

Reuse Update Miami-Dade Water and Sewer Department

Special thanks to Virginia Walsh, Ph.D.,
P.G. - WASD



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Client Director



Agenda

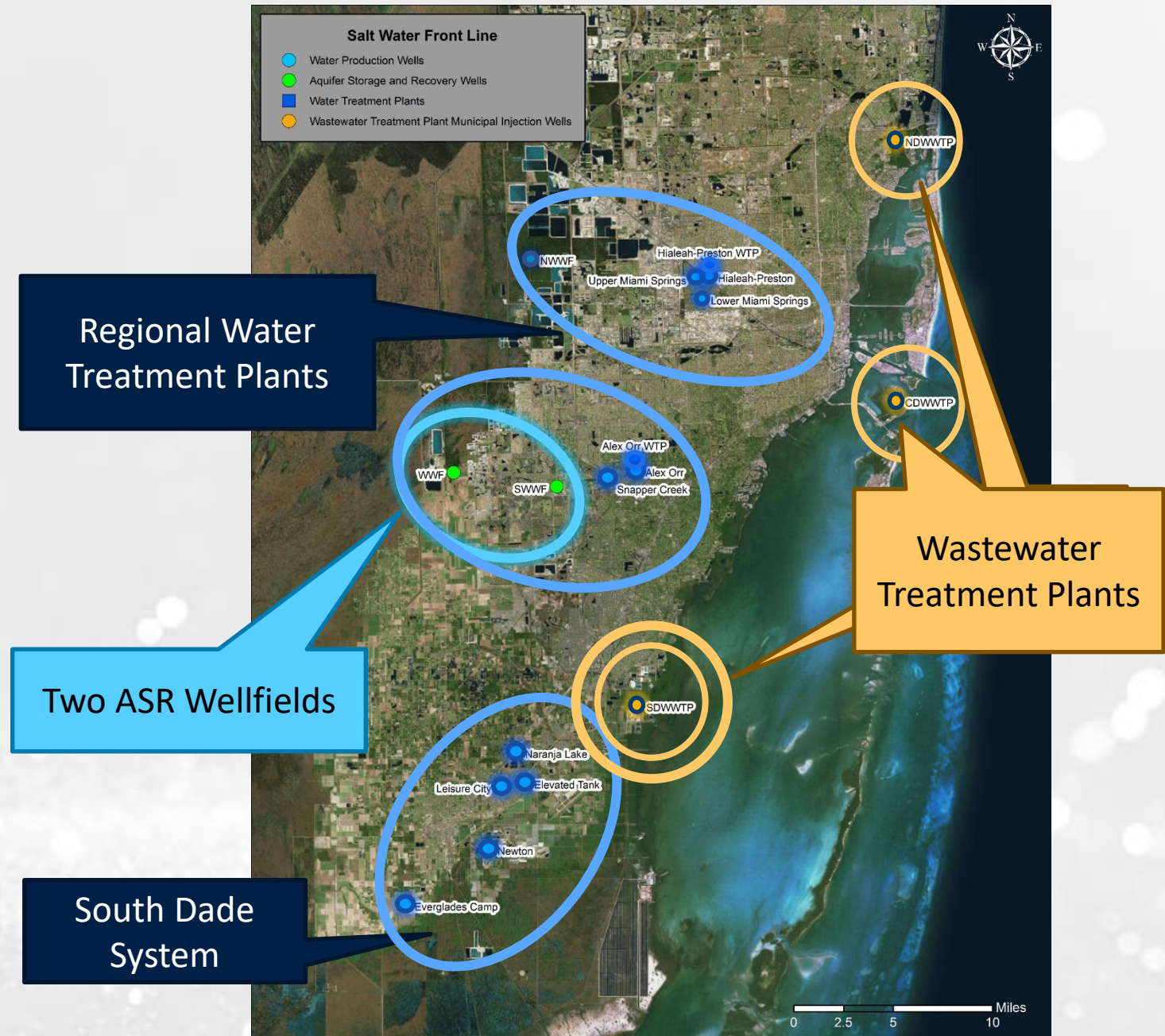
- Miami-Dade WASD Overview
- Reuse Challenges
- Reuse Alternatives
- Future Reuse Alternatives
- Summary
- Questions



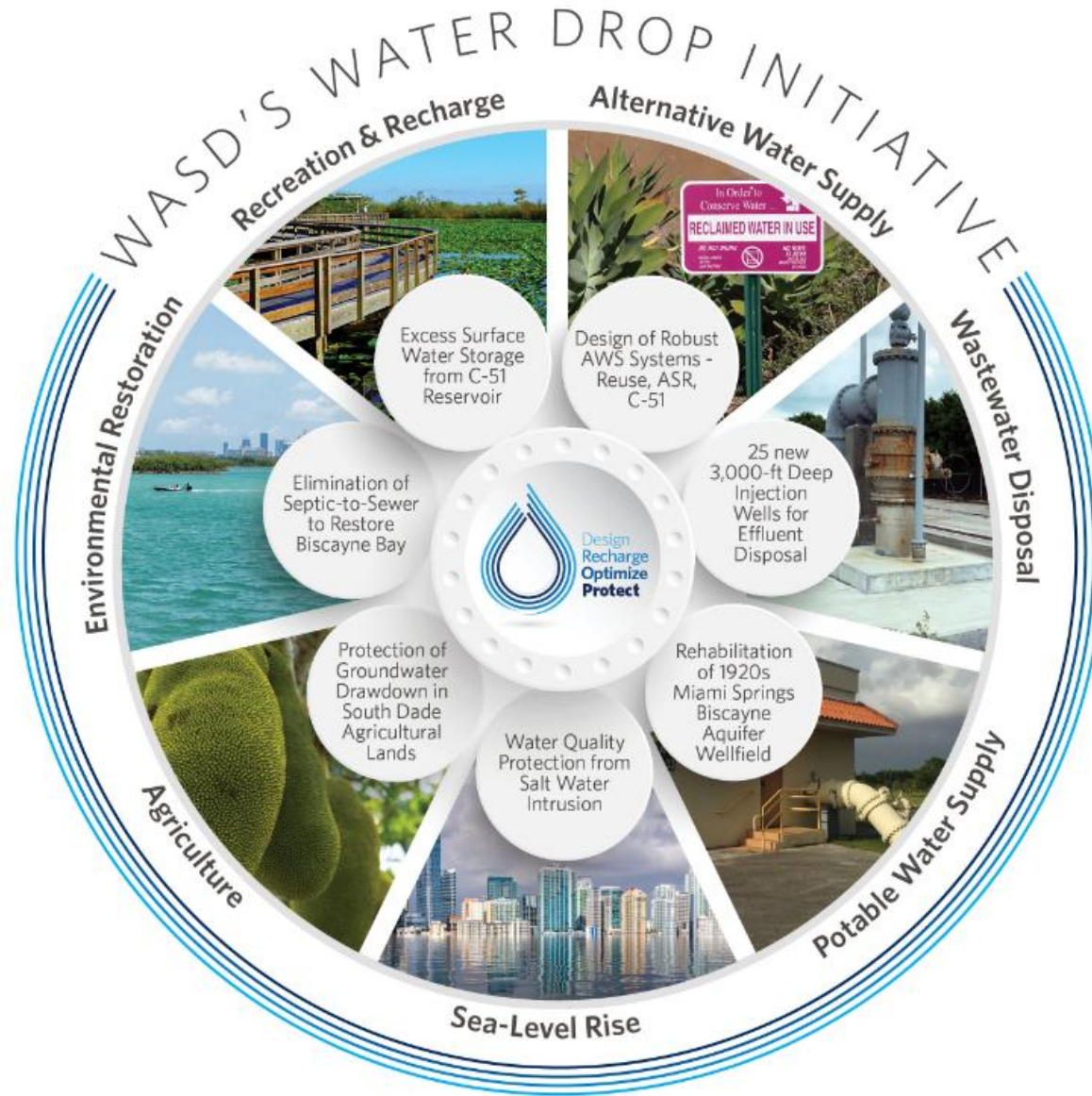
MIAMI-DADE WASD OVERVIEW

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

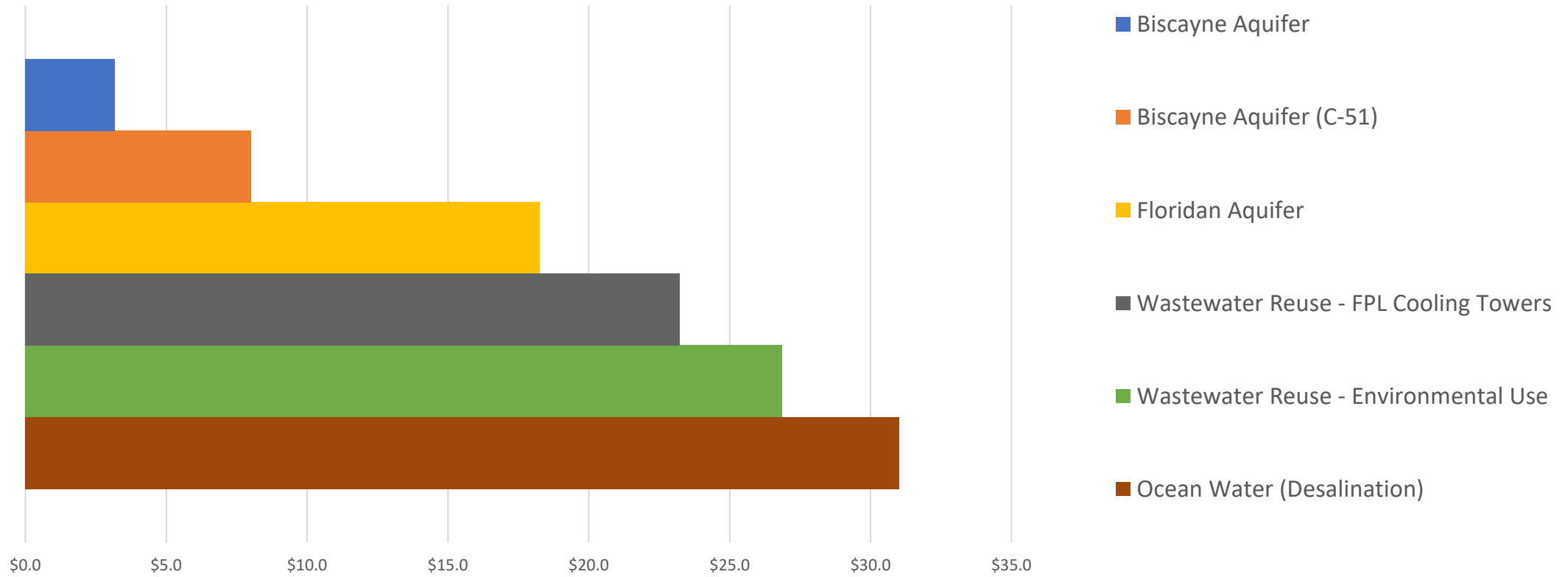


DESIGN RECHARGE OPTIMIZE PROTECT (DROP)



WATER SUPPLY INVESTMENTS IN CONTEXT

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





REUSE CHALLENGES

REUSE PROJECTS EVALUATED

IDENTIFYING 117 MGD OF ECONOMICALLY FEASIBLE REUSE PROJECTS IS A CHALLENGE: A REVIEW OF KEY PREVIOUS WORK



South District Water Reclamation Plant

21 mgd Aquifer Recharge

Total Investment ≈\$250 Million

Required reverse osmosis, advanced oxidation and ion exchange treatment for nutrient and chemicals of concern removal

May need to be shutdown during wet season

Large carbon footprint

Designed but not built

Biscayne Bay Wetlands Rehydration Pilot Project

Evaluated several treatment technologies to determine technical feasibility of wetlands rehydration

Determined energy intensive reverse osmosis (RO) treatment would be necessary to meet stakeholder requirements on nutrient and chemicals of concern removal

High cost and large carbon footprint

Recommended Floridan RO WTP would be more effective

FPL Industrial Reuse Project

15 mgd to FPL

FPL will pay capital and WASD will pay for O&M costs



Central District Water Reclamation Facility

1.5 mgd spray irrigation

Required reverse osmosis treatment due to high chlorides

Total Investment ≈\$30M

Large carbon footprint

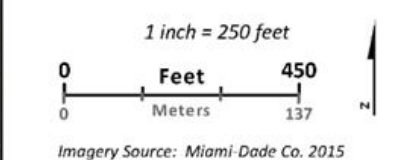
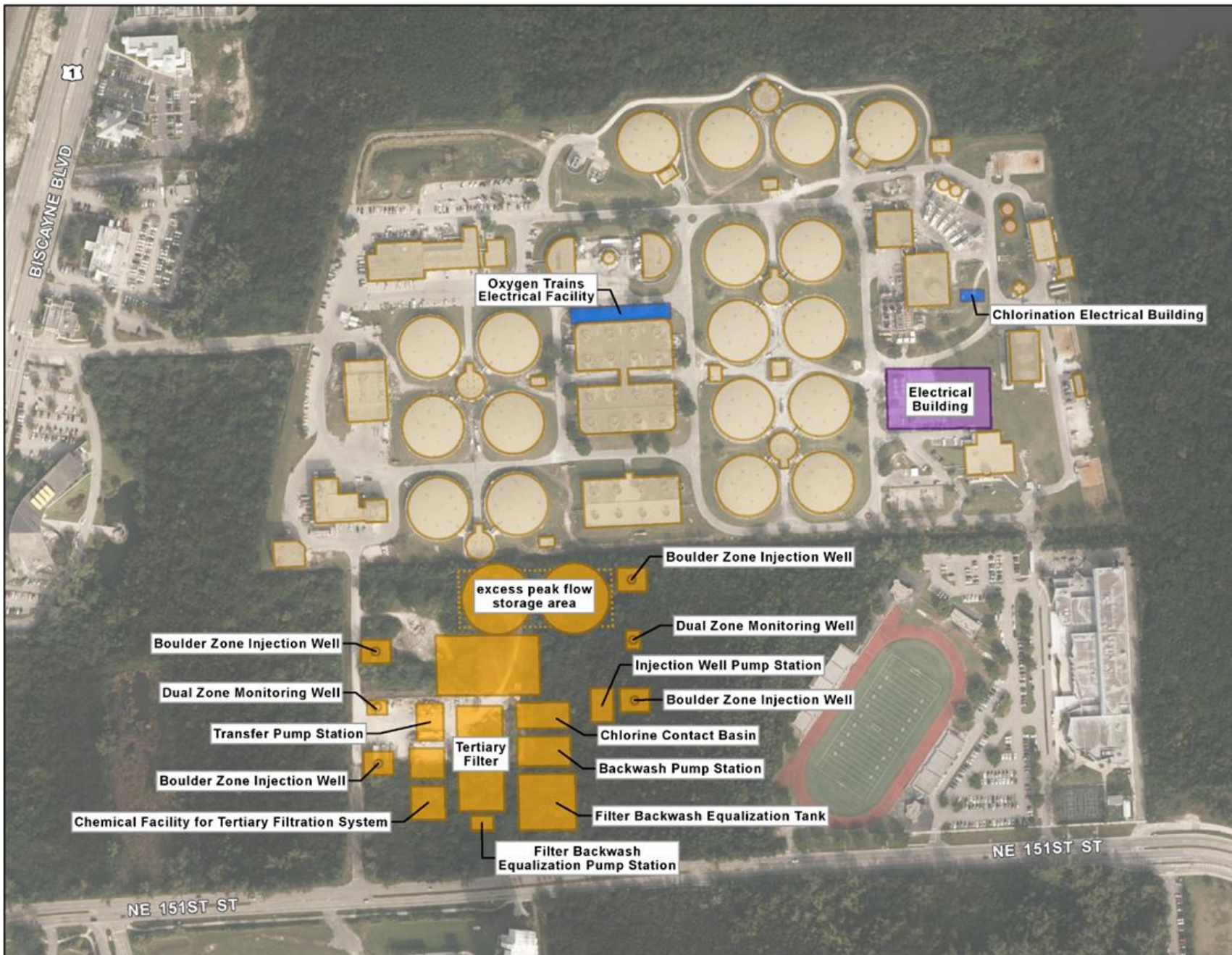
Designed but not built

Reuse Feasibility Study

Recommends focusing on FPL reuse project in the short-term and continue to evaluate reuse opportunities in the future

Identified several technical issues that impact feasibility of reuse

OOL PROJECTS UPDATE



**North District
Wastewater Treatment Plant
Site Plan
TA7, Task 2.1 Interim Flows**



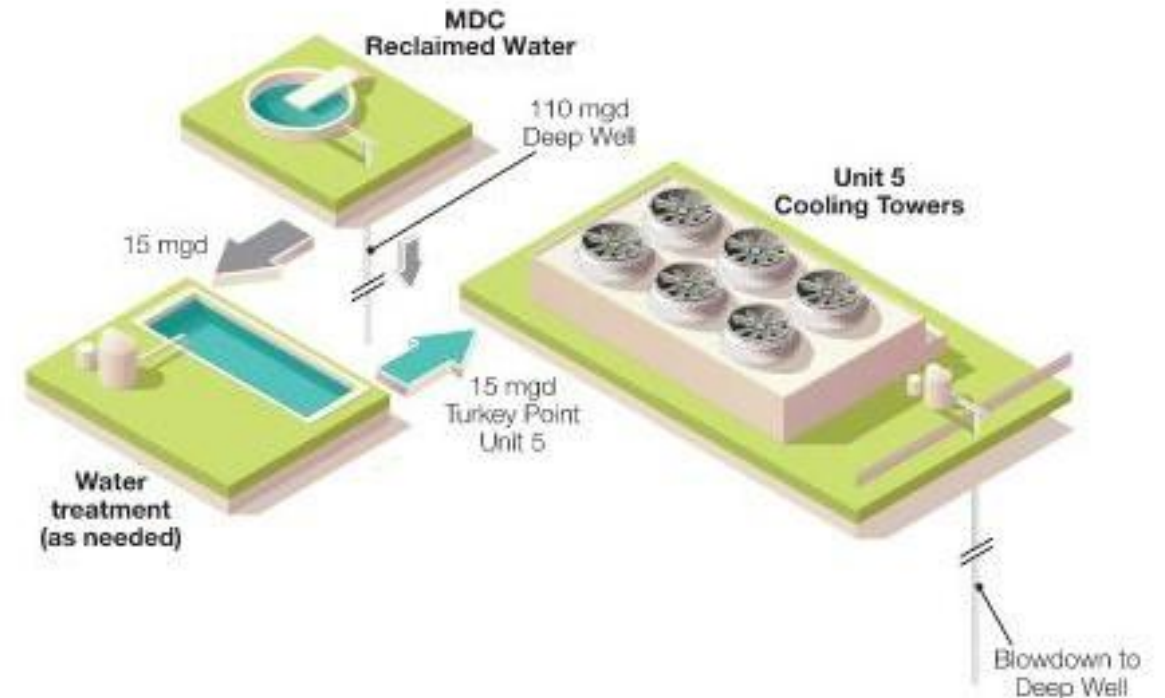
REUSE ALTERNATIVES

FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER (CWRC)

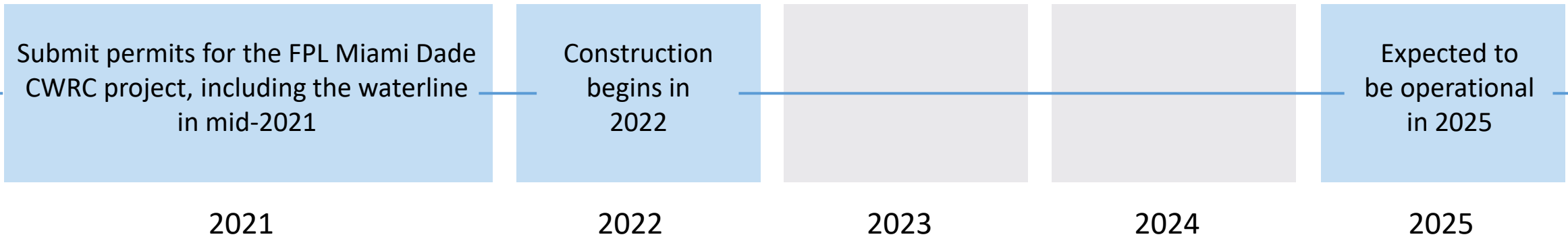


- 15 mgd of WASH high-level disinfection treated wastewater from SDWWTP
- 8-mile, 42-inch pipeline
- Water treatment cleans the water for re-use and handles waste streams to meet environmental goals

O&M Cost	\$6.5
WASH	Million/year



PROJECTED PROJECT TIMELINE



ADDITIONAL PIPELINE CAPACITY FOR FUTURE EXPANSION WILL BE BUILT INTO THE PROJECT (+45 MGD)

- FPL is in design phase for the 2nd pipeline to South Dade
- Should the County determine to expand reuse to South Dade, FPL will permit and construct the 2nd pipeline
 - Design phase is on schedule
- County would need to determine and provide funding for 2nd pipeline
 - To date, no discussions with new County administration as to opportunities for expansion beyond 15 MGD – however we anticipate that may happen soon
 - Any expansion beyond the 15 MGD will not impact FPL’s schedule for building the 15 MGD facility by 2025
- FPL and County would need to reach agreement on FPL reimbursement of costs and schedule of payment
- 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

MIAMI DADE ZOO REUSE PROJECT



- Miami-Dade County Initiative between Miami Dade Parks and MDWASD in partnership with Black & Veatch to increase/promote the water reuse within the County.



MIAMI DADE ZOO REUSE PROJECT



- Current supply = onsite wells
 - Ponds emptied on regular schedule
 - Water is sent to sewer
- Treatment onsite
- Anticipated capacity = 0.5 MGD
- Service water use – animal ponds, moat



Benefits

- Reduce the high sewer contribution of the MD Zoo by developing a cost-effective water reuse scheme
- Implement a sustainable water reuse program for the zoo using sustainable infrastructure practices of the ENVISION framework
- Take advantage of the project location and develop it to provide public outreach about water reuse by **developing a pavilion/exhibit** for the public to learn about water reuse, the roles of microorganisms in water reuse, and sustainable infrastructure practices.

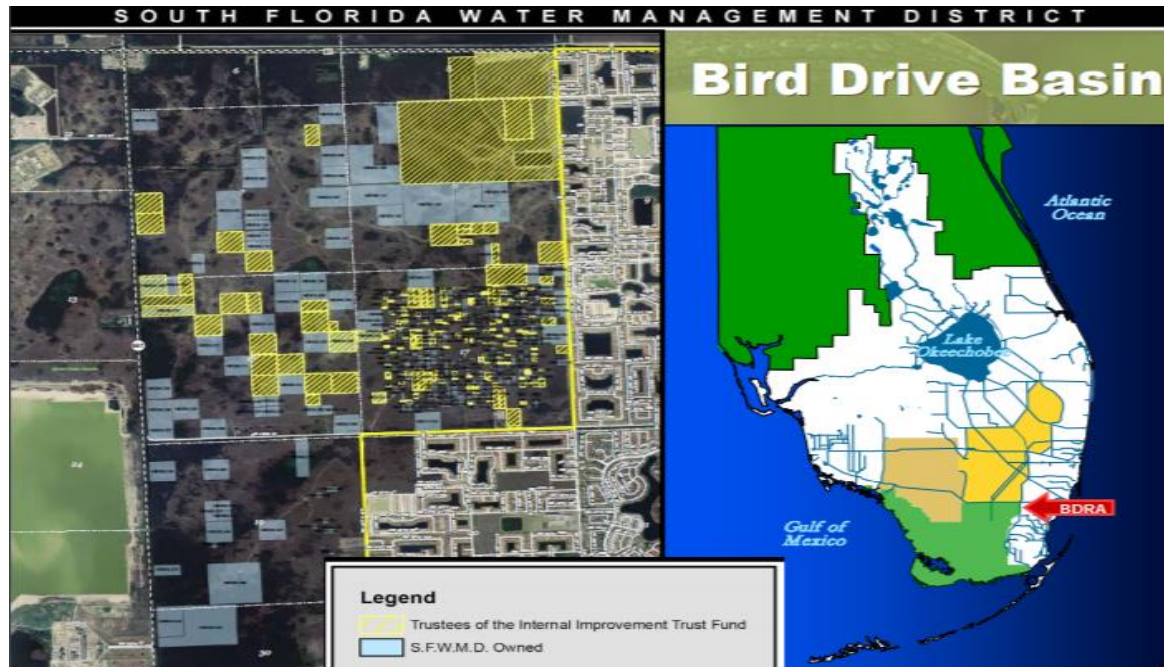
FUTURE REUSE ALTERNATIVES

COASTAL WETLANDS REHYDRATION PILOT PROJECT

- Reverse osmosis was required to be part of the treatment train
- The HLD effluent is high in nutrients:
 - TN in the 20 to 30mg/L
 - TP in the 2 to 3 mg/L
- Reuse is currently under consideration for alternative evaluation in Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER)

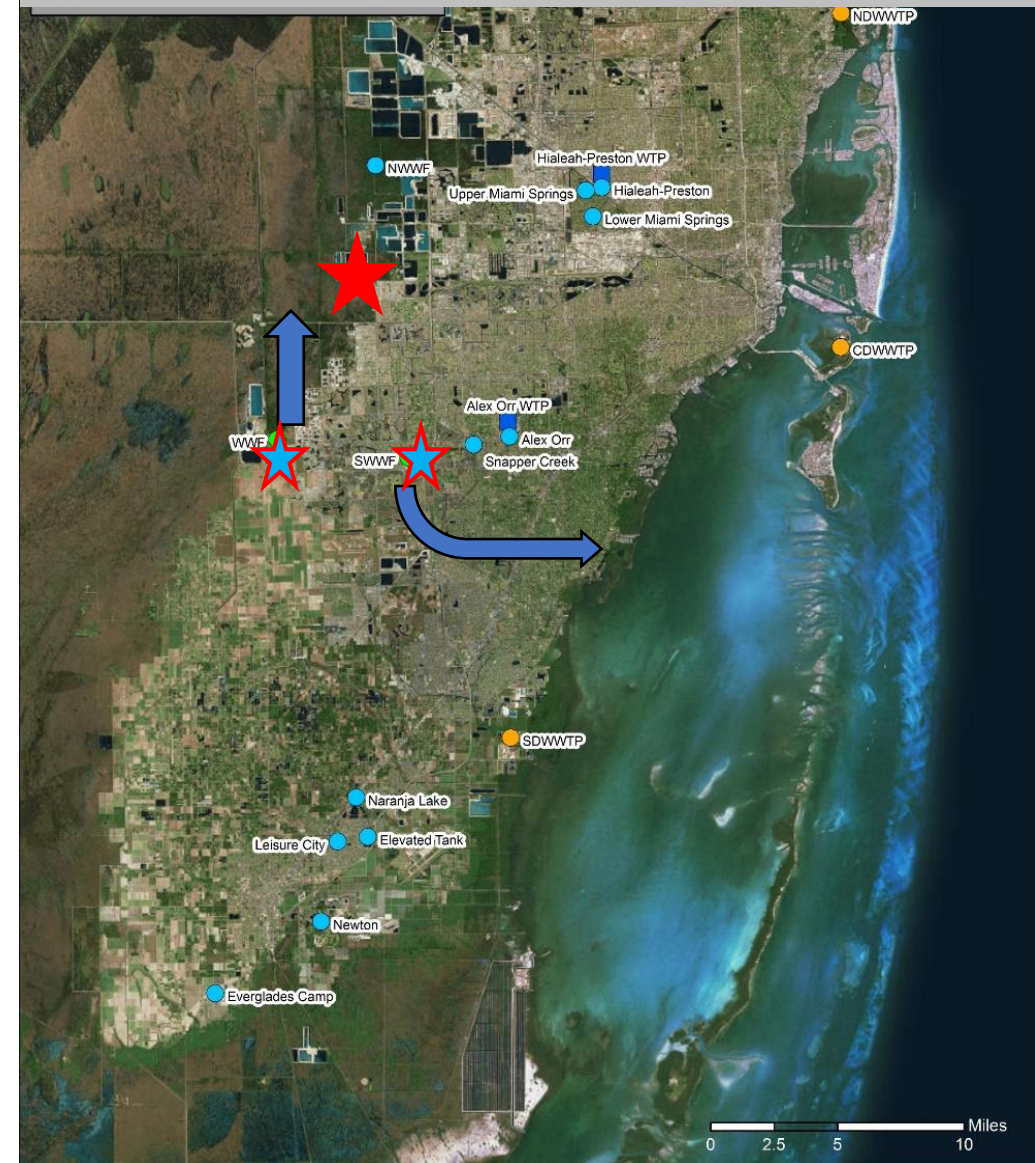


WEST MIAMI DADE REUSE



- WAsD flows are currently below 300 MGD with a permitted capacity through our three existing plants of 394 MGD
- The West District Plant is planned, but will not be constructed until required (post 2035)

West District Wastewater Treatment Plant
Scheduled: Post 2035 Construction start



SUMMARY

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- Collaborative projects such as the FPL CWRC and Miami Zoo are reuse opportunities under development
- Water resources development and restoration applications also represent a significant potential demand for highly purified reclaimed water
- The importance of reclaimed water as an integral part of MDWASD's integrated water supplies is expected to grow as lower cost permitted supplies are exhausted and the development of more costly supplies are required to support continued growth



Design
Recharge
Optimize
Protect



Questions?

Thank You

Contact Us

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