57,000 Acres of STA Built and Operational in 2010

- Treatment for Total Phosphorus Loading (TPL) Urban and Agricultural Areas
- TPL Reduction – 170ppb to as low as 12ppb

Stormwater Runoff (Pulse Flows) Reduce Water Treatment Effectiveness

- Reduced Treatment Time
- Soil Degradation
- Damage to Vegetation
2012 SFWMD Started Implementing Restoration Strategies Program

- Optimize Existing Water Quality Infrastructure
- Suite of Additional Water Quality Projects
- Address Pulse Flow Issues and Reduce TPL to 10ppb

Plan Included 6 Projects

- 6,500 Acres of STA Expansion
- 120,000 Acre-Feet of Additional Water Storage
- Flow Equalization Basins (FEB)
FEB Attenuation of Pulse Flows
- Optimized Hydropatterns
- Reduced Flow Volumes/Velocities
- Lower Peak TP Loading Rates
- Reduced STA Expansion

STA Optimization
- Cost Effective
- Environmentally Preferable
- Key Objective
EAA A-1 FEB Objectives

- Support STA-3/4 and STA 2/Compartment B
  - Provide Flow Equalization
  - Reduce Peak Loading
  - Prevent STA Damage

- Support the Long-Term 10 ppb TPL Objective
  - Achieve Greater Periods of Treatment Time
  - Increasing the Treatment Performance

- Provide Additional Operational Flexibility
Design Considerations

- **Historical Inflows**
  - Canal Flows from S-2, S-7, and S-8 Water Basins
  - Stormwater Runoff from Central Flow Path
  - Direct Precipitation

- **Predicted Outflows**
  - Evapotranspiration
  - Seepage
  - STA Releases
Design Considerations

- Existing Infrastructure
  - Pump Stations G-370, G-372, G-434, G-435
  - Water Control Structure G-373
  - Power Supply
  - Hwy 27
  - Adjacent Farmland and Holey Land

- Negative Impacts to WQ

- Future Vegetative Conditions
Value Engineering

- Utilization of Previous Construction
  - Existing Scraped Area
  - Existing Seepage Canal
  - Existing Agricultural Canals

- Utilization of Existing Materials
  - Seepage Canal Excavation Stockpiles
  - Sorted/Processed Material Stockpiles

- Solar Powered Gates

- Future Vegetative Conditions
FEB Overview

- 13,500 Acres of Storage
- 54,000 Acre-Feet Temporary Storage
- Uniform North-South Flow
- 2 Inflow Structures
- 11 Outflow Structures
- 2 Bypass Structures
- 13 Miles of New Perimeter Levee
- 7 Miles of New Above Ground Inflow Channels
INFLOW OPERATIONS

Inflow from G-372
- 2,775 cfs to G-720
- 925 cfs to STA-3/4

Inflow from G-370
- 1,850 cfs to G-721
- 925 cfs to STA-3/4
WATER CONTROL STRUCTURE G-720

- 3-Bay Reinforced Concrete Gated Spillway
- 11’ x 20’ Vertical Lift Roller Gates
- Remote Telemetry SCADA Control
- Commercial Electric Power
- Portable Backup Generator
WATER CONTROL STRUCTURE G-720
WATER CONTROL STRUCTURE G-721

- 2 - Bay Reinforced Concrete Gate Spillway
- 10’ x 20’ Vertical Lift Roller Gate

3-D Model Looking North

G-721 Layout

- Remote Telemetry SCADA Control
- Commercial Electric Power
- Backup Power Supplied from G-370
OUTFLOW OPERATIONS

**G-722W and G-722**
- G-722W – Bypass G-721 Inflow Channel
- G-722 – Release to NNRC.
- Max Outflow = 2,000 cfs

**G-723**
- Outflow Canal Bypass Seepage Collection
- Outflow Canal Low Flows
- Max Outflow = 225 cfs

**G-724 (A-J)**
- Gravity Flow Discharge to STA-3/4 Inflow Canal
- Max Outflow = 2,000 cfs
WATER CONTROL STRUCTURE – G-722W

- 3 - Barrel Reinforced Concrete Box Culvert
- 10’ x 10’ x 600’
- Non-gated Culvert Structure

G-722W Profile

3-D Model Looking Northwest
WATER CONTROL STRUCTURE G-722

- 3-Barrel Reinforced Concrete Gate Culvert
- 10 Feet Tall; 10 Feet Wide; 31 Feet Long
- Stem Operated Vertical Lift Slide Gates

Remote Telemetry SCADA Control
Commercial Electric Power
Backup Power Supplied from G-370
WATER CONTROL STRUCTURE G-723 N & S

- Single Barrel Reinforced Concrete Gate Culvert
- 7.5’ x 7.5’ x 460’
- 2 Stem Operated Vertical Lift Slide Gates

G-723 Profile

G-723 Layout

- Remote Telemetry SCADA Control
- Commercial Electric Power
- Backup Power Supplied from G-370
WATER CONTROL STRUCTURE 724A-J

- 1 - Barrel Reinforced Concrete Gate Culvert
- 6’ x 6’ Rubicon Vertical Lift Aluminum Slide Gates

Typical Stem Slide Gate

- Remote Telemetry SCADA Control
- Solar Charged Battery Power
- Manual or Portable Generator Backup
**Anticipated Impact**

<table>
<thead>
<tr>
<th>UNITS</th>
<th>DRY YEAR - 2007</th>
<th>WET YEAR - 2008</th>
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<tbody>
<tr>
<td>Total Volume Captured by FEB/STA-3/4 System</td>
<td>158,075</td>
<td>472,577</td>
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<tr>
<td>Total Volume of Diversions</td>
<td>0</td>
<td>33,848</td>
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<tr>
<td>Net Inflow to FEB (G-720 and G-721)</td>
<td>38,000</td>
<td>133,204</td>
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<td>Total Outflow through G-722</td>
<td>24,606</td>
<td>90,767</td>
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<tr>
<td>Total outflows through G-724 (A-J)</td>
<td>0</td>
<td>20,275</td>
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Note: -Modeling based on inflows to STA-3/4 at 1,000cfs below and 2,000cfs above a NFSL of 1 feet NAVD 88.  
-Results provided by NOVA Consulting.
DRY YEAR – 2007

- Modeled FEB Attenuated 24% of all Miami and NNR Canal Inflows.
- 100% of Inflows Handled by FEB/STA-3/4 System

WET YEAR – 2008

- Modeled FEB Attenuated 26% of all Miami and NNR Canal Inflows.
- 93% of Inflows Handled by FEB/STA-3/4 System
- G-724 A-J Utilized to Convey 18% of FEB Releases to STA-3/4.
PROJECT TEAM

Owner/Operator

SUBCONSULTANTS

RADISE
Infrastructure Engineers • Software Developers

HEE
HILLERS ELECTRICAL ENGINEERING, INC.

BETSY LINDSAY, INC.
SURVEYING AND MAPPING
LICENSED BUSINESS NO. 8852

Nova Consulting, Inc.
engineering & environmental services
Outside References

- Restoration Strategies Regional Water Quality Plan, South Florida Water Management District, April 2012.
QUESTIONS...