

BISCAYNE BAY COASTAL WETLANDS RESTORATION BENEFITS

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INTRODUCTION

The Biscayne Bay Coastal Wetlands (BBCW) project redistributes freshwater runoff from the existing canal discharges and into coastal wetlands adjoining Biscayne Bay to provide a more natural historic overland flow.

This project will help restore coastal wetlands and the nearshore bay through re-establishment of optimal salinity concentrations for fish and shellfish nursery habitat.

Comparison of baseline data (2010 through 2012) to data collected (2010-2017) shows, the project trending toward short-term hydrological improvements.



Figure 1. BBCW Phase I project components.

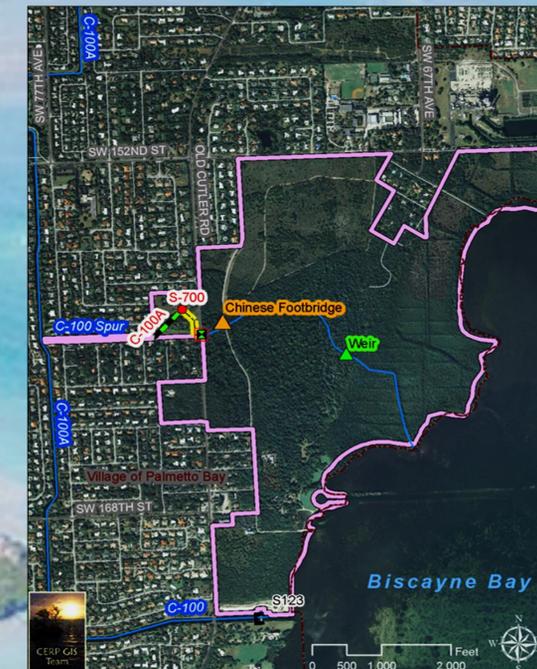


Figure 2. Deering Estate component features.

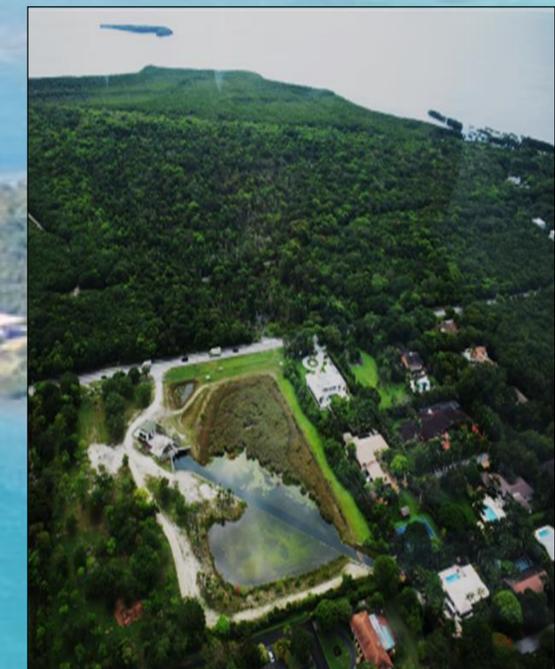
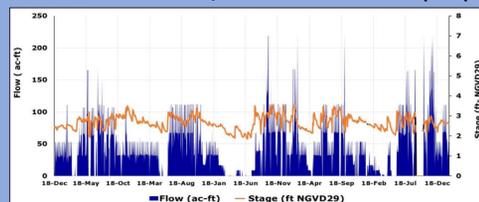


Figure 3. Deering Estate Pump Station. (completed in April 2012)

OBJECTIVES and RESULTS

FRESHWATER DELIVERED TO PROJECT

- IMPROVE QUANTITY, QUALITY, TIMING AND DISTRIBUTION OF FRESHWATER TO BISCAYNE BAY AND MINIMIZE POINT SOURCE DISCHARGES
- RE-ESTABLISH CONNECTIVITY BETWEEN THE COASTAL AND ADJACENT WETLANDS



82,000 ac-ft. of freshwater redirected to historic remnant wetlands and Biscayne Bay through Deering Estate pump station (S-700)

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PRESERVE AND RESTORE NATURAL COASTAL GLADES HABITAT

- Wetland stage and inundation have been increased in Deering Estate as a result of flow redirection from the C-100 Canal
- Pulse versus continuous pumping under different pumping regimes were compared and continuous pumping at minimum rate of 25 cfs was recommended
- Vegetation response to improved hydrology includes:
 - Die-off of upland vegetation & emergence of wetland species
 - Reduced percentage cover of invasive vegetation

COASTAL HABITAT RESTORATION

Determined extent of inundation under various pumping rates

Pumping Rate (cfs)	Duration of Testing (Hours)	Estimated Acres of Impounded Surface Water	Percentage of Inundated Remnant Wetlands Within Cutler Creeks
0	5	0	0%
25	5	19	58%
50	5	25	76%
75	5	27	82%
100	5	33	94%



Vegetation monitoring along the transect within tidal wetlands downstream of the L-31E Culverts



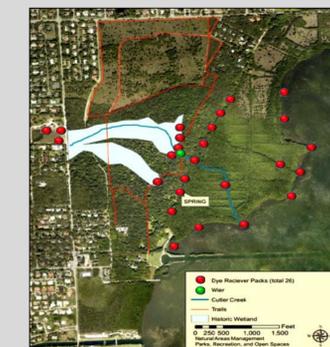
WY2017 sawgrass mapping east of the L-31E levee (acreage increased approximately 9 acres since 2013)



Delineation of the historical freshwater wetland sloughs in Deering Estate and areas of inundation at different pump rates



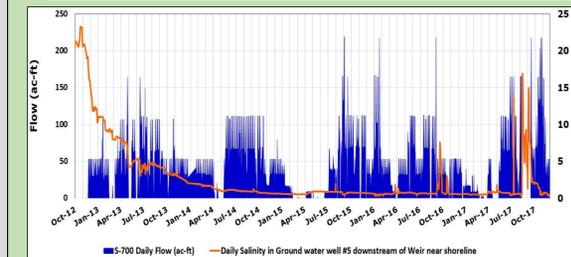
Changes in vegetation communities includes die off of unwanted accompanied by reestablishment of wetland vegetation including sawgrass and pond apple trees



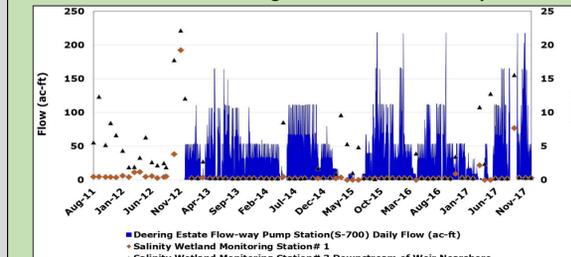
Dye test-determined where and how water is being distributed throughout Deering Estate Component

IMPROVEMENT OF SALINITY REGIMES

- IMPROVE NEAR-SHORE AND COASTAL WETLAND SALINITY REGIMES
- RE-ESTABLISH PRODUCTIVE NURSERY HABITAT



Comparison of salinity concentrations in groundwater in tidal wetlands Deering Estate versus S-700 daily flow



Comparison of surface water salinity at Deering Estate salinity wetland monitoring stations versus S-700 daily flow