Alternative Water Supply Sources
Reuse and Resilience
Miami-Dade Water and Sewer Department

South Florida Ecosystem Restoration Task Force
Public Engagement Workshop
November 17, 2020

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Miami Dade Water and Sewer Department
AGENDA

• Overview Miami-Dade Water and Sewer Department (WASD) system
• Summary of South Dade Water Reclamation Project
• Summary County-FPL Reuse Agreement
• Current Available Reuse for BBSEER
MIAMI-DADE UTILITY
OVERVIEW

Water Treatment System
Supplying on average 320 million gallons per day (MGD)

Wastewater System
Collecting, treating, and disposing of ~290 MGD

ASR Wellfield
Will provide up to 25 MGD of additional capacity

Regional Treatment Plants
Two ASR Wellfields
South Dade System
Wastewater Treatment Plants

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WASTEWATER REUSE

Challenges in Miami-Dade County

• **Land application opportunities (i.e. irrigation)**
  • Economic infeasibility due to the urbanized community (as indicated by FDEP in 2015 Report to Florida Legislature).
  • Limited irrigation

• **Aquifer recharge**
  • Regulatory and economic challenges
  • Geographical position between two ecologically sensitive national parks
  • Unique connectivity between the Biscayne Aquifer and the surrounding water resources
  • Requires a significantly higher level of treatment (Outstanding Florida Waters – Antidegradation Standards, etc.)

• **WASD Aquifer Recharge Project Piloting**
  • Economic and environmental impact of aquifer recharge is much greater than that of other available water supplies
WATER SUPPLY INVESTMENTS IN CONTEXT

Water Supply Alternatives
Cost Comparison
(Millions of Dollars – 15 MGD)

- Biscayne Aquifer
- Biscayne Aquifer (C-51)
- Floridan Aquifer
- Wastewater Reuse - FPL Cooling Towers
- Wastewater Reuse - Environmental Use
- Ocean Water (Desalination)
South District Water Reclamation Project—Groundwater Replenishment

Project Facilities

Source of Aerial: Google Earth Pro
Selected SDWRP Treatment Processes

- **Microfiltration**
- **Reverse Osmosis**
- **Ion Exchange**
- **UV w/ H₂O₂**

Influent from SDWWTP → Microfiltration → Backwash to SDWWTP

- **RO Brine to Deep Injection Wells**
- **IX Brine to Deep Injection Wells**

Recharge Facilities at Metro Zoo

### Summary of South Dade Water Reclamation Project

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>SDWWTP Average Effluent</th>
<th>Anticipated Limit Annual Average</th>
<th>Anticipated Limit Single Sample</th>
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<tbody>
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<td>CBOD₅</td>
<td>mg/L</td>
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<td>--</td>
<td>20</td>
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<tr>
<td>TOC</td>
<td>mg/L</td>
<td>11.7</td>
<td>3 (Monthly)</td>
<td>5</td>
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<td>TSS</td>
<td>mg/L</td>
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<td>Nitrate</td>
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<td>10</td>
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<td>Ammonia</td>
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<tr>
<td>T. Phosphorus</td>
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South District Water Reclamation Plant Cost Estimate
Project stopped at 90% design in 2011

2011:
- Total Estimated Capital Cost (including design, construction, construction management, overhead, etc) = $350 million
- Total Estimated Annual Operation and Maintenance Cost = $18 million

2020:
- $413 million
  Using U.S. Bureau of Labor CPI 1.18

Goal was 20 ug/L
Required 10 ug/L to meet Water Quality standards for Bay
Based on pilot tests 10 ug/L was achievable

Summary of South Dade Water Reclamation Project
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Clean Water Recovery Center

15 mgd of WASD treated wastewater

Water treatment cleans the water for reuse and handles waste streams to meet environmental goals

<table>
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<th>Capital Cost</th>
<th>FPL</th>
<th>$300 Million</th>
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<tr>
<td>O&amp;M Cost</td>
<td>WASD</td>
<td>$6.5 Million/ year</td>
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BBSEER is starting with the six CERP components below.

This list will be subjected to screening and analysis during the study:

- Biscayne Bay Coastal Wetlands (OPE)
- Biscayne Bay Coastal Canals (FFF)
- C-111N Canal Project (WW)
- South Miami Dade County Reuse (BBB)
- West Miami Dade Reuse (HHH)
- North Lake Belt (XX)
FPL is in design phase for the 2nd pipeline to South Dade.

Should the County determine to expand reuse to South Dade (according to the schedule would be Fall 2021 for determination), FPL will permit and construct the 2nd pipeline.

County would need to determine and provide funding for 2nd Pipeline.

FPL and County would need to reach agreement on FPL reimbursement of costs and schedule of payments prior to Fall 2021.

2nd pipeline would then be used for environmental water down south.

Water Quality treatment separate and potentially stand alone facility at a yet to be determined location.

Based on current flows to SDWWTP there are approximately 85 MGD unallocated that could be utilized for reuse.
West Miami Dade Reuse

- WASD flows are currently below 300 MGD with a permitted capacity through our three (3) existing plants of 394 MGD.
- The West District Plant is planned, but will not be constructed until required (post 2035)
Integrating ASR into Reuse Multiple Stakeholder Solutions
Example South Dade Agricultural Drawdown

Current: DRY (2008) – Canal structure opening

DRY (2008) – low flow pumpage and storage in ASR wells

ASR storage water available for irrigation, salt front mitigation, environmental applications
QUESTIONS?

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