Southeast Florida Ocean Outfall Strategy

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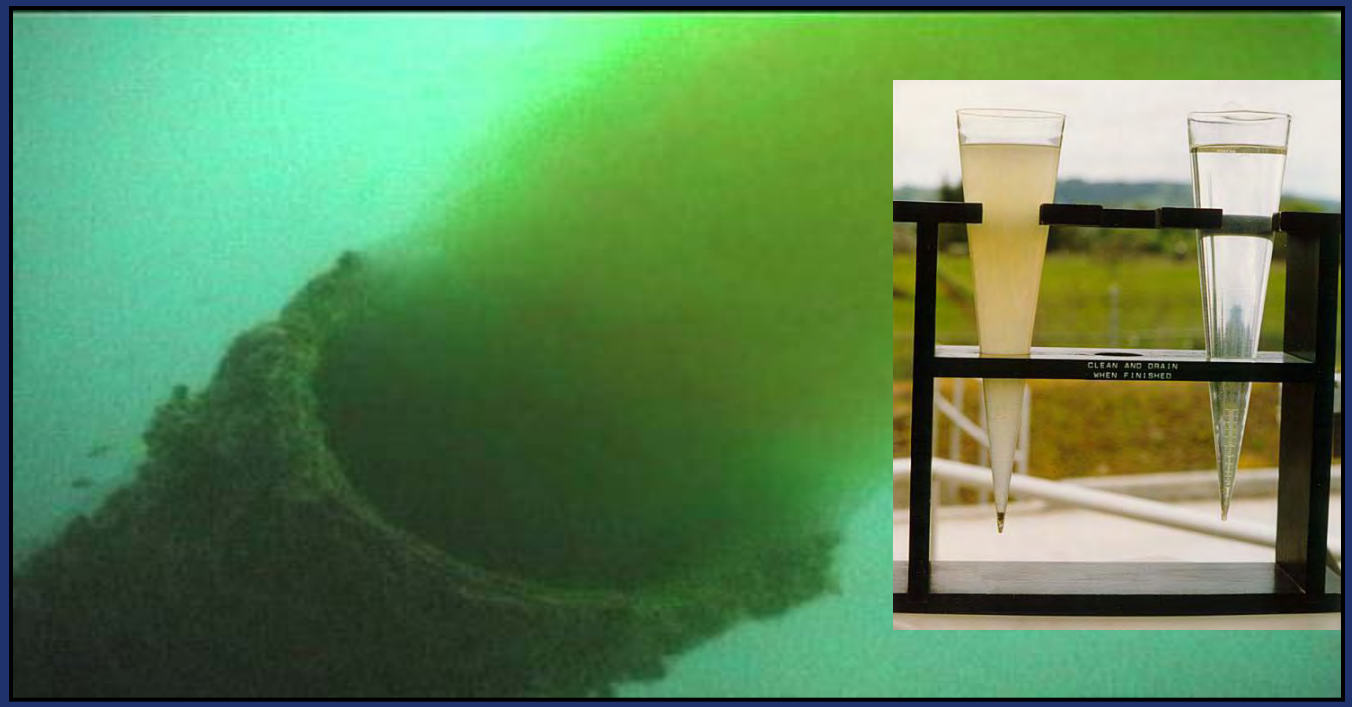


Southeast Florida Ocean Outfalls

- **Disposal method utilized by 5 major WWTPs in Southeast Florida**
  - **Make up 40% of total effluent in Florida**
  - **Serve over 6 million customers**
    - **30% of Florida's population**

WWTP	Capacity
City of Boca Raton	17.5 MGD
South Central Regional Wastewater Treatment Facility	24 MGD
Hollywood	42 MGD
Broward County North	80 MGD
North District: Miami-Dade	112.5 MGD
Central District: Miami-Dade	143 MGD

FACE

- **Utility work group formed in 1987:**
  - **Miami-Dade;**
  - **Broward County;**
  - **the City of Hollywood;**
  - **the City of Boca Raton; and**
  - **the South Central Regional Wastewater Treatment Advisory Board**
- **Provide funding and direction for FACE related work pertaining to Ocean Outfall.**
  - **SEFLOE I**
  - **SEFLOE II**
  - **Other Studies**

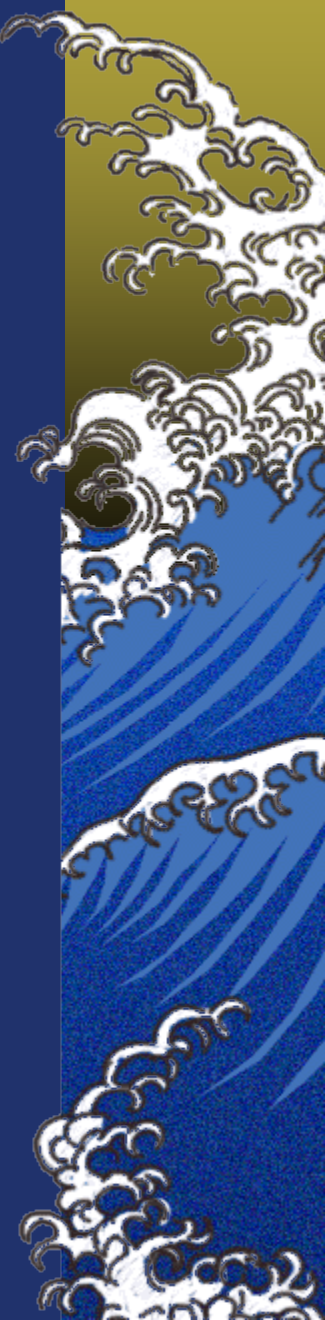
FACE

Florida Atlantic Coastal Environmental Initiative

FACE

- Participants in the FACE initiative include: the National Oceanic Atmospheric Administration (NOAA), US Environmental Protection Agency (USEPA), the US Army Corps of Engineers, the Florida Department of Environmental Protection (FDEP), the US Geological Survey (USGS), and the US Fish and Wildlife Commission

- Developed as a long-term program to gather quality controlled measurements of nutrients and to quantify those nutrients for sources at multiple locations in the coastal waters of Southeast Florida



Results

- **The net result of the studies will be a *scientific based* understanding of ocean outfalls and the potential impacts on the coastal ocean environment. Key findings to date:**
  - **Distribution of nitrate, nitrite, and ammonia is unbiased about the outfall location in a north-south direction. Silica concentrations are higher north of the outfall than south; showing that although currents run to the north ~ 75 – 80% of the time, Nitrate+Nitrite and ammonia do not.**
  - **Both Rhodamine dye and SF_6 studies show little, if any, effluent plume mixing to the bottom of the gulf stream reef.**
  - **Nitrogen isotope ratios do not indicate wastewater derived nutrients in water or algae.**
  - **Inlets contribute to at least 7 times more total nitrate + nitrite onto the Gulfstream reef.**
  - **Ocean upwelling occurs on a regular basis which contributes to nutrient loading.**
  - **Studies still on-going…**

Legislation

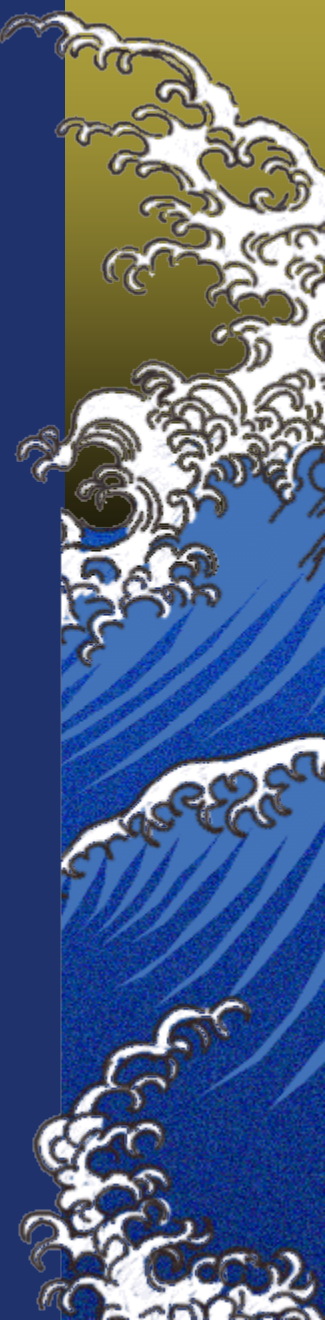
- **SB 1302**
  - **Signed by the Governor on June 30, 2008**
  - **Ocean Outfall Nutrient Reduction by December 31, 2018**
  - **≥ 60% of Outfall Flow to Reuse by December 31, 2025**
  - **SFWMD to require reuse of water made available by the elimination of ocean outfalls**
    - ***[FS 373.250 (2) (d) Reuse of Reclaimed Water]***
  - **Outfall Discharge prohibited after Dec. 31, 2025 except for functioning reuse system back-up**
    - ***[FS 403.086 (9) (d)]***

Legislation

- **Functioning reuse system:**
  - A functioning reuse system means an environmentally, economically, and technically feasible system for ≥ 60% facility actual flow
- **Alternatives**
  - Diversion of flow to other facilities counts toward the 60% if 100% is reused
  - Diversion of 60% of combined facilities for single utility

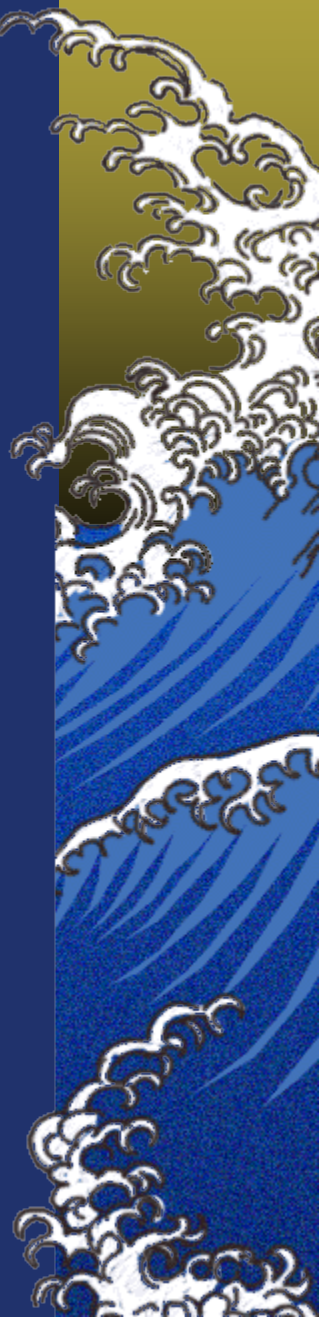
Reuse Strategy for Palm Beach County Outfalls

- *Boynton/Delray*
- *Boca Raton*



South Central Regional WWTP Strategy

- *Expand Reclaimed System (100% Treatment)*
- *Distribution System Expanding (60% by 2025)—Use of Outfall pipe as a conveyance pipe to the barrier island*
- *Installation of Deep Well Injection*

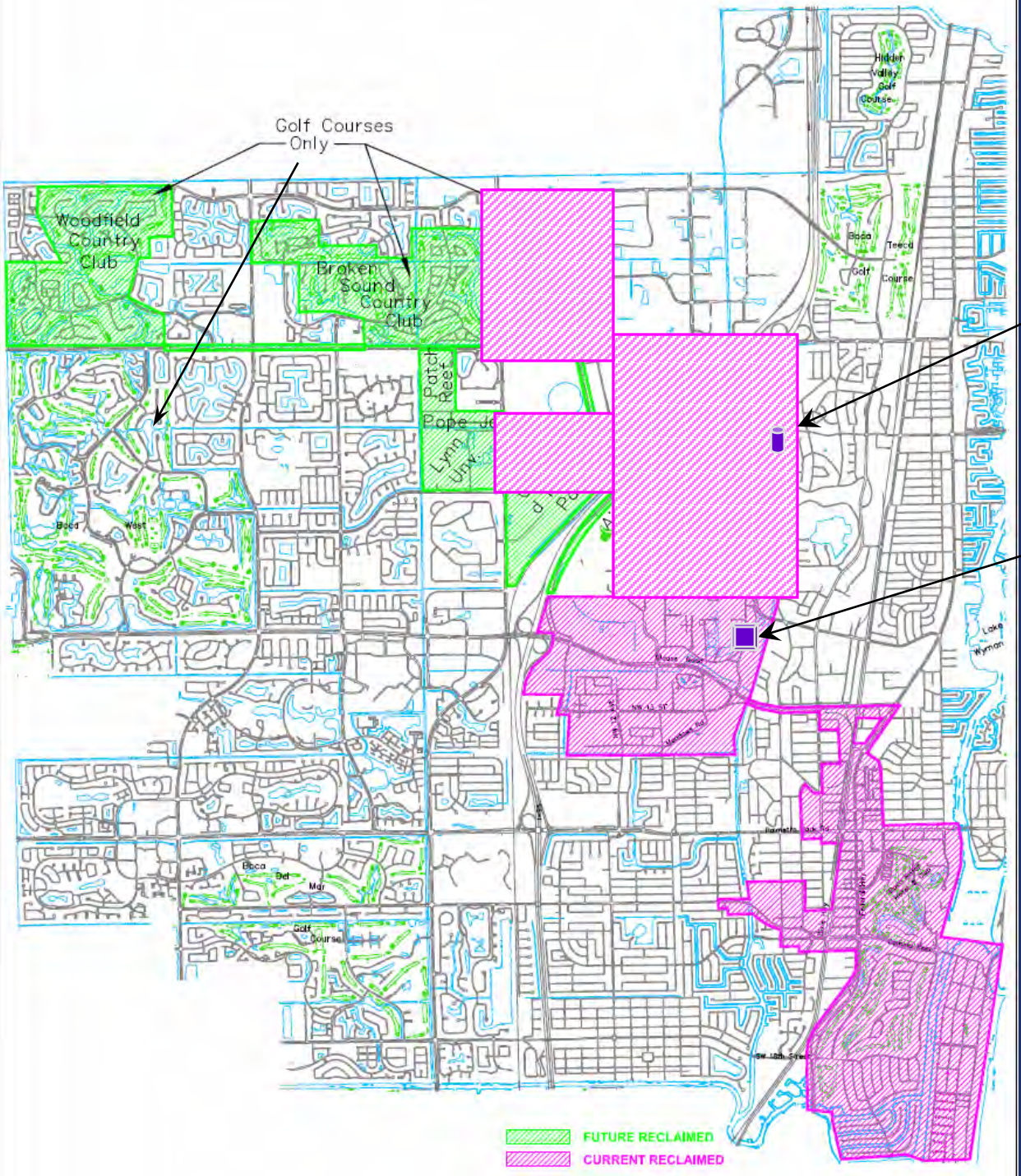


Taking a Holistic Approach

- **Outfall Bill 1302**
  - **Boca Language**
- **2006 Regional Availability Rule**
  - **Offsets: large irrigation well users**
  - **On-site storage capability**
- **20 Yr Consumptive Use Permit-Future Demands**
  - **Targeted areas**
    - **Broken Sound Golf Courses 2.3 MGD**
    - **Woodfield Country Club Golf Course-1.5 MGD**
    - **Boca West Golf Course-2.5 MGD**

City of Boca Raton Strategy

- **Reclaimed System Expansion**
  - **Distribution System**
    - **30,000 feet of pipe**
  - **Increase Storage Capacity**
    - **On-site--Un-lined ponds (users)**
    - **Off-site 5.0 MG Storage Tank**
  - **Increase Plant Capacity**
    - **In-plant 7.5 MGD capacity expansion**
    - **100% Reuse**



5.0 MG Reclaimed Water Storage Tank

Reclaimed Water Facility Expansion: 10.0 MG to 17.5 MG

Reclaim System Funding

- ***Rates***
  - ***Tiered conservation rate structure***
- ***Large user agreements***
  - ***"Discounted" Fixed Rate***
    - ***Storage Capabilities***
    - ***Guaranteed use/payment***

RECLAIMED WATER RATES:

- **$0.43 per 1000 gal up to 25,000 gal.**
- **$0.53 per 1000 gal over 25,000 gal up to 50,000 gal.**
- **$0.64 per 1000 gal over 50,000 gal**
- **Large user agreements $0.43 per 1000 gallons**

Timeline

"100 %" Reuse Facility

Regulation
NPDES Permits

- **NPDES - FDEP**
  - **Open Ocean Water Quality Monitoring**
    - **Monthly samples for one year**
    - **SF_6 and Rhodamine dye studies**
      - **Two each – summer and winter**
  - **Required for all outfalls**
  - **Cost range: ~$6.25 K - $1.2 M**
  - **Wise expenditure?**

Regulation
Numeric Nutrient Criteria

- **NPDES - FDEP**
  - **Numeric Nutrient Criteria**
    - **1/14/09 – FDEP has 24 months to develop numeric nutrient criteria for estuaries and near shore waters**
    - **Currently a “narrative” standard**
    - **Criteria will be based on existing data**
    - **Previous attempts to establish un-ionized ammonia standard for Class III waters**
      - **0.072 mg NH_3 / L**
      - **Mixing zones?**

Questions

Thank you!