SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Aquatic Vegetation, Trash and Debris Entering District Waterways

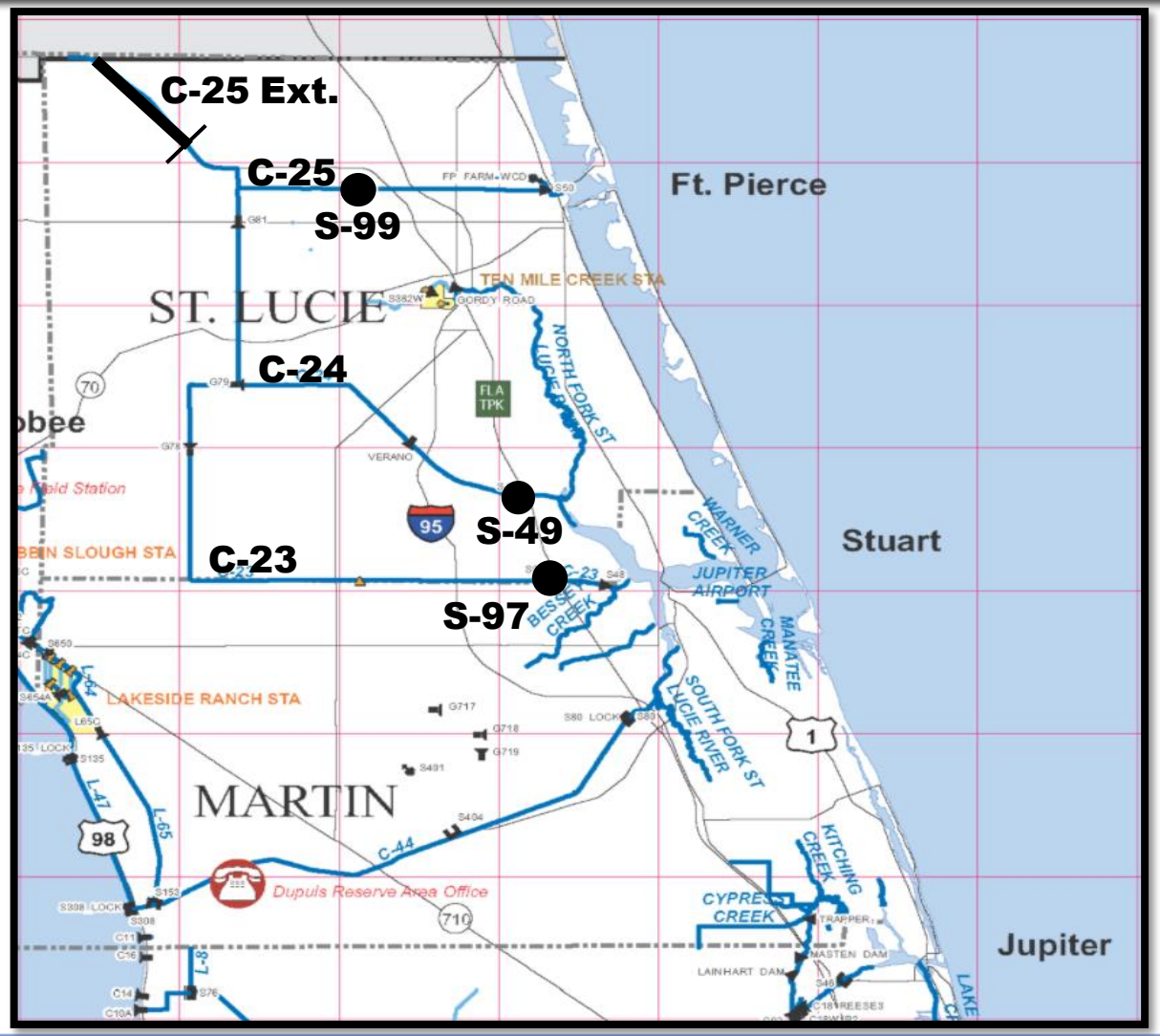
South Florida Water Management District
Public Workshop January 10, 2022
Rich Virgil, P.E., PMP Director - Field Operations

sfwmd.gov

Aquatic Vegetation Issues in Martin & St. Lucie Counties

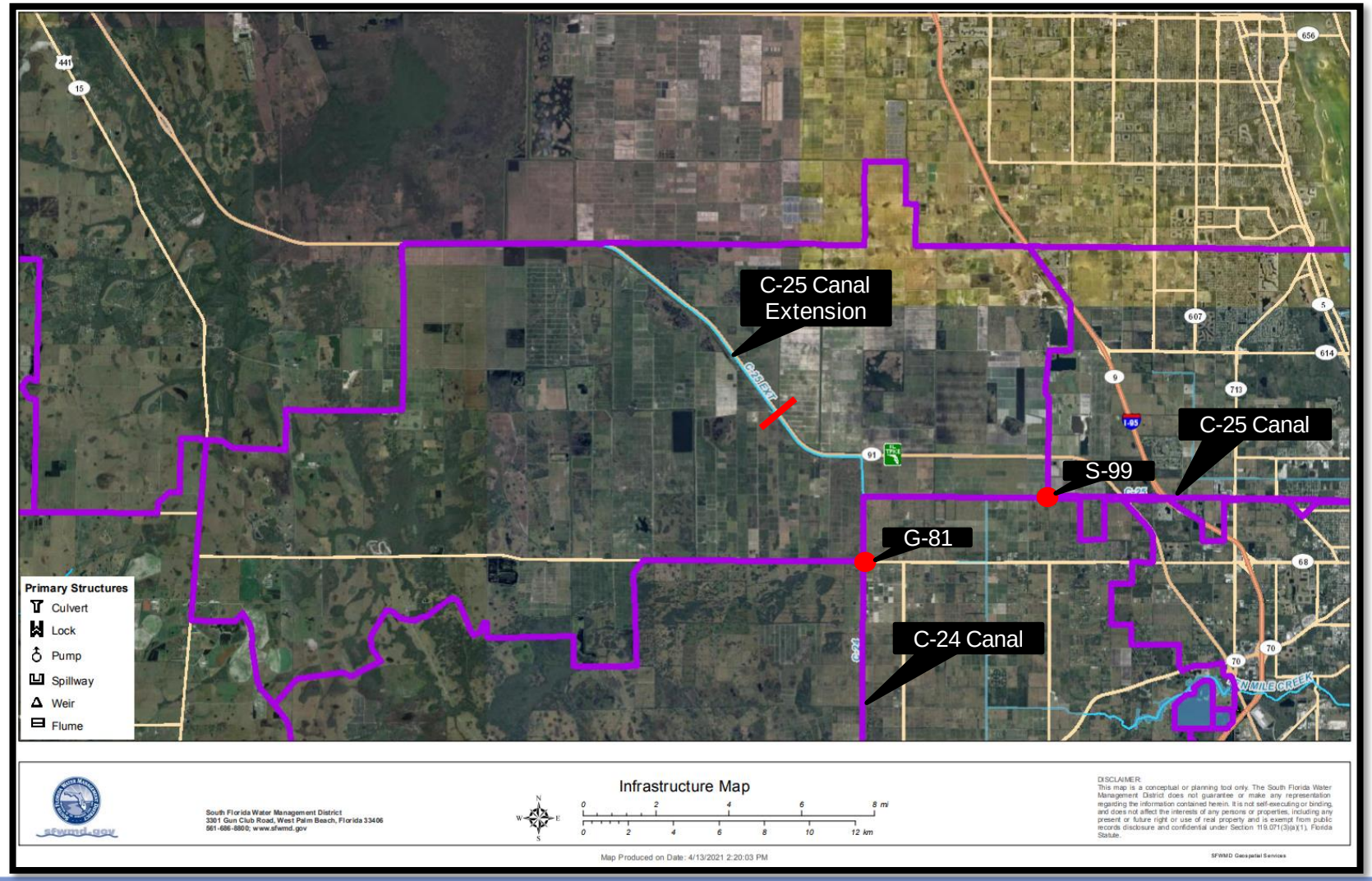
Structures and canals where significant aquatic vegetation accumulation occurs in Martin and & St. Lucie Counties:

- **C-25 Extension**
- **C-25**
- **S-99**
- **S-49**
- **S-97**



Impacts to Drainage

- **Obstructions like floating vegetation, that is not promptly removed, can result in blockage of canals and structures which can lead to flooding.**
- **Floating vegetation discharged to coastal estuaries can have negative impacts to water quality and marine life.**



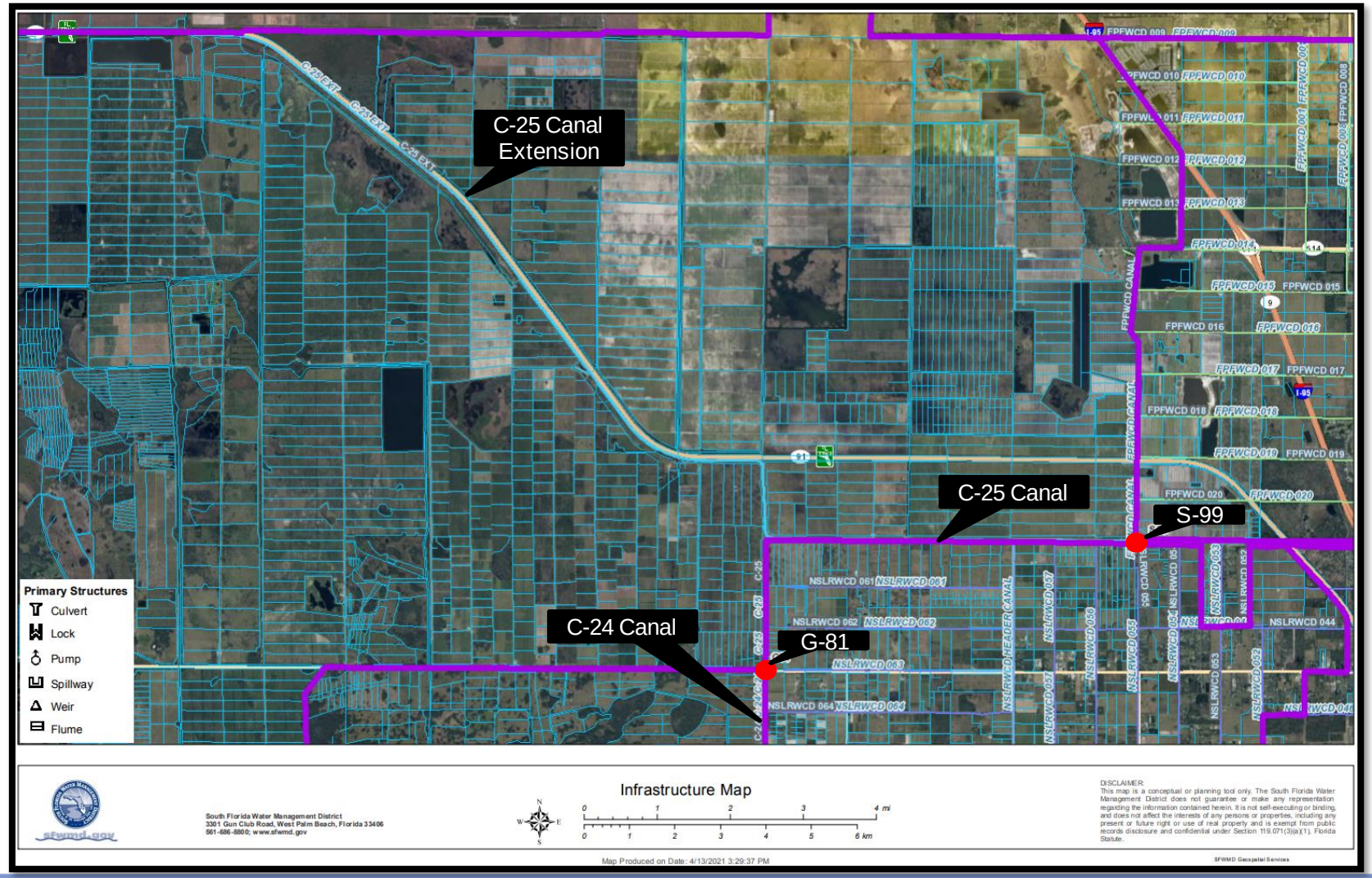
Impacts to Drainage

- Structure S-99 in the C-25 Canal looking west.

- Structure S-97 in the C-23 Canal looking west.

Additional Drainage Infrastructure

- **Hundreds of miles of privately owned and operated canals discharge to the District system (Secondary Inflows).**



Secondary Inflows

- **Vegetation being discharged to the District Canals from private lands via project culverts (PCs).**

Secondary Inflows

- Vegetation being discharges to the District Canals from private canals such as the C-25 Extension

Secondary Inflows

- **Once the rains start vegetation is broken loose causing it to discharge into the District Canals from private canals such as the C-25 Extension.**

Flood Control Maintenance

Background:

- **C-25 Canal provides flood control for approximately 1/3 of St. Lucie County. The C-25 Canal is approximately 17 miles long and flows west to east ultimately discharging to the Indian River Lagoon. Large amounts of vegetation accumulates upstream of the C-25 Canal in a privately own canal known as the C-25 Extension. During major rain events this vegetation is often discharged to the C-25 Canal.**

Properly Maintained C-25 Canal Free of Floating Vegetation

SFWMD Response

- **Mechanical Harvesting**

Impacts to Permitted Facilities

- **Severe damage to bridge caused by the extreme pressure applied by floating vegetation, which required removal and replacement of the bridge.**

Vegetation Removal Summary

Vegetation Removal Totals for Significant Locations:

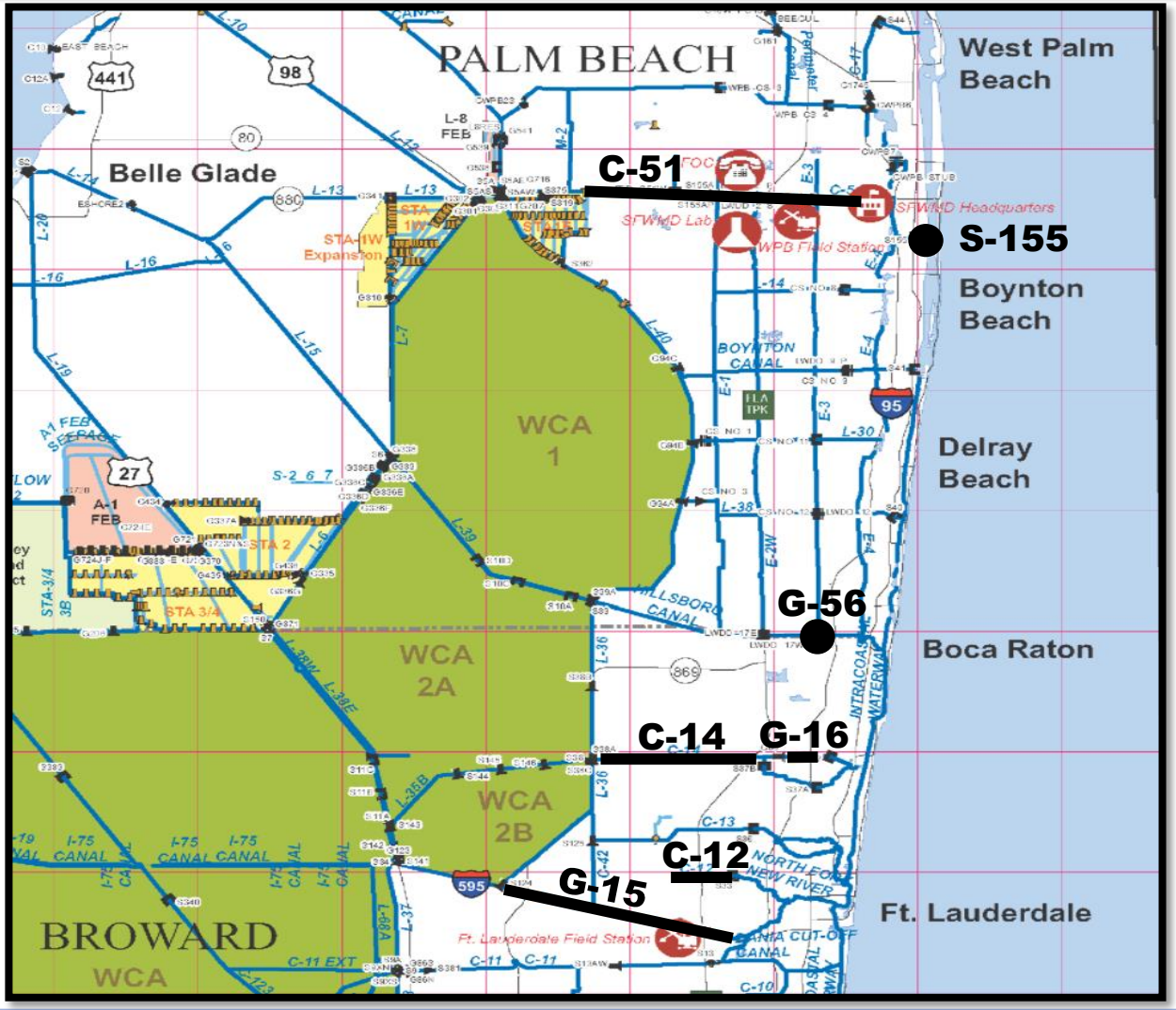
- **FY 19 C-25: 1671 Cubic yards**
- **FY 20 C-25: 597 Cubic yards**
- **FY 21 C-25: 620 Cubic yards**
- **FY 21 C-25 Ext: 400 Cubic yards**

Note: The cubic yards of secondary vegetation identified above was removed from three locations on the C25, Turnpike Extension barrier, the Y barrier and S-99 structure.

Aquatic Vegetation and Debris Issues In Broward & Palm Beach Counties

Structures and canals where significant aquatic vegetation and debris accumulation occurs in Broward and & Palm Beach Counties:

- **S-155**
- **G-56**
- **G-16**
- **C-14**
- **C-12**
- **G-15**

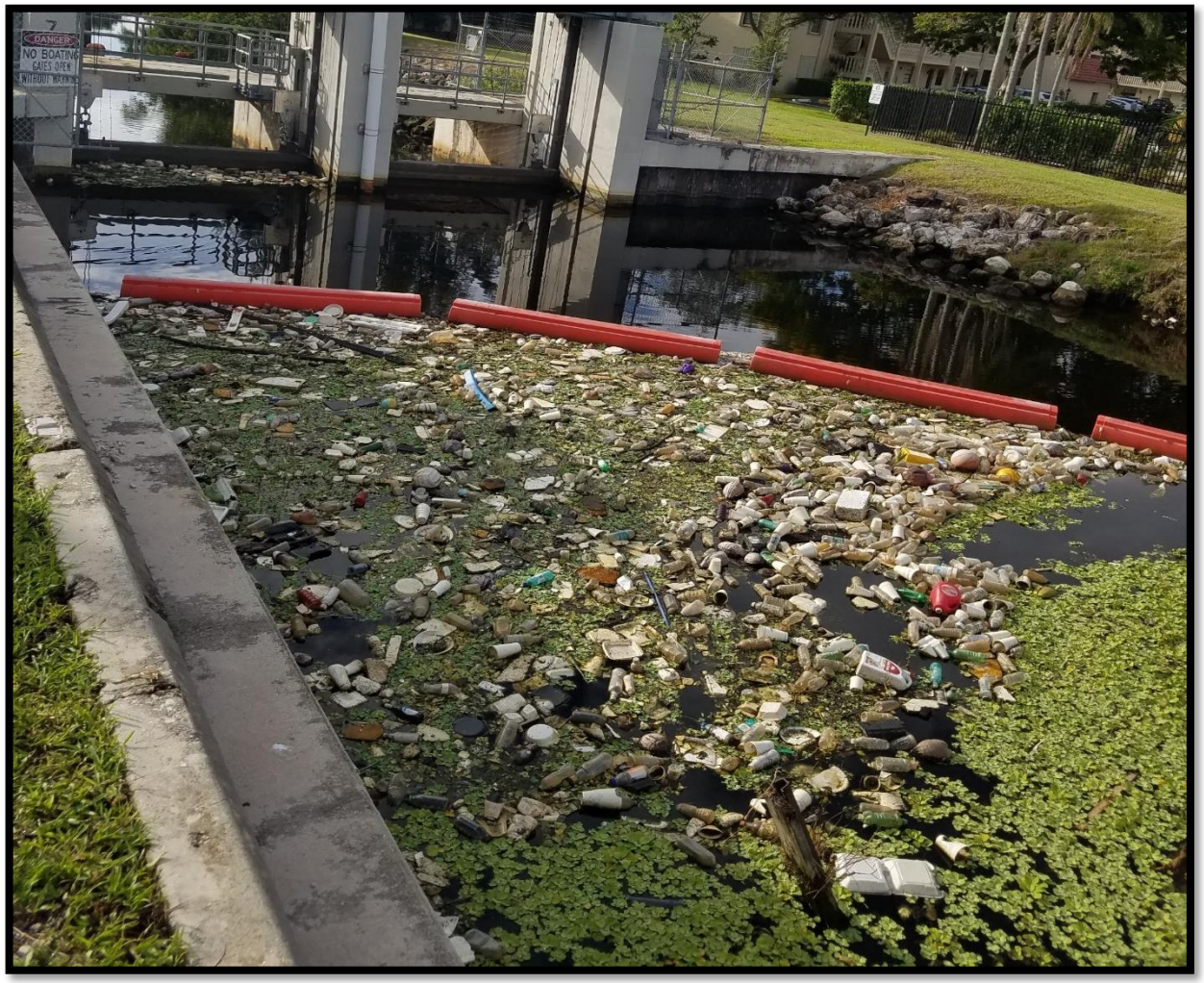


Aquatic Vegetation Accumulation at S-155 in the C-51 Canal

Secondary Inflows to C-51 Canal

Aquatic Vegetation Accumulation at G-56 in the Hillsboro Canal

Debris Accumulation in the G-16 Canal



Debris Accumulation in the C-12 Canal

Aquatic Vegetation and Debris Removal Summary

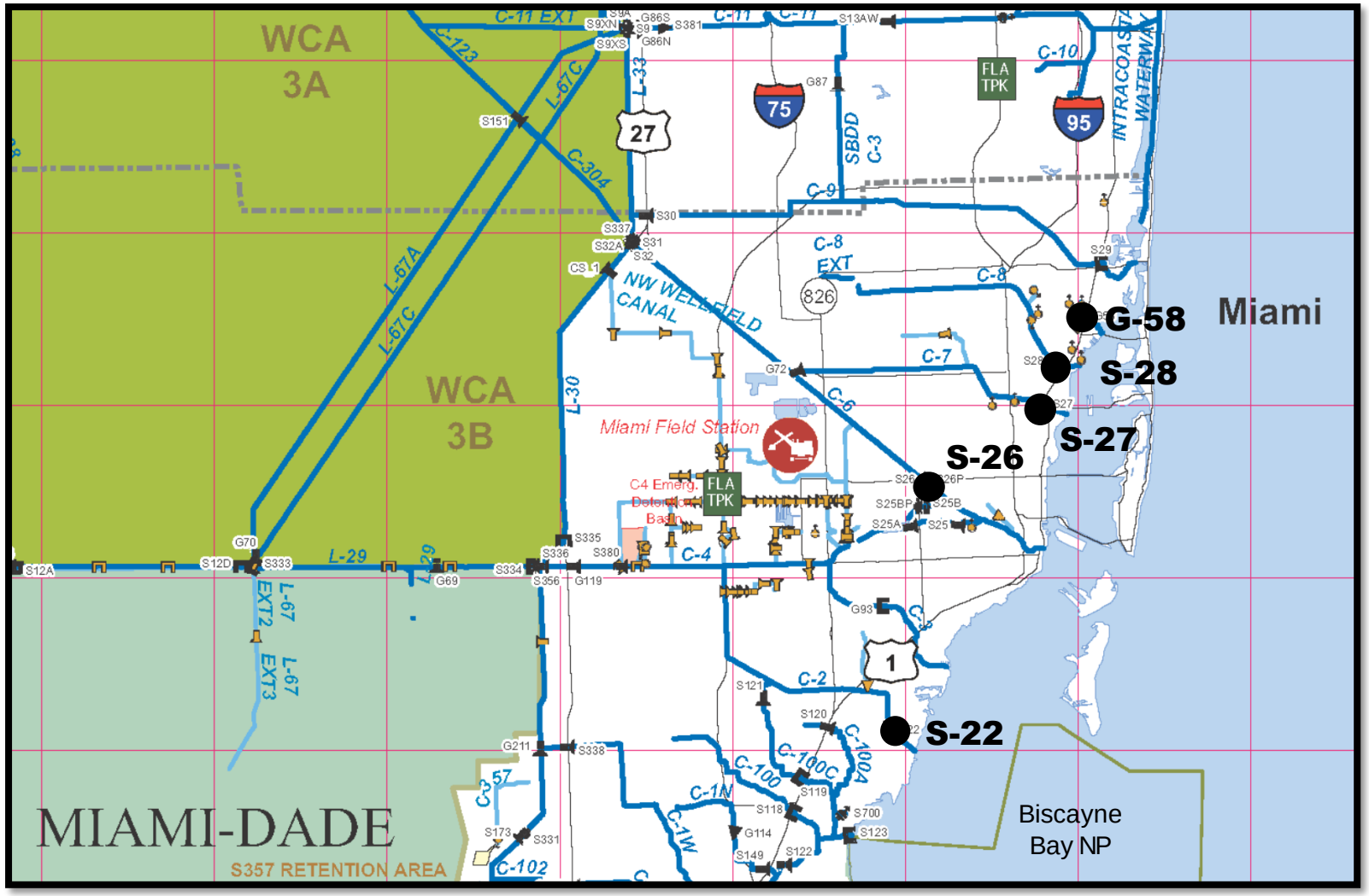
FY21 Structure and Canal Cleaning Totals for Significant locations:

- **S-155: 60 Tons Average**
- **G-56: 2 Tons Average**
- **G-16: 2 Tons Average**
- **C-14: 1 Ton Average**
- **C-12: 2 Tons Average**
- **G-15: 2 Tons Average**

Debris Issues In Miami-Dade County

Structures where significant litter and debris accumulation occurs in Miami-Dade County:

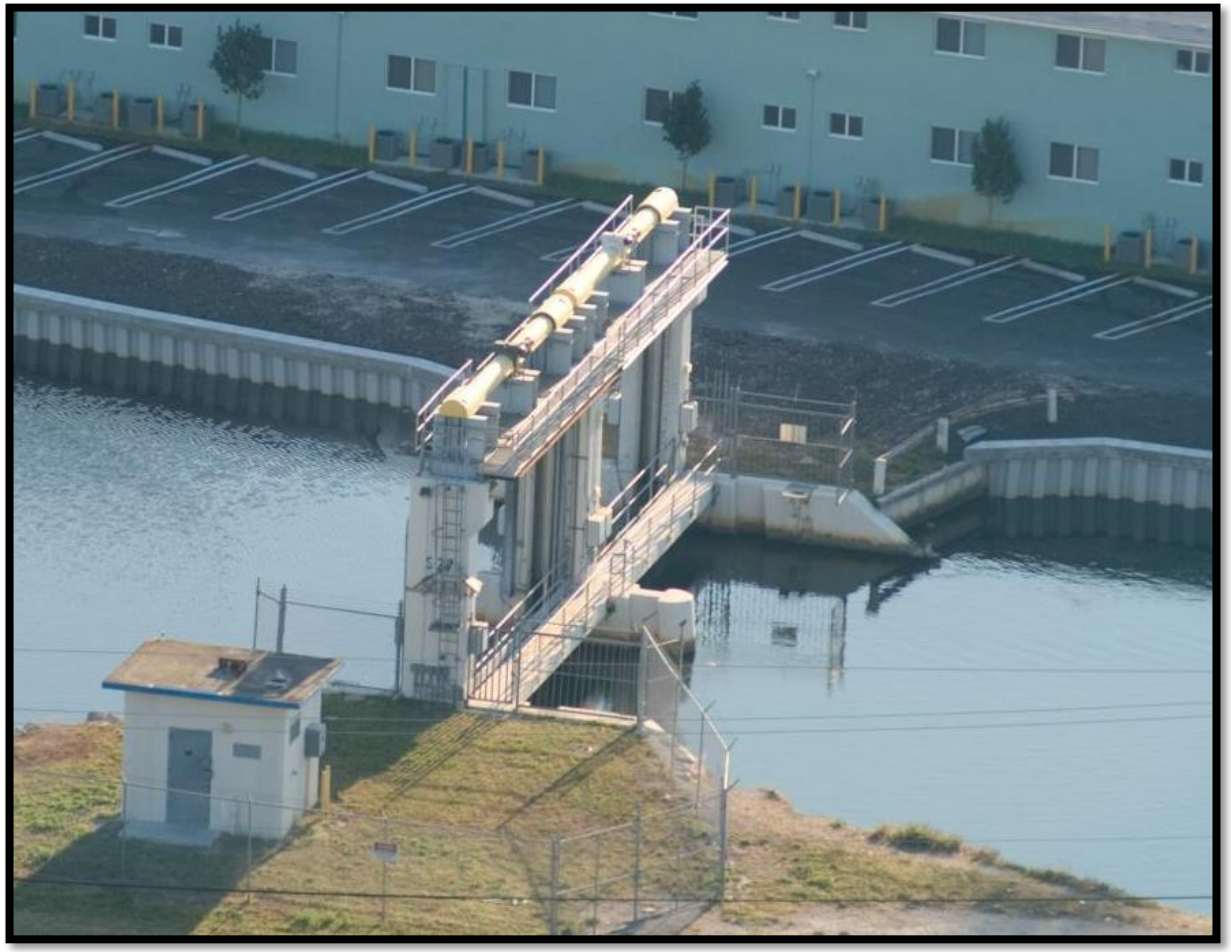
- **S-22**
- **S-26**
- **S-27**
- **S-28**
- **G-58**



Debris Issues In Miami-Dade County

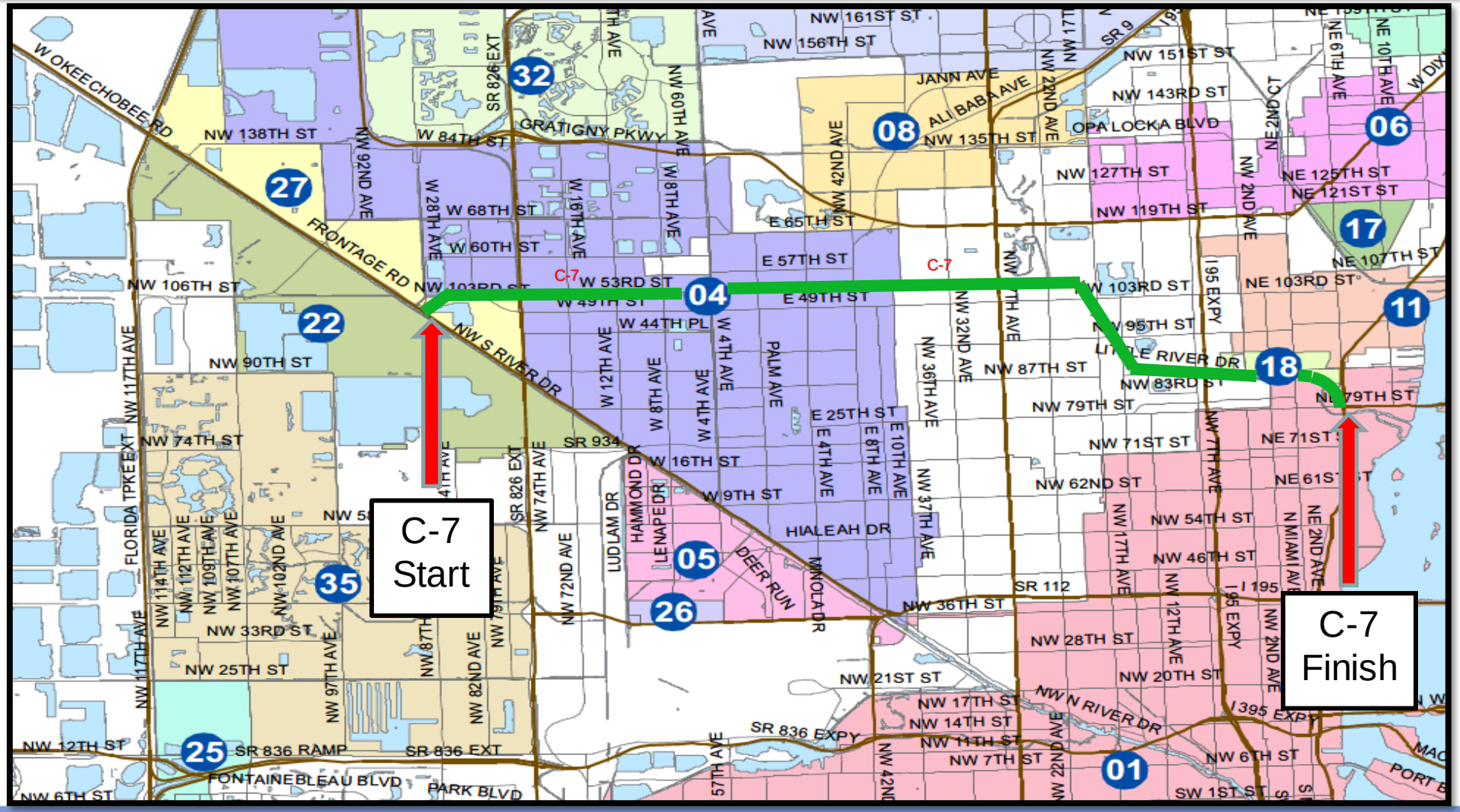
Background:

- **S-27 is the coastal salinity structure located on C-7 Canal. C-7 is approximately 11 miles long and flows west to east through 5 local urban municipalities. Large amounts of litter and debris accumulates upstream of S-27. This results in high number of complaints to clean the area requiring significant District resources.**



C-7 Canal Basin

- **Municipalities Within C-7 Basin:**
  - 22, MEDLEY, 1949
  - 27, HIALEAH GARDENS, 1948
  - 04, HIALEAH, 1925
  - 30, UNINCORPORATED MIAMI-DADE, N/A
  - 18, EL PORTAL, 1937
  - 01, MIAMI, 1896
- **Debris can result in blockage of canals and structures which can lead to flooding.**
- **Discharge of debris to Biscayne Bay can have negative impacts to water quality and marine life.**



Type of Debris that Accumulates

- Plastic water bottles, Styrofoam cups, coconuts and vegetation

- Doors, bed mattresses, couches, coolers, tires and pallets

Equipment Needed to Clean Up Debris

- **Towboat and trash truck in action removing debris from the canal**

After Clean Up at S-27 in the C-7 Canal

Additional Measures Taken in the C-7 Canal

- In an ongoing effort to reduce debris in the Miami Little River C-7 Canal the District has installed a second tuff boom at NW 27th Avenue.
- The S-27 Structure and NW 27th Avenue booms are cleaned twice a week.

Debris Accumulation at S-22 in the C-2 Canal

Debris Accumulation at S-28 in the C-8 Canal

Debris Removal Summary

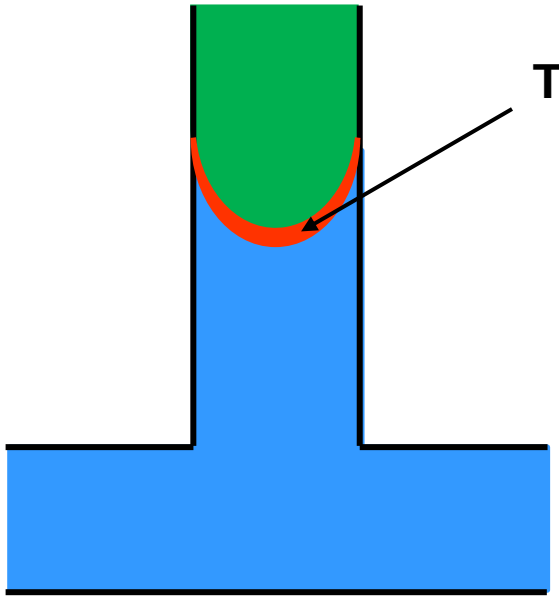
FY21 Structure Cleaning Totals for Significant locations:

- **S-22: 25 Tons Average - 19 Cleanings**
- **S-26: 2 Tons Average - 2 Cleanings**
- **S-27: 217 Tons Average - 97 Cleanings**
- **S-28: 84 Tons Average - 57 Cleanings**
- **G-58: 2 Tons Average - 4 Cleanings**

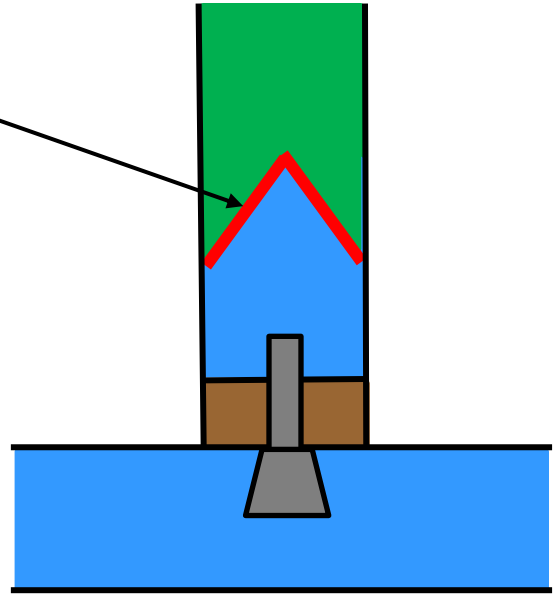
Types of Best Management Practices

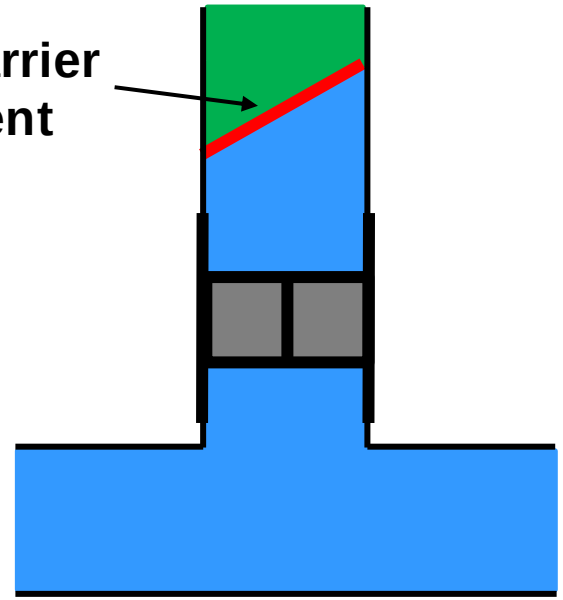
- Installation of barrier at all discharge points to the C&SF Flood Control System or other Works of the District.
- Periodic maintenance of the barrier including mechanical removal of vegetation and debris to minimize discharges to the C&SF Flood Control System or other Works of the District.
- Use of herbicides to minimize to development and accumulation of vegetation on the barrier which could discharge to the C&SF Flood Control system or other works of the District.

Types of Best Management Practices



Typical Barrier Placement





Typical Barrier Placement

Canal to Canal

Culvert to Canal

Water Control Structure to Canal

Typical Barrier Placement for Various Types of Connections

Types of Best Management Practices

Canal

Culvert

Water Control Structure

Typical Barrier Placement for Various Types of Connections

Types of Best Management Practices

Blue Floating Barrier

Black Floating Barrier

Turbidity Barrier

Typical Types of Floating Barriers

Types of Best Management Practices

Wood & Styrofoam Floating Barrier

Types of Best Management Practices

Chain-link Fence used as a Barriers

Types of Best Management Practices

District Standard Barrier – Tuff Boom

Purpose of Proposed Rule

Prevent the discharge of aquatic vegetation, trash, or other debris from entering the C&SF system or other Works of the District through best management practices (BMPS)

Who is covered?

System owners, including special districts, of any water management system or water management feature that **connect to or make use of** the C&SF system or other Works of the District located in the following counties:

Broward	Highlands	Okeechobee	Polk
Collier	Lee	Orange	St. Lucie
Glades	Martin	Osceola	
Hendry	Miami-Dade	Palm Beach	

Requirements

System owners shall establish and implement a vegetation and debris management plan, which **must** include:

- An implementation schedule
- Preventative BMP measures, which **may** include:
  - installation of features to block transmission and facilitate removal
  - mechanical removal
  - herbicide application

Requirements

- System owners shall maintain a copy of the Management Plan along with records demonstrating implementation and maintenance of the Management Plan.

- At the District's request, system owners must provide a copy of the Management Plan and implementation and maintenance records within 7 days.

Remedial Measures

- If the system owner fails to establish or timely provide a Management Plan, the District will issue a Notice of Violation requiring the system owner to provide a Management Plan within 30 days.
  - The District may approve an extension of time upon a showing of good cause from the system owner.
- The District may take enforcement action, which may include civil penalties of up to $15,000 per day, per violation, as provided in section 373.129(5), F.S.

Next Steps in Rulemaking Process

- January 17, 2023 – deadline for public comments
- February or March 2023 – additional rule workshop
- Spring/Summer 2023 – request Governing Board authorize the publishing of the Notice of Proposed Rule and adoption of Proposed Rule.

Aquatic Vegetation, Trash, and Debris Entering District Waterways

Virtual Participants

If you're participating via Zoom – use the Raise Hand feature

If you're participating via Phone –
*9 Raises Hand
*6 Mutes/Unmutes