



FINAL ROUND 2 ALTERNATIVES

February 3, 2023



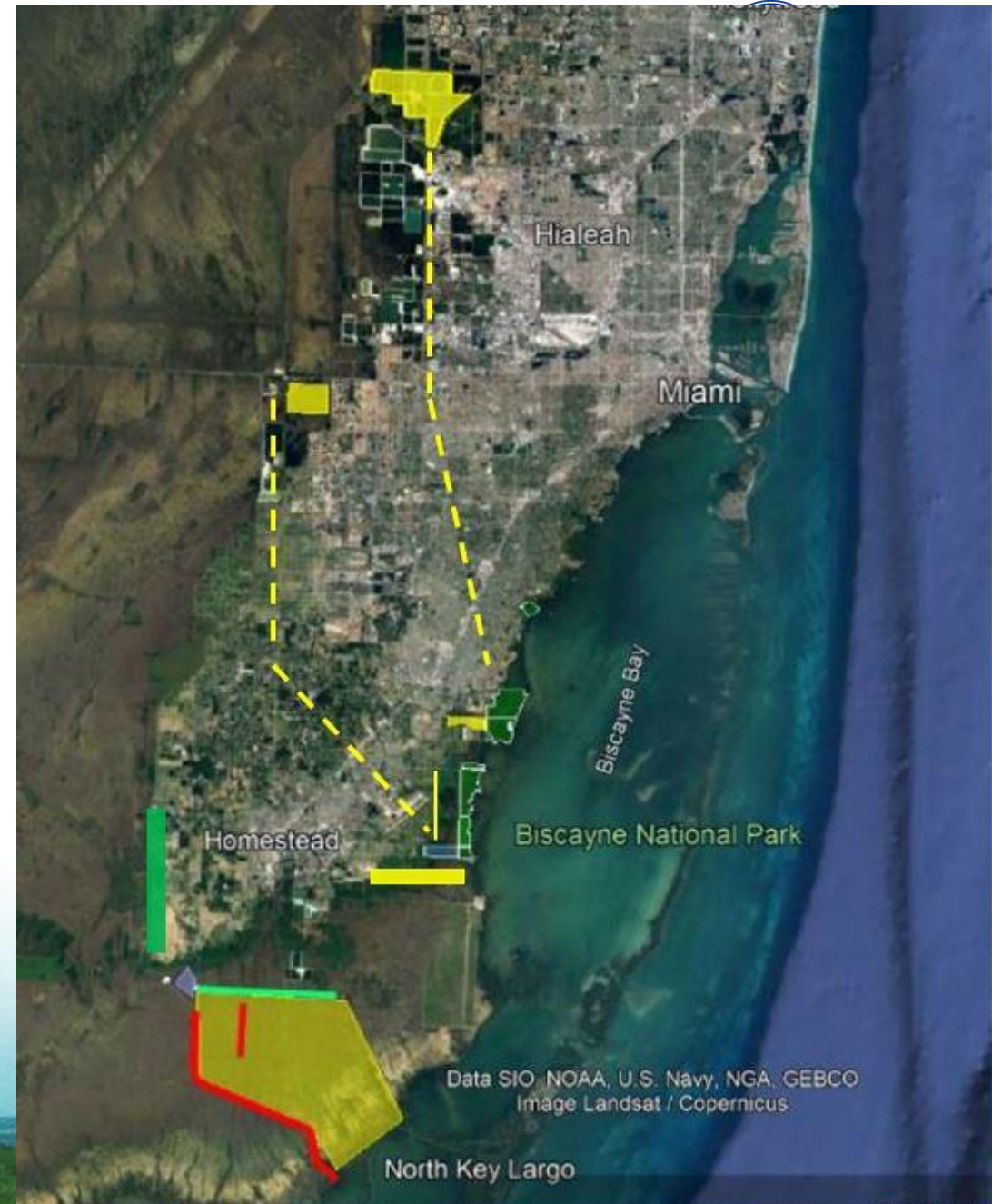
YELLOW BOOK ALTERNATIVE

Yellow Book Components Included:

- North Lake Belt Storage Reservoirs
- West Miami-Dade Wastewater Reuse
- South Miami-Dade Wastewater Reuse
- Biscayne Bay Coastal Wetlands
- Biscayne Bay Coastal Canals (operational)
- C-111N Project

Yellow Book Alternative Strategy:

- Model will depict 1999 Restudy feature components with authorized feature modifications for BBCW1 and C-111 SCW





POTENTIAL SOURCES OF NORTHWEST WATER



Sources identified from North Lake Belt Yellow Book Component:

- C-6 Canal
- C-9 Canal
- C-9, C-11 Reservoirs (ref. BCWPA PIR)

Additional Sources Identified:

- Seepage from L-30, L-31N basins
- Groundwater seepage from East Coast Buffer Area.
- Stormwater Runoff backpumping from C-1W and L-31N.
- C-4 runoff



LEGEND



Culvert Plug



Storage



New Structure



Operational change at existing structure



Remove structure



Pump



New Culvert



Inverted Siphon



Operational change at structure in conveyance canal



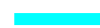
Seepage Management



Backfill, plug canal



Shallow canal



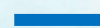
New Pipeline



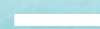
Spreader Canal



Lined Spreader Canal



New Canal



Existing canal, used for conveyance



MEASURES IN ALL ROUND

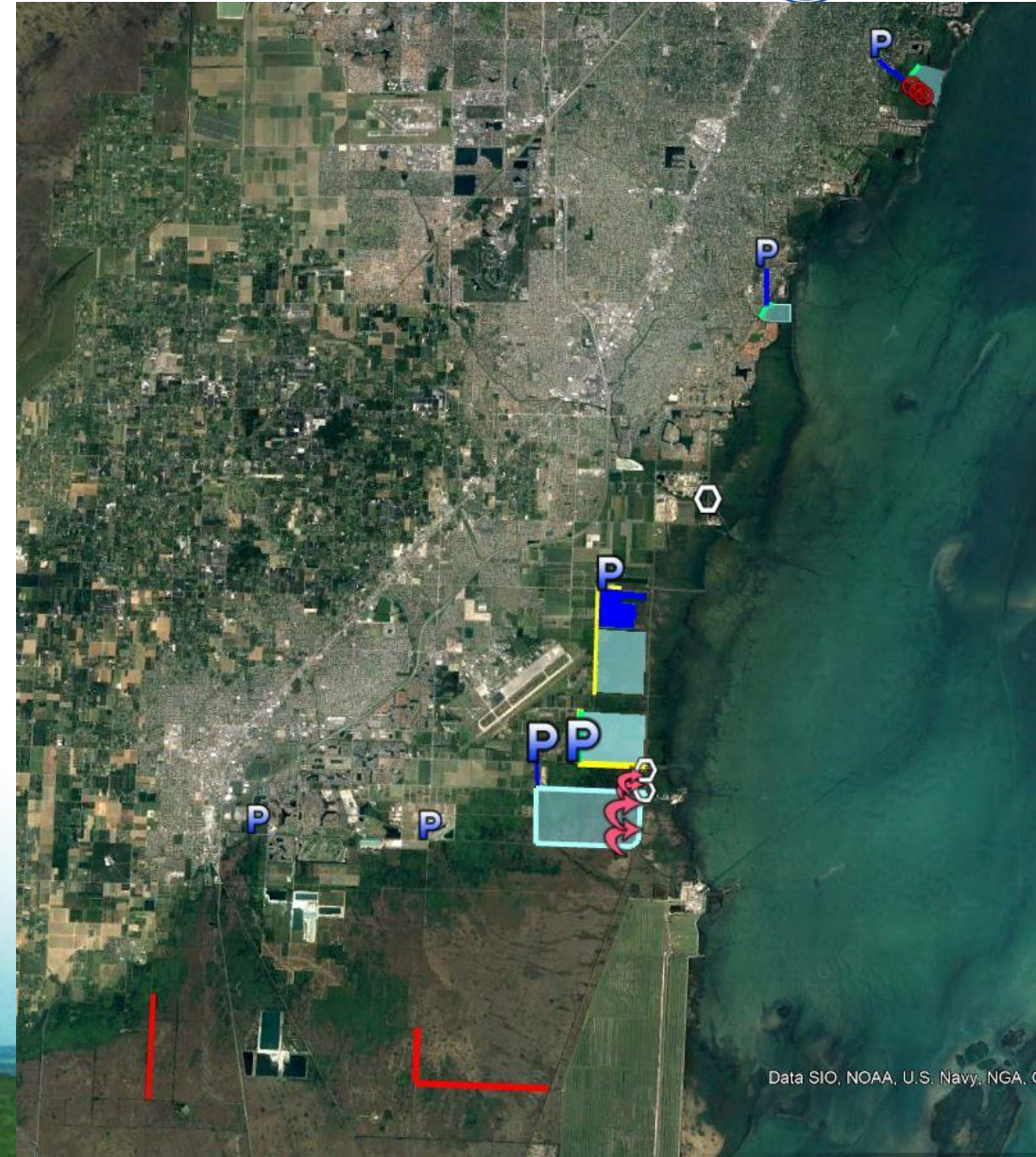
2 ALTERNATIVES



5

- Hardy Matheson (Source: C-2 Canal)
- North Cutler (Source: C-100 Canal)
- South Cutler (Overflow Weir or similar structure)
- C-102 to Military Rehydrate (Source: C-102 Canal)
- Military to C-103 Spreader (Source: C-103)
- Plug/Backfill Model Lands North Canal
- Plug/Backfill 1 mile of Tallahassee Rd Borrow canal
- Plug/Backfill multiple mosquito ditches in wetlands
- 2 pump stations in Florida City Canal, moving water to northern Model Lands
- Culverts on west side of L-31E from North Canal wetlands
- New Structure on L-31E south of C-103
- New Structure on L-31E north of North Canal
- Plugs in upper C-110 Canal

BBSEER



Data SIO, NOAA, U.S. Navy, NGA, C

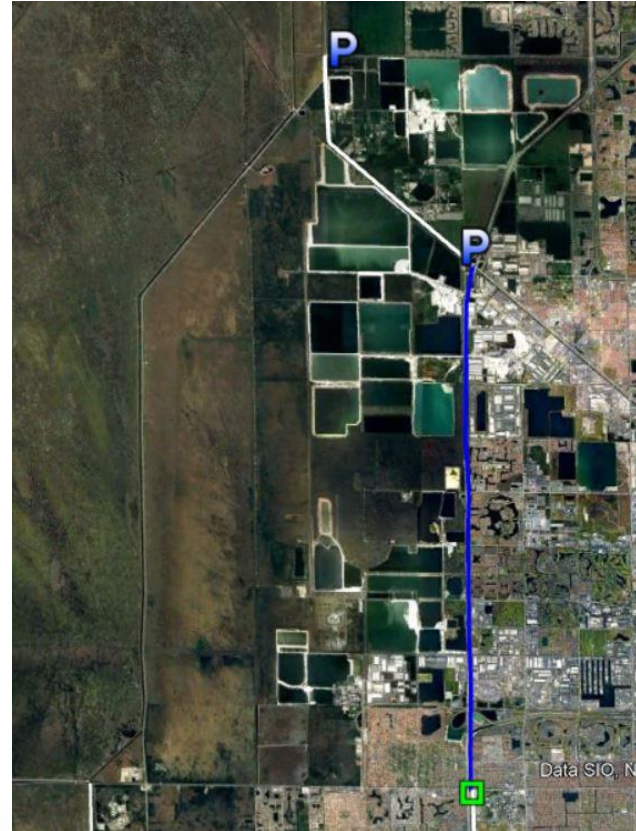
2/3/2023

NORTH LAKE BELT AND PENNSUCO



ALT21

- Pumps from C-9 and C-6 canals to Lake Belt
- Pumps to Pennsuco and DBLE canal.
- Modify canal along east Pennsuco with hanging curtain wall.
- Seepage mgmt. along western corner.
- Remove mud levee and canal in Pennsuco.
- Inverted siphons and culvert becomes weir.



ALT22

- Pumps from C-9 and C-6 canals.
- C-9 water rerouted west to C-6 canal. C-6 water rerouted along turnpike.
- New canal along FL turnpike.
- Connection to C-2 canal.



ALT23

- Pumps from C-9 and C-6 canals.
- Pump from Lake Belt to Pennsuco.
- 2 pumps from Pennsuco to L-30 canal.
- Inverted siphons and culvert becomes weir.
- Keep the Pennsuco mud levee and canal, remove curtain wall.



BIRD DRIVE BASIN AND KENDALL



ALT21

- Pump on C-4 canal to Bird Drive Basin.
- Pump and new connection from C-4 to Kendall.
- Pump from L-31N to Kendall.
- Pump from BDB to Kendall.
- Pump from Kendall to L-31N
- Spreader canal east of BDB.
- Seepage collection from Bird Drive spreader, seepage to Kendall.
- New structure on Bird Drive Basin canal at eastern border of BDB.



ALT22

- Pump from L-31N to Kendall, Kendall as groundwater recharge.
- New structure on Bird Drive Basin canal at eastern border of BDB.



ALT23

- Pump on C-4 canal to Bird Drive Basin.
- Seepage management and spreader canal ~0.5 miles west of BDB.
- Culverts under BD canal to move water south.
- Conveyance out of BDB through BD canal to C-2, new structure.
- Conveyance out of BDB south through new canal, pump to move water east to C-1 or west to L-31N.

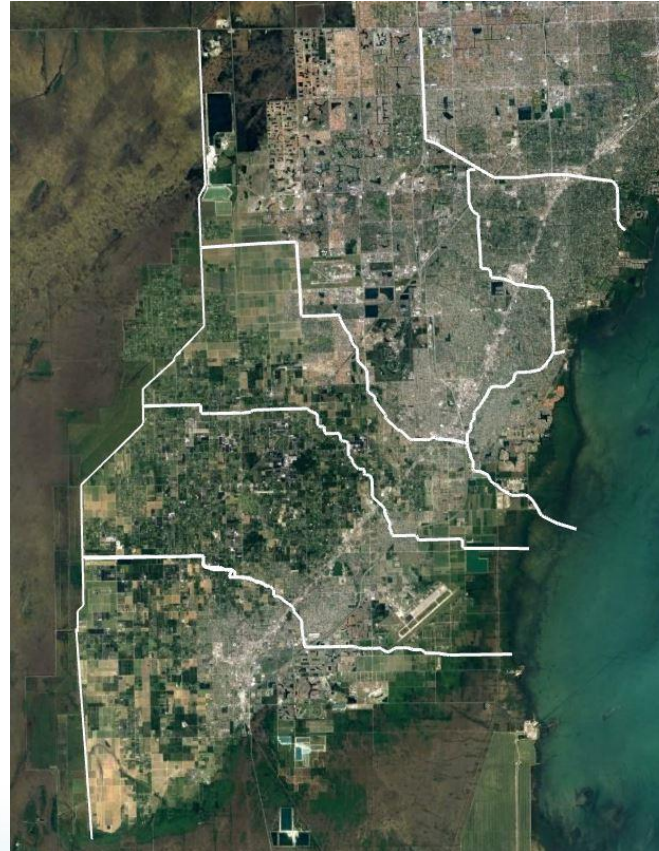


CONVEYANCE PATHWAYS



ALT21

L-31N, C-1, C-102, C-103, C-111



ALT22

Turnpike canal to C-2 canal, C-100, C-1, C-102, C-103, C-111



ALT23

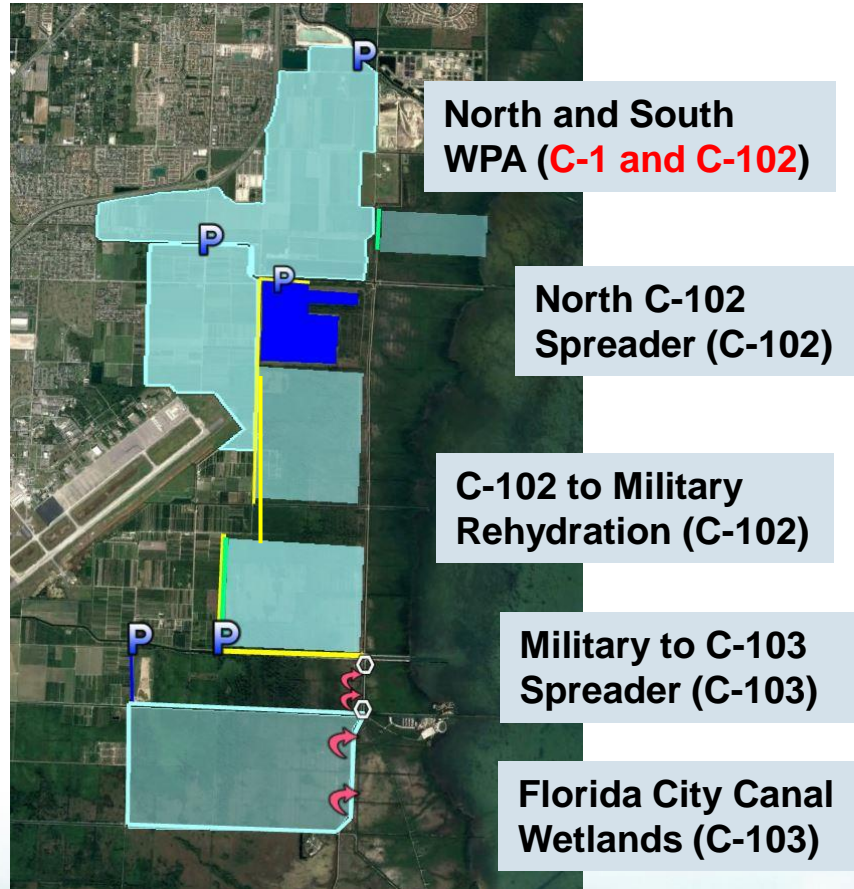
L-30 canal to L-31N, C-4, BDB Canal to C-2, BDB to C-1W, C-1, C-100, connection of C-100 to C-1, C-102, C-103, C-111



COASTAL WETLANDS

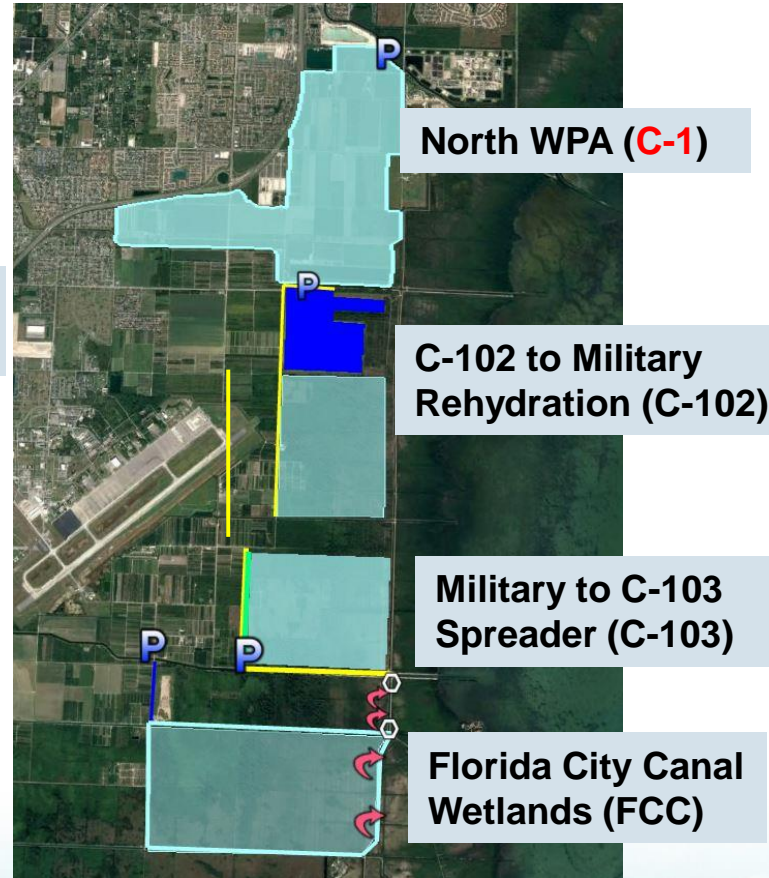


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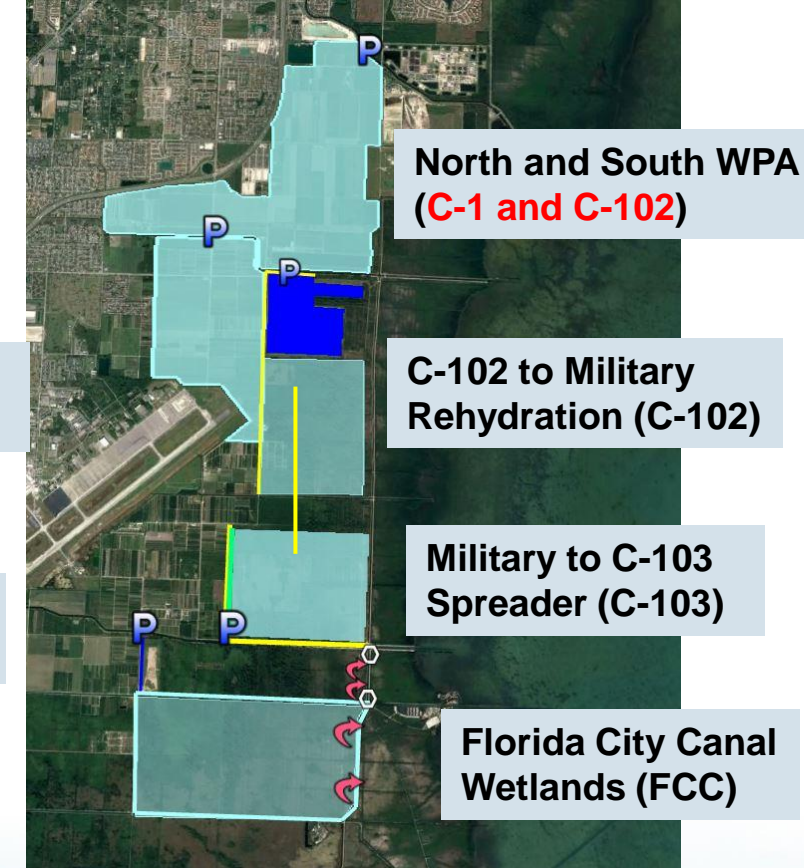
ALT21

Includes all four redistribution features north/south of Military Canal and two coastal WPAs



ALT22

Includes three redistribution features north/south of Military Canal and one coastal WPA

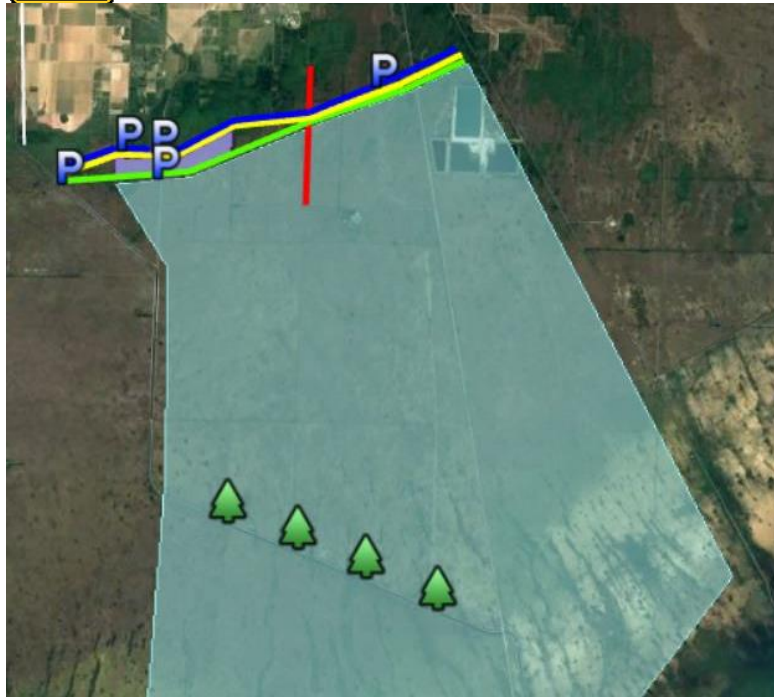


ALT23

Includes three redistribution features north/south of Military Canal and two coastal WPAs

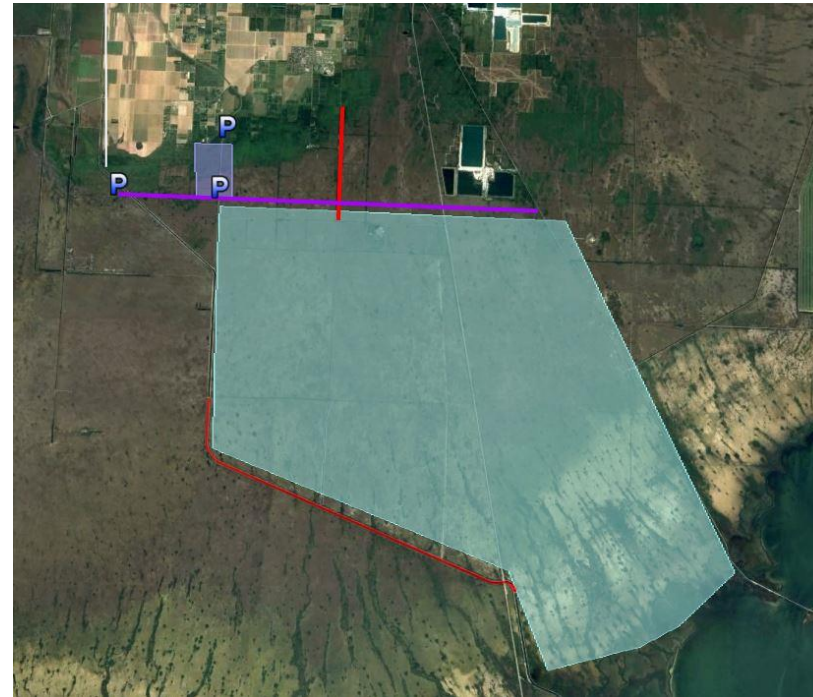


C-111 BASIN & SOUTHERN GLADES



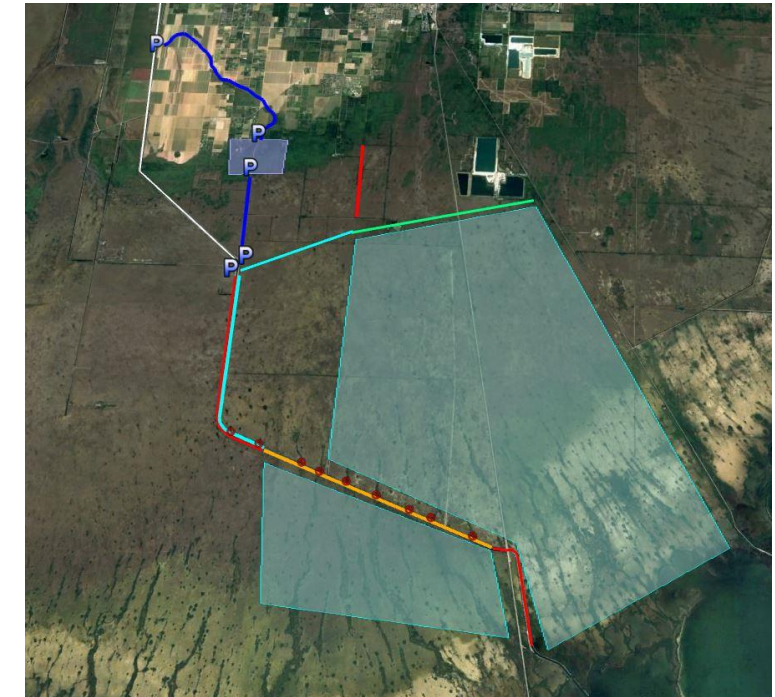
ALT21

- Levee + Cutoff Wall at boundary between Southern Glades and development. STA on C-111E and spreader south of levee.
- Engineered vegetated hammock plugs in lower C-111 canal.



ALT22

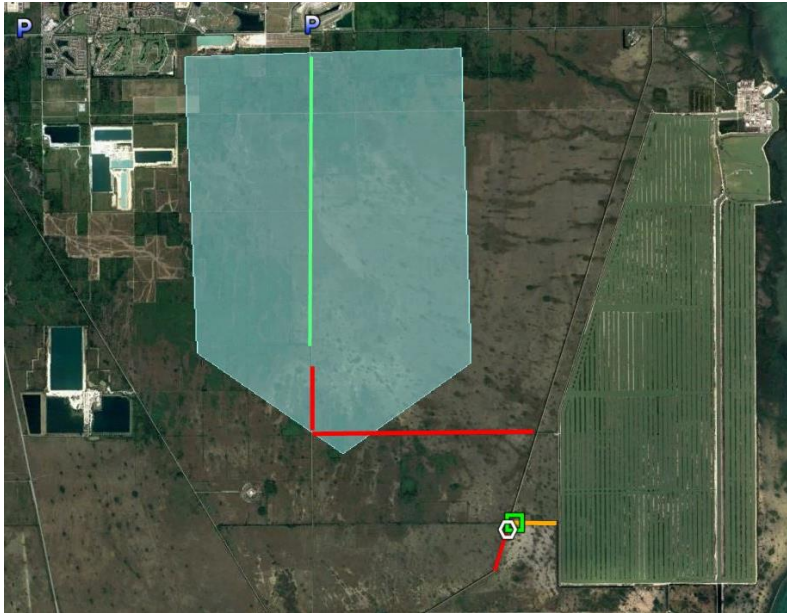
- Lined spreader moves water from C-111 and C-111E STA.
- Spreader is extended to capture water directly from C-111 canal.
- Remove Bypass from C-111 to C-111E.
- Backfill of C-111 from S-18C to S-197



ALT23

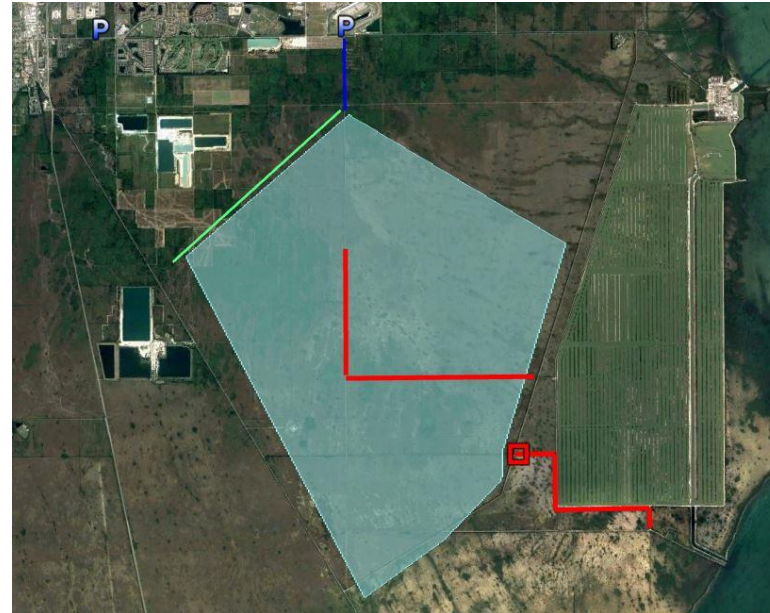
- Pipeline south, opens at lower C-111. STA on C-111E and pipeline angled SW to NE to spreader across Southern Glades.
- 2 pump stations at start of pipelines.
- Remove culverts in 9 ditches.
- Backfill N-S portion of C-111 adjacent to new pipeline.
- Include bypass through C-111E canal.
- Shallow C-111 canal, backfill north of S-197 to Marina.

MODEL LANDS



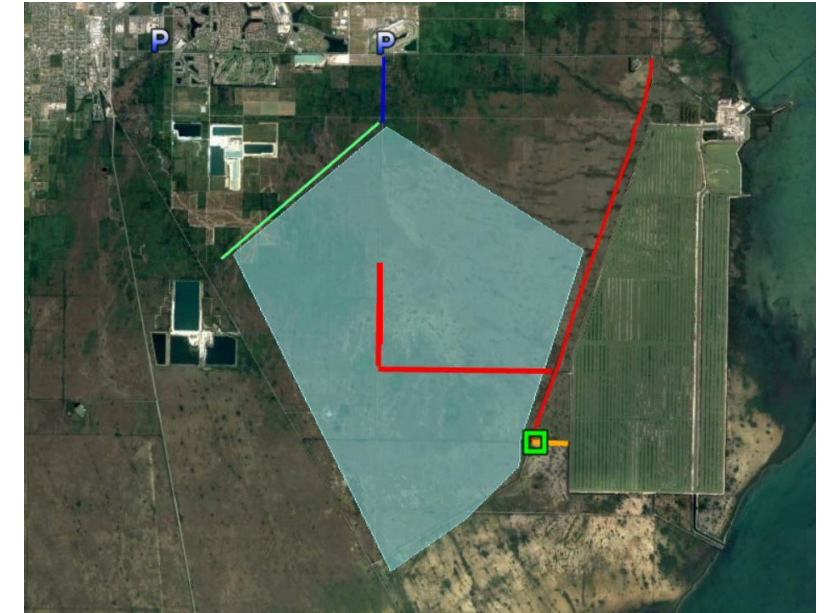
ALT21

- North-south spreader in Tallahassee Rd. Borrow Canal.
- Increase stage triggers at S-20 Structure.
- Shallow S-20 Getaway Canal to 5-6 feet.
- Backfill portion of L-31E from S-20 to FPL culverts.
- Add culvert from L-31E to wetlands adjacent to Cooling Canals



ALT22

- Northeast-Southwest angled spreader in Model Lands.
- Add connection from middle pump in FCC to spreader.
- Remove S-20 Structure.
- Backfill S-20 Getaway Canal.



ALT23

- Northeast-southwest angled spreader in Model Lands.
- Increase stage triggers at S-20 Structure
- Backfill L-31E Canal from S-20 to Palm Dr.
- Shallow S-20 Getaway Canal to 5-6 feet.



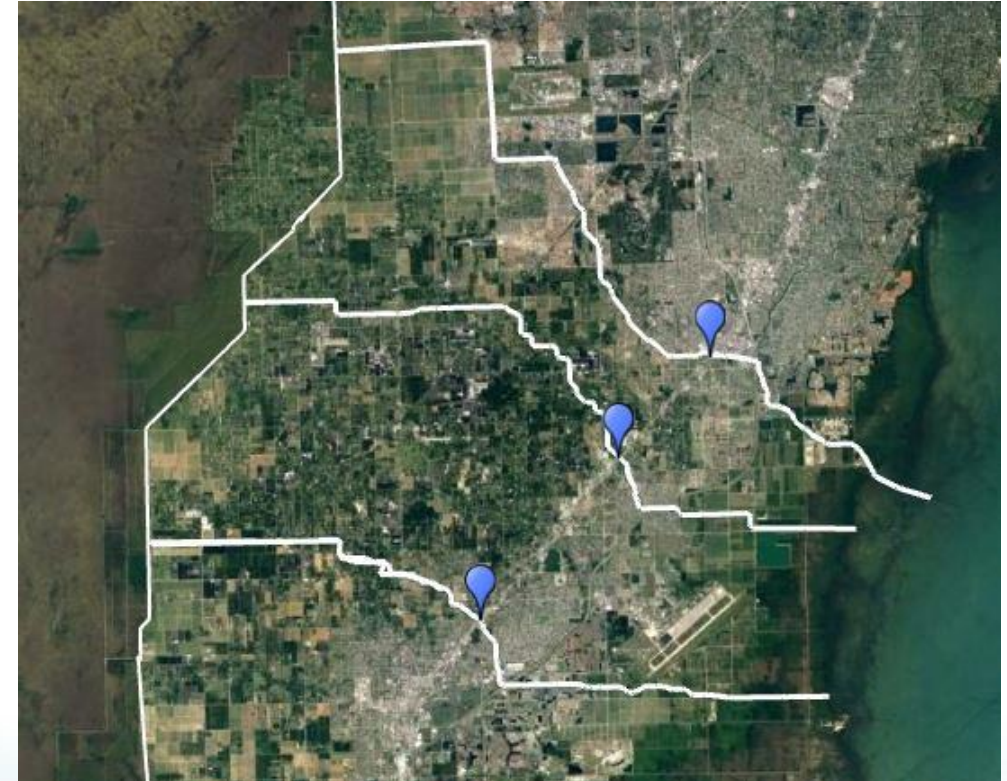
BBSEER OPERATIONS



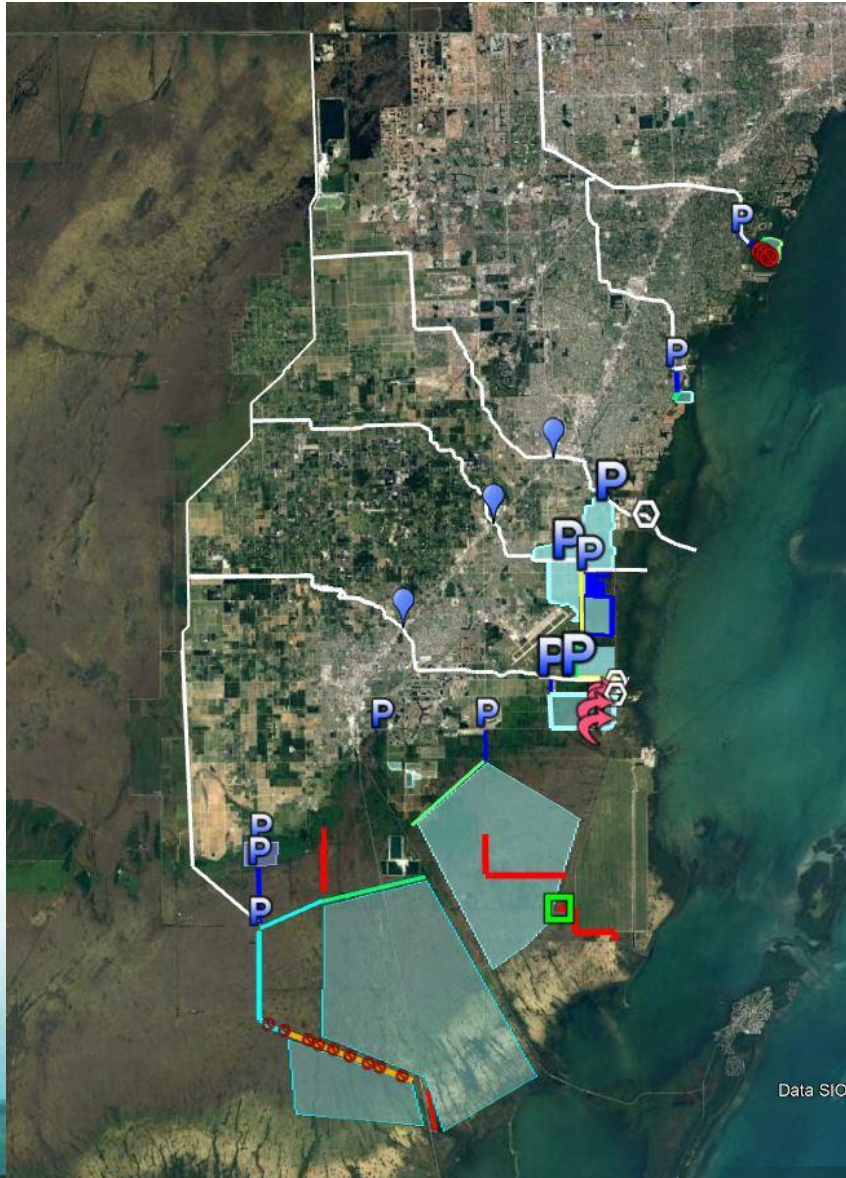
BBSEER Operations Goal: Increase freshwater flows in the dry season. Operational refinements will be worked on in the Plan Formulation sub-team with IMC.

Operational refinements carried forward from Round 1:

- Decrease stages at coastal ridge structures on C-1, C-102, and C-103 canals to encourage eastern flow of water to Biscayne Bay.
- Other operational refinements include:
 - Seasonality of flows into the coastal WPAs and releases during the dry season. Outflow on east side to Biscayne Bay.
 - Maintain deliveries at S-18C, and then prioritize flows east to the Southern Glades.



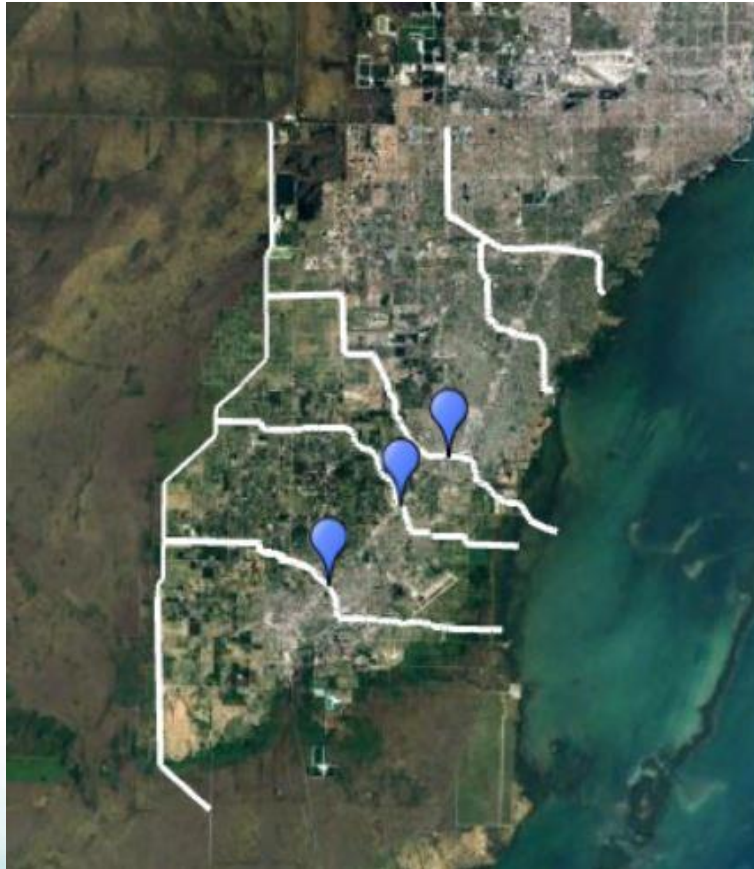
ALT24- NEW ADDITION



Alternative Purpose:

- We want to show what we would lose if we do not include Northwest storage and water.
- Does not include storage or sources of water in the Northwest.
- Uses existing water through existing canal to achieve project objectives.
- Includes redistribution of freshwater flows in BBSEER natural areas.

ALT24 MEASURES

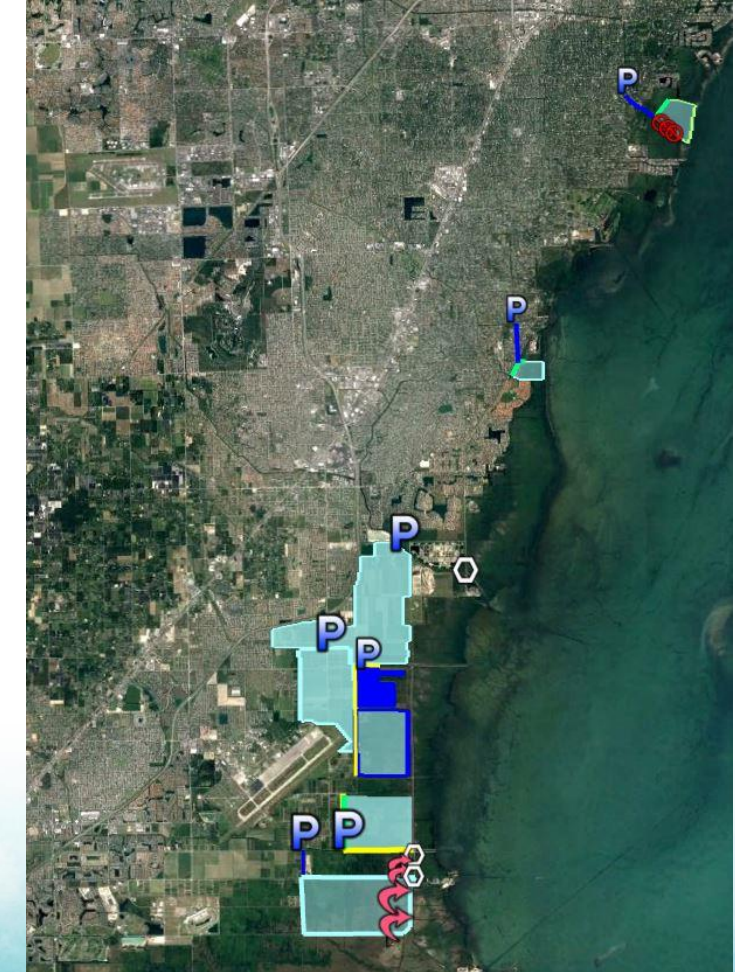


Conveyance Paths

- C-4 canal to C-2 and C-100 canals.
- L-31N, C-1, C-102, C-103, and C-111
- Lowers stages at intermediate structures on C-1, C-102, and C-103 canals to encourage eastward flow of freshwater

Coastal Wetlands

- Hardy Matheson Preserve
- North Cutler and South of Cutler
- Northern and Southern coastal WPAs
- C-102 to Military and Military to C-103 wetland rehydration
- Florida City Canal wetlands
- New structures in L-31E south of C-103 and north of North Canal
- 2 culverts west of L-31E adjacent to North Canal wetlands



ALT24 MEASURES



Southern Glades

- Same pipeline delivery version that is included in ALT23.
- Does not include bypass through C-111E canal.

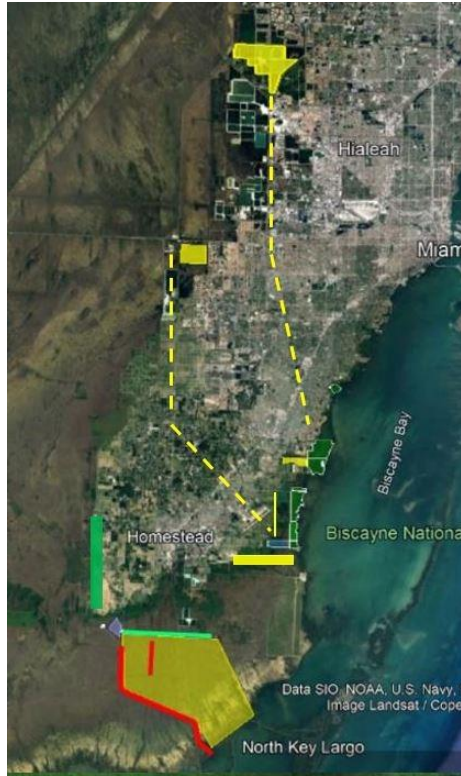


Model Lands

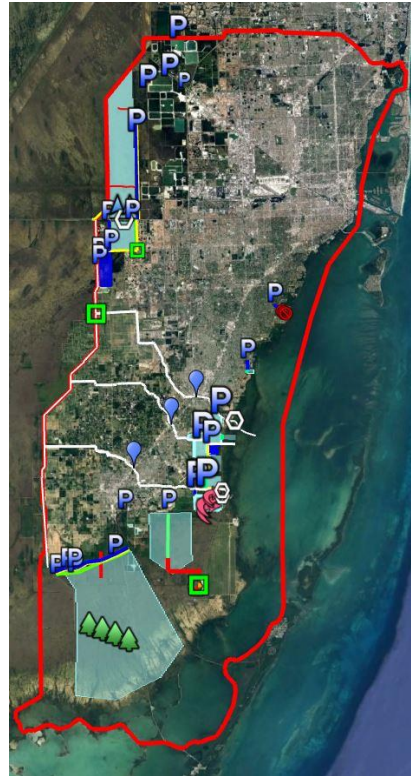
- Same spreader canal that is included in ALT22 and ALT23.
- Increase stage triggers at S-20 Structure and fill Tallahassee Rd Borrow Canal and ML N Canal.
- Backfills S-20 getaway canal.



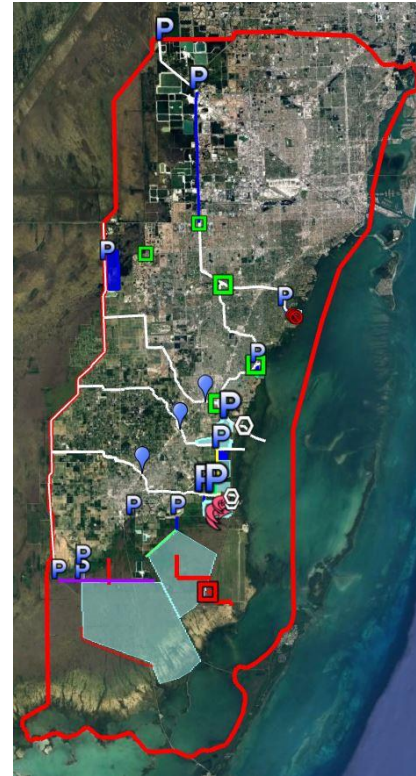
BBSEER ROUND 2 ALTERNATIVES



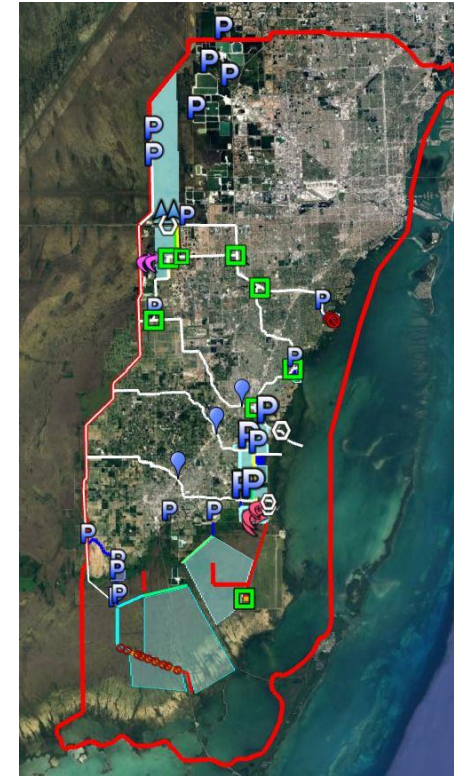
ALTYB
(Conceptual)



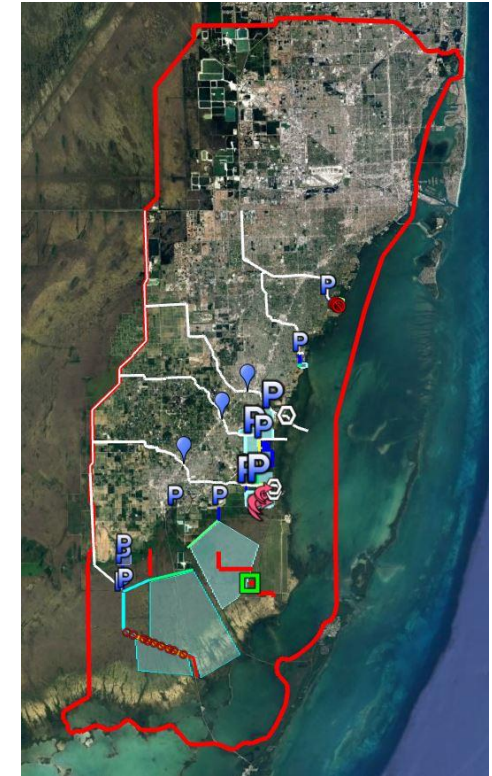
ALT21



ALT22



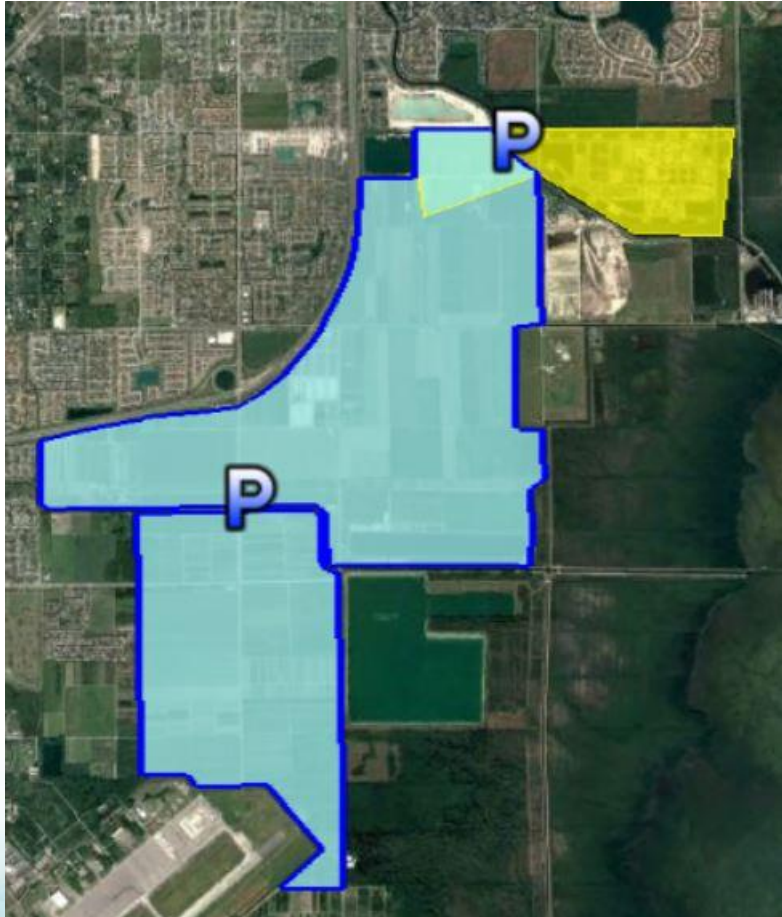
ALT23



ALT24



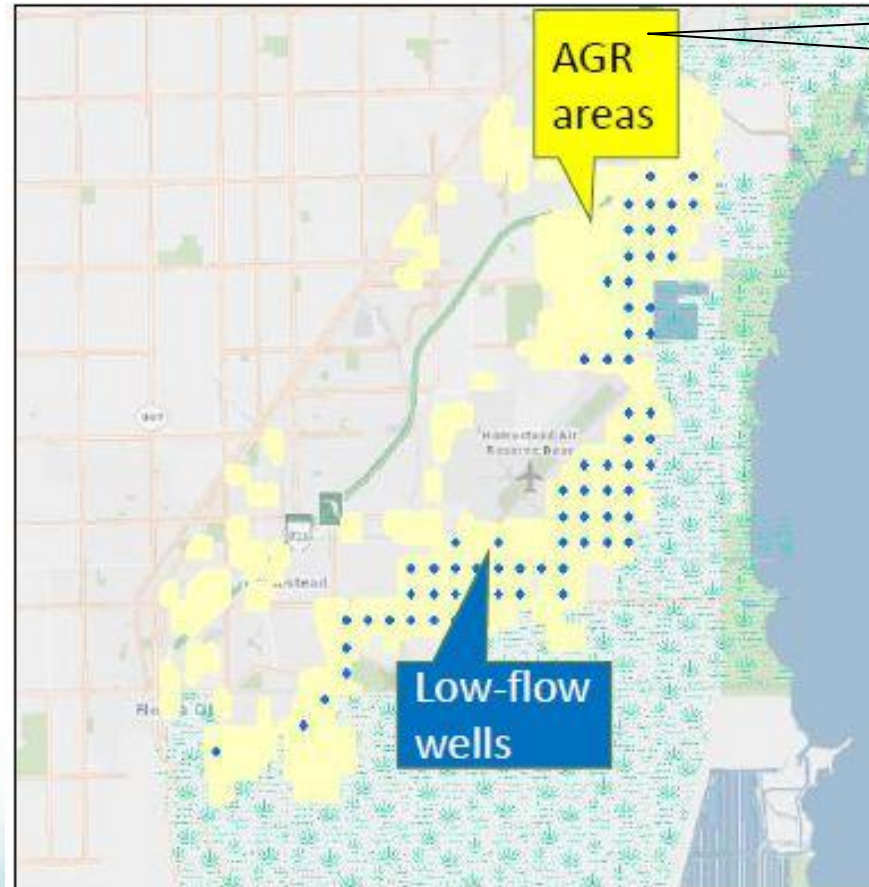
ALT21 ASSOCIATED SENSITIVITY RUNS



Sensitivity Run 21A: South Dade Reuse to North and South coastal WPA. Includes advanced water treatment facility construction, pipeline construction from advanced facility to coastal WPAs.

ALT22 ASSOCIATED SENSITIVITY RUNS

AGR = agriculture, with dewatering wells,
not aquifer storage and recovery



Sensitivity Run 22A: Dewatering wells (small low-flow production wells) in the coastal agricultural lands to reduce the surface/groundwater levels without changing the saltwater front. Remove current seasonal drawdown operations on the coastal structures on C-102 and C-103 canals.

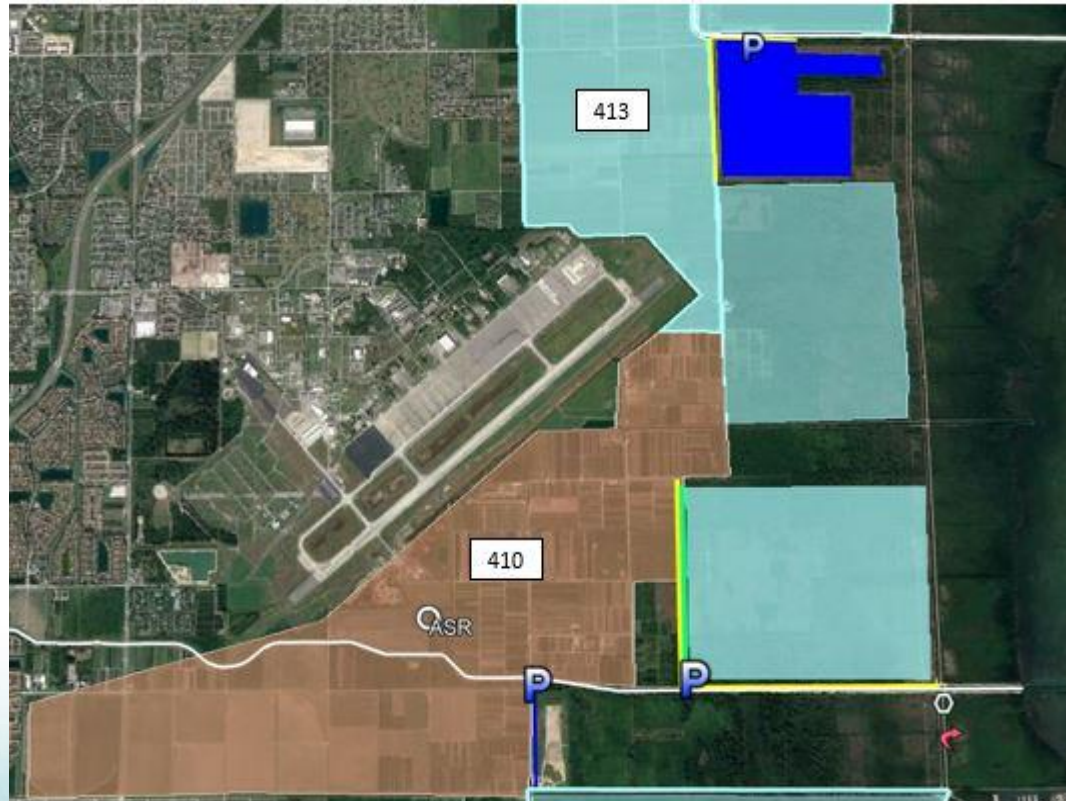
ALT23 ASSOCIATED SENSITIVITY RUNS



Sensitivity Run 23A: Add Aquifer Storage and Recovery (ASR) wells south of the Lake Belt region for late dry-season freshwater deliveries south and east.

**Precise location of ASR wells still in development.

ALT23 ASSOCIATED SENSITIVITY RUNS



Sensitivity Run 23B: Add Aquifer Storage and Recovery (ASR) wells in the coastal agricultural areas for late dry-season freshwater deliveries to the coastal wetlands and Biscayne Bay nearshore.

**Precise location of ASR wells still in development.