

# C-43 Storage Reservoir – Part 1

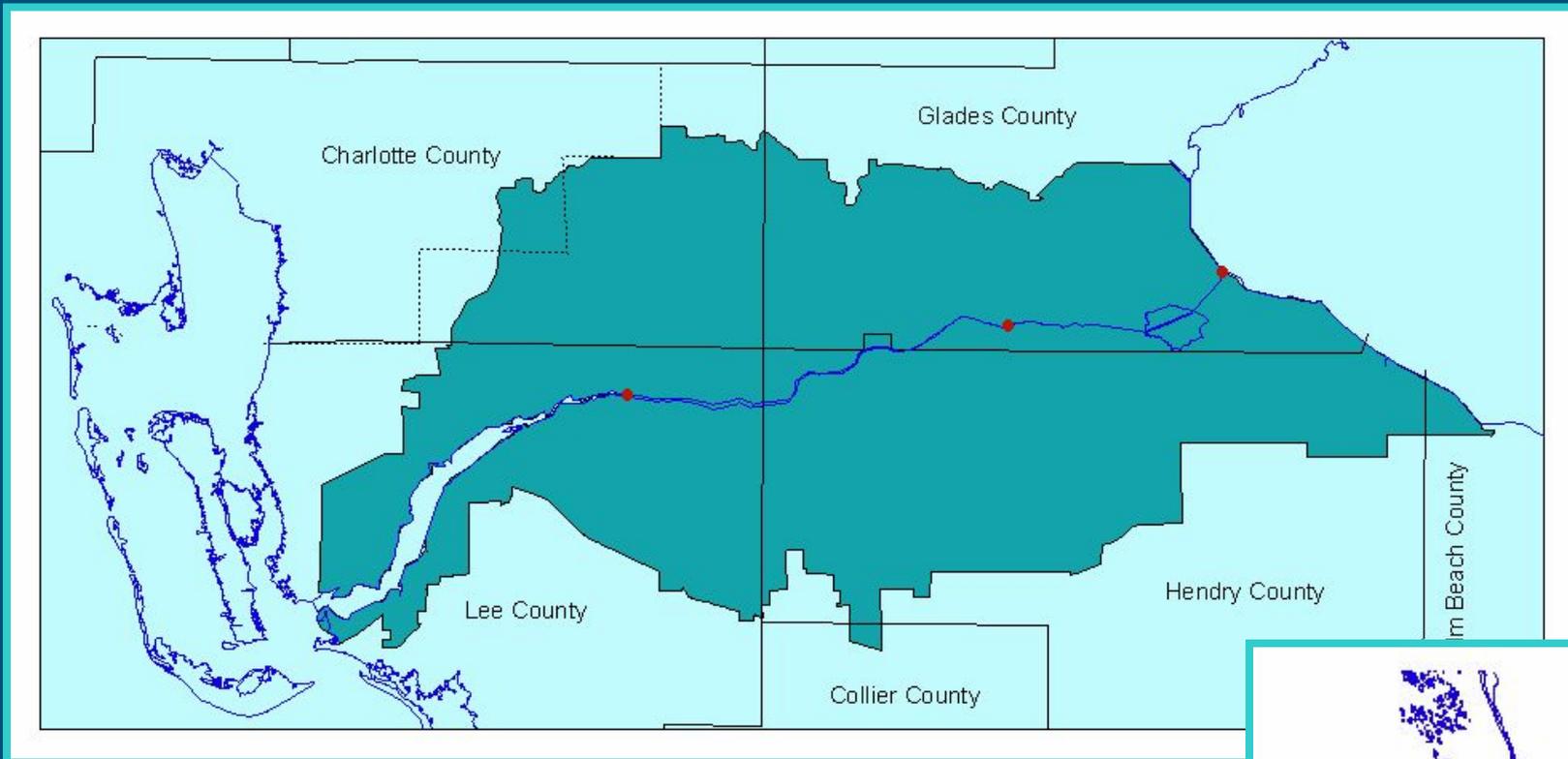


August 30, 2005

# C-43 Basin Storage Reservoir Part 1

- Project Purpose: To improve the the timing, quantity, and quality of freshwater flows to the Caloosahatchee River estuary
- Yellow Book Cost: \$201,200,000 (approximately \$132,600,000 attributed to real estate)
- Yellow Book Escalation Cost to 2005: 391.6 million dollars

# C-43 Basin Map



## Caloosahatchee Basin



# Objectives

- **Improve the quantity and timing of freshwater flows to the Caloosahatchee Estuary by capturing runoff from the Caloosahatchee Basin and Lake Okeechobee for release when needed and/or necessary**
- **Improve salinity balance in the Caloosahatchee Estuary for estuarine organisms.**
- **Improve water quality in the Caloosahatchee Estuary by reducing nutrient inflows from the freshwater Caloosahatchee Basin**
- **Improve the spatial extent and functional quality of habitat for estuarine biota**

# **Objectives** (continued)

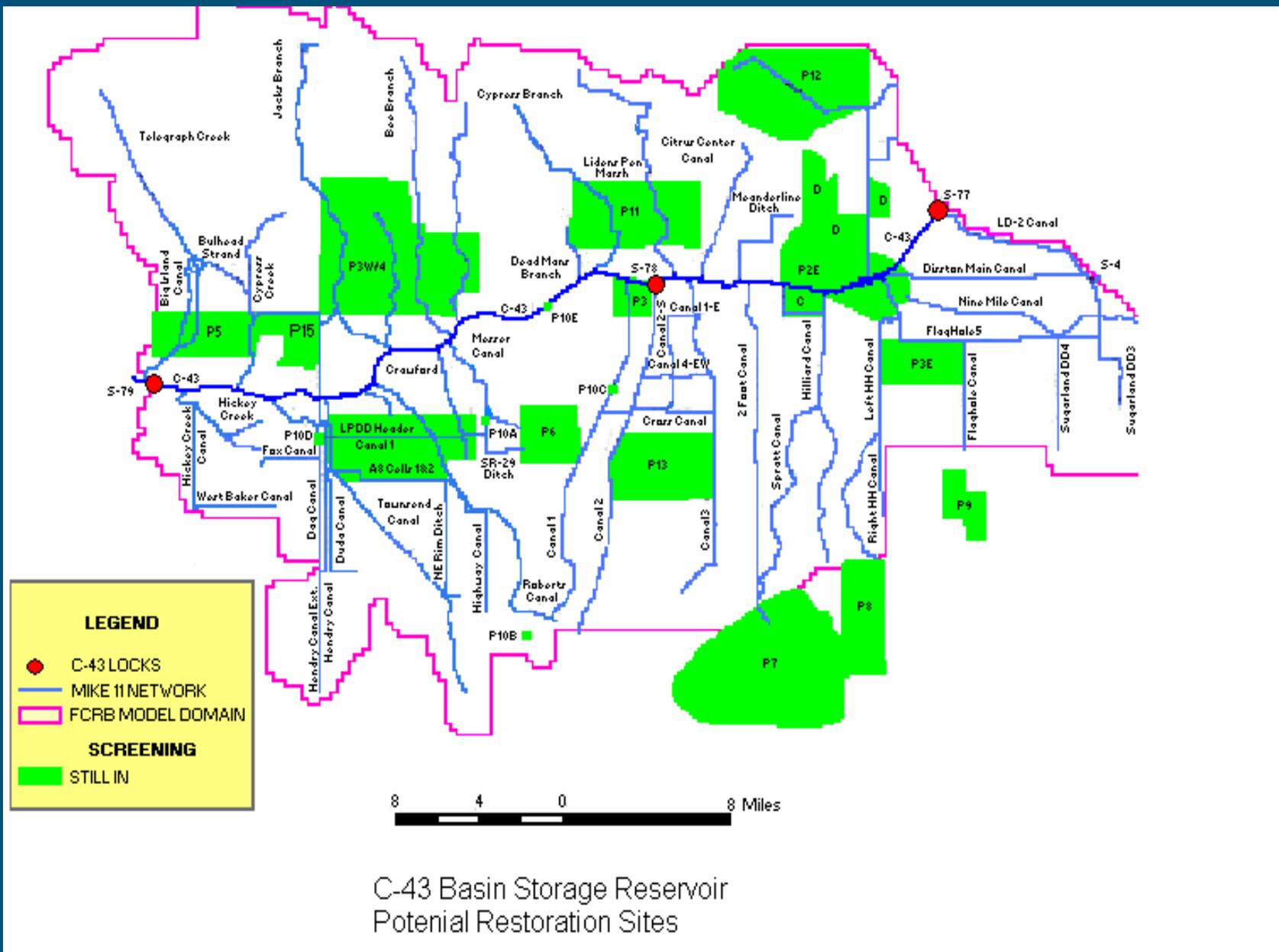
- **Increase plant and animal diversity and abundance, particularly increasing the spatial extent of SAV**
- **Conserve and protect water resources to ensure sustainability of economic and natural resources**
- **Provide adequate availability of ground and surface water for environmental resources while protecting existing legal sources of water for agricultural and urban uses**
- **Provide recreational, tourism, and environmental education opportunities**

# **C-43 Basin Storage Reservoir - Part 1 in Restudy**

- **CERP identified a conceptual C-43 Basin Storage Reservoir project that would provide 160,00 acre feet of above ground storage for environmental restoration of the Caloosahatchee River and estuary**
- **Updated information now shows that 160,000 acre feet of storage proposed in the Restudy may not be adequate due to greater agricultural demands, increased estuarine demands, and less basin runoff than initially predicted**
- **This potential shortfall will be examined during the development of the Project Implementation Report**

# Plan Formulation

- Initial screening identified 20 land parcels as potential sites for future project components.
- ***Site Screening:***
  - Rated parcels of land against a variety of criteria for suitability of placement of mgt measures
  - Potential sites scored for 2 sets of objectives:
    - 1) meeting storage requirements
    - 2) restoration potential
  - Criteria divided into 2 categories:
    - 1) Gate Criteria
    - 2) General Criteria

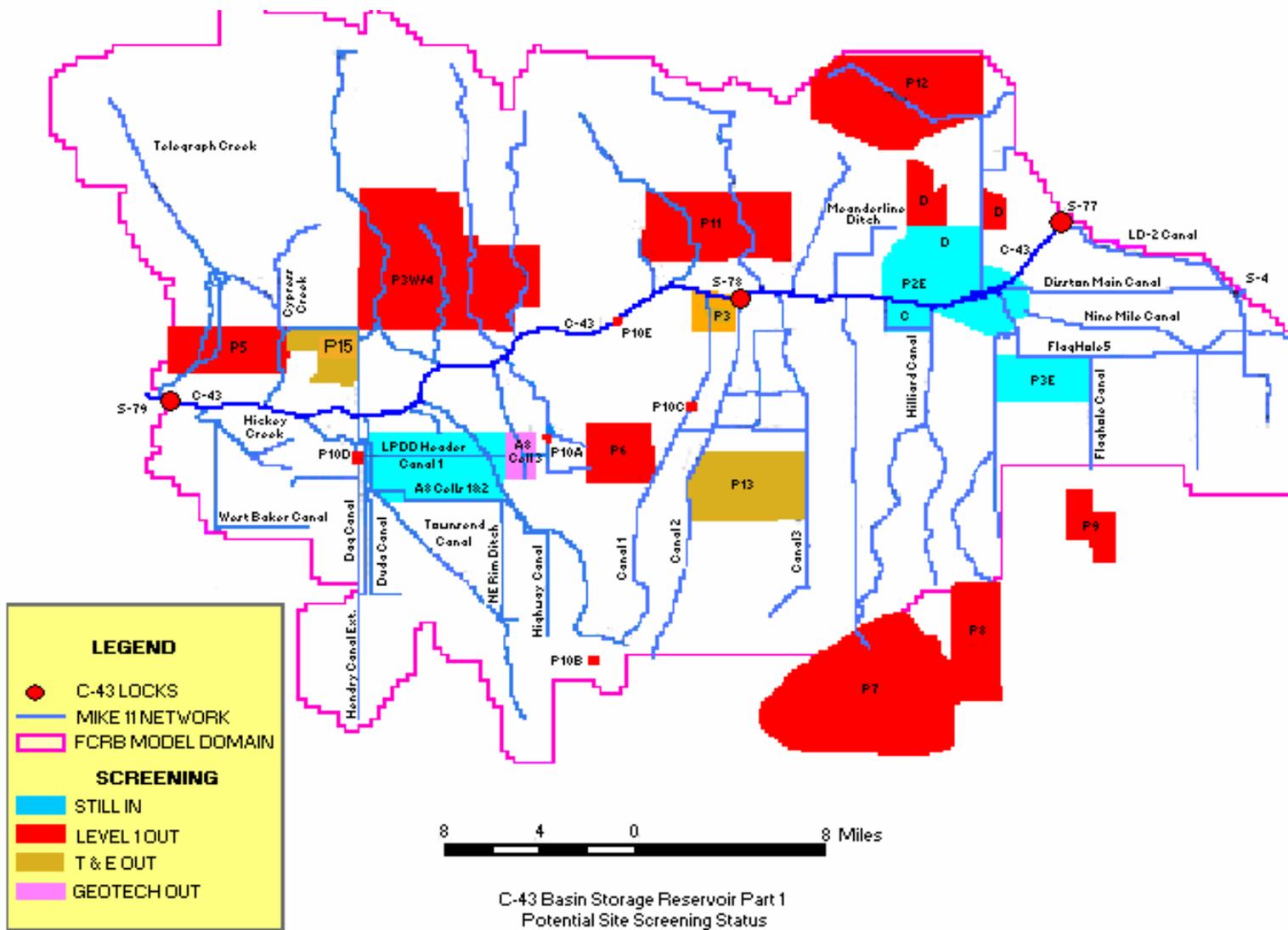


# Site Screening

- Level 1 screening based upon general & gate criteria
  - Criteria resulting in site elimination included:
    - T&E species
    - Significant wetlands
    - Cultural resources
    - Basin location in respect to Caloosahatchee River
    - Effects to natural tributaries
    - Incompatible w/ enterprise zone
    - Potential seepage/flooding

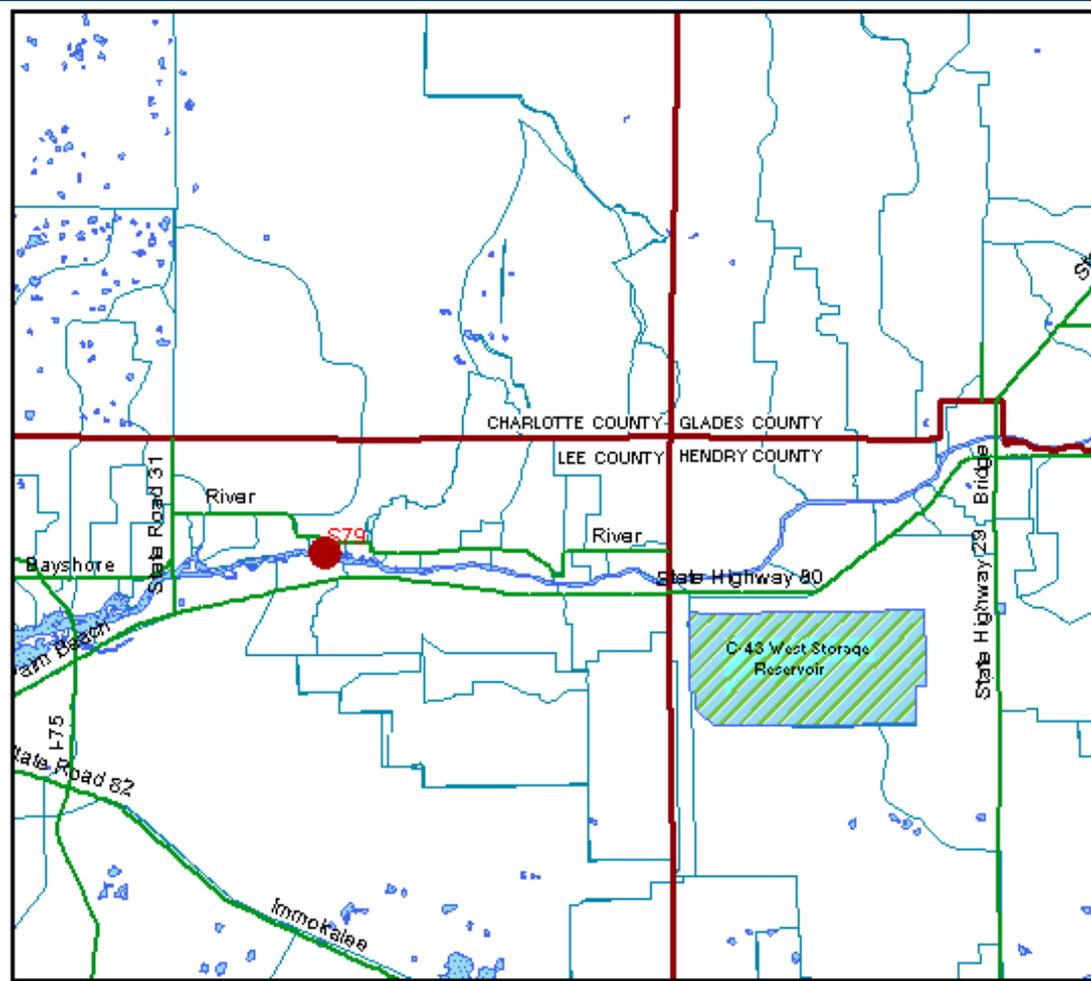
# Site Screening (cont'd)

- Level 2: Additional screening of remaining sites are based upon more detailed information regarding:
  - T& E Species screening: panther, grasshopper sparrow & scrub jay habitats
  - Geotechnical screening: seepage rates
- Screening Results:
  - 11 potential restoration sites
  - 11 sites reduced to 7 sites based on T&E species



# Initially Formulated Alternatives

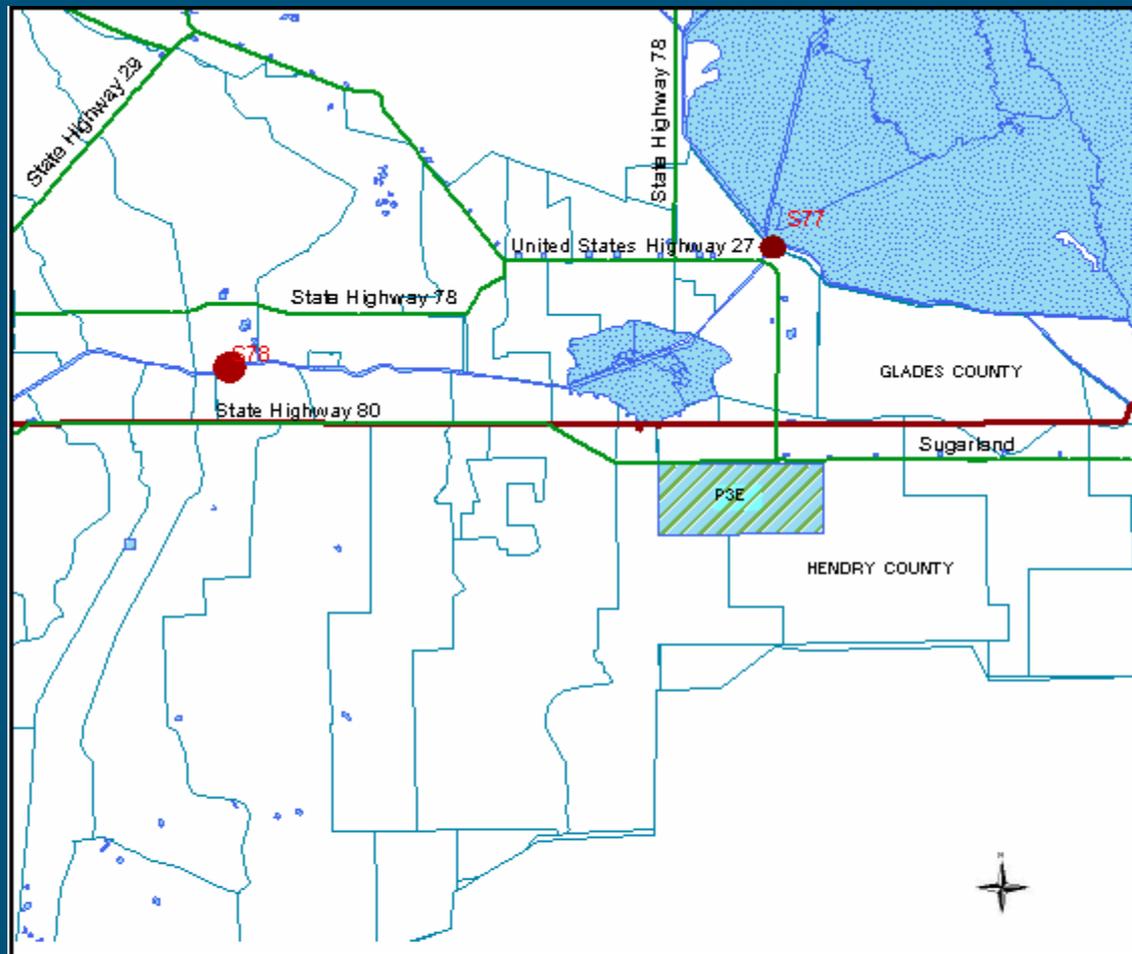
Features	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
<b>Storage Reservoirs</b>							
C-43 West Storage Reservoir	X				X		X
P3E (Flaghole) Reservoir		X			X		X
P2E Reservoir			X			X	X
D-Duda Reservoir			X			X	X
River Groves				X		X	X
Lake Hicpochee			X	X		X	X



- RESERVOIRS
- MAJOR ROADS
- COUNTY LINE
- MAJOR STRUCTURES
- SUB-BASINS

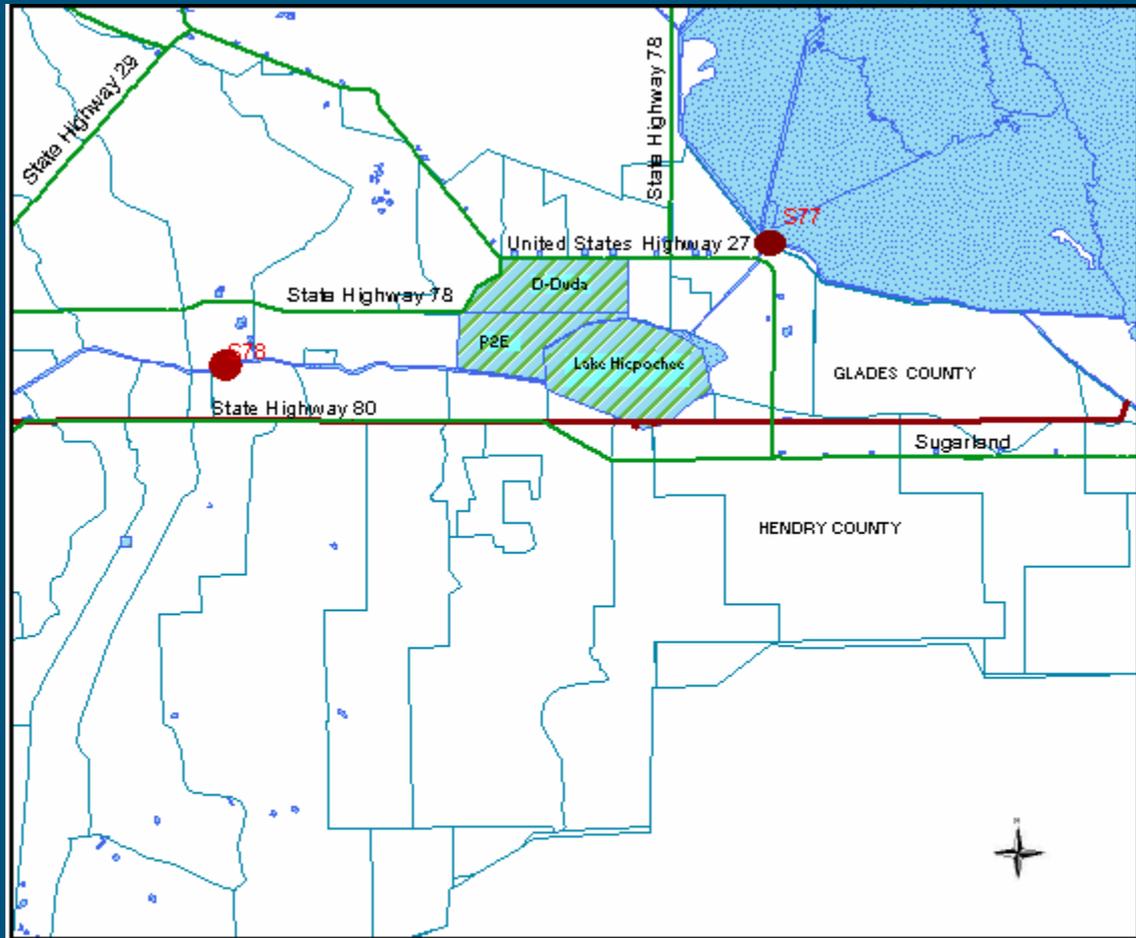


## ALTERNATIVE 2



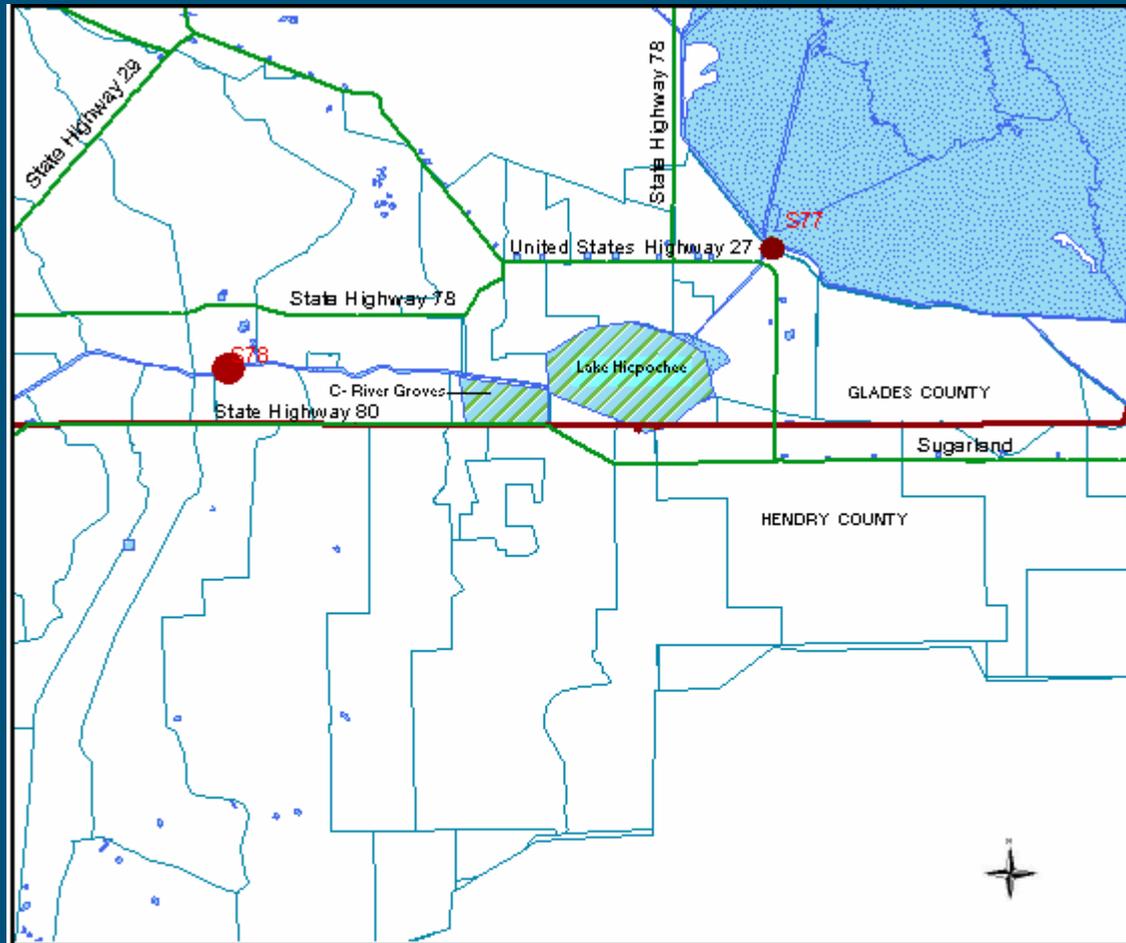
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|---|------------------|---|-------------|---|-------------|
|  | RESERVOIRS       |  | MAJOR ROADS |  | COUNTY LINE |
|  | MAJOR STRUCTURES |  | SUB-BASINS  |   |             |

**ALTERNATIVE 3**



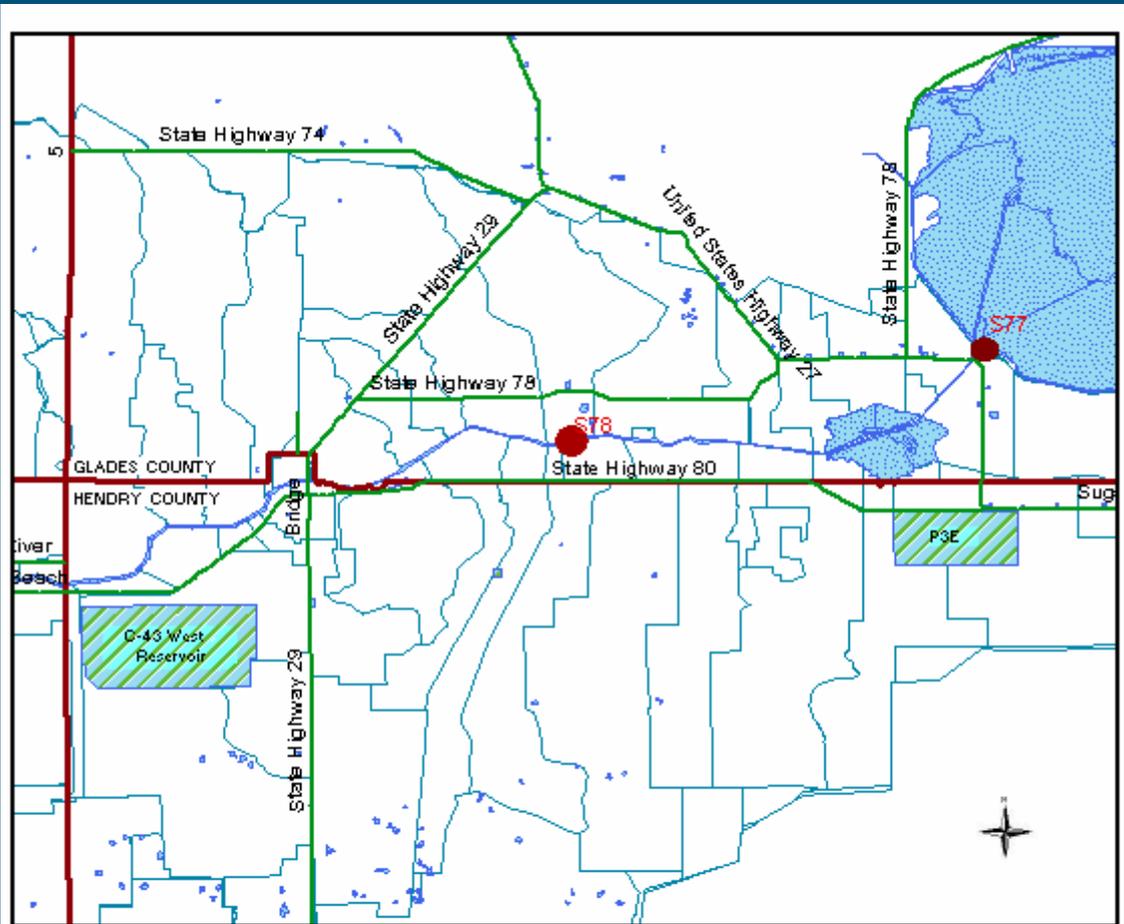
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|  | RESERVOIRS       |  | MAJOR ROADS |  | COUNTY LINE |
|  | MAJOR STRUCTURES |  | SUB-BASINS  |   |             |

### ALTERNATIVE 4



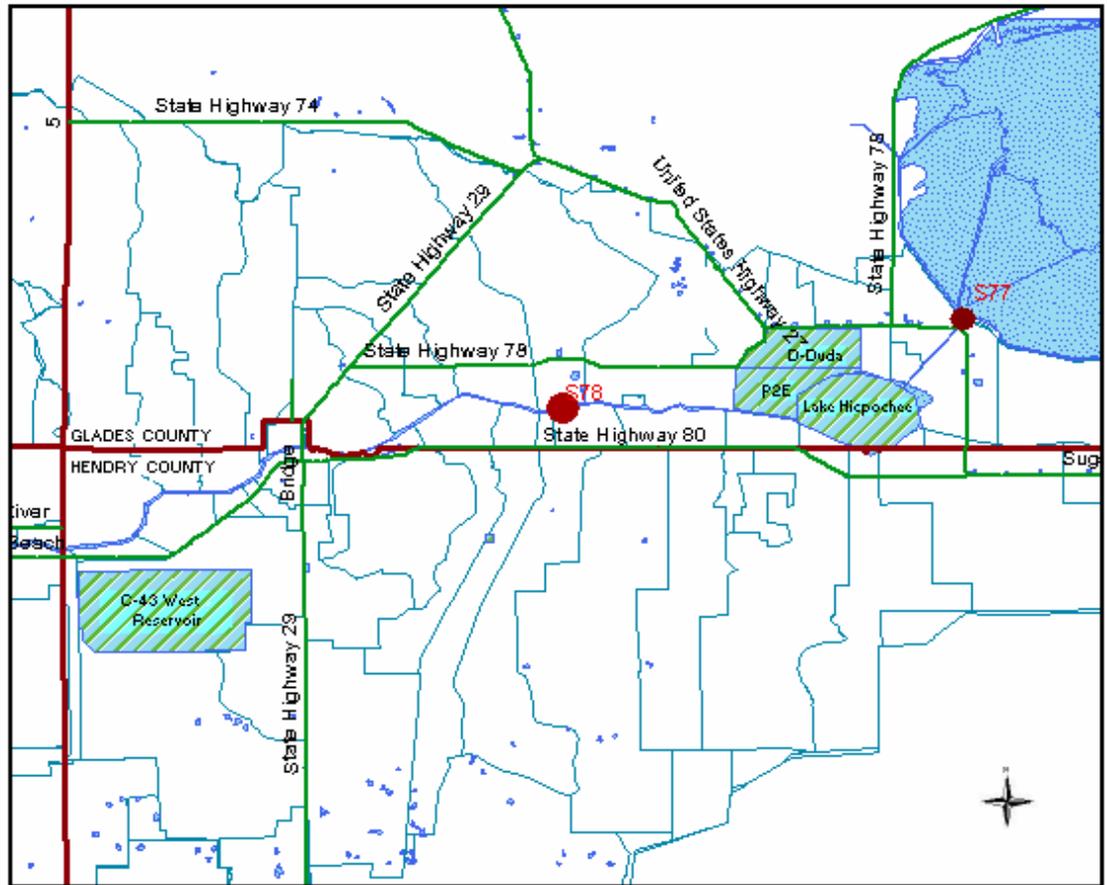
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|---|------------------|---|-------------|---|-------------|
|  | RESERVOIRS       |  | MAJOR ROADS |  | COUNTY LINE |
|  | MAJOR STRUCTURES |  | SUB-BASINS  |   |             |

## ALTERNATIVE 5



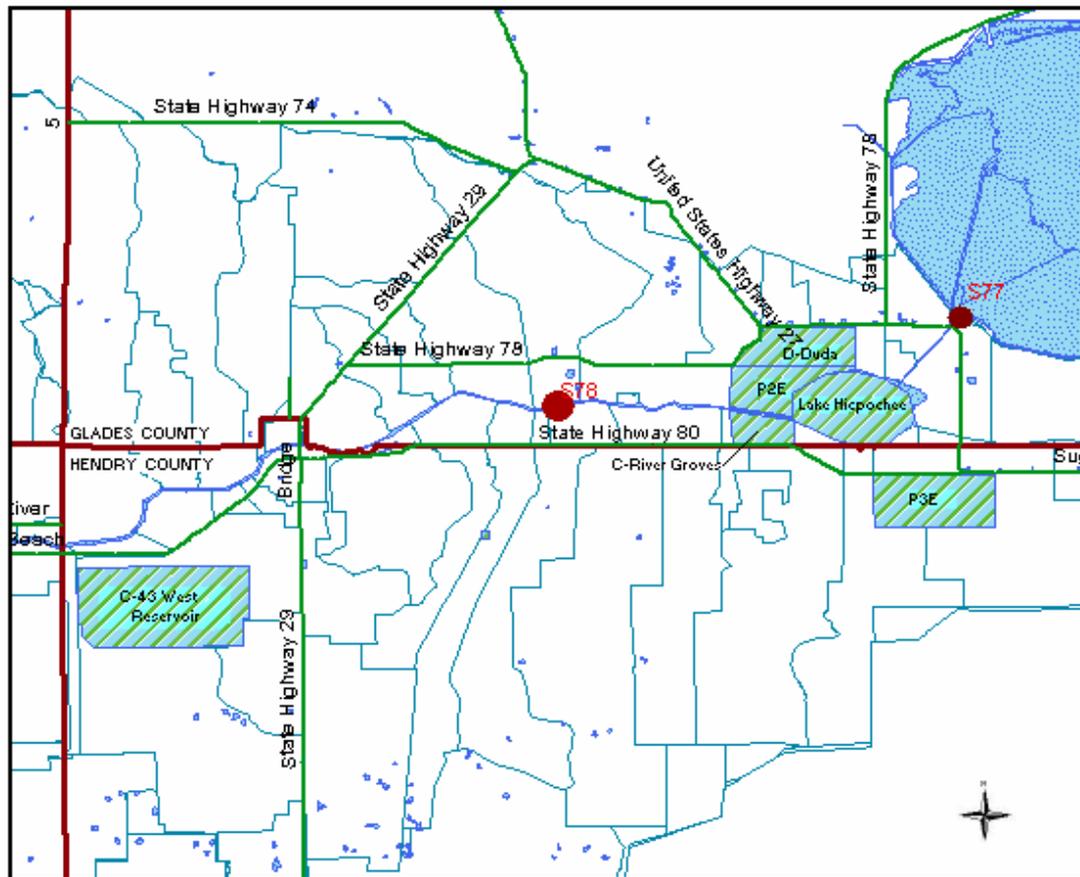
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|---|------------------|---|-------------|---|-------------|
|  | RESERVOIRS       |  | MAJOR ROADS |  | COUNTY LINE |
|  | MAJOR STRUCTURES |  | SUB-BASINS  |   |             |

### ALTERNATIVE 6



- |  |   |   |
|--|---|---|
|  RESERVOIRS       |  MAJOR ROADS |  COUNTY LINE |
|  MAJOR STRUCTURES |  SUB-BASINS  |   |

### ALTERNATIVE 7



- |   |                  |   |             |   |             |
|---|------------------|---|-------------|---|-------------|
|  | RESERVOIRS       |  | MAJOR ROADS |  | COUNTY LINE |
|  | MAJOR STRUCTURES |  | SUB-BASINS  |   |             |

### ALTERNATIVE 8

# Estimated Storage Volumes for C-43 Alternatives

Features	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
<b>Storage Reservoirs</b>							
C-43 West Storage Reservoir	170,000 ac-ft				170,000 ac-ft	170,000 ac-ft	170,000 ac-ft
P3E (Flaghole) Reservoir		30,320 ac-ft			30,320 ac-ft		30,320 ac-ft
P2E Reservoir			21,520 ac-ft			21,520 ac-ft	21,520 ac-ft
D-Duda Reservoir			21,490 ac-ft			21,490 ac-ft	21,490 ac-ft
River Groves				12,080 ac-ft			12,080 ac-ft
<b>Sub-totals Storage Reservoir Volumes</b>							
Available Volume	170,000 ac-ft	30,320 ac-ft	43,010 ac-ft	12,080 ac-ft	200,320 ac-ft	213,010 ac-ft	255,410 ac-ft
<b>Natural Storage</b>							
Lake Hicpochee			0 ac-ft	0 ac-ft		0 ac-ft	0 ac-ft
<b>Total Available Volume (Storage Reservoir + Natural Storage)</b>							
Available Volume	170,000 ac-ft	30,320 ac-ft	52,670 ac-ft	12,080 ac-ft	200,320 ac-ft	213,010 ac-ft	255,410 ac-ft

# Plan Evaluation

- Same hydrologic output will be used to evaluate the final array of alternatives
- Final array will employ MIKESHE / MIKE 11 groundwater/surface water model to characterize flow distribution at S-79
- Ecological outputs will also be used to evaluate the final array of alternatives
- Ecological outputs = NER benefits, will be used for cost effectiveness/incremental cost analysis

# Current Status of C-43 BSRP

- Preparing AFB documentation
- Running MIKESHE/MIKE 11 model for existing and 2050 conditions
- Running STELLA model to screen combination of alternatives for final array of alternatives
- Running WAMView and Eco-Lab models for evaluation of water quality (nutrient load reductions) on alternatives
- Collecting soil boring information on Lake Hicpochee and surrounding 3 sites to gather site data

# Next Steps-- C-43 BSRP

- Develop cost estimates for final array of alternatives
- Evaluate final alternatives
- Hold General Public Meeting to discuss alternatives
- Hold 1502 pre-application meeting with FDEP
- Conduct CE/ICA on alternatives (using HU's), identify TSP
- Conduct final analysis on TSP for Assurances & Next Added Increment
- Finalize AFB document and submit to HQ & SAD

# C-43 Basin Storage Reservoir – Part 1

## Milestones

- **FSM:** February 11, 2005
- **Guidance Memo:** June 2, 2005 (received)
- **AFB Submittal:** October 13, 2005
- **AFB:** November 15, 2005
- **IPR:** Feb/March 2006 (tentative)
- **Draft PIR:** June 2006
- **Final PIR:** May 2007