C-139 Regional Feasibility Study

A Complete Water Resource Perspective

Quarterly Communications Meeting on the Long-Term Plan for Achieving Water Quality Goals for Everglades Protection Area Tributary Basins

August 25, 2011

Tom Kosier, PhD.
The C-139 “Region”

- **C-139 - one of several Everglades western tributaries**
- **Collectively known as the “Western Basins”**

Basins Tributary to Everglades
- C-139 Basin
- Feeder Canal Basin
- L-28 Basin

Potential Tributary Basin
- S-4 basin (Clewiston Canal)
Basin Specific Projects: Existing & Currently Planned

Existing

- STA-5: Cells 1, 2 and 3
- STA-6: Sections 1 and 2
- C-139 Annex Pump Station

Planned

- Feeder Canal Basin: “Critical Project” (Tribe and ACOE)
- “Compartment C” under construction
- Potential S-4/Clewiston Canal Diversion to the south
- Feeder Canal/L-28 CERP Projects
Develop an integrated regional approach beyond basin specific efforts to deal with these challenges.

- **Water Quality & Quantity**
  - EFA mandates – basins not meeting goals

- **Stormwater Management**
  - High intensity rainfall events occur in short time period decreasing percent retained within basins

- **Water Availability**
  - Reliance on groundwater is affected by rainfall patterns and soils

- **Coordination/Integration of Projects**
  - ECP/LTP, CERP, Land Practices
Evaluating the feasibility of Regional Solutions across Basin Boundaries allows for:

- Flexibility in movement of water between individual basins for water availability, timing of STA inflows, flood control & regional storage
- Integrated approaches to meet common Water Quality and Conservation Goals
- Opportunities to use District or public-owned lands for more comprehensive benefits
Regional Storage

- Benefit Water Quality, Water Availability

Canal / Infra-structure modifications

- Allow for more flexibility in movement of water for flood protection & regional storage/treatment
- Develop interconnections between individual basins for excess stormwater recycling

Operational Optimization

- Take advantage of infra-structure to better manage regional water resources
- Retain first wet season events to capture the first flush of nutrients
C-139 Basin Regional Feasibility Study: Current Status

- Identify solutions for C-139, Feeder Canal and L-28 Basins together as a “Region”

- Phase 1:
  - Gather existing information, identify data needs, fill in data gaps, identify potential alternative elements, develop integrated groundwater/surface water model for region – complete
  - New/updated data gathered as part of study:
    - Topography
    - Canal Cross Sections
    - “Nested Pair” groundwater monitoring wells installed
  - Summary Report February, 2011
Phase 2 Study began March 2011

From Phase I Study, the integrated Surface/Groundwater “Detail Model” model did not calibrate well enough to use. Recommend development of a less complex “Routing” model.

Performance measures for Water Quality, Water Supply, Food Control and Wetland resources have been developed.

“Routing” model being developed using District RSM inputs (for C139 and Feeder Canal Basins), Mike11 for routing and DMSTA for water quality assessment.

Model will be used to simulate the affects of alternative elements on Performance measures.

Continuing to collecting groundwater data and further develop the Detail Model in-house.
Potential “Alternatives”

Regional Scale

- S-4 excess stormwater south to storage area
- Caloosahatchee River excess stormwater south to storage area
- Use available lands, if acquired, for regional storage and treatment
  - C-139 Basin
  - Feeder Canal Basin
- Stormwater Management Improvements
Potential Alternatives continued

Sub Regional Scale

- Dissect region into hydrologic “sub-basins”
- Focus efforts on storage and treatment in sub-basins yielding highest cost efficiencies
- Potential projects on District lands east of “Compartment C” and downstream of S&M sub basin
Smaller Scale Alternatives

- Cooperatively construct Above-Ground Impoundments (AGI) – improve above and beyond current requirements
- Addition of “Step Down” weirs at key topographical breaks
- Dispersed water storage and treatment program – solicitation for water management on public, private and tribal lands
- Canal sediment settling /collection basins
Advanced Treatment Technologies

Retrofit current, bottom opening gates to “over the top” discharging gates

Westward pumping stations on L-2

“First Flush” Operating plans

Cooperative Tail-water Recovery projects

Others (as suggested)
Critical coordination

- Stakeholder Input – through District PM
- Construction and Engineering issues
- Regional Modeling (integrated surface & groundwater)
- Land Management issues (exotics/nuisance vegetation)
- Operation of District facilities
- Regulatory issues
- Water Supply planning
- Everglades Restoration coordination
Questions/Comments?