SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Operations, Maintenance & Construction

Capital Refurbishment Program

sfwmd.gov

Operations, Engineering & Construction Inspection Programs

- Structure Inspection Program (SIP)
- Microwave Tower Inspection Program
- Roof Maintenance Inspection Program

OBJECTIVE:

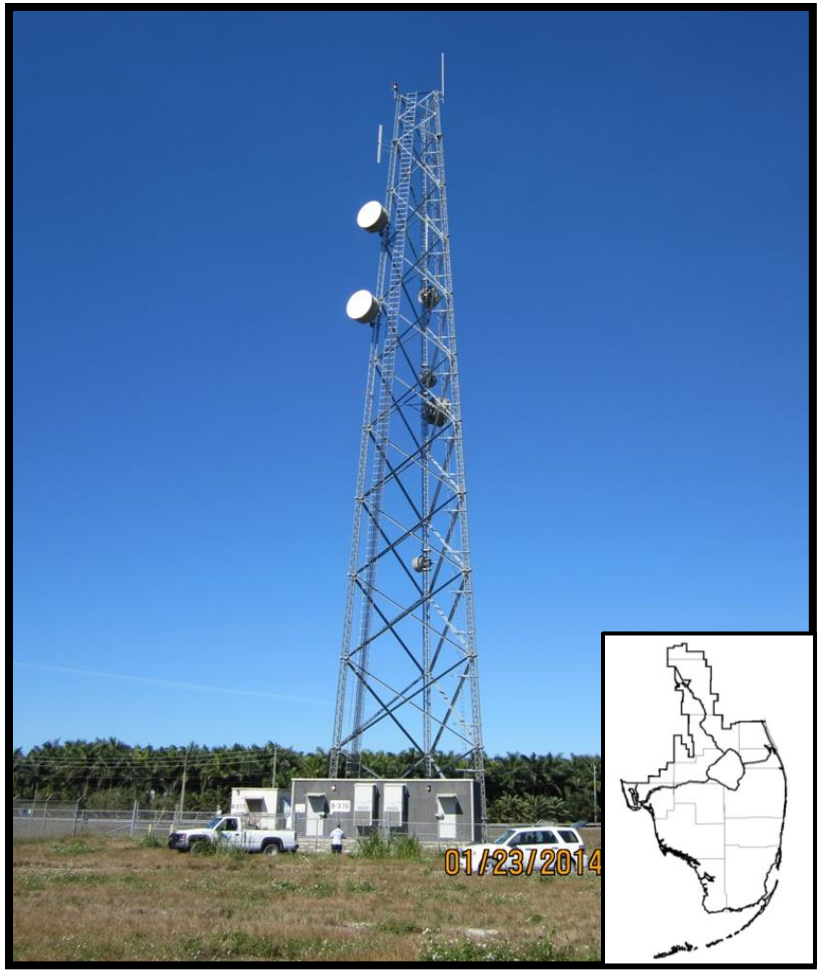
- Perform multi-engineering discipline and underwater inspection of District Infrastructure by individuals certified and licensed in their field.
- Inspections performed on a 5 year cycle or as needed to ensure operational integrity of District infrastructure.
- Findings used to assist the District in:
  - Identifying and prioritizing repairs.
  - Capital refurbishment plan prioritization.
  - Meeting FDEP permit compliance requirements and USACE Rehabilitation Inspection Program requirements.

Operations, Engineering & Construction Inspection Programs

Benefits:

- Reduces emergency work efforts allowing for better use of District resources and operation of the system.
- Identifies warranty repairs saving District time and money for future repairs.
- Enables more efficient resource utilization at the field stations, through planned repairs, rather than reactive maintenance.
- Prioritizes repair or replacement of infrastructure reducing liability to the District for improperly maintained structures and prolong the life of the infrastructure.
- Allows for future trend analysis of components through compiled data.

Operations, Engineering & Construction
FY14 SIP Projects: Microwave Tower Repairs



District Wide

Project Scope:

Risk Score: **11.52**, Priority: **2**

- Number of towers for repair – **35** Towers
- Tower Structure:
  - Repair or replace corroded steel structural members.
  - Replace all corroded, missing bolts and braces.
  - Tighten and torque all bolts that are loose.
- Safety Devices – Replace all corroded life safety line and appurtenances.
- Lightning Protection & Grounding – Replace all damaged, missing parts & conductors as necessary for a working system.

Operations, Engineering & Construction
FY14 SIP Projects: G-70 Gated Culvert

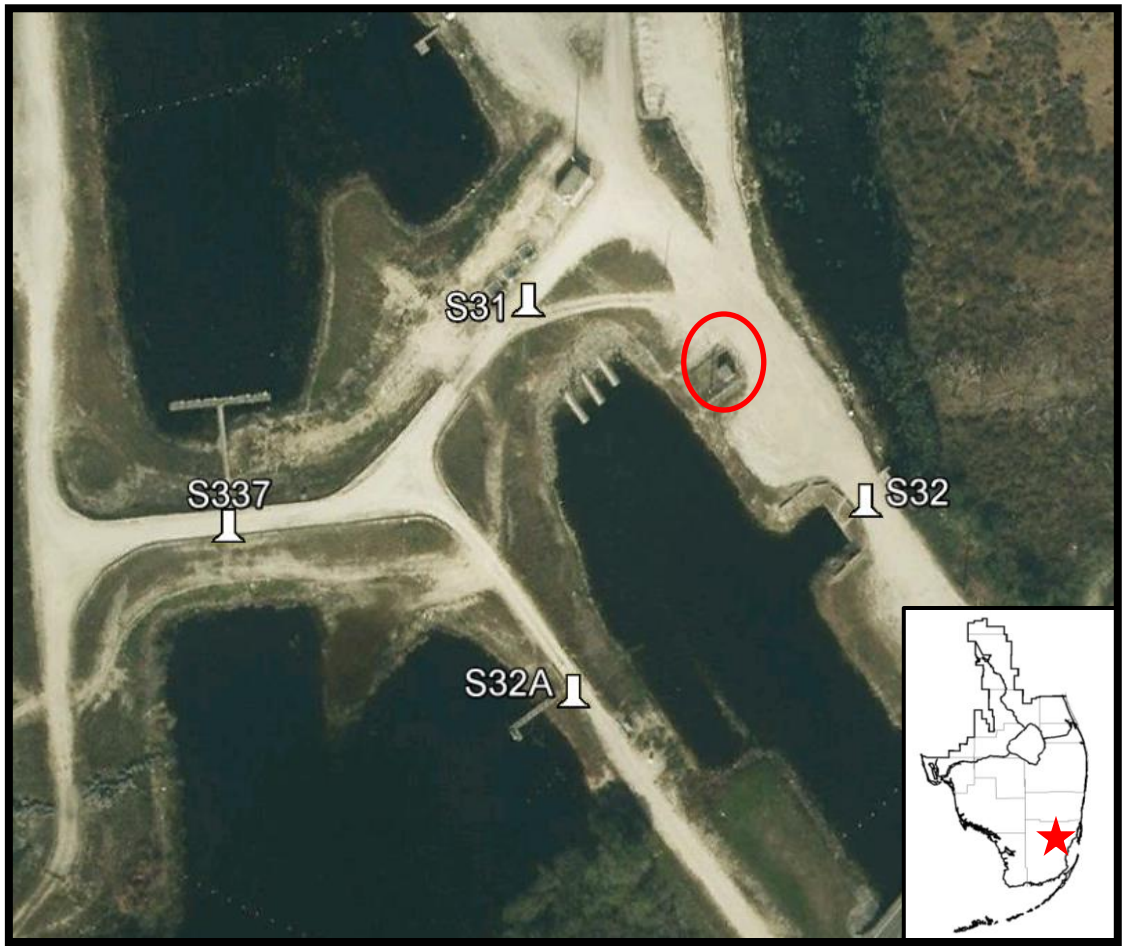
Miami-Dade County - WCA 3B

Project Scope:

Risk Score: **3.0**, Priority: **2**

- Single barrel CMP, manually operated stem gate.
- Remains closed for about 20 years & no data in DBHydro.
- Removal or replace structure. Removal preferred.
- Overall C-5 rating.

Operations, Engineering & Construction FY14
SIP Projects: S31/S32A/S32/S377 Repairs



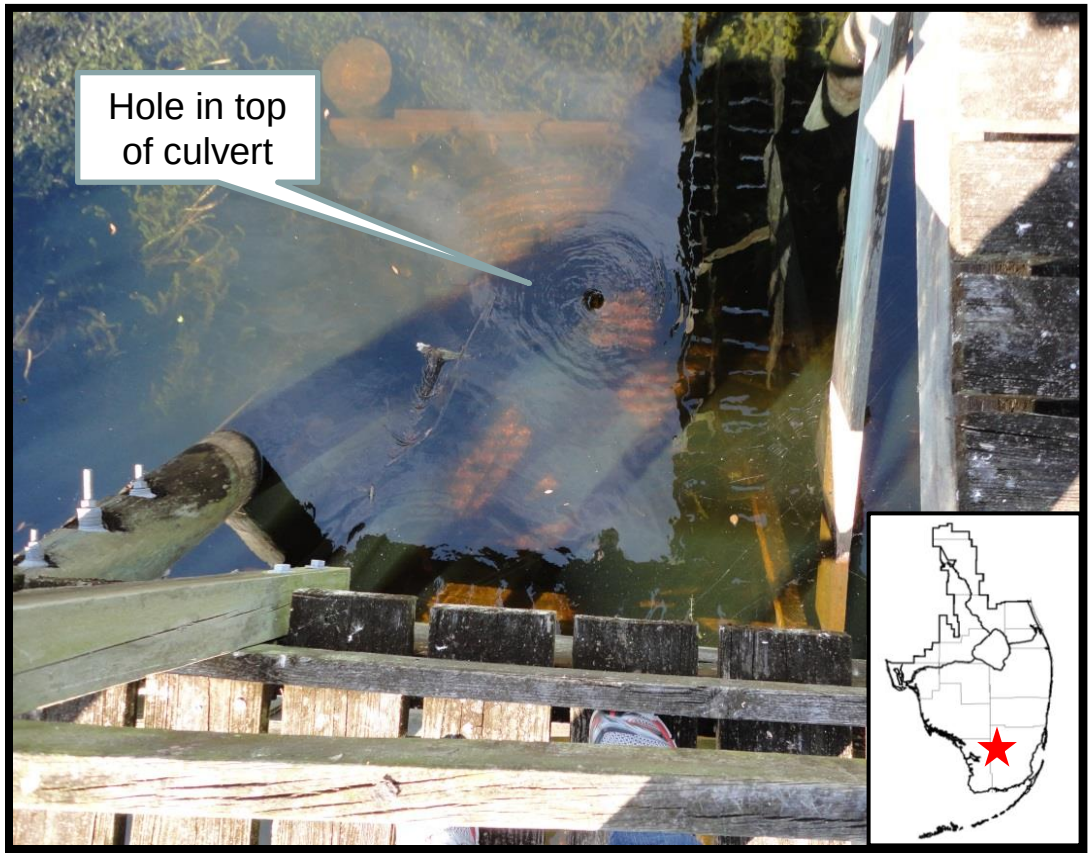
Miami-Dade County - WCA 3B

Project Scope:

Risk Score: **6.89**, Priority: **3**

- **S-31:**
  - Remove abandoned building (circled in red)
- **S-32:**
  - Gate Repair
  - Concrete Barrier Removal
  - Guardrail Installation
- **S-32A**
  - Replace Platform
- **S-377**
  - Guardrail Repair
  - Rip-rap Repair

Operations, Engineering & Construction
FY14 SIP Projects: S343A/S343B/-344 Repairs



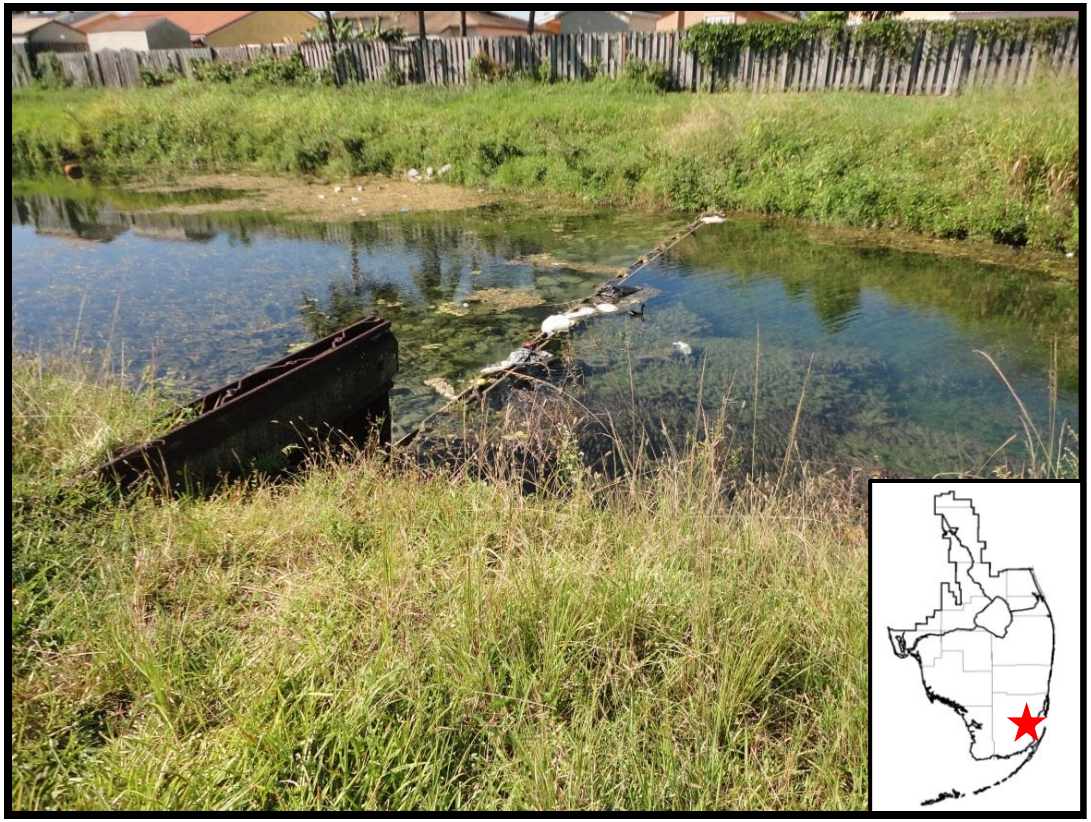
Miami-Dade County - WCA 3A

Project Scope:

Risk Score: **4.34**, Priority: **4**

- Slip Line each culvert at each site & refurbish gates.
- S-343A & S-343B: C-4 rating. S344: C-4 rating.
- Re-grade downstream banks.

Operations, Engineering & Construction
FY14 SIP Projects: G-114 Weir Replacement



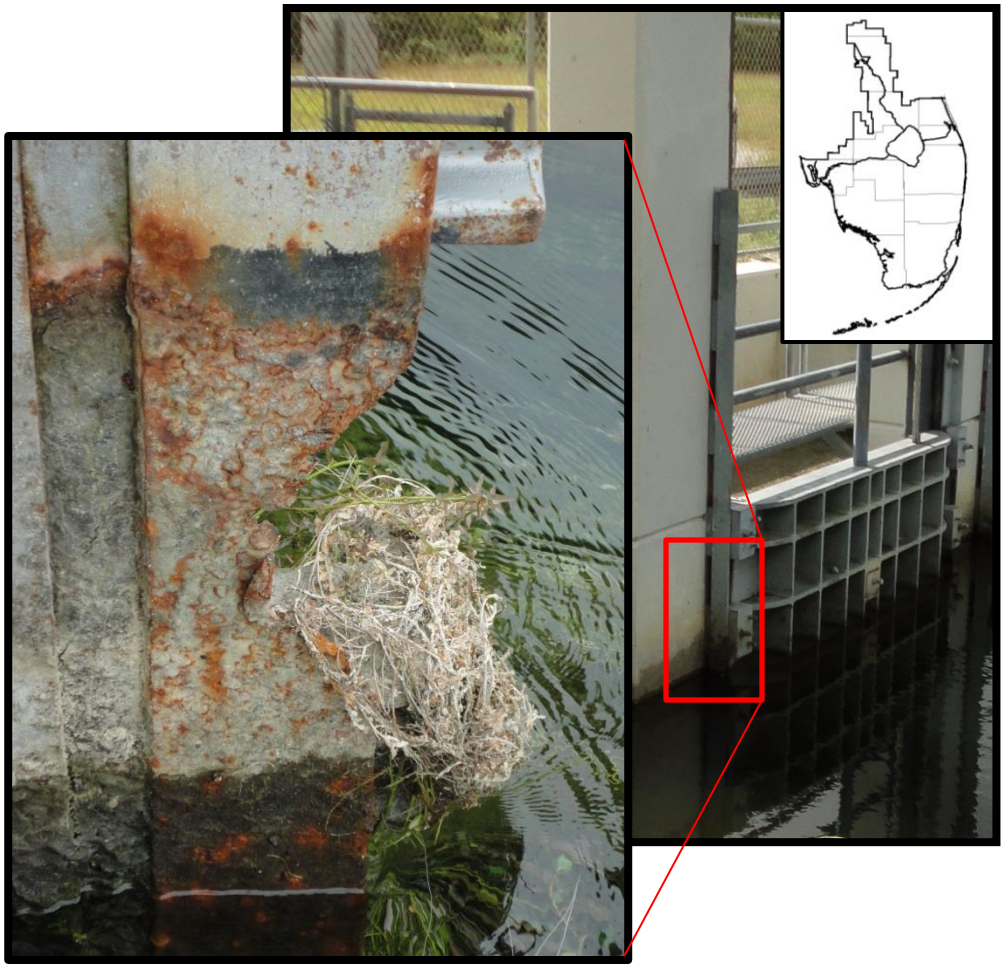
Urban Miami-Dade County

Project Scope:

Risk Score: **12.40**, Priority: **2**

- Remove and replace weir.
- Overall C-4 rating.

Operations, Engineering & Construction
FY14 SIP Projects:Gate Replacement Program



Throughout Miami-Dade County

Project Scope:

Risk Score: **12.18-2.4**, Priority: **2-5**

Miami & Homestead:

S120, S121, S25A, A195, S122, S149
S173, S338, S194, S196, S175, S14

- Remove & refurbish and/or replace gates.
- Overall C-4 rating.
- Additional work may include:
  - Shoal Removal
  - Endwall undermining &/or crack repair
  - Sand Cement Endwall repair
  - Culvert joint repair
  - Culvert replacement

Operations, Engineering & Construction FY14 Non-SIP Capital Program Projects

- BCB: GG1-7, Coco1-7, FU4-7, CYP1, CR951 1&2, CORK 1&2, HC1, SR29 1-8
- WPB FS Revitalization Plan
- Dupuis Maintenance Facility
- G-450 (Allapattah Culvert)
- BCB New Tower
- S-71 TWW Scour Hole & Weir Repair
- Arc Flash Warning Sign Installation
- G-310 & G-335 Debris Removal System
- S-319 Automatic Transfer Switch
- Manatee Protection New Technology
- S-331 Communications & Control

Small Projects

- Low Cost
- Minimum Engineering Design
- Immediate Need

Operations, Engineering & Construction
Small Project: G64 Gated Culvert Replacement

Broward County – WCA 3A

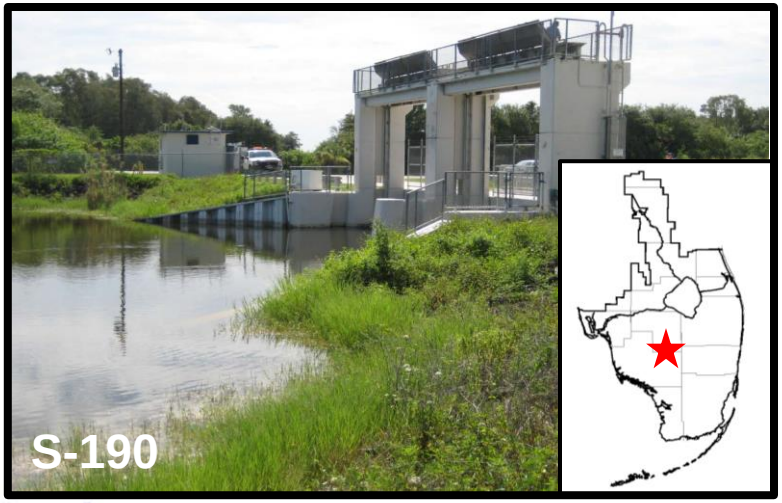
Ft Lauderdale

Issue: C-5 Rating. Rotted Timber Support Piles & Gate/Frame Corrosion

Probable Cause: Age, corrosive & moist environment.

Recommend: Replace culvert through culvert replacement program.

Operations, Engineering & Construction
Small Project: Bank/Riprap G96/G135/G205/G206/S190



Clewiston

Issues: G-96, G-135, G-205, G-206 & S-190 have missing riprap, steep bank slopes and signs of erosion on upstream and downstream sides. S-190 also has overgrown vegetation.

Probable Cause: Riprap was not installed per design and/or riprap deteriorated overtime.

Recommendation: Stabilize the banks. This will require adding fill and re-grading the slopes, installing filter fabric, adding bedding stone, and installing rip rap. Remove vegetation from S-190 slopes prior to bank stabilization.

G205: Palm Bch County – EAA/WCA- 3A

S190: Hendry County – Big Cyp. Res.

Operations, Engineering & Construction
Small Project: S-700 Debris Removal System

Urban Miami-Dade County

Miami

Issue: Debris builds up at the end of the trash rake causing the system to shut off. This in turn stops pump operation.

Probable Cause: Not included in the original design.

Recommendation: Install conveyor to move debris to a dumpster. The new conveyor will require making minor changes to the site plan. Including:

- Fencing
- Concrete pad
- Landscaping
- Addition of a Dumpster

Operations, Engineering & Construction
Risk Based Prioritization

Addition of Risk Based Prioritization to Capital Program

Project Backlog Prioritized Based on the Following Categories:

Likelihood of Failure Categories:

- Physical Condition
- Impacts to Operation & Maintenance
- Frequency of Operation

Consequence of Failure Categories:

- Public Health, Safety, Security & Service
- Financial Impact
- Vulnerability
- Legal Implication

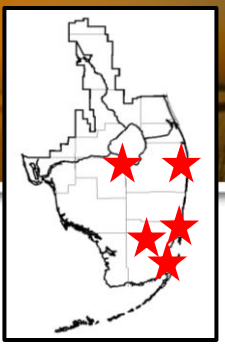
Semi-annual Prioritization Meeting

Risk Score = Consequence of Failure X Likelihood of Failure:

Capital Projects

- Higher Cost
- Significant Engineering Design
- Prioritized over all identified Projects

Operations, Engineering & Construction Capital Projects FY14



FY14 Accomplishments (cont.):

- Completed Projects included:

Miami FS B47 Repl.

EOC Chiller Repl.

T5 Monitoring Sta. Repl.

S-21 Cathodic Protection

S-235 Gate Repl.

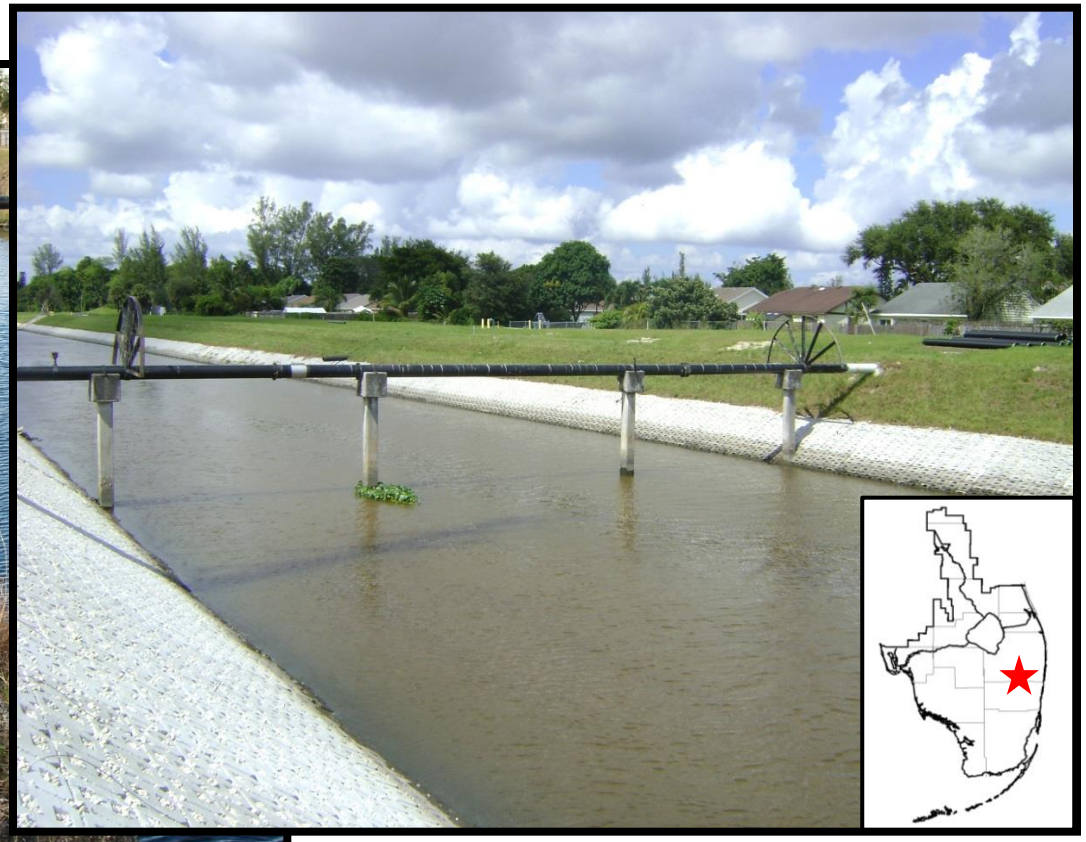
FY14 PC Culvert Repl.

Operations, Engineering & Construction Capital Projects FY14

FY14 Accomplishments (cont.):

- **Construction Progress Hillsboro Canal Stabilization**

September 2013



September 2014

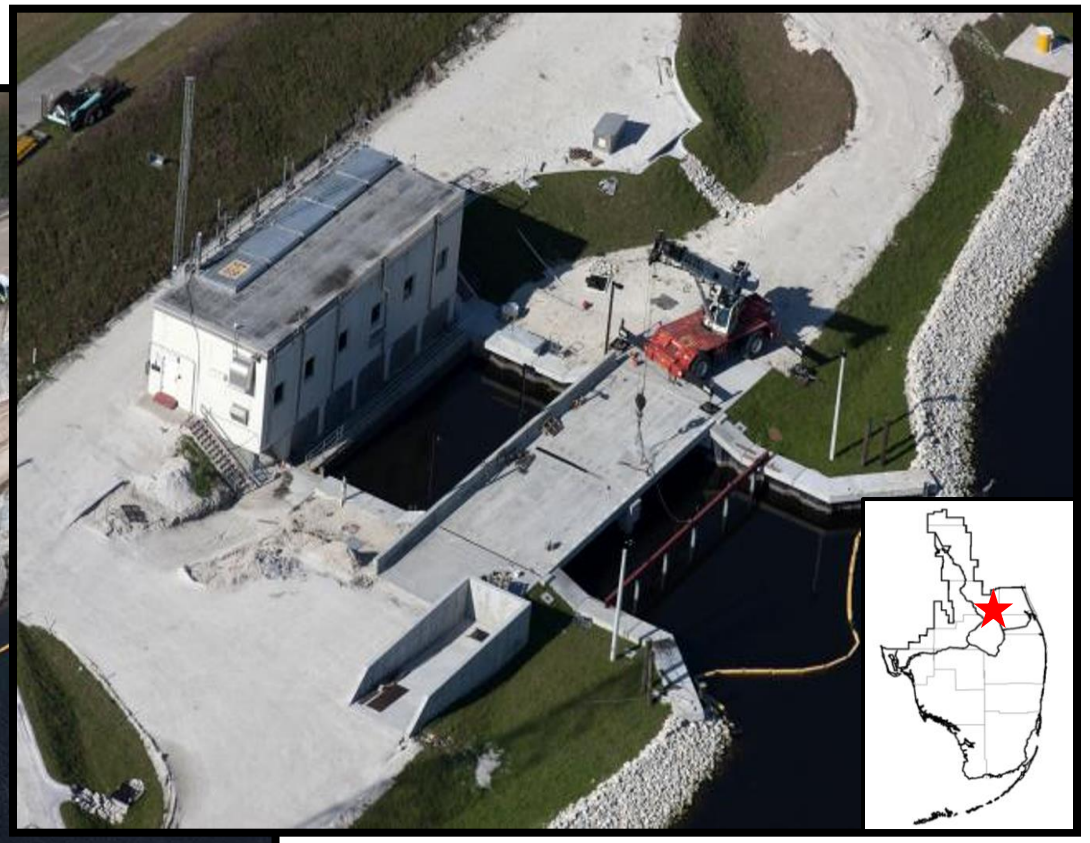
Palm Beach/Broward Counties

Operations, Engineering & Construction Capital Projects FY14

FY14 Accomplishments (cont.):

- **Construction Progress North Shore Trash Rakes:**

November 2013



August 2014

Okeechobee County

Operations, Engineering & Construction Capital Projects FY14

FY14 Accomplishments (cont.):

- **Construction Progress C4 Canal Stabilization:**

April 2014

August 2014

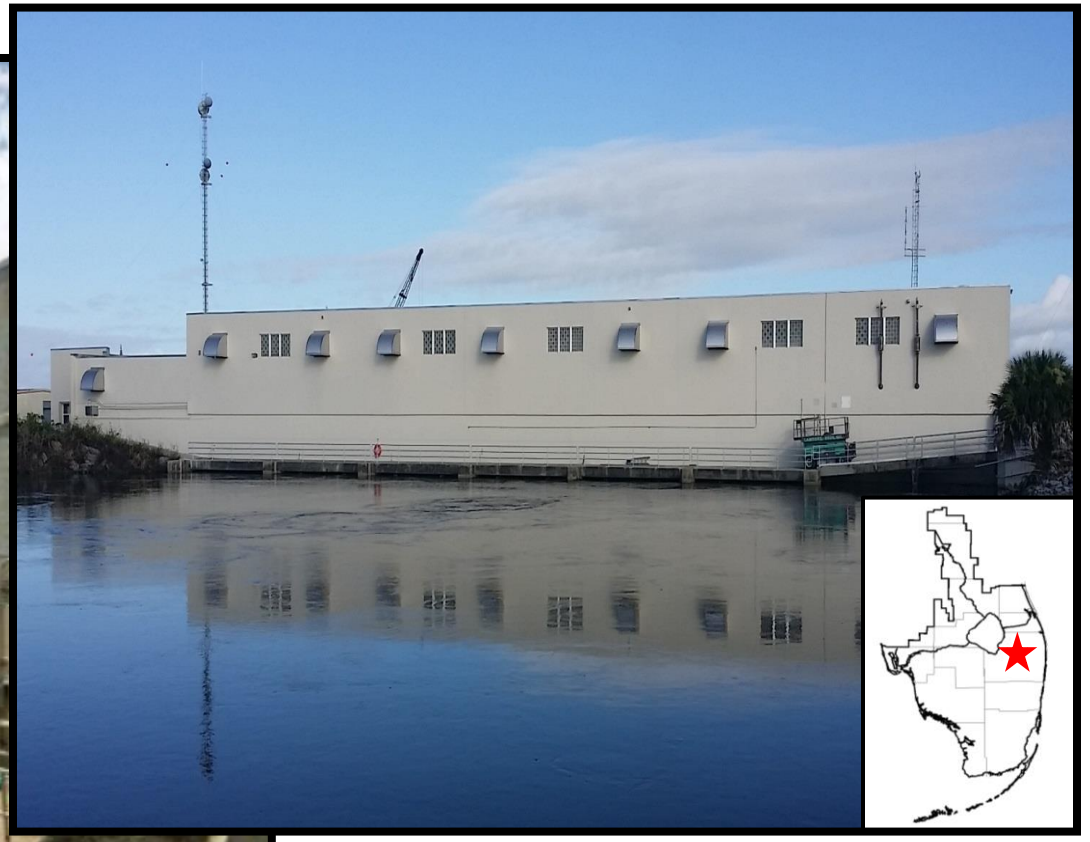
Miami-Dade County

Operations, Engineering & Construction Capital Projects FY14

FY14 Accomplishments (cont.):

- **Construction Progress S5A Hardening and Service Bridge:**

September 2013



September 2014

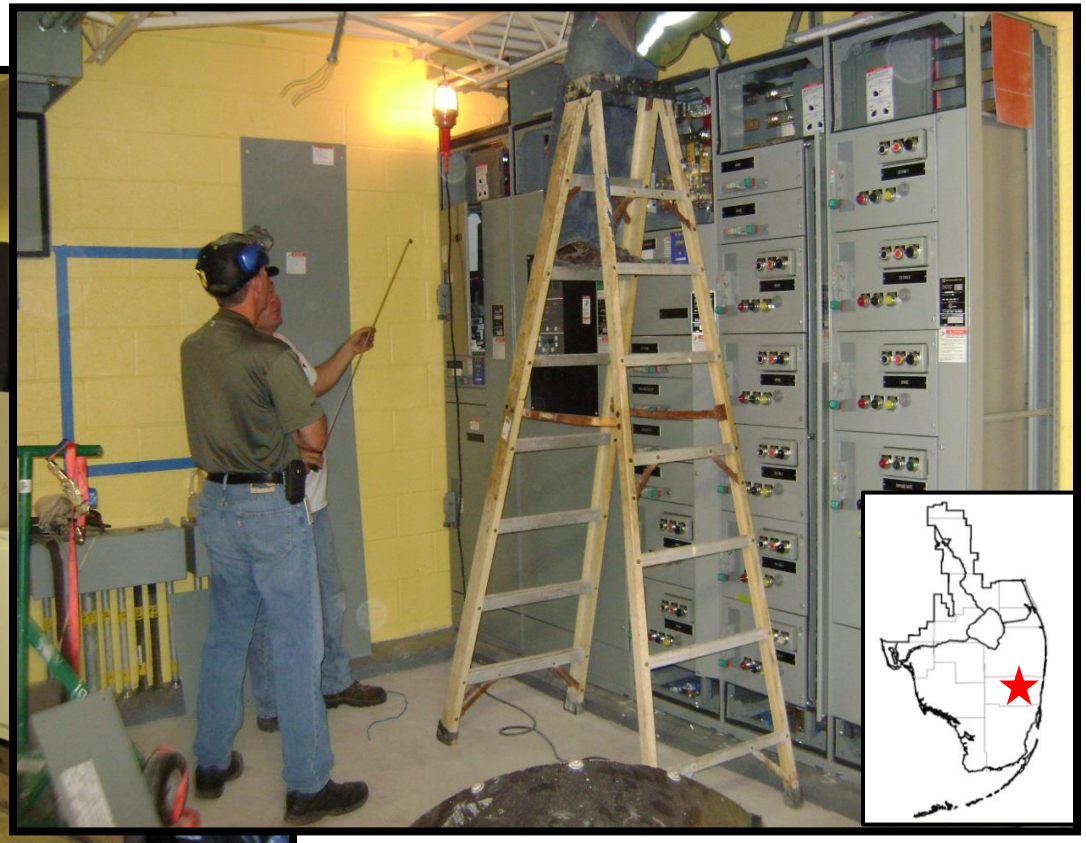
Palm Beach County - EAA

Operations, Engineering & Construction Capital Projects FY14

FY14 Accomplishments (cont.):

- **Construction Progress S-13 Pump Station Repower:**

March 2014



September 2014

Broward County

Operations, Engineering & Construction Capital Projects FY14 – FY15

FY14 Accomplishments (cont.):

- **Completed new General Engineering Services Contracts.**
- **Technical Review resulted in a change order total of only $698,737 in $51,996,890 of total contract amount, for a resulting percentage of 1.34%.**
- **10 New Projects started, 6 Projects Completed, 21 Projects Continued.**

FY15 Outlook:

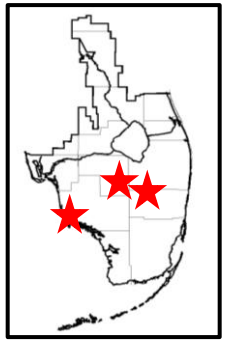
- **$29,330,000 has already been encumbered to date.**
- **12 New Projects starting, 14 Projects expected to be completed, 17 Existing Projects continuing into FY16.**

Operations, Engineering & Construction Capital Projects FY15

FY15 Outlook (cont.):

- Continuing Construction Projects Include:

S-150 Replacement
Broward County.



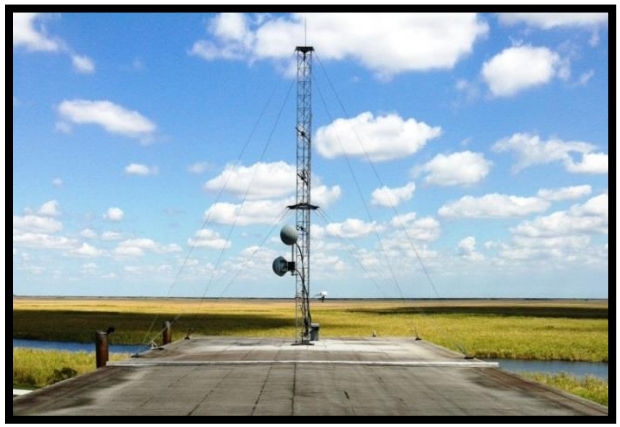
G-151 Replacement
Hendry County.

Miller Weir 3 Replacement
Big Cypress Basin

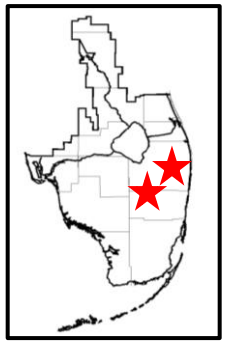
Operations, Engineering & Construction Capital Projects FY15

FY15 Outlook (cont.):

•Other Future and Continuing Construction Projects Include:



S6 Tower Replacement
Palm Bch. County.



G-94 Series Refurbishment
Palm Beach. County.

IT Shelter Replacements
District Wide

Operations, Engineering & Construction
Capital Projects

Current and Upcoming Design Projects:

- BCB FS Progressive D-B (DeAngelis-Diamond, 50% in review)
- Hillsboro Package 3 (Atkins, 90% due in December)
- S5A Refurbishment (Brown & Caldwell, 30% in review)
- C4 Detention Basin Pump Stations (Feasibility Study, Scoping 10/23)
- G103 Replacement (Ash Engineering, in progress)
- S140 Trash Rake (Mock-Roos, November Design Start)
- G58 Gate Replacement (ADA Engineering, October Design Start)
- S39A Replacement (Atkins, November Design Start)
- C100A Bank Stabilization (unassigned, May Design Start)
- Golden Gate #4 Replacement (unassigned, January Design Start)

Operations, Engineering & Construction
Capital Refurbishment Program

QUESTIONS