

LOXAHATCHEE RIVER WATERSHED LOCAL INITIATIVE OPTIONS

**PRESENTATION TO
WATER RESOURCES TASK FORCE
PALM BEACH COUNTY**

May 3, 2018

Ken Todd, P.E.

**Water Resource Manager
Palm Beach County**





Local Stakeholder Goals (included in 2010 TSP)

- Provide Restoration Flows to Loxahatchee River
- Enhancement of Loxahatchee Slough
- Reduce Freshwater flows to Lake Worth Lagoon
- Enhance Water Supply for Various Utilities
- Better Flood Protection for Western Communities

Storage and Flow-way Improvements – 2010 TSP

Flow-way #3 (lands have been acquired)

Moss Property Improvements

Flow-way #2

L-8 Reservoir

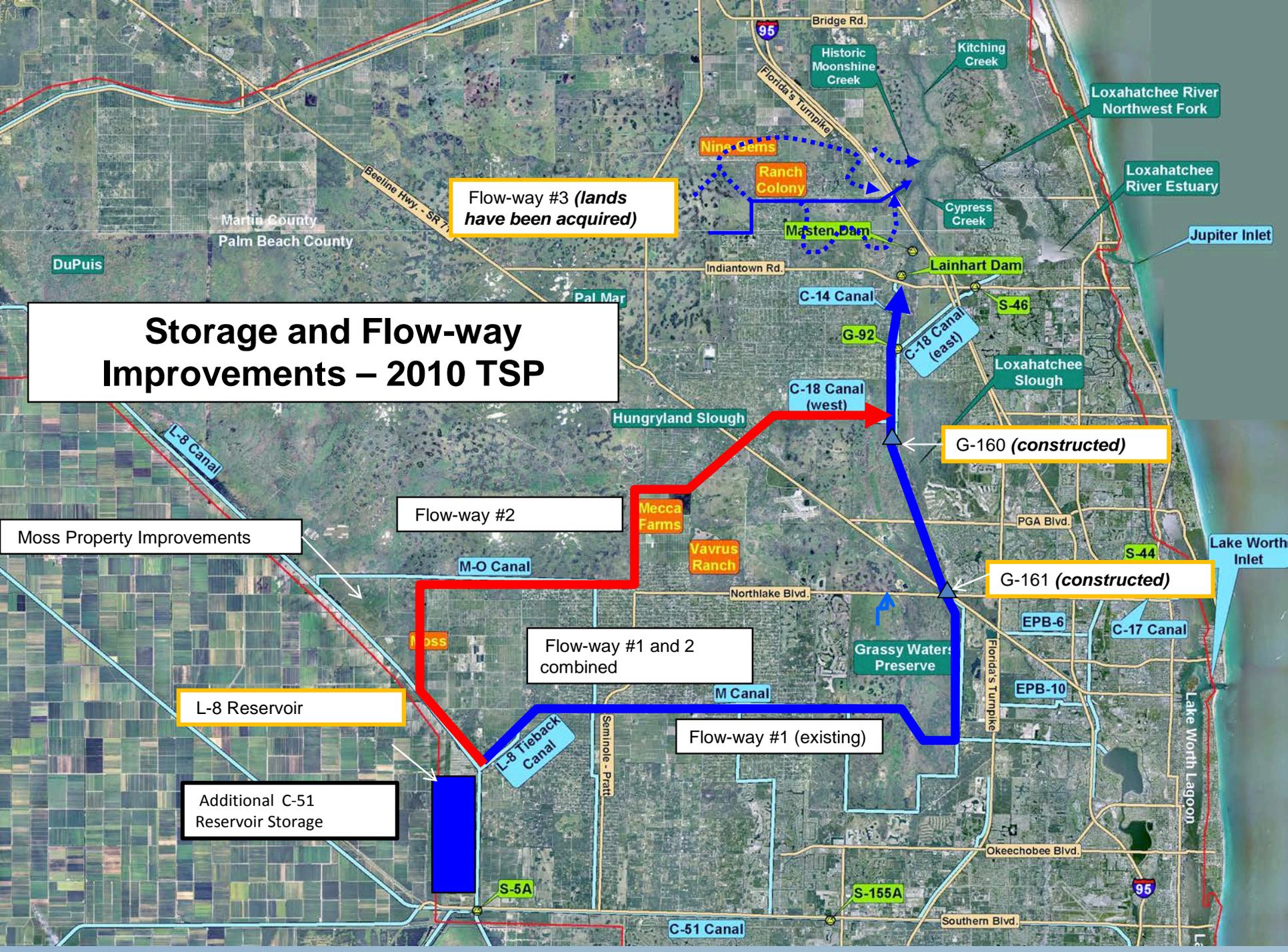
Additional C-51 Reservoir Storage

Flow-way #1 and 2 combined

Flow-way #1 (existing)

G-160 (constructed)

G-161 (constructed)



Project Alternatives

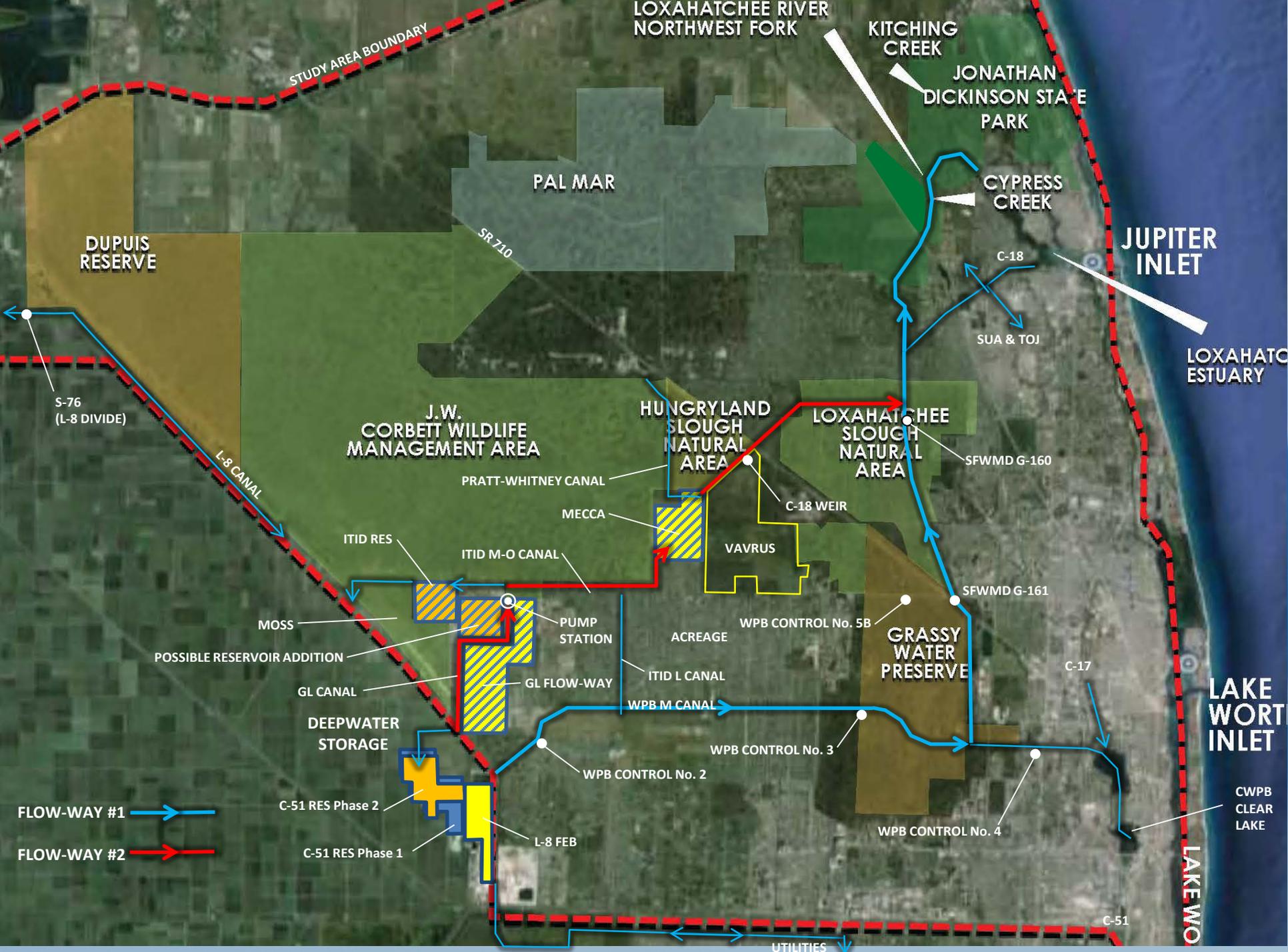
| Alternative | Deep Storage in L-8 Basin | Shallow Storage in L-8 Basin | C-18W Basin Storage | Aquifer Storage and Recovery (ASR) | FW3 Features |
|-------------|---------------------------|------------------------------|---|------------------------------------|--------------|
| 2 | None | 4,300 ac-ft. | 7,200 ac-ft. | 2 wells | Full range |
| 5 | None | None | 9,500 ac-ft. | 4 wells | Full range |
| 10 | 44,000 ac-ft. | None | 7,200 ac-ft. | None | Limited |
| 13 | None | 6,500 ac-ft. | Increased wetland elevations to support natural storage | 4 wells | Full range |



Basic Components of the Lox River Local Initiative (Part of the 2010 TSP)

**Note: All 11 of these components listed below are part of the 2010 TSP
Those components in Black are in one of the current alternatives**

- 1. Use of C-51 Reservoir for storage**
- 2. Use of Flow-way 1 to send water thru Grassy Waters to the C-18**
- 3. Use of ITID Canal System (Flow-way 2) to send water north from C-51 Reservoir**
- 4. Continued use of ITID Reservoir to store water from M-1 Basin**
- 5. Continued use of ITID outfall canal to deliver water to C-51 Reservoir**
- 6. Eliminate connection from Lake Okeechobee to the C-51 Reservoir**
- 7. Improve M-O Canal including connection to Mecca site**
- 8. Use Mecca site for storage/flow-way to flow into C-18 Canal**
- 9. Reconnect Hungryland, Loxahatchee and Vavrus sloughs via C-18 Canal**
- 10. Use C-51 Canal to deliver water from C-51 Reservoir south through LWDD**
- 11. Deliver water for recharging North County Surficial Aquifer/wellfields**



STUDY AREA BOUNDARY

LOXAHATCHEE RIVER
NORTHWEST FORK

KITCHING
CREEK

JONATHAN
DICKINSON STA E
PARK

PAL MAR

CYPRESS
CREEK

JUPITER
INLET

DUPUIS
RESERVE

SR 710

C-18

SUA & TOJ

LOXAHAT
ESTUARY

S-76
(L-8 DIVIDE)

L-8 CANAL

J.W.
CORBETT WILDLIFE
MANAGEMENT AREA

HUNGRYLAND
SLOUGH
NATURAL
AREA

LOXAHATCHEE
SLOUGH
NATURAL
AREA

SFWM G-160

PRATT-WHITNEY CANAL

MECCA

VAVRUS

C-18 WEIR

SFWM G-161

ITID RES

ITID M-O CANAL

MOSS

POSSIBLE RESERVOIR ADDITION

GL CANAL

DEEPWATER
STORAGE

ACREAGE

ITID L CANAL

WPB CONTROL No. 5B

GRASSY
WATER
PRESERVE

C-17

LAKE
WORT
INLET

FLOW-WAY #1

FLOW-WAY #2

C-51 RES Phase 2

C-51 RES Phase 1

L-8 FEB

GL FLOW-WAY

WPB M CANAL

WPB CONTROL No. 2

WPB CONTROL No. 3

WPB CONTROL No. 4

CWPB
CLEAR
LAKE

LAKE WO

C-51

UTILITIES



Local Initiative Flow-way 1 Components

Flow-way 1

1. Operate structure S-76 in SFWMD L-8 Canal to eliminate flow from Lake Okeechobee into Grassy Waters Preserve (GWP) system and the C-51 Reservoir except in emergencies or extreme drought.
2. Use C-51 Phase 1 Reservoir to send water south to the LWDD system via the SFWMD C-51 Canal.
3. Evaluate flow (up to 200 CFS as per previous SFWMD Modeling) into SFWMD C-51 Canal from the L-8/C-51 Phase 1 Reservoirs, ultimately entering the LWDD system.
4. Use C-51 Phase 2 Reservoir to send water east through the L-8 Tie-back Canal and the City of WPB 'M' Canal for the City of WPB and the Loxahatchee River **and use for flood control reserve (at least 5,000 AF).**
5. Use C-51 Phase 2 Reservoir for stormwater storage from the L-8 Basin, thereby reducing flows to LW Lagoon.
6. Use Flow-way 1 (City of WPB "M" Canal) to send water thru GWP canal system to SFWMD C-18 Canal via SFWMD G-161. Evaluate hydraulics of City of WPB "M" Canal east from City of WPB Control 3 through GWP to ensure water profile stays within banks and will not spread across GWP wetlands.
7. **Connect ITID Reservoir to Moss property for rehydration and for better water quality.**
8. **Moss Property is an old farming area that is owned by Florida Fish & Wildlife Commission. See map.**
9. **Construct new outfall structure from Moss Property to SFWMD L-8 Canal.**
10. **Construct structure connecting "GL Flow-way" to "GL" Canal.**
11. **Construct "GL" Canal and construct pump station sending water north to ITID "M-O" Canal. Water could come from C-51 Reservoir, Moss Property or "GL Flow-way".**



Local Initiative Flow-way 1 Components

Flow-way 1 (cont'd)

- 12. Use City of WPB Control 2 Pump Station to deliver at most 300 cfs to City of WPB "M" Canal from C-51 Phase 2 Reservoir where a minimum of 150 cfs goes east for delivery to the WPB WTP thru the City of WPB Control 4 and water goes north to Jupiter and Seacoast Utilities for aquifer recharge.**
- 13. Add pump to existing structure @ Limestone Creek/C-18 Canal to facilitate aquifer recharge within Jupiter Wellfields along Island Way Corridor**
- 14. Add pump stations and conveyance for aquifer recharge south of C-18 Canal within Jupiter System and Seacoast Wellfields.**
- 15. Improve City of WPB "M" Canal cross-section to deliver 300 cfs (if needed).**
- 16. Develop a cascading sheet flow conveyance from Mecca site via Vavrus property (aka Avenir) crossing over PBC 'Sweet Bay Preserve' or south of the Airport into the City of WPB GWP Northern Marsh (north of Northlake Blvd.), ultimately ending up in City of WPB GWP 300-acre Triangle Area that connects to the SFWMD C-18 Canal. This is directional flow from the City of WPB Control Structure 5B to the City of WPB GWP 300-acre Triangle Area. Flow is then north under SR 710 with connections to Gentle Ben and the Loxahatchee Slough south of PGA Blvd. to supplement dry season pooling and contributory MFLs to the Loxahatchee River via PC 15A and others south of the SFWMD G-160 Structure in the SFWMD C-18 Canal.**



Local Conceptual Flow-way 2 Components

Flow-way 2

1. Operate S-76 in SFWMD L-8 Canal to eliminate flow from Lake Okeechobee into Grassy Waters Preserve (GWP) system and C-51 Reservoir except in emergencies or extreme drought.
2. Construct "GL Canal" and construct pump station sending water north to ITID "M-O" Canal. Water can come from C-51 Reservoir, Moss Property, ITID Reservoir or possible "GL Flow-way".
3. Connect ITID Reservoir to Moss property for rehydration and for better water quality.
4. Moss Property is an old farming area owned by Florida Fish & Wildlife Commission. See map.
5. Construct new outfall structure from Moss Property to SFWMD L-8 Canal.
6. Construct structure connecting possible "GL Flow-way" to possible "GL Canal".
7. Construct flow-way on Mecca site to act as cascading sheet flow system to hydrate PBC 'Sweet Bay Preserve', GWP Northern Marsh (north of Northlake Blvd.), GWP 300-acre Triangle Area with ultimate connection(s) to Gentle Ben at Loxahatchee Slough (south of PGA Blvd.).
8. Connect ITID "M-O" Canal to Mecca site with a conveyance canal and Pump Station.
9. Possible relocation of C-18 Weir to West/South side of Beeline Hwy and FEC RR or add structure south of SR 710.



Local Initiative Flow-way 2 Components

Flow-way 2 (Cont'd)

10. Add Pump Stations and conveyance for aquifer recharge south of C-18 Canal within Jupiter System and Seacoast Wellfields.
11. Possible 640-acre reservoir (on GL Property) adjacent to ITID Reservoir that can be used for additional storage for ITID and for the release of water during periods of drought.
12. Use C-51 Phase 2 Reservoir for flood control reserve (at least 5,000 AF) and to reduce flows into the LW Lagoon except in emergencies.
13. Clean out ditch northeast of train trestle along SR 710.
14. Look into filling in the Pratt-Whitney Canal.

Note:

1. Some of these Flow-way 1 and Flow-way 2 components overlap with each other to demonstrate the ability of the system to provide better flexibility to meet Locally Preferred Goals.
2. Future operational discussions need to be held by governmental entities.



Questions concerning the Local Initiative Component Options

1. Who could be the lead in implementing the components?
2. What components could be included in the local initiative?
3. How could the local initiative components be funded?



Basic Answers to Questions

1. Components done through a Local Initiative Lead Agency being SFWMD or Local Gov't
2. Local Initiative Components critical to meeting Loxahatchee River MFL & Restoration flows
3. Flow-way 1 & 2 with storage will be beneficial to Water Supply, Lake Worth Lagoon Water Quality, and Flood Protection
4. Local & State Governments should pursue funding through grants, cooperative funding, local and public/private partnerships

Amended Determination v. Final Plan Estimated Project Costs

| Flow Path | Amended Determination Projects (Sept. 2010) | | Final Projects (June 2012) | |
|-------------------|--|---------------|-------------------------------|---------------|
| | | | | |
| Eastern Flow Path | STAs | \$900M | FEB & STAs | \$365M |
| Central Flow Path | STAs | \$500M | FEB | \$120M |
| Western Flow Path | FEB | \$500M | FEB & Earthwork | \$130M |
| | | | Replacement Features | \$180M |
| | | | Science Plan | \$ 55M |
| | | | Source Controls | \$ 30M |
| | Total* | \$1.9B | | \$880M |

*totals do not include sunk costs

Funding Options



- Cooperative Federal Funding (if available)
- SFWMD Cooperative Funding Grants (If available)
- \$1 Million for C-51 Reservoir Evaluation
Note: SB10 money for C-51 Reservoir Phase 2 Evaluation)
- \$180 Million for replacement features in Restoration Strategies Budget (less Mecca Farms purchase)

Note: Some could be used to help build C-51 Reservoir Phase 2 as a replacement for Mecca Reservoir.

Beneficiaries are Lox River, City of WPB & LW Lagoon.

- Everglades Forever Act Funding



Funding Options (Cont'd)

- Local Government Sources
 - Budgeted Projects by Gov't Agencies
 - Local Government Partnerships (Funding & In-Kind)
 - Public/Private Partnerships
 - DEP WQ Project Grants, i.e. 319 Grants (if available)
 - FEMA HMGP Grants (if hurricane disaster declared)
 - FEMA Pre-disaster Mitigation Funds
 - LATF (Amendment 1 Funding)
 - Projects recognized in report of Florida Senate Select Committee on IRL/ Lake Okeechobee



Note: WRTF should consider asking BCC to establish a coalition of local stakeholders to work with ACOE/SFWMD and do the following:

Immediate Needs

- I. Establish lead agency to administer a local initiative or Locally Preferred Plan**
- II. Prioritize Projects**
 - 1. Evaluate and prioritize components community wishes completed by reviewing benefits obtained and costs**

Possible Future Needs

- III. Put together a short & long range schedule of projects**
 - 1. All Components will require different timing & funding**
- IV. Inter-Local Agreements while working w/ ACOE/SFWMD**
 - 1. Establish tasks to be done by each gov't agency**
 - 2. Establish Funding Agreements**
 - 3. Sign contracts to construction projects per schedule**
 - 4. Operational schedule developed by agencies**



Discussion