

Pelican Landing Community Association Erosion Control Project at Big Hickory Island

By

Douglas W. Mann, P.E., D.CE

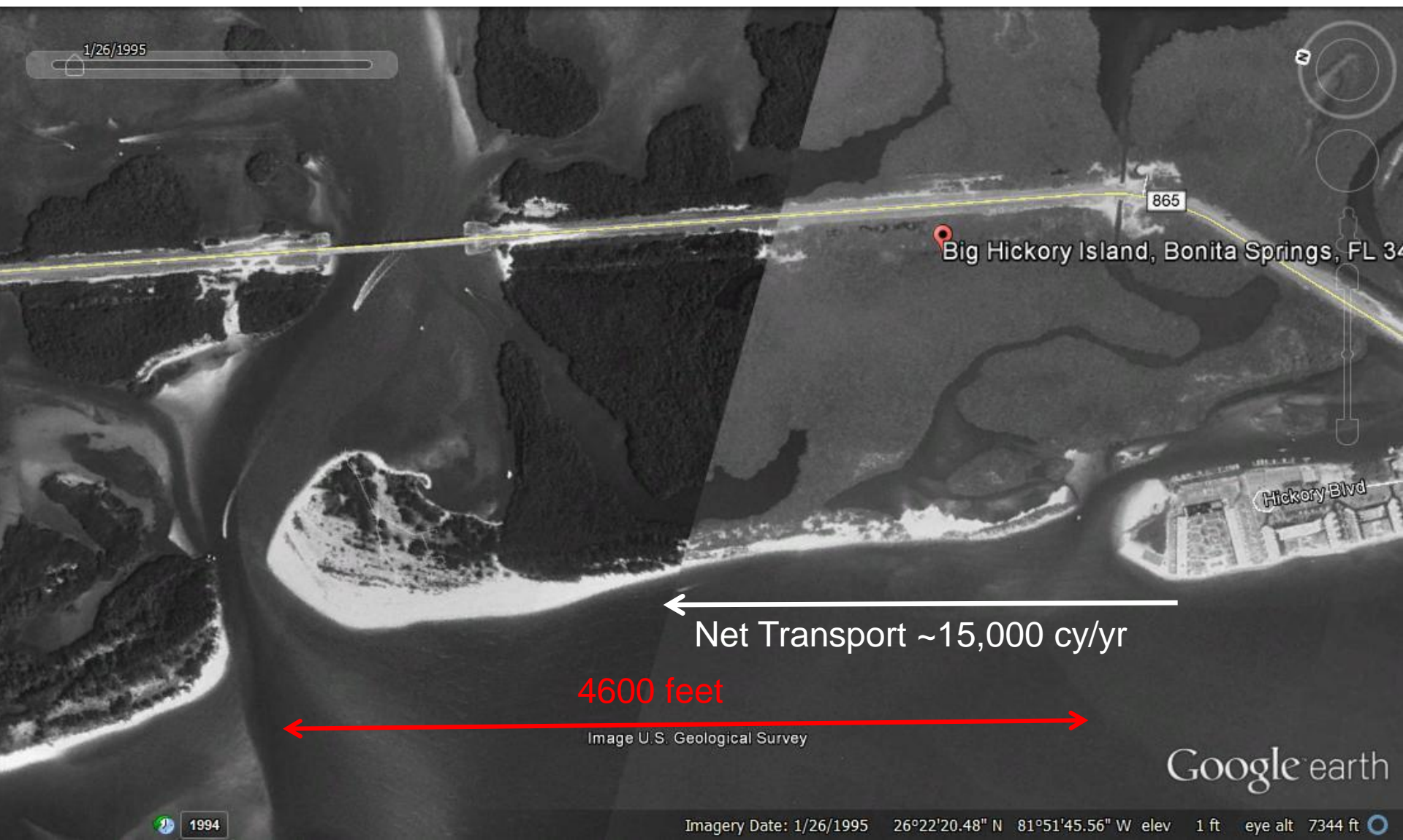
Joshua Revord, E.I.

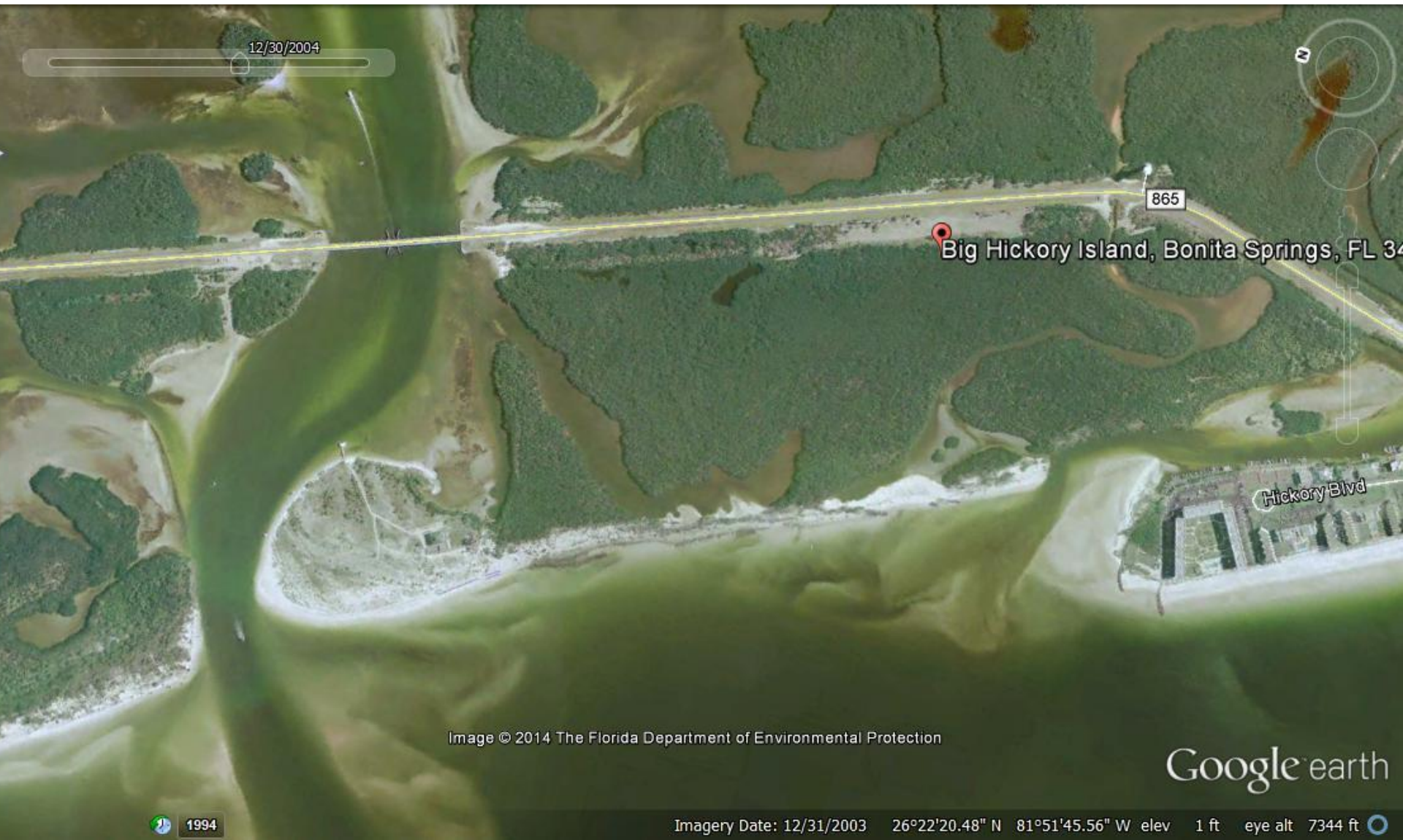




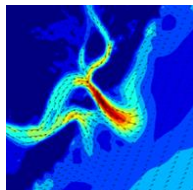
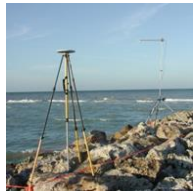


- Pelican Landing Community Association
- Hyatt Hotel At Coconut Point
- Hyatt Vacation Club
- Resulted in approximately 65,000 visits to the beach in 2013.





- “...The shoreline however, suffered major beach and dune erosion. Losses averaged 91 feet for the island.”
- “The recovery process is expected to provide partial restoration, however full recovery is not anticipated without nourishment. ” (from R. Neal, February 2005)







- Restore the recreational amenities of the beach park.
- Fundable.
- Be environmentally acceptable.
- Address the breach in the island.
- Be “neighborly”.



January 2008

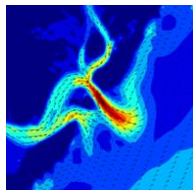
Lee
County

Pelican
Landing

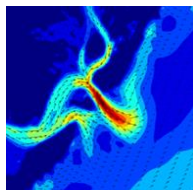
MHW 4/02/2009

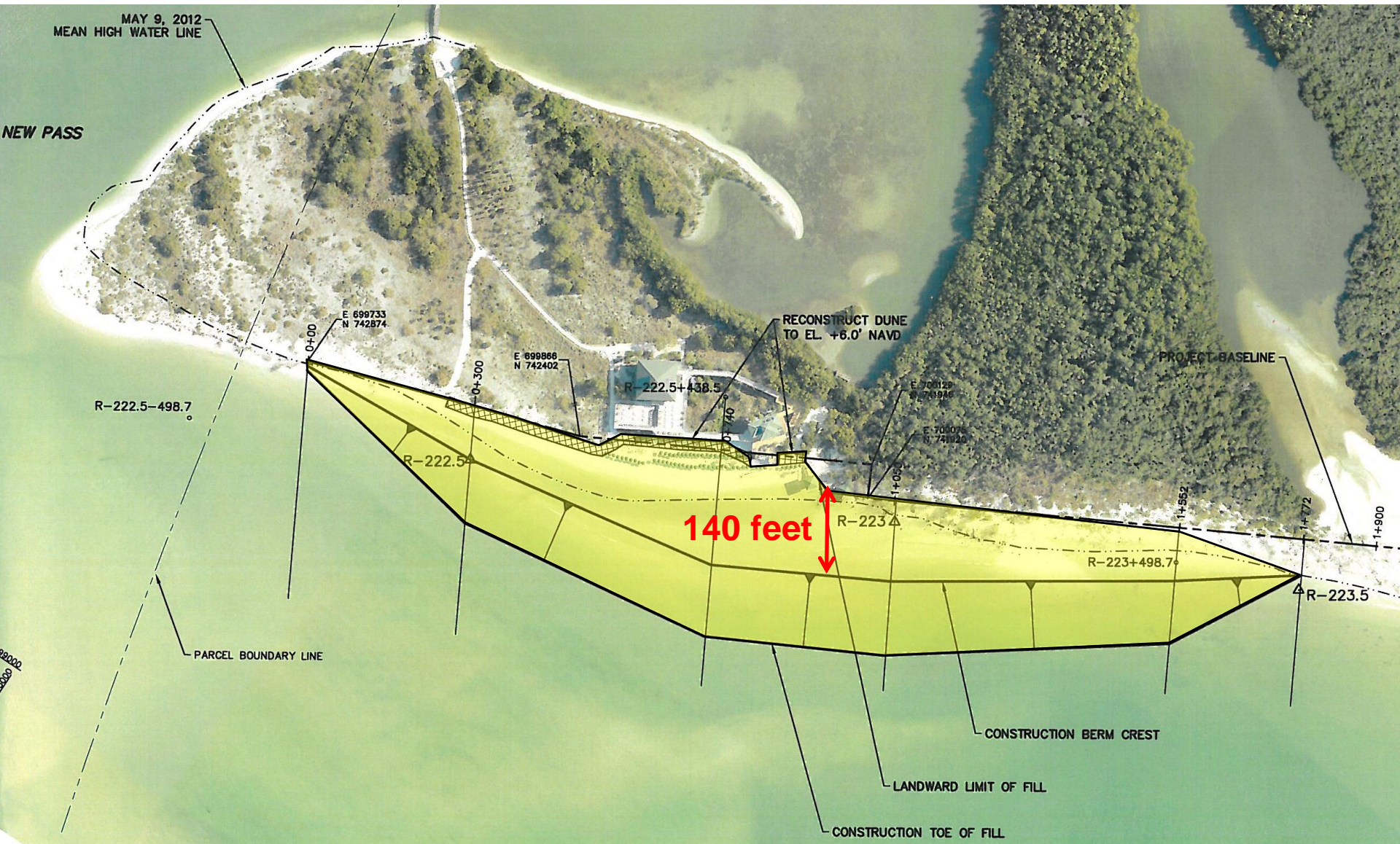


- Two viable alternatives for erosion control of BHI at Pelican Landing included:
 - Segmented breakwaters, dune fill, beach nourishment
 - Traditional groins, dune fill, beach nourishment
- Non viable alternatives:
 - Beach nourishment only.
 - No action.



- Dredge a minimum of 75,000 cy of sand from the New Pass ebb shoal and place it on the beach.
- Construct a 600 foot long dune along the back of the new beach.
- Construct 7 king pile and panel groins to control the loss of sand.
- Project budget established at \$3M.
- Long term beach monitoring and groin adjustment plan included.

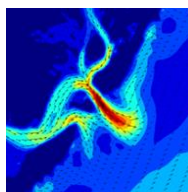
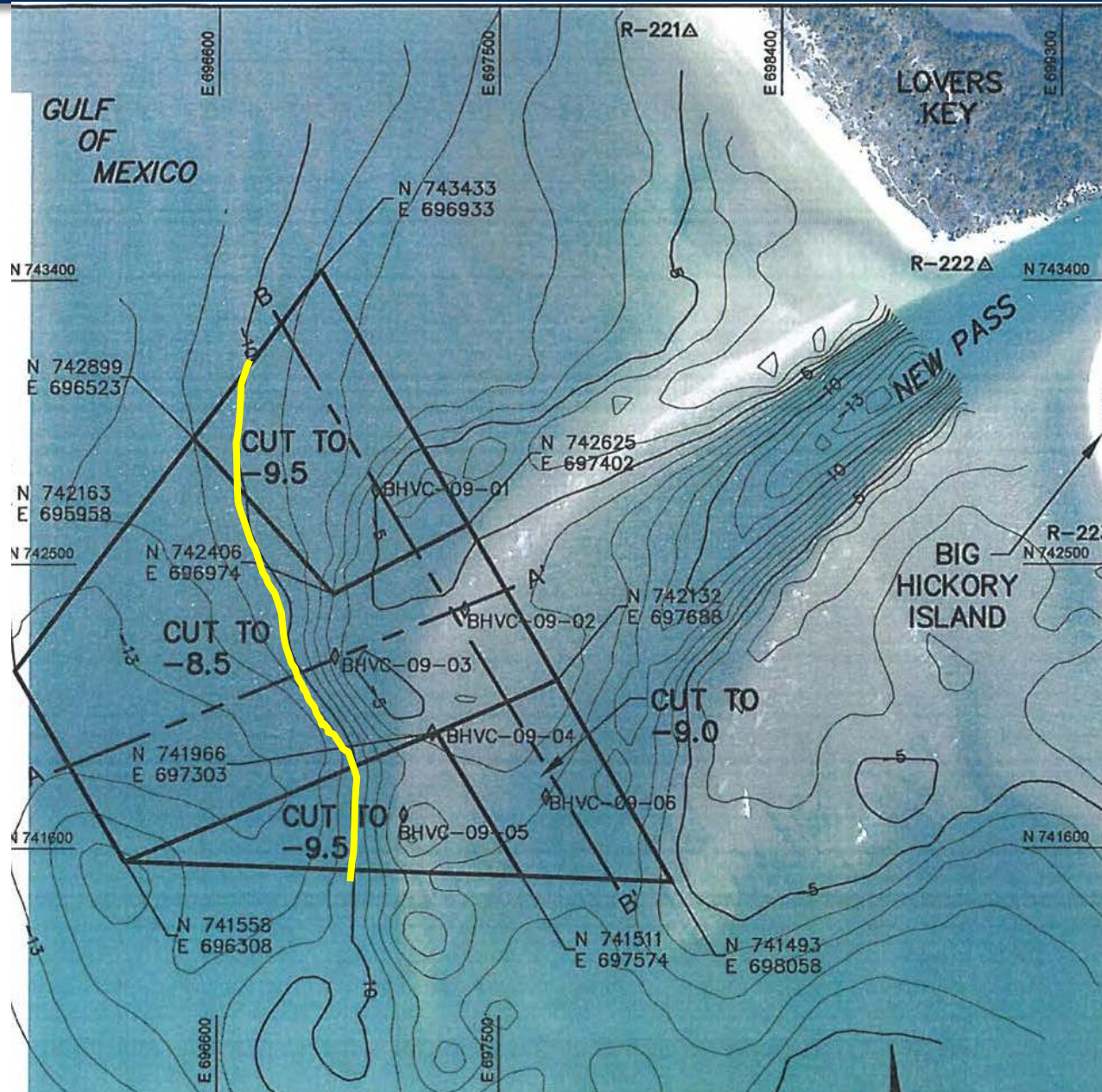




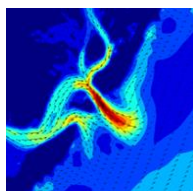
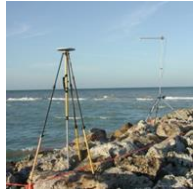
- Limited footprint
- Minimization of the volume of material
- Minimize sea turtle interactions
- Adjustable
- Ease of construction (offsite concrete casting)

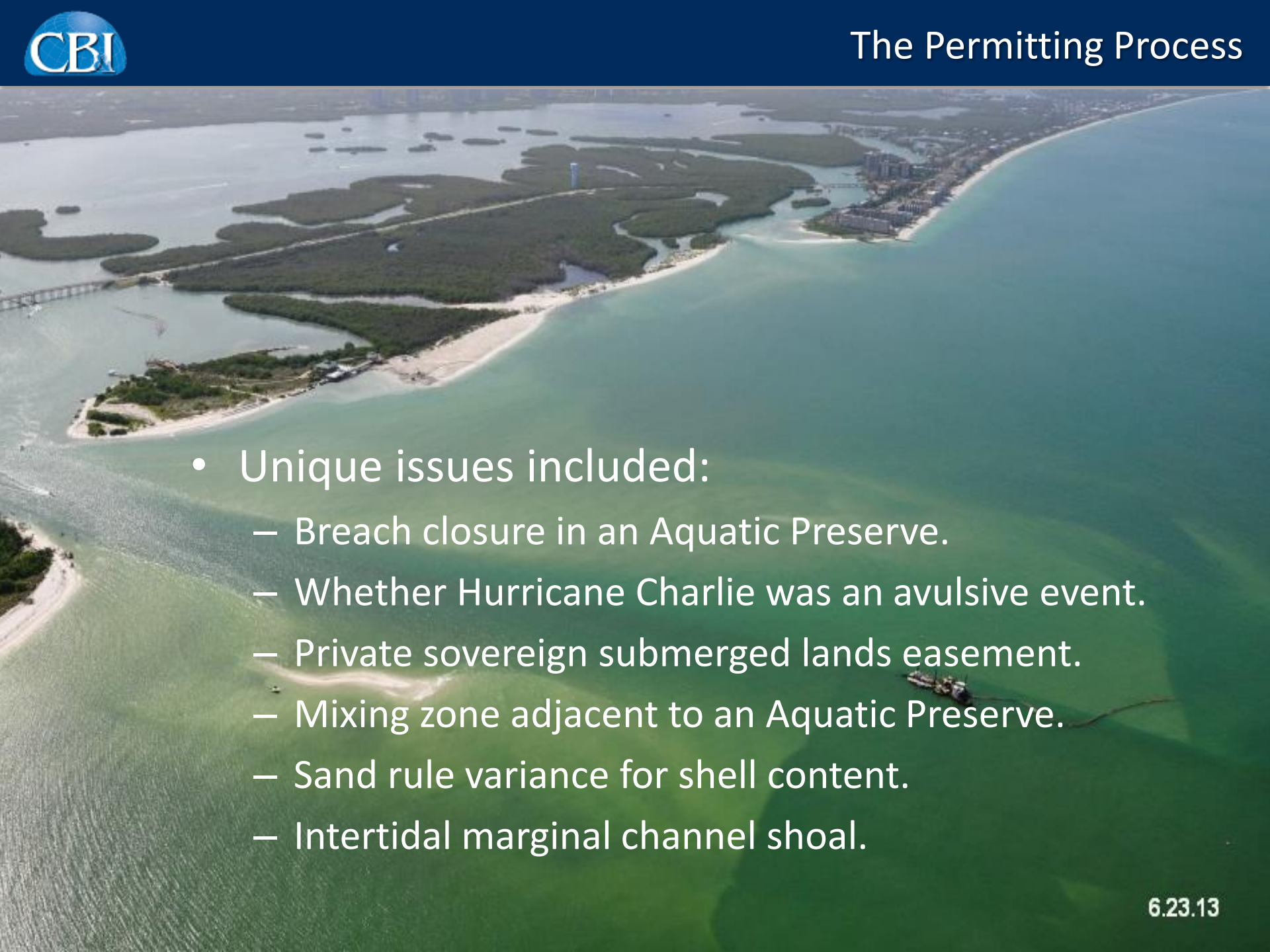




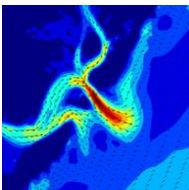
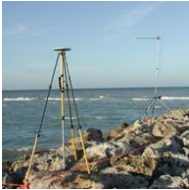


- New Pass ebb shoal was previously permitted and dredged in 1990's.
- Adequate volume remained or had recovered in the ebb shoal to provide sand to nourish the island.
- Vibracores showed layers of fine sand, shelly sands above non beach compatible material.
- Side scan sonar survey shows no environmental resources offshore of BHI that would preclude sand placement.

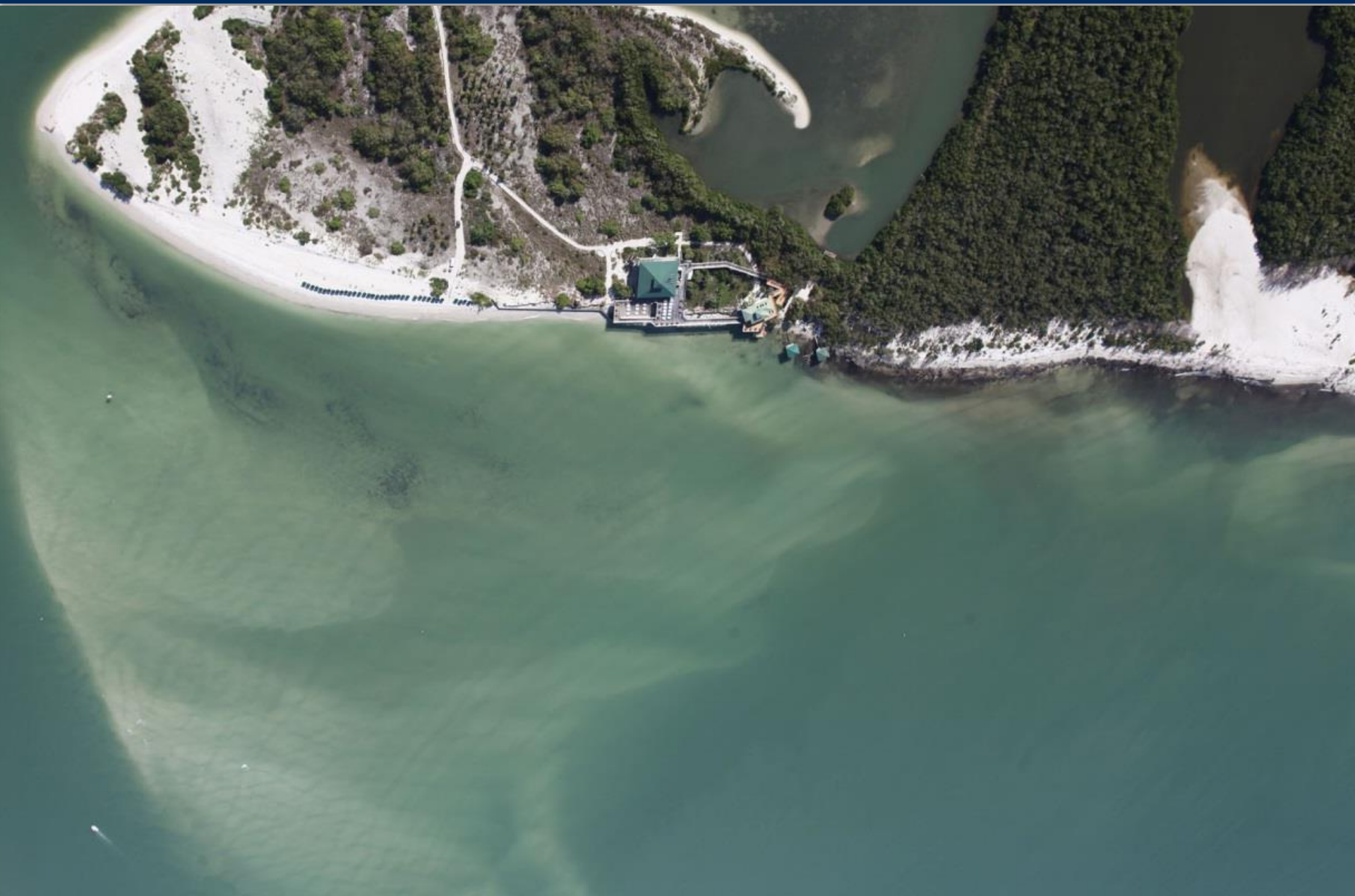


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- Unique issues included:
 - Breach closure in an Aquatic Preserve.
 - Whether Hurricane Charlie was an avulsive event.
 - Private sovereign submerged lands easement.
 - Mixing zone adjacent to an Aquatic Preserve.
 - Sand rule variance for shell content.
 - Intertidal marginal channel shoal.

- Bid the beach nourishment and the groin construction separately to limit contractor risk and eliminate prime contractor mark up of subcontractor's work.
- Low bidder of the nourishment was Orion Marine Group.
 - Mobilization = \$354,000
 - Base bid unit price = \$8.94/cy
 - Total project cost was =\$ 1,402,000
- Low mobilization cost was the result of bidding during a time when Orion was nearing completion of a similar job in Collier County.
- Second lowest bidder of the groin construction was Florida Marine Construction. Total project cost was \$552,000.

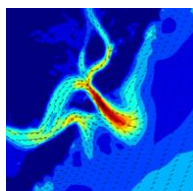
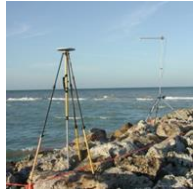








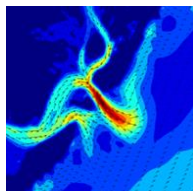
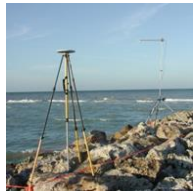
- Gulf of Mexico mixing zone variance did not allow turbidity within the Estero Bay Aquatic Preserve.
- Dredging on flood tides resulted in a violation of water quality and a shut down of the dredge. Typically lost two hours until the tide reversed.







Event	Design Beach Volume (cy)	Available Borrow Area Volume (cy)	Efficiency (%)
Base Bid w/o beach tolerance	75,000	104,000	72%
Base + Option Bid w/o beach tolerance	90,000	104,000	86%



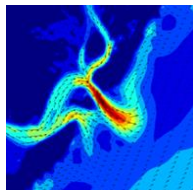
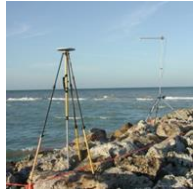




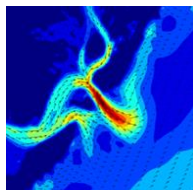




- Private 100%
 - PLCA 50%
 - Hyatt Hotel 50%



- Pelican Landing Community Association
 - Marie Martel, General Manager
 - Tom Schemenaur, Beach Operations Manager
- Robert Dean, Ph.D.
- Nicole Elko, Ph.D.

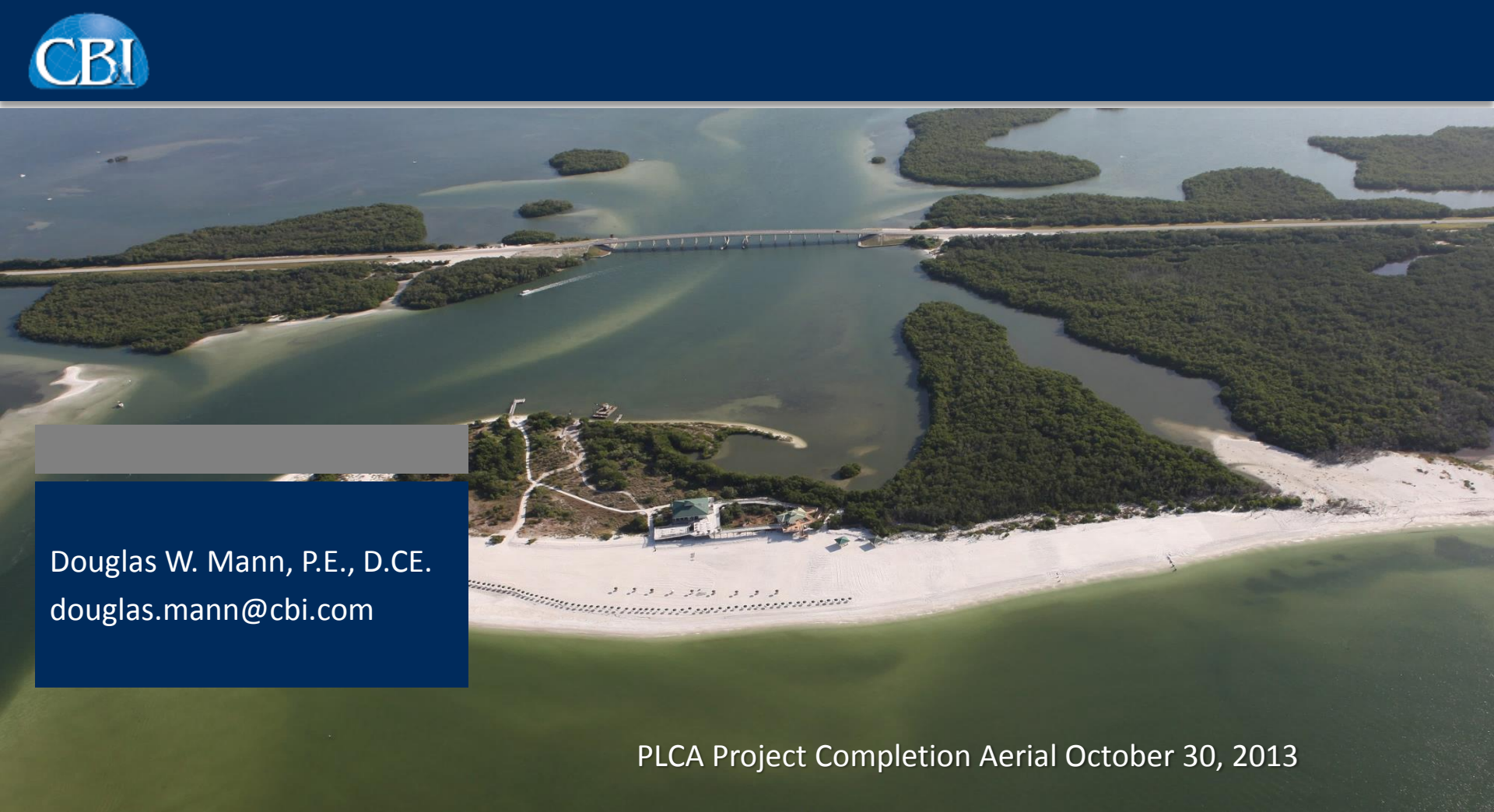




PLCA Project Completion Aerial October 30, 2013

“Thank you, thank you, That is really cool. Yes, a picture is worth a thousand words and this one says it all! It doesn't tell us what it took to get here, but it perfectly lays out the goal. Thank you all who contributed to Pelican Landing reaching this point. You could have written "SUCCESS" in the sand.”

- Tom Moehring, PLCA resident and former Board Member.

An aerial photograph showing a coastal area. A long bridge spans a body of water, connecting a landmass with dense green vegetation to another. In the foreground, there is a sandy beach with a row of small, dark objects, possibly umbrellas or chairs. The water is a mix of green and blue, with some sandbars visible. A small building is situated on the beach near the water's edge.

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