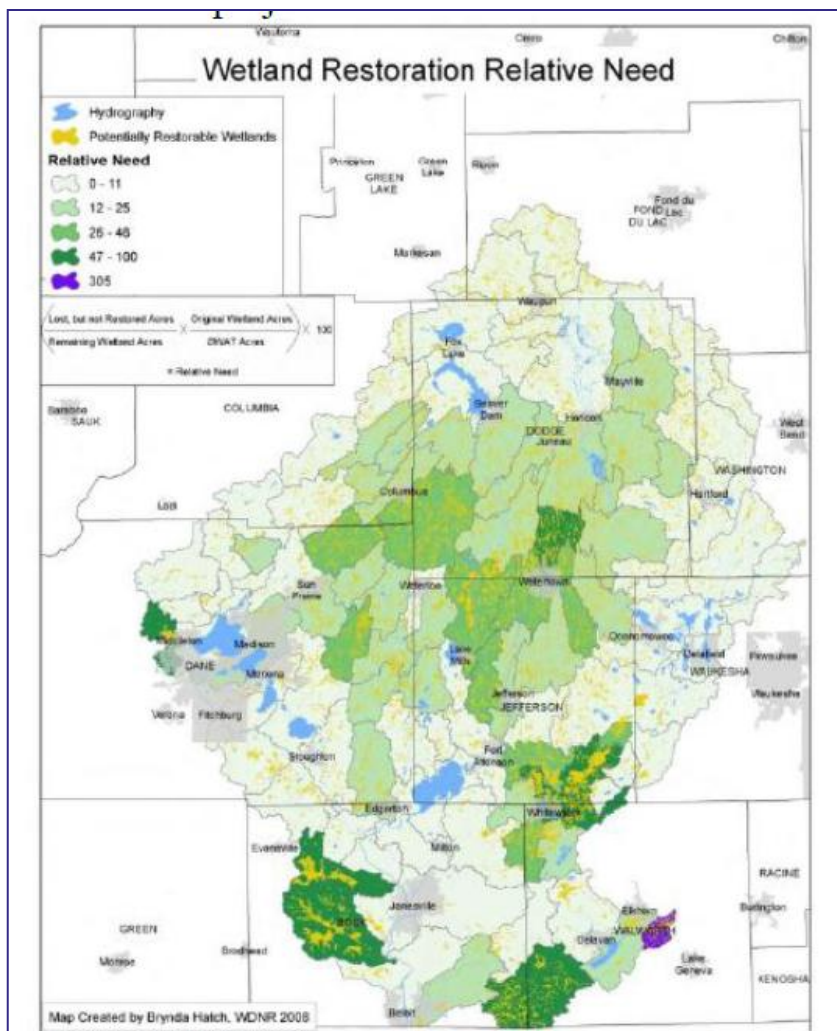


Figure 1: Wetland restoration relative need by subbasin in the Rock River watershed, WI

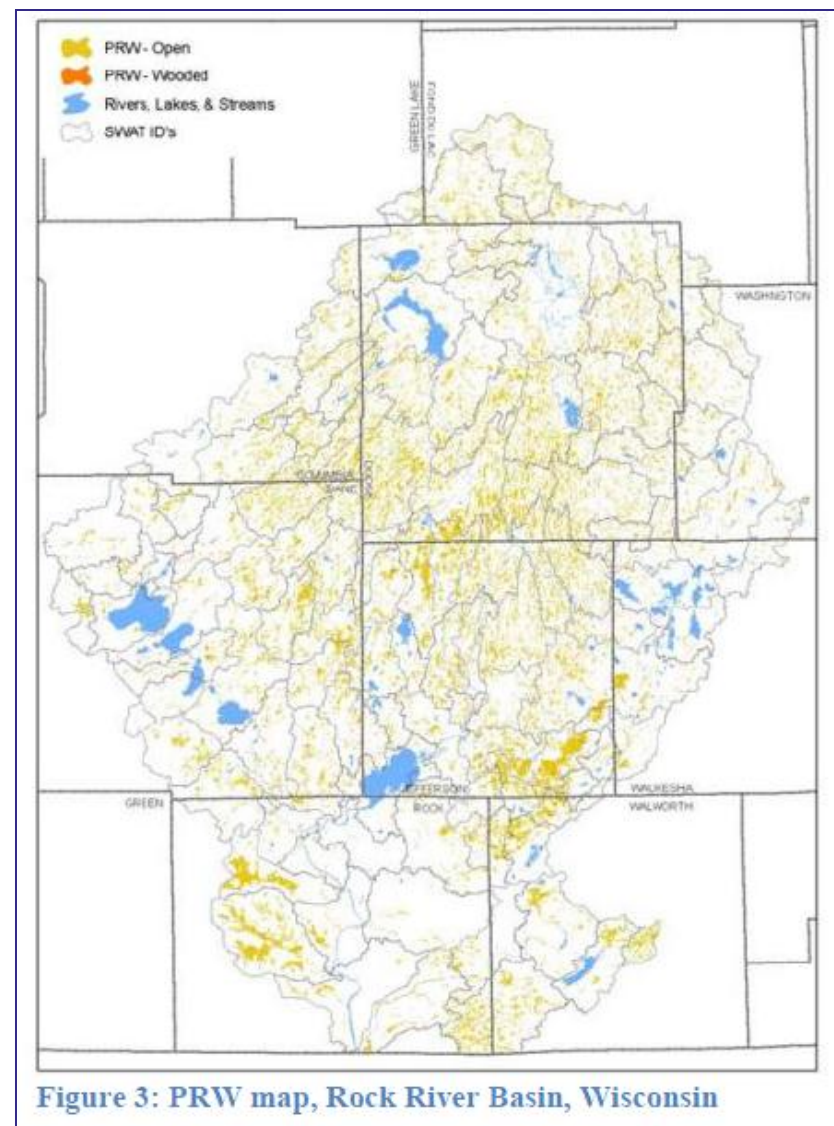


Figure 3: PRW map, Rock River Basin, Wisconsin

# Aquifer-based watershed

Can relate to recharge activities and surface restoration

Meets multiple goals

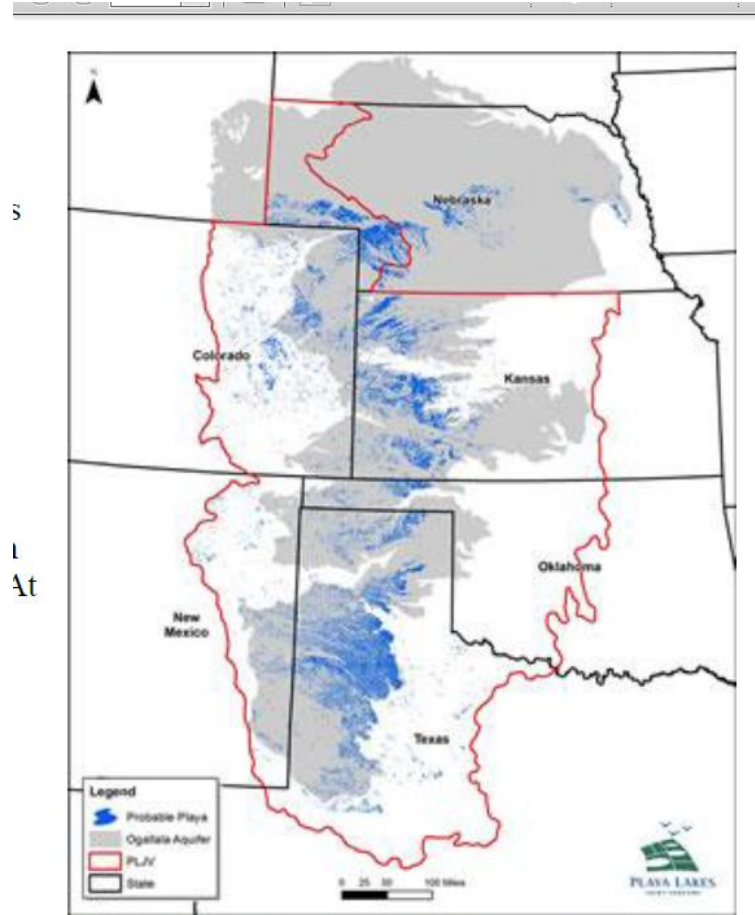
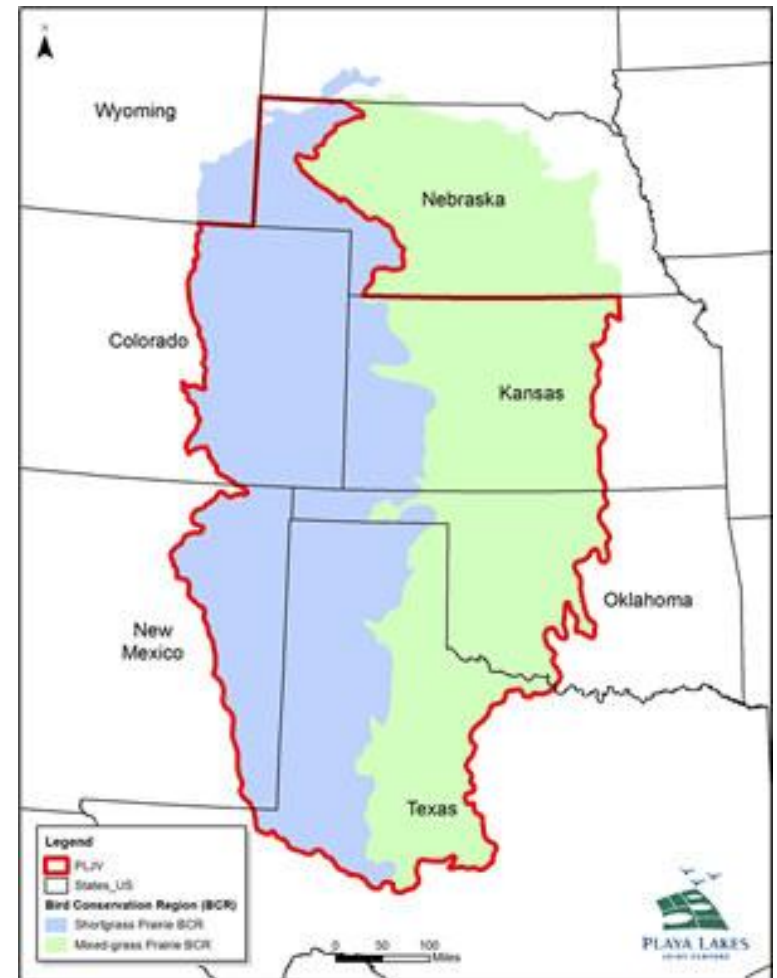


Figure 2: Probable playas in Ogallala Aquifer region, Playa Lakes Joint Venture

General locations identified

<http://www.pljv.org/>



# Maryland Water Resources Registry

The screenshot displays the Maryland Water Resources Registry website in a Windows Internet Explorer browser. The browser's address bar shows the URL <http://watershedresourcesregistry.com/Default.aspx>. A red box highlights the text "Sites identified w/in watersheds" in the upper right corner of the browser window.

The website header features the "Watershed Resources Registry" logo and navigation links for EPA, USACE, EWS, FHWA, SHA, MDE, DNR, and Help. The main content area is titled "Location Details Results" and includes a "Find Opportunities" panel on the left. This panel contains the following sections:

- Select a County:** A dropdown menu with "Prince George's" selected.
- Select a Watershed:** A dropdown menu with "All Watersheds" selected.
- Select Potential Opportunities:** A grid of radio buttons for various categories:
  - Upland Preservation
  - Upland Restoration
  - Wetland Preservation
  - Wetland Restoration
  - Riparian Preservation
  - Riparian Restoration
  - Stormwater Natural Infrastructure Preservation
  - Stormwater Compromised Infrastructure Restoration
- Select Score:** A radio button for a 1-star score is selected.
- Select Score Operator:** A dropdown menu with "=" selected.
- Where Acres is Greater Than (>):** A dropdown menu with "Any Area" selected.
- Where Acres is Less Than (<):** A dropdown menu with "Any Area" selected.

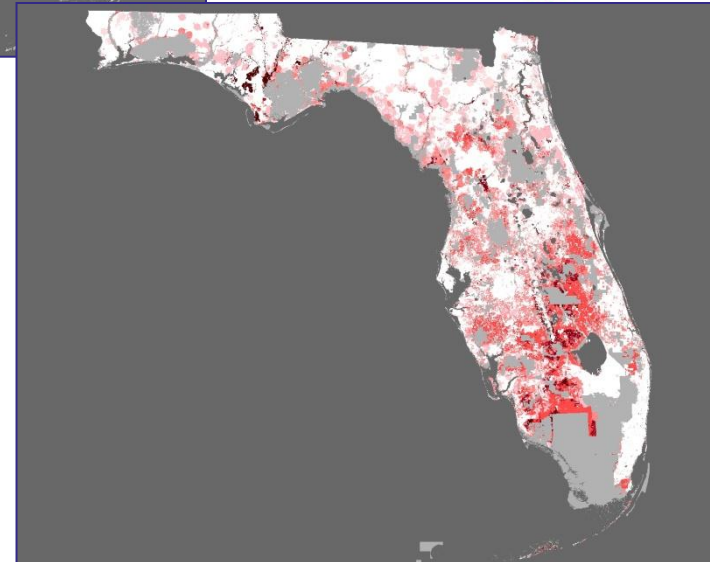
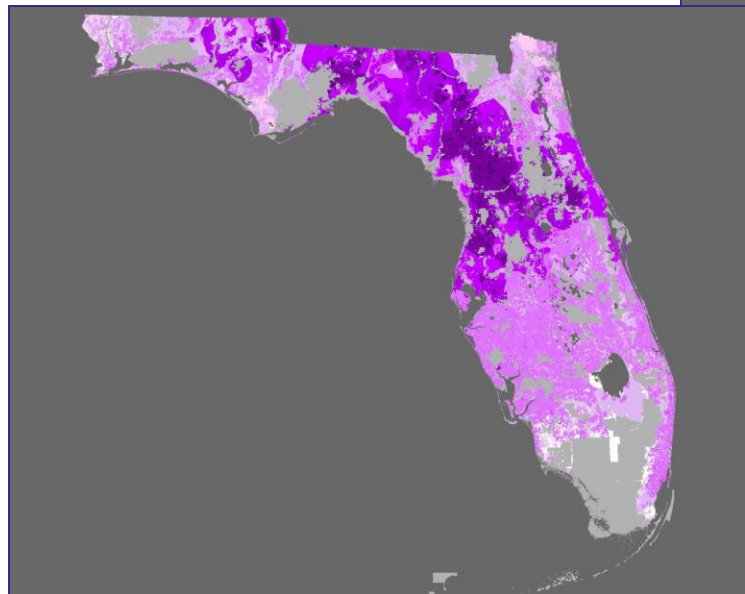
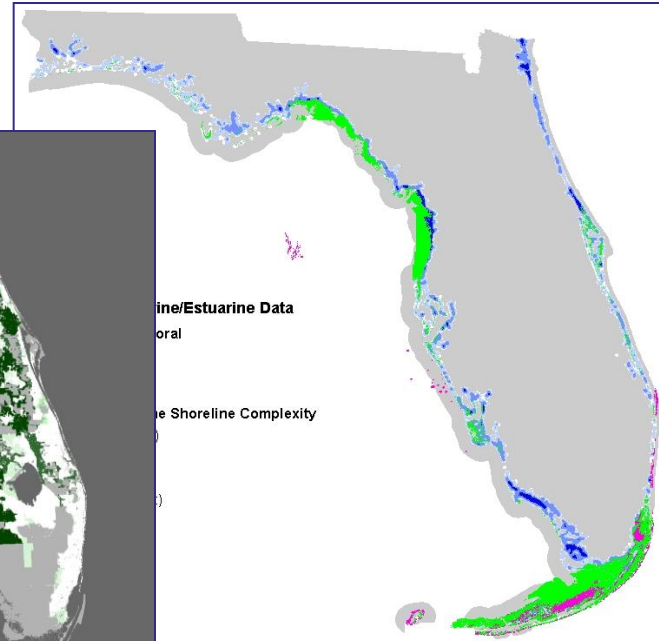
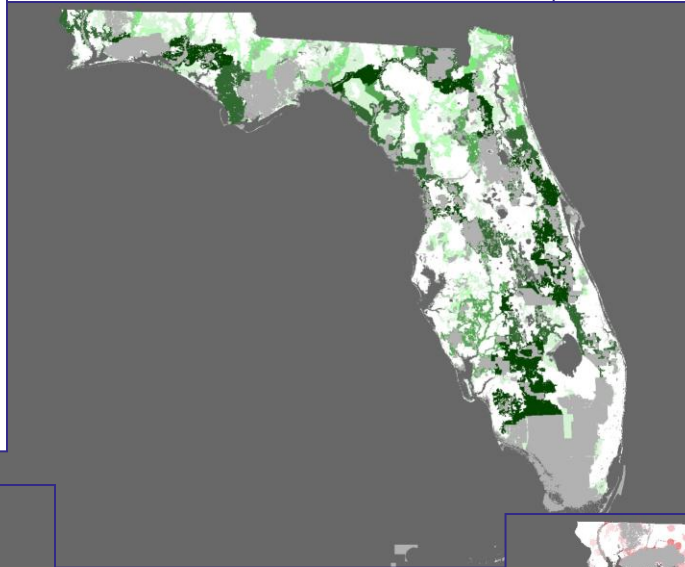
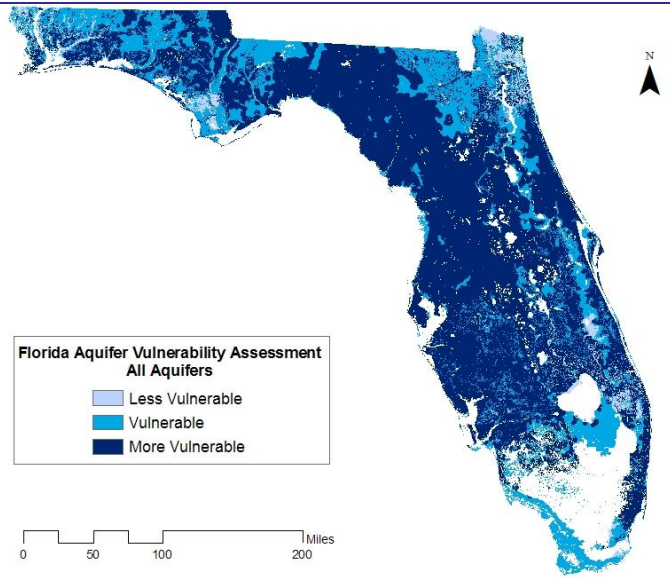
Below the filters is a "Find Opportunities" button and a list of results with checkboxes and acreage values:

- 1 - 31.3 acres
- 1 - 31.1 acres
- 1 - 31.0 acres

The main map area shows a map of Prince George's County, Virginia, with several sites highlighted in red and green. The map includes labels for "DC", "Virginia", and "Prince George's". A scale bar at the bottom left indicates 0 to 4 miles. The browser's taskbar at the bottom shows the Start button and several open applications, including Office Communicator, Microsoft PowerPoint, and the Watershed Resource... application. The system clock in the bottom right corner shows 7:41 PM.

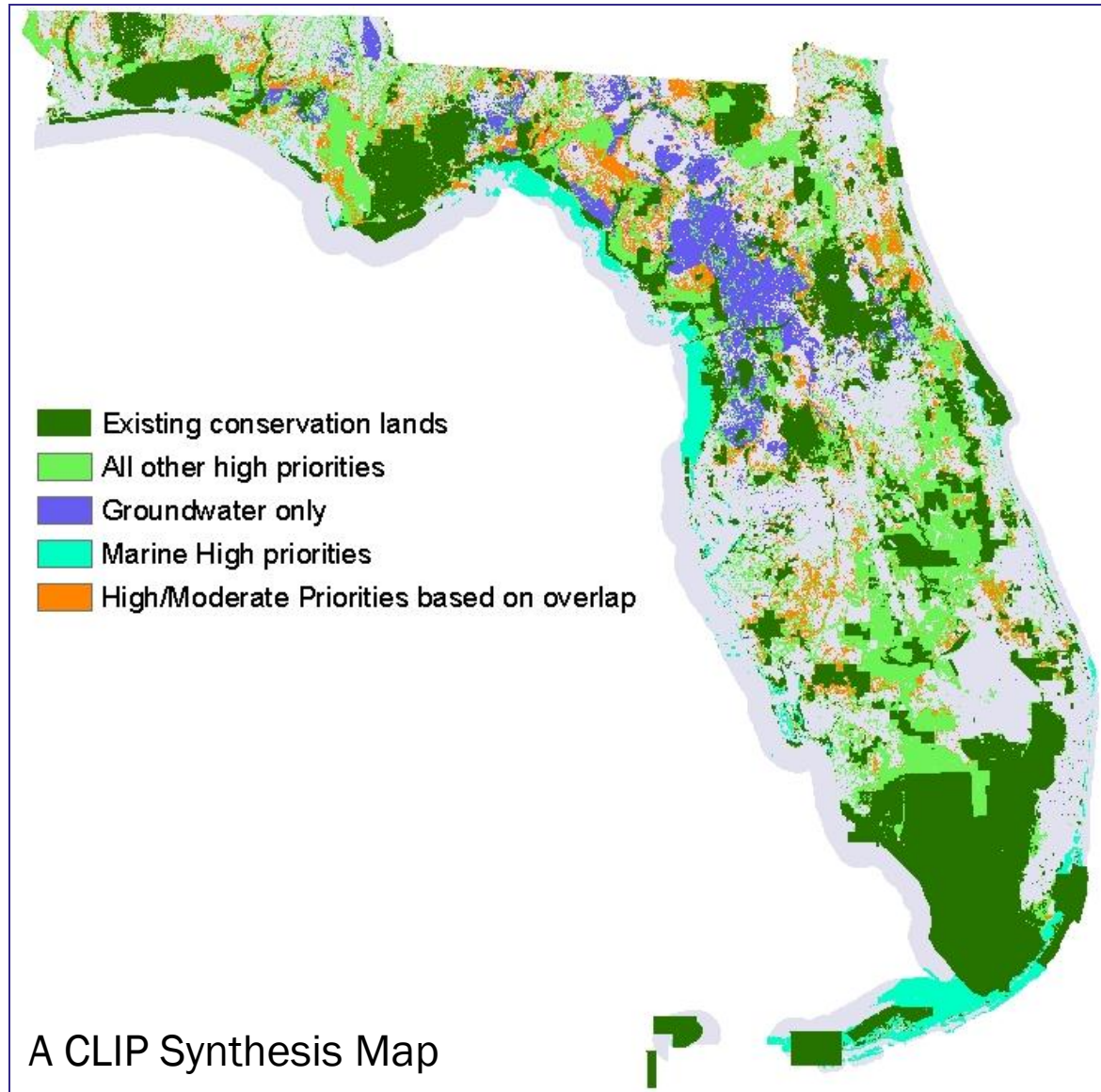
Watershed Analysis: Non-Prescribed outcomes

# Florida's Critical Lands and Waters Identification Project (CLIP)



# Watershed Approach

- Each area has its own priorities
- Federal and State both focus on watershed as the unit of interest
- Need collaborative watershed plan development
- Use the IRT (Interagency Review Team) model?
- Use techniques relevant to your situation
- Work Together



# Questions?

Graphics provided by:

- ✓ *The CLIP Project*
- ✓ *FRESP*
- ✓ *The St. Joe Company*
- ✓ *TNC*
- ✓ *WilsonMiller*
- ✓ *Family Lands Remembered*
- ✓ *The CLIP project*
- ✓ *Photos by Ann Redmond*

Wiregrass in bloom, Apalachicola National Forest – a sustainably managed forest, formerly bedded pine plantation

