

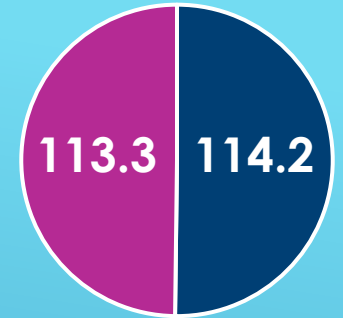
An aerial photograph of a tropical coastline. The image shows a wide, sandy beach curving along the shore. To the left of the beach is a residential area with numerous houses, many with orange-tiled roofs, and lush green vegetation. The water is a vibrant turquoise color near the shore, transitioning to a deeper blue further out. The overall scene is bright and clear, suggesting a sunny day.

Beach Nourishment & Nearshore Hardbottom

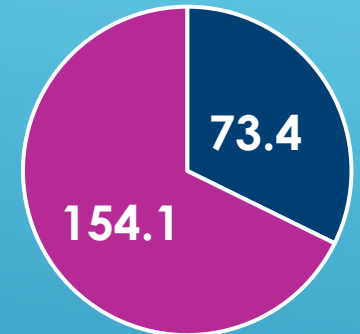
***Florida Chamber Environmental Permitting Summer School
Danielle H. Irwin, PWS
July 10, 2015***

Miles of Critically Eroded & Managed (Nourished) Shoreline

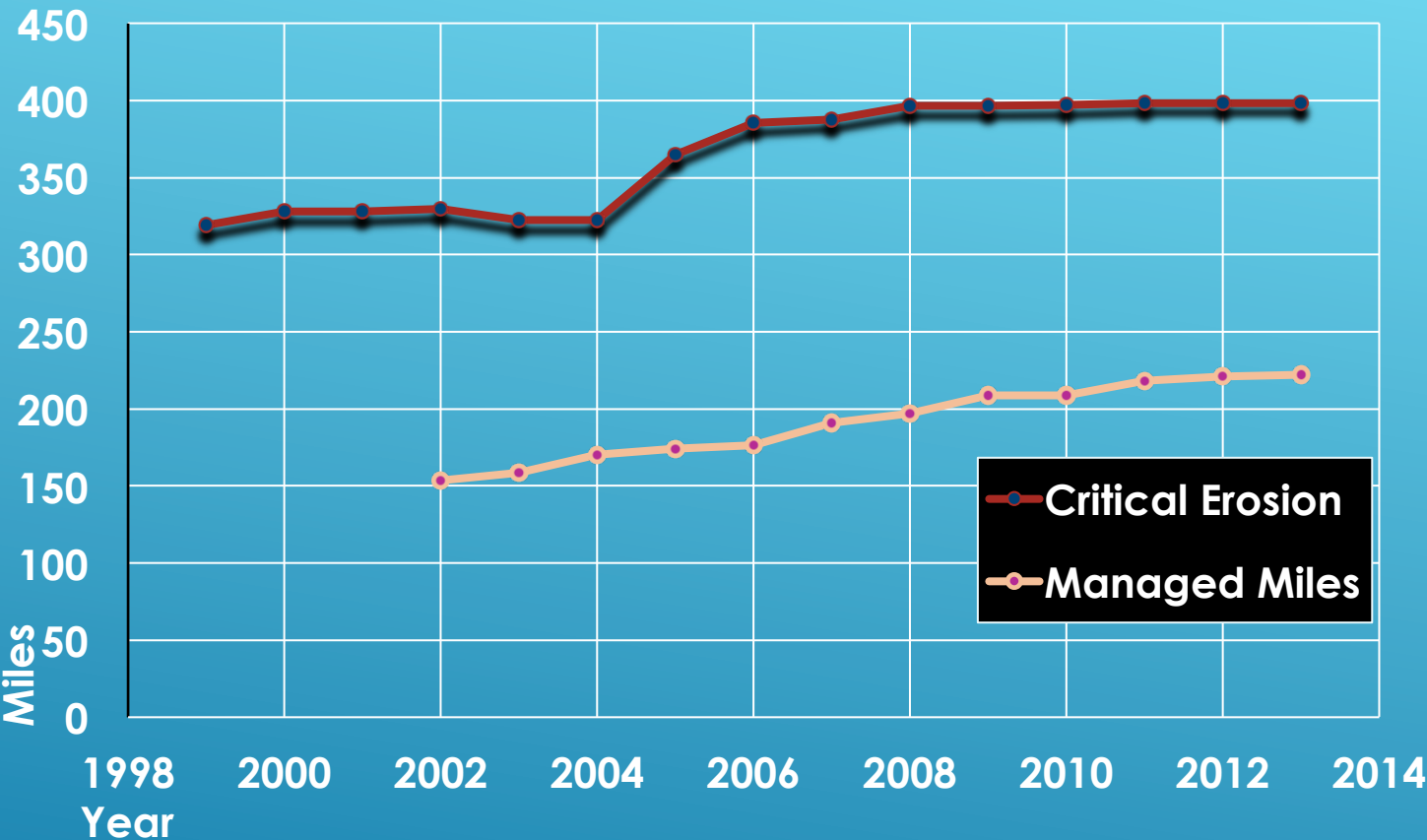
Nourished Miles



■ Gulf Coast
■ Atlantic Coast



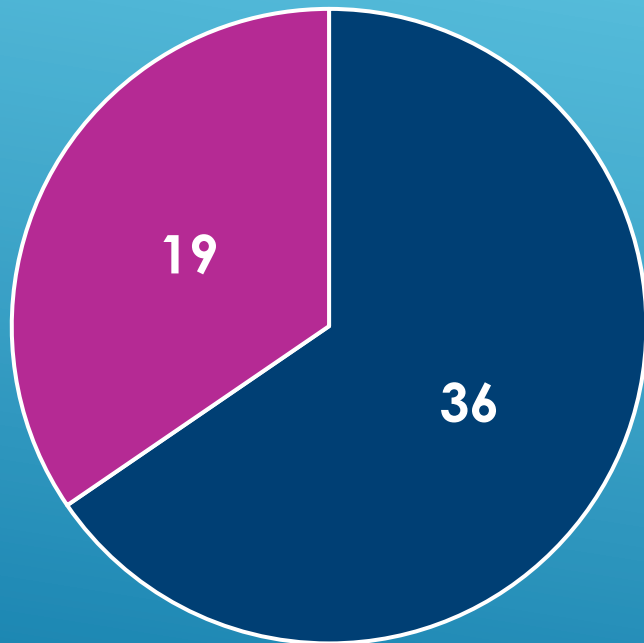
■ North FL
■ South FL



HALF OF FLORIDA'S SANDY BEACHES ARE CRITICALLY ERODED.

Less than half of last year's nourishment projects were in close proximity to hard bottom resources.

2014 – 55 Active Projects



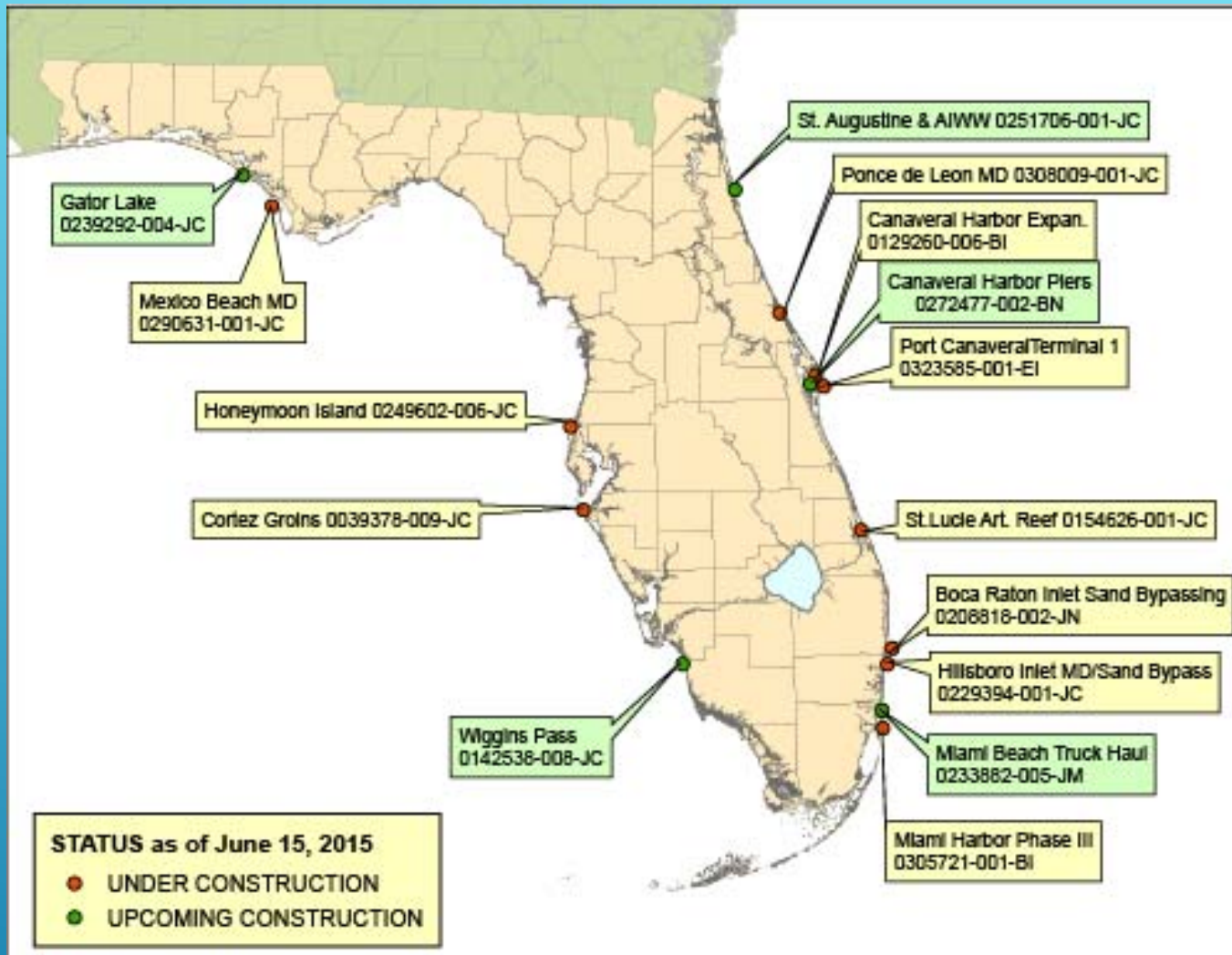
- Projects without HB monitoring
- Projects with HB monitoring

- 68 beach nourishment projects statewide (active & inactive)
- 41 projects have, at some point, HB monitoring requirements (excl. ports)

- ▶ Habitat
 - ▶ Shelter or feeding to >1000 species algae, verts, inverts
- ▶ Fisheries
- ▶ Tourism/Recreation – boating, fishing, diving
- ▶ Wave energy dissipation

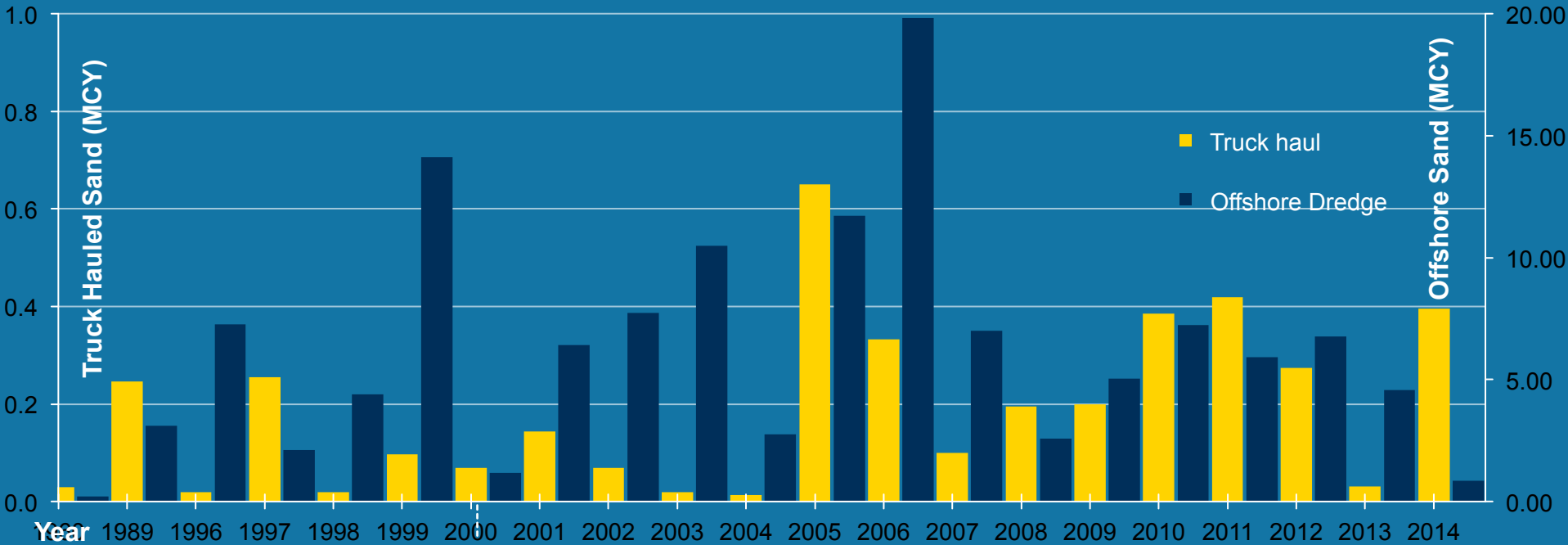


WHY DO WE PROTECT NEARSHORE
HARD BOTTOM RESOURCES?



JCP PROJECTS UNDER CONSTRUCTION OR SCHEDULED FOR CONSTRUCTION – JUNE 2015

Truck Hauled vs. Offshore Dredged Sand for Beach Nourishment



MORE TRUCK HAUL PROJECTS
SINCE 2005
- STILL LESS SAND PLACED THAN
WITH OFFSHORE SAND SOURCES

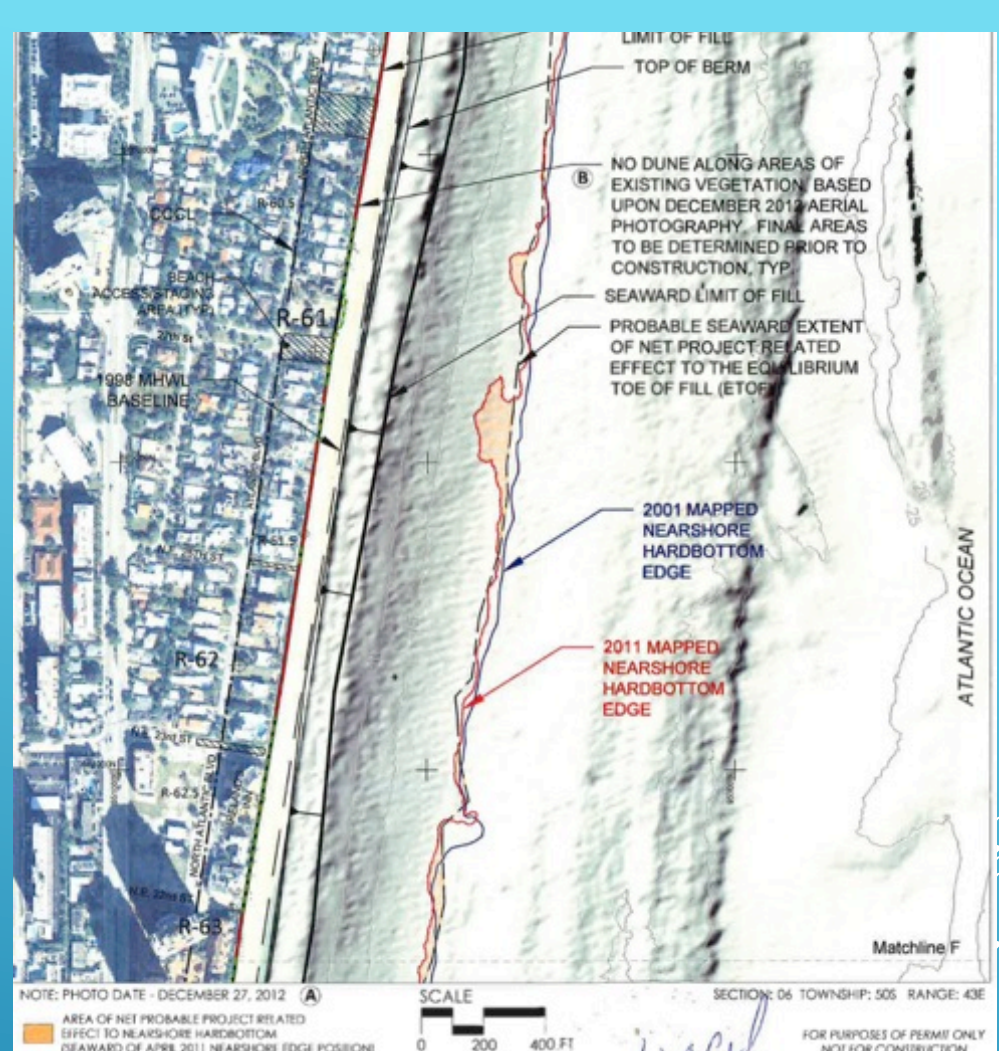
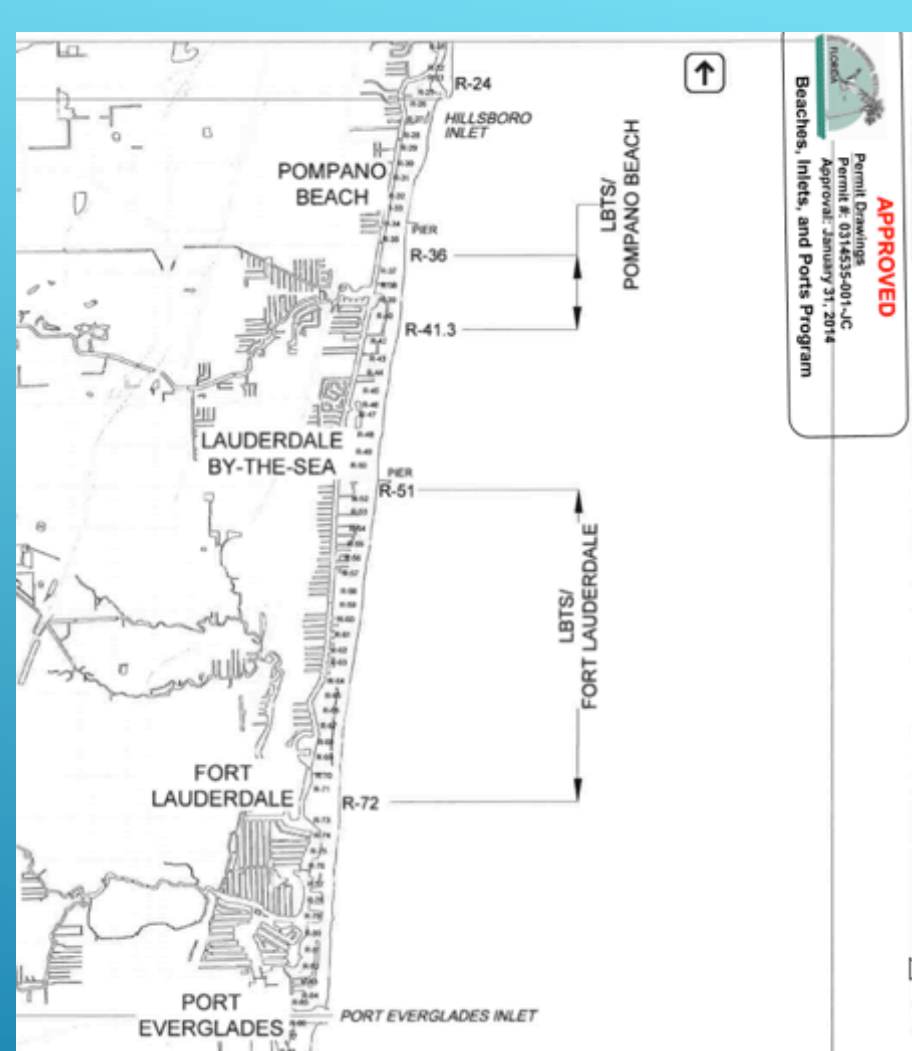
- ▶ Alternate to sand from offshore borrow areas
 - ▶ Scarcity of offshore sand (SE FL)
 - ▶ More sand quality control from mines vs offshore
 - ▶ Easier to treat hot spot erosion with upland sand
 - ▶ Fewer permitting concerns with upland sand
 - ▶ borrow area surveys, offshore resources, pipeline corridors
 - ▶ Reduce secondary impacts to HB - Broward
 - ▶ Shift coastal mgmt. strategy to smaller, more frequent projects
 - ▶ Beware of externalities with mined sand – traffic, noise, etc.

WHY CHOOSE UPLAND MINED SAND?

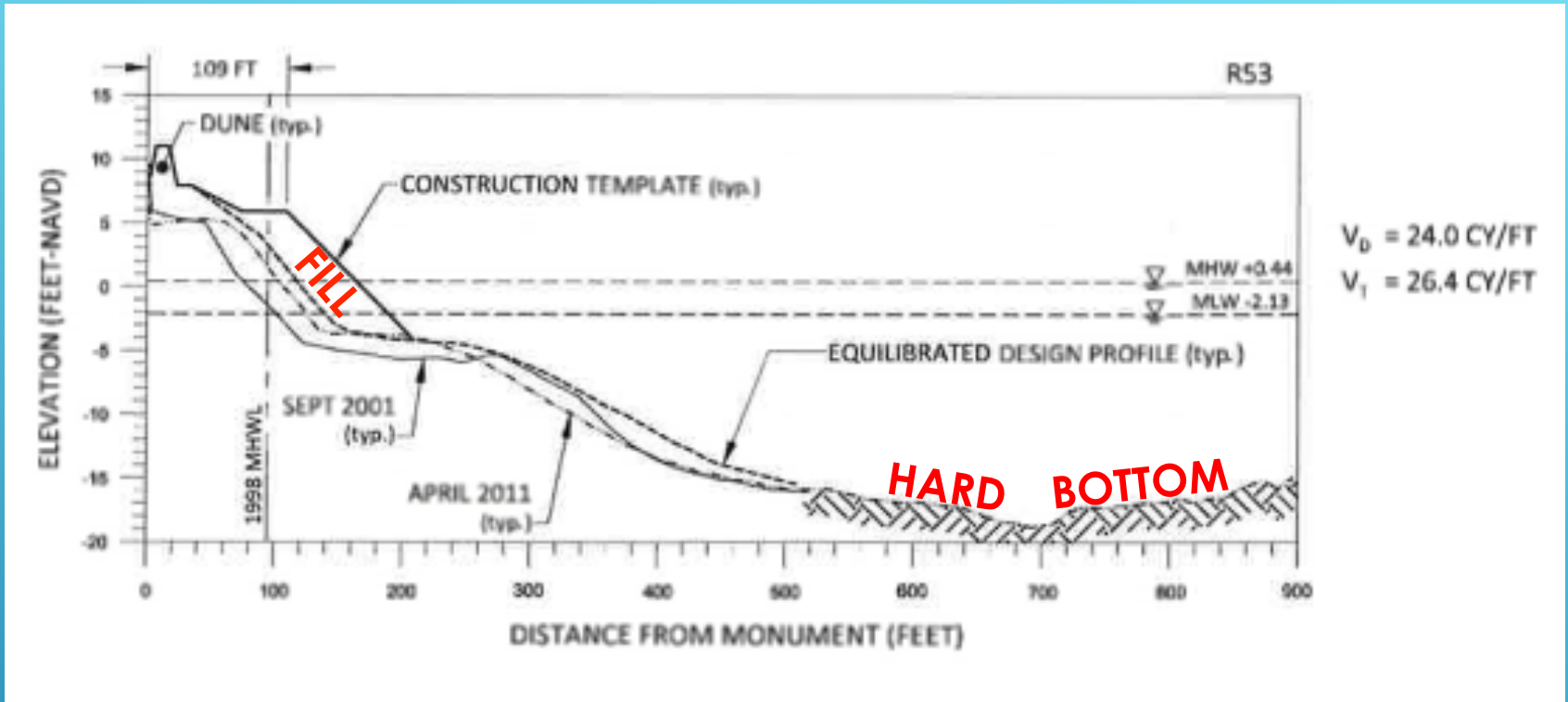
UPCOMING BROWARD SEGMENT II NOURISHMENT & RESTORATION PROJECT

- ▶ DEP File 0314535-001-JCP
 - ▶ 15-yr permit issued Jan 2014
 - ▶ Nourish 4 municipalities, 5 mi.
 - ▶ Truck Haul/rail 663,430 cy fill
- ▶ Upland sand
 - ▶ E.R Jahna Ortona, Stewart Imomokalee, Vulcan Witherspoon & Cemex Davenport
- ▶ Direct impacts to 4.9 acres of hard bottom
- ▶ Mitigate 6.8 acres artificial reef within 10-ac. footprint
- ▶ Monitor for unanticipated & secondary impacts to hard bottom
- ▶ Permit includes hard bottom, turtle, seabird, shorebird conditions



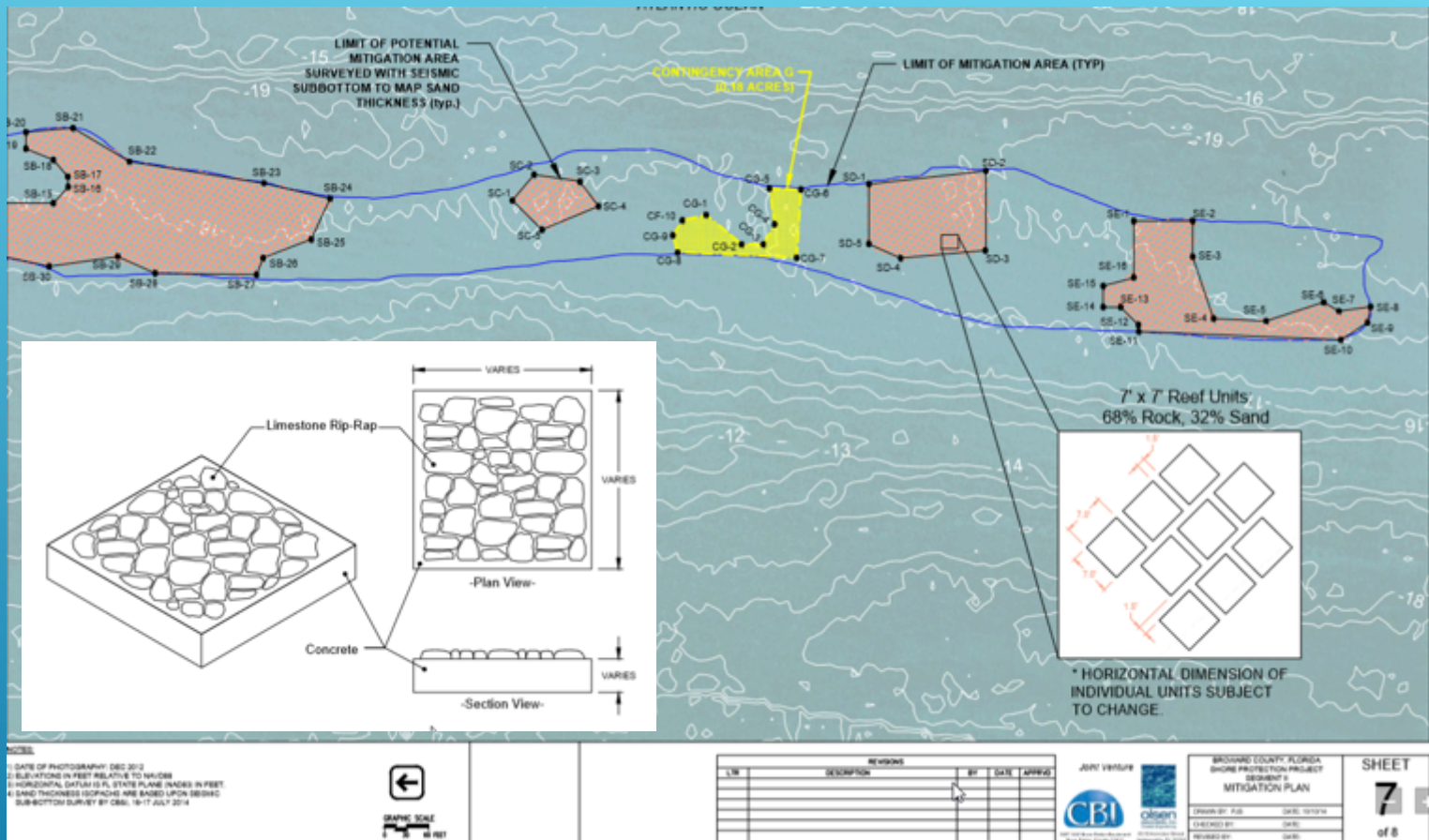


WHERE IS THE PROJECT IN RELATION TO HARD BOTTOM RESOURCES?



EQUILIBRATED FILL PROFILE
 EXPECTED TO IMPACT OR BE NEAR
 RESOURCES.

APPLYING ARTIFICIAL REEF PLACEMENT CRITERIA.



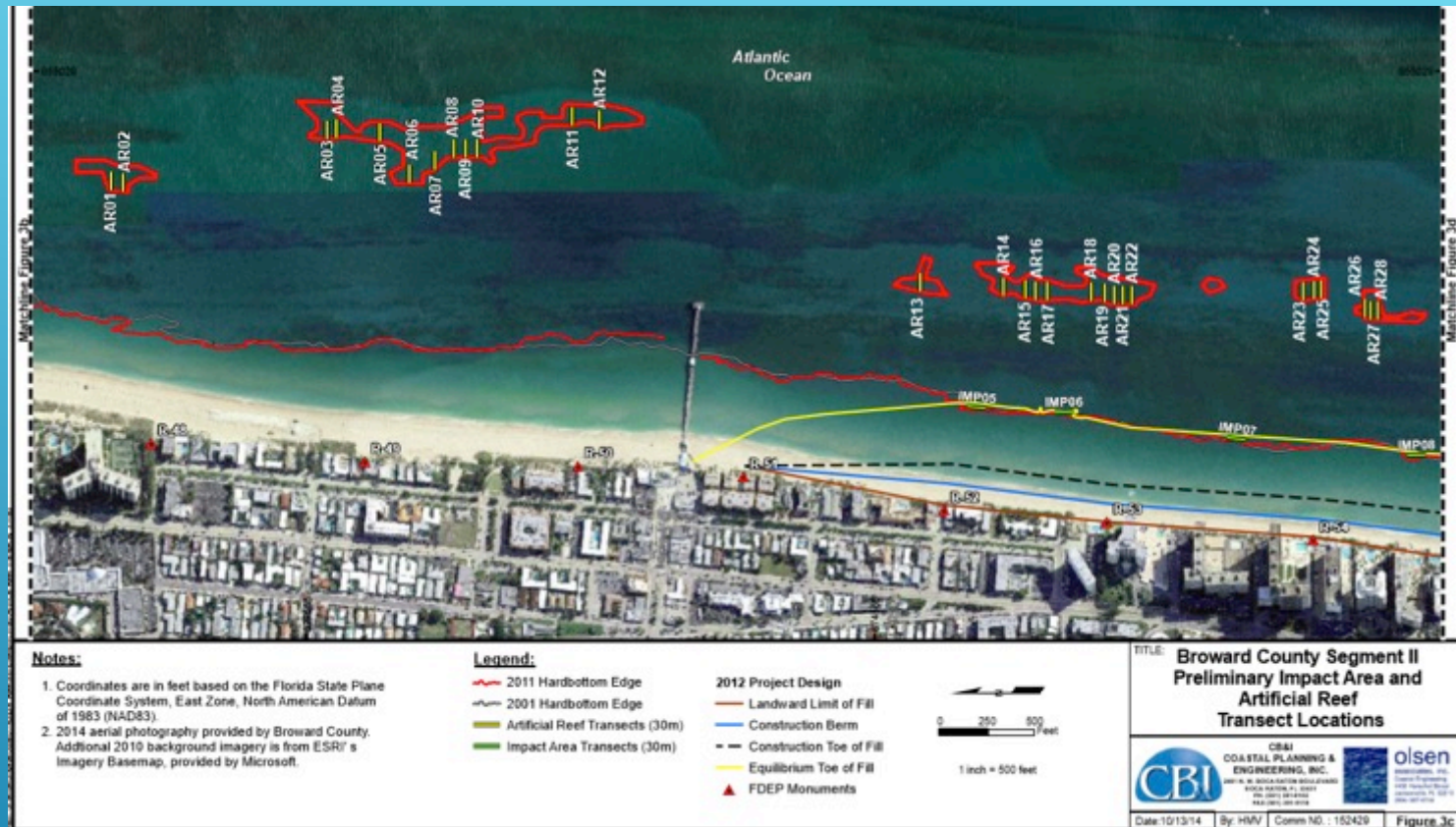
- ▶ Offshore ETOF, similar water depth, not shallower than 8'
- ▶ 50' buffer from hard bottom
- ▶ Thin sediment layer over substrate

HB BIOLOGICAL MONITORING FOR UNANTICIPATED FILL IMPACTS.



- ▶ 5 summer surveys – pre, post, Yrs 2/3/5
- ▶ HB edge mapping, 150 m transects (57), aerial imagery, *Acropora* stations (8)
- ▶ 2 post-con monitoring events for short-term sediment dynamics (STORMS)
- ▶ Report on trends in bio community & burial/sedimentation

BIOLOGICAL MONITORING TRANSECTS FOR ARTIFICIAL REEF SUCCESS.



- ▶ Transplant coral from project sites
- ▶ 3 summer surveys – Yrs 2/3/5
- ▶ Video survey, quadrat sampling along 30 m transects (28)
- ▶ Success – similar benthic community & colonization as impact area

Questions?

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