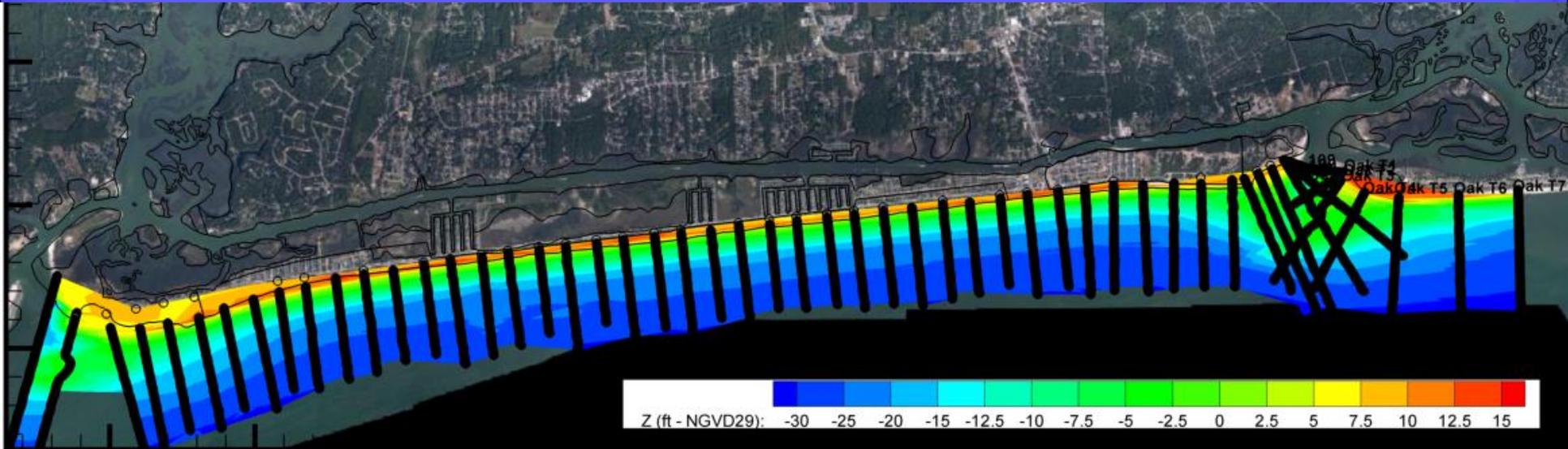


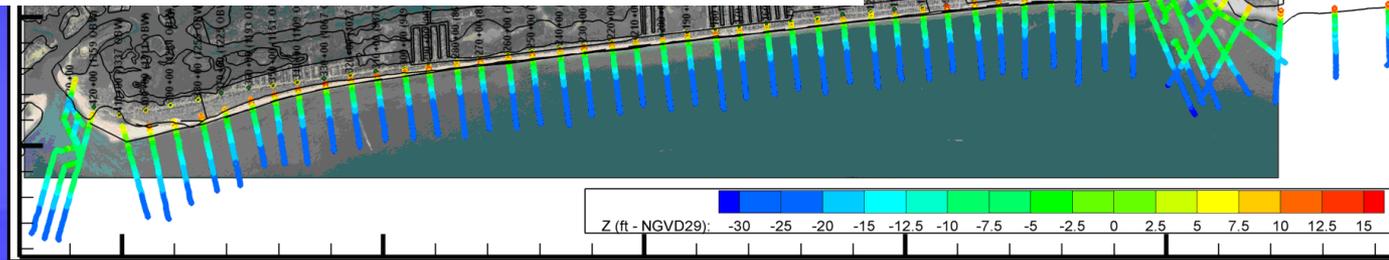
HOLDEN BEACH ANNUAL MONITORING

October 18, 2016



*Marina, Coastal, Environmental
& Water Resources Engineers*

Annual Monitoring Analysis



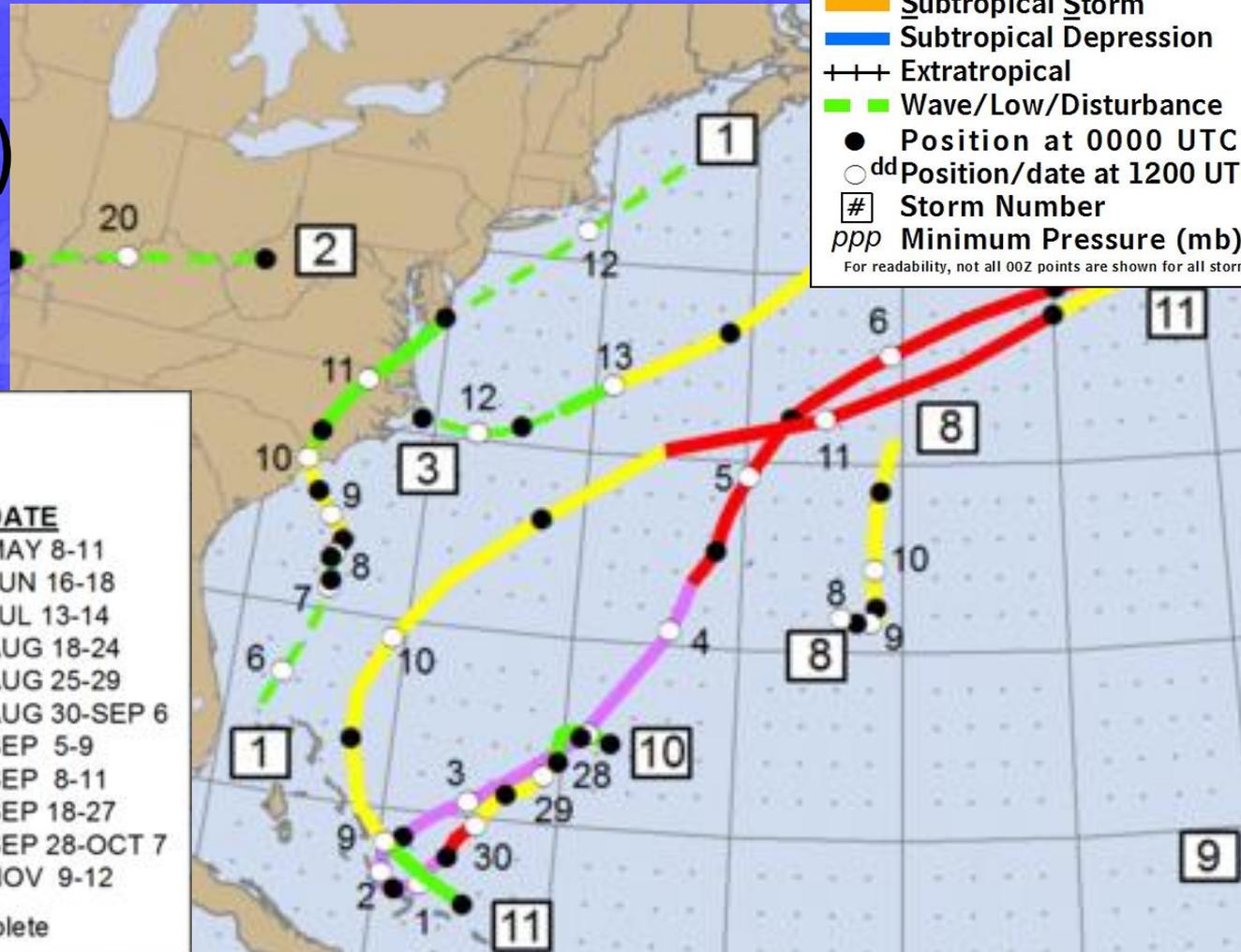
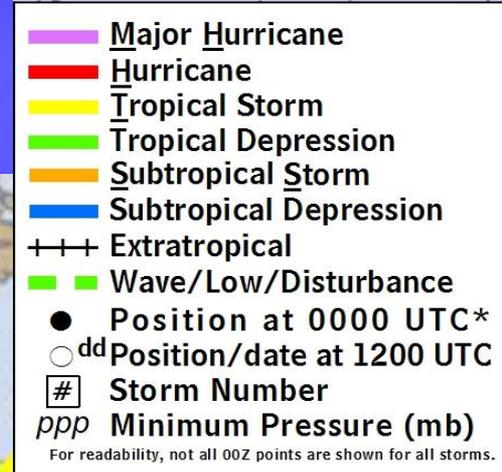
- Volume Change
- Shoreline Change
- Has occurred annually since 2001
- Nourishment Planning & FEMA Eligibility



Figure 39. Photographs of the eastern portion of Holden Beach. A. West view (3/86) of eroding shoreline and houses stranded on recreational beach. Note bulkheads, timber groins and vestiges of seawalls that litter the beach. The eastern portion of Holden Beach shoreline near the inlet has been a chronic erosion zone since the late 1970s. B. West view (11/7/97) of same area in "A" retreat of the shoreline, removal of all but one home and a refurbished dune/dike composed of truck hauled sand. C. Aerial photograph of house on beach and peat exposure. Insert depict dike along road. D. Aerial photograph depicting shoreline and chronic erosion zone. Note the homes fronted by bulkheads and remnants of those destroyed.

2015 Hurricane Season

Moderate:
 Ana (Spring)
 Joaquin (Fall)



2015

NUMBER	TYPE	NAME	DATE
1	TS	ANA*	MAY 8-11
2	TS	BILL*	JUN 16-18
3	TS	CLAUDETTE*	JUL 13-14
4	MH	DANNY	AUG 18-24
5	TS	ERIKA	AUG 25-29
6	H	FRED	AUG 30-SEP 6
7	TS	GRACE*	SEP 5-9
8	TS	HENRI*	SEP 8-11
9	TS	IDA*	SEP 18-27
10	MH	JOAQUIN	SEP 28-OCT 7
11	H	KATE	NOV 9-12

* Post-storm analysis is complete

2015 Hurricane Season

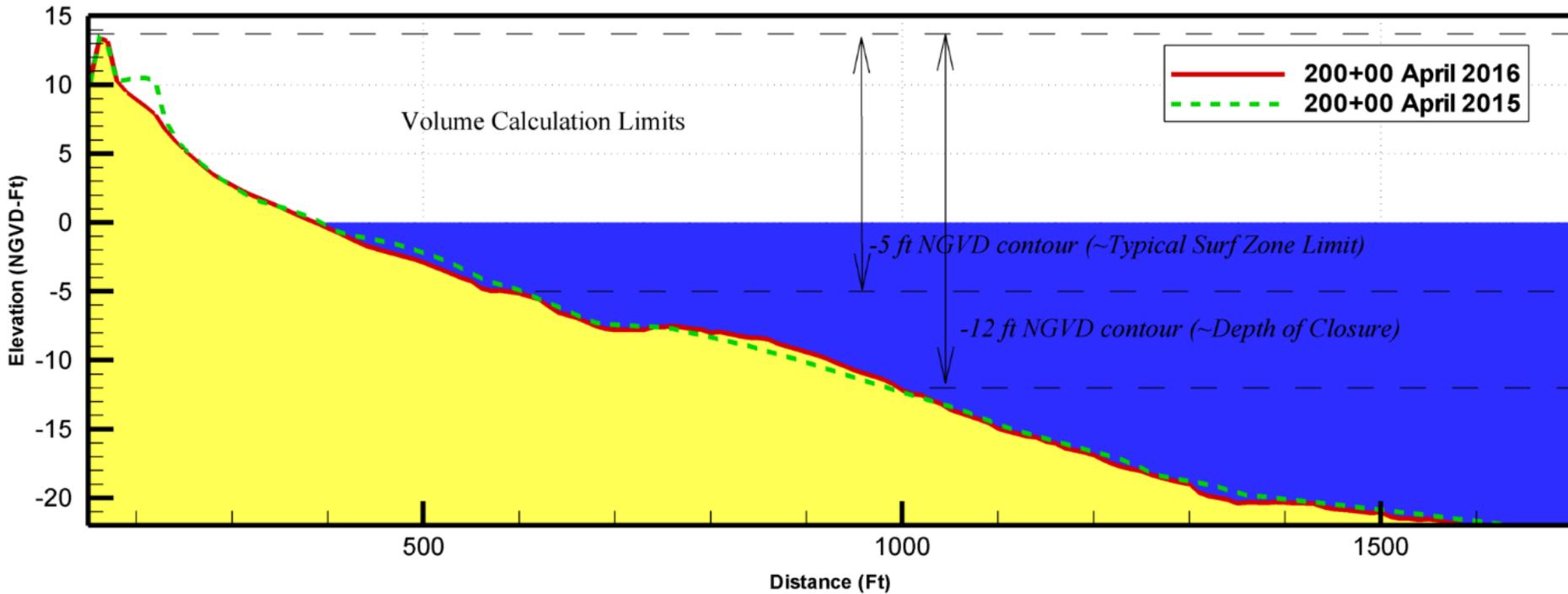


TS Ana – May 8-
12, landfall in
Myrtle Beach

Joaquin-Related



Volume Analysis



Volume Change (to -12 ft)

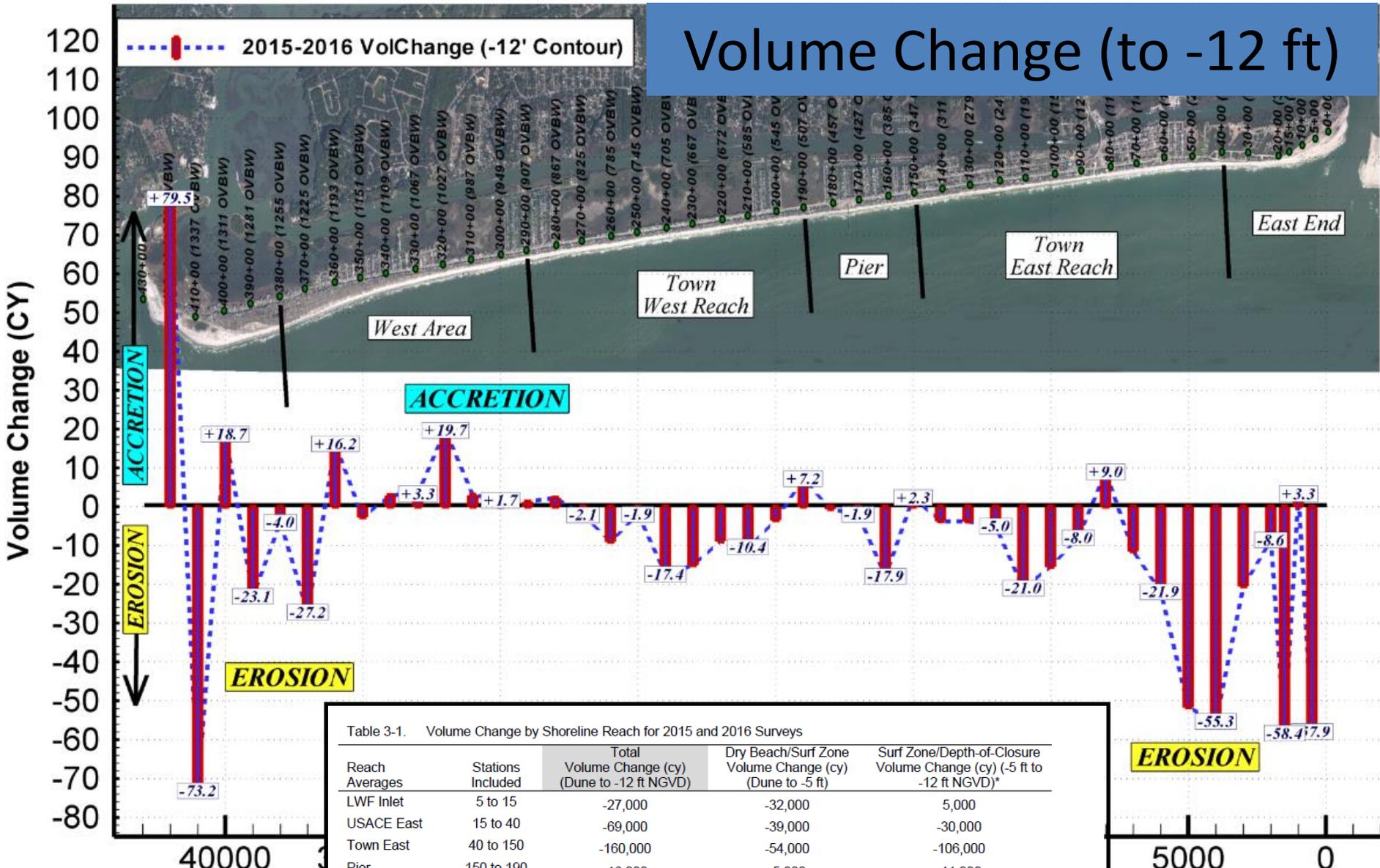
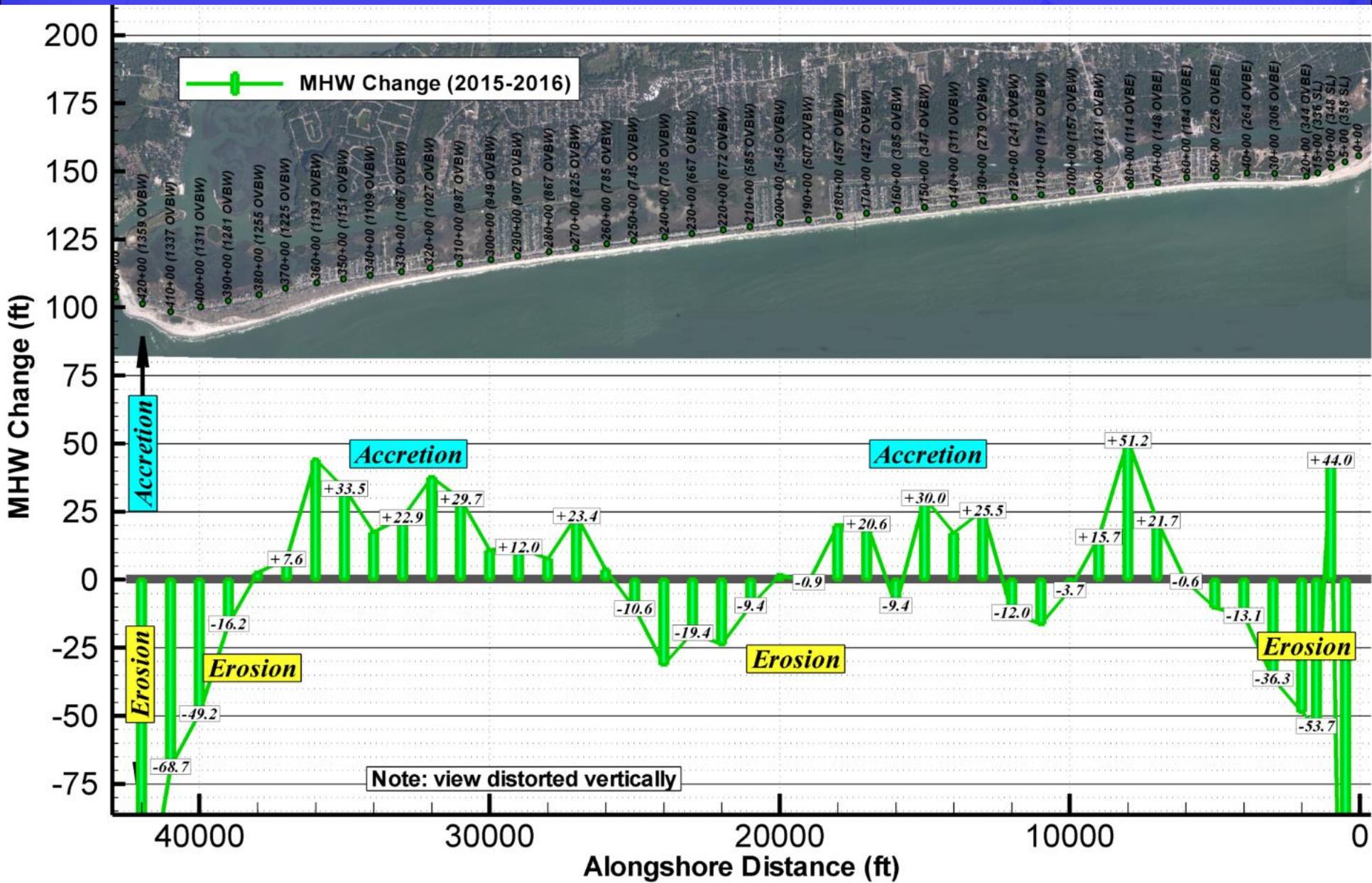


Table 3-1. Volume Change by Shoreline Reach for 2015 and 2016 Surveys

Reach	Stations Included	Total Volume Change (cy) (Dune to -12 ft NGVD)	Dry Beach/Surf Zone Volume Change (cy) (Dune to -5 ft)	Surf Zone/Depth-of-Closure Volume Change (cy) (-5 ft to -12 ft NGVD)*
LWF Inlet	5 to 15	-27,000	-32,000	5,000
USACE East	15 to 40	-69,000	-39,000	-30,000
Town East	40 to 150	-160,000	-54,000	-106,000
Pier	150 to 190	-16,000	-5,000	-11,000
Town West	190 to 290	-62,000	-58,000	-4,000
West Area	290 to 380	16,000	4,000	12,000
Shalotte Inlet	380 to 420	-40,000	-81,000	41,000
TOTAL		-358,000	-265,000	-93,000
Central Reach	40 to 290	-238,000	-117,000	-121,000

*Negative values indicate likely sediment movement from dry beach/surf zone area to surf zone/depth-of-closure area

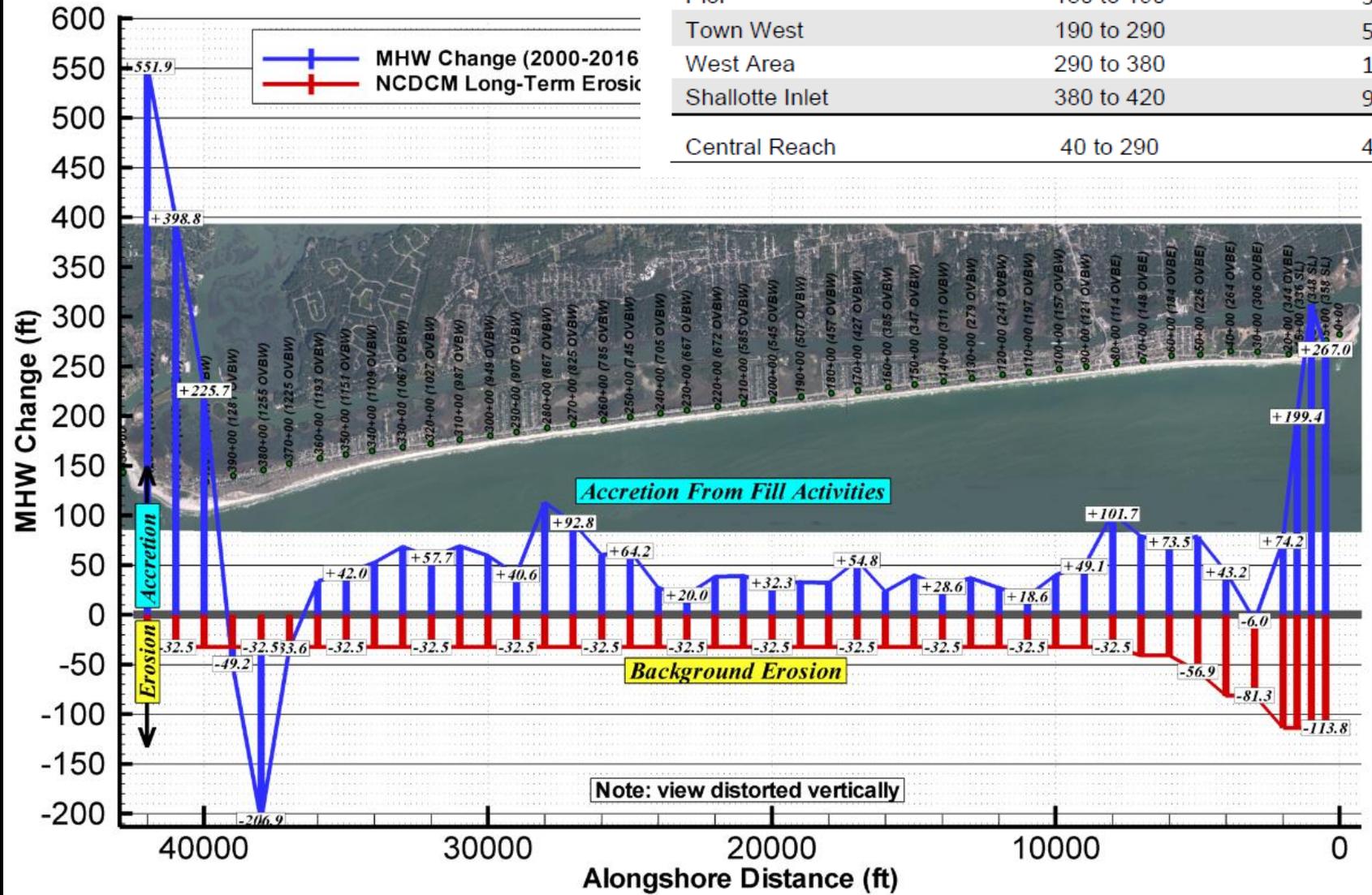
Shoreline (MHW) Change



2000 to 2016

Table 3-4. Historical MHW Shoreline Change by Reach (2000 to 2016)

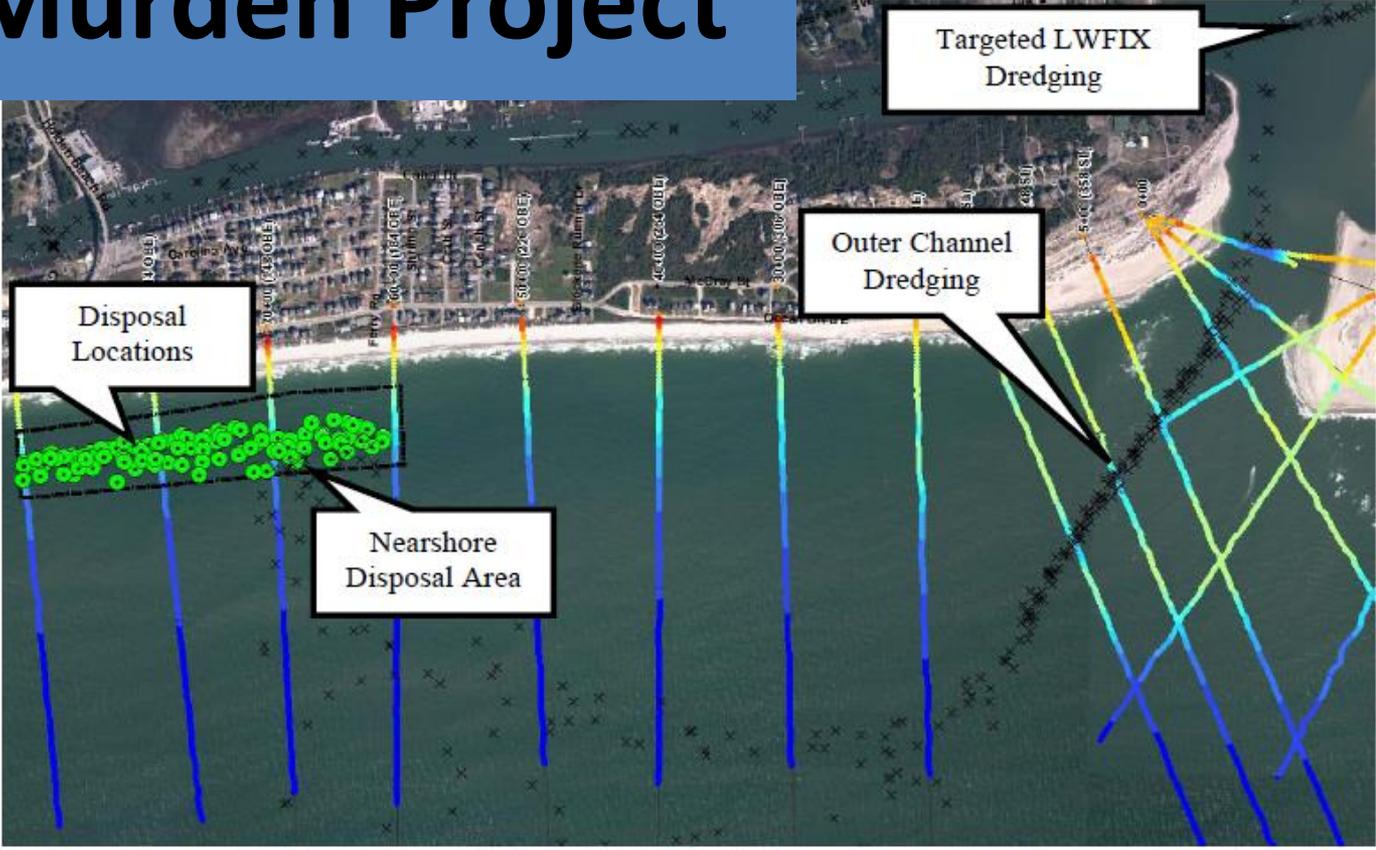
Reach Averages	Stations Included	Historical MHW Change (2000 to 2016) (ft)
LWF Inlet	5 to 15	259.8
USACE East	15 to 40	37.1
Town East	40 to 150	51.4
Pier	150 to 190	36.6
Town West	190 to 290	51.0
West Area	290 to 380	18.4
Shallotte Inlet	380 to 420	92.1
Central Reach	40 to 290	49.5





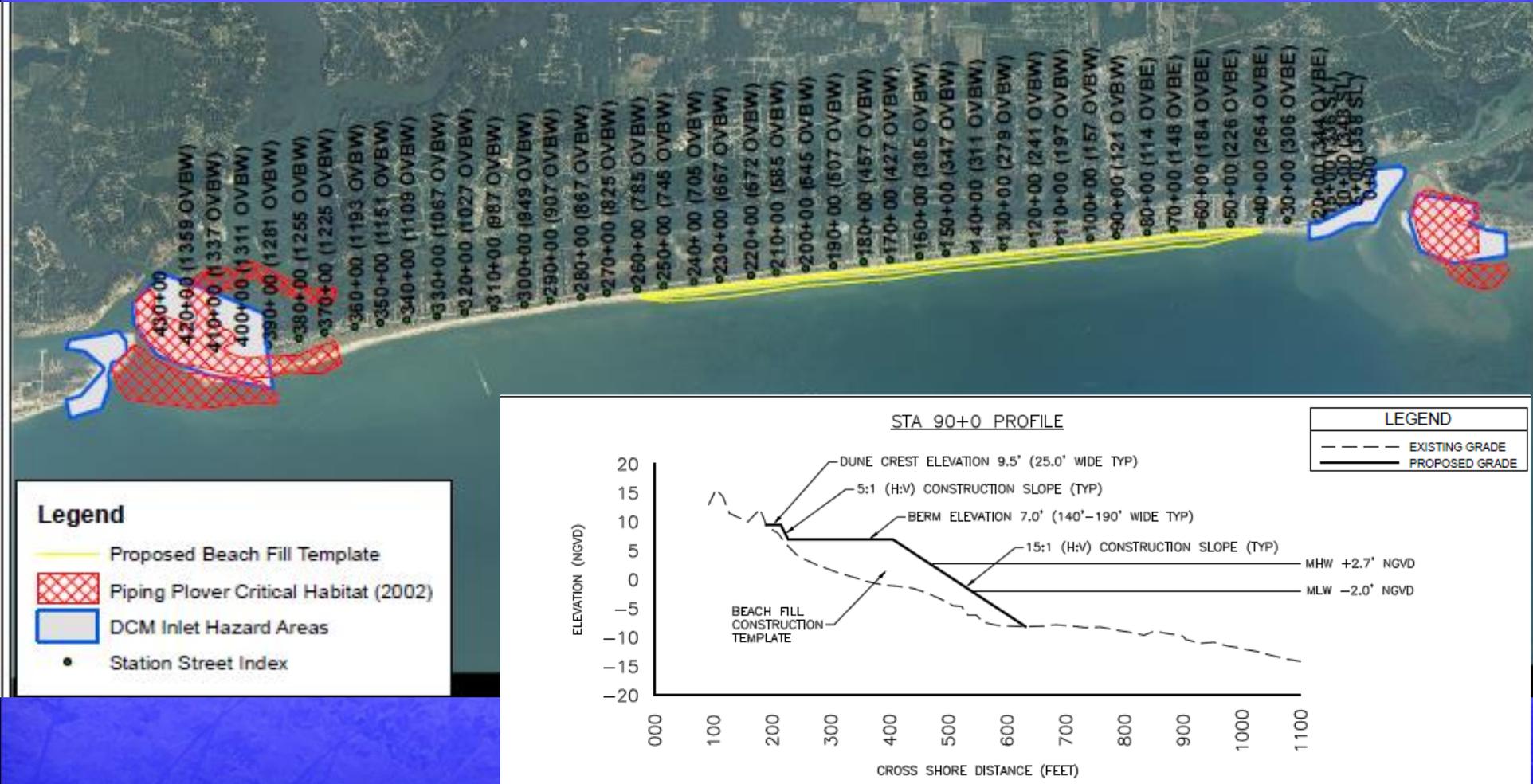
Murden Project

~30,000 cy



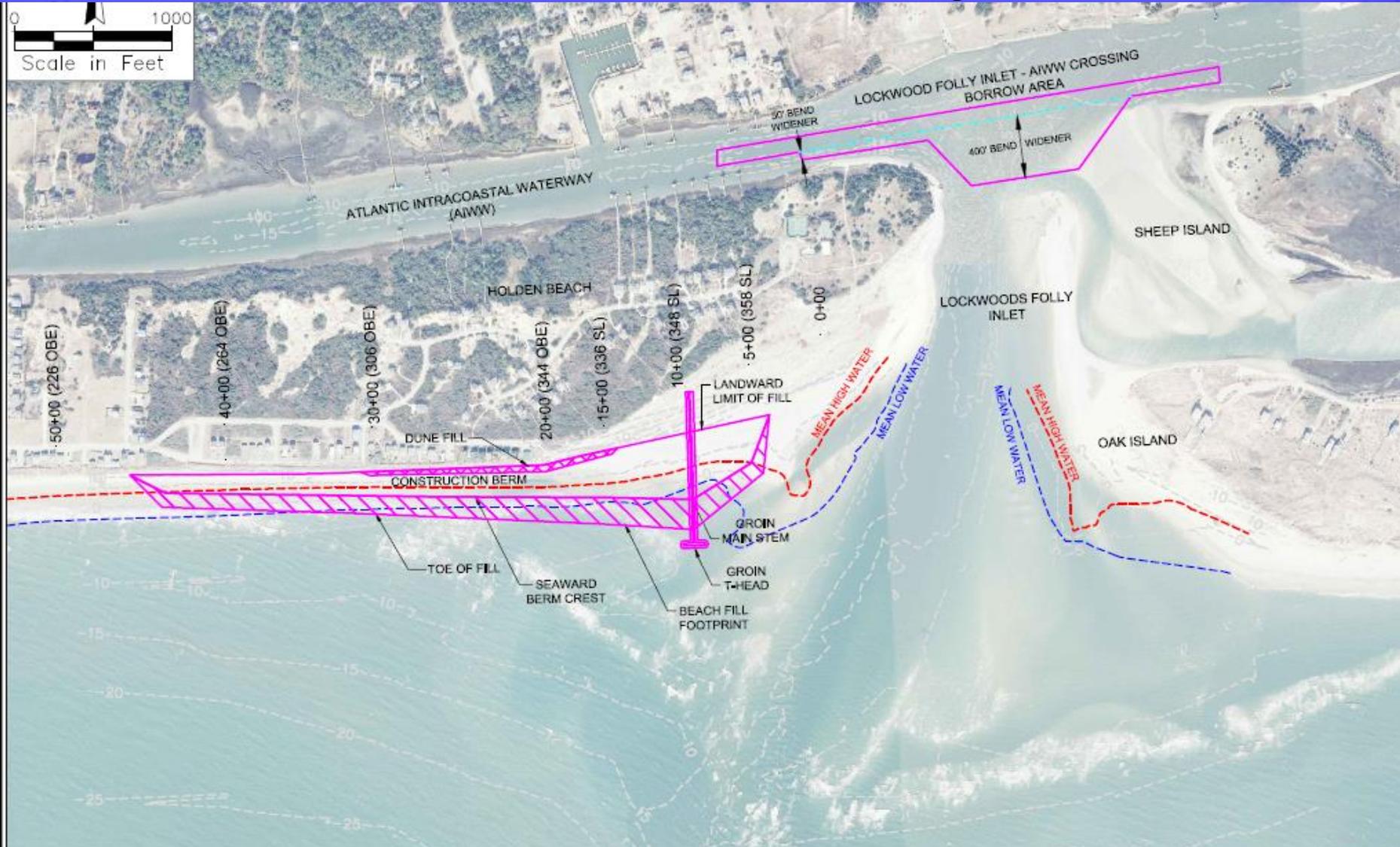
HOLDEN BEACH CENTRAL REACH PROJECT

- ~1.25 MCY over 21,000 ft (OBE 262 to OBW 781)

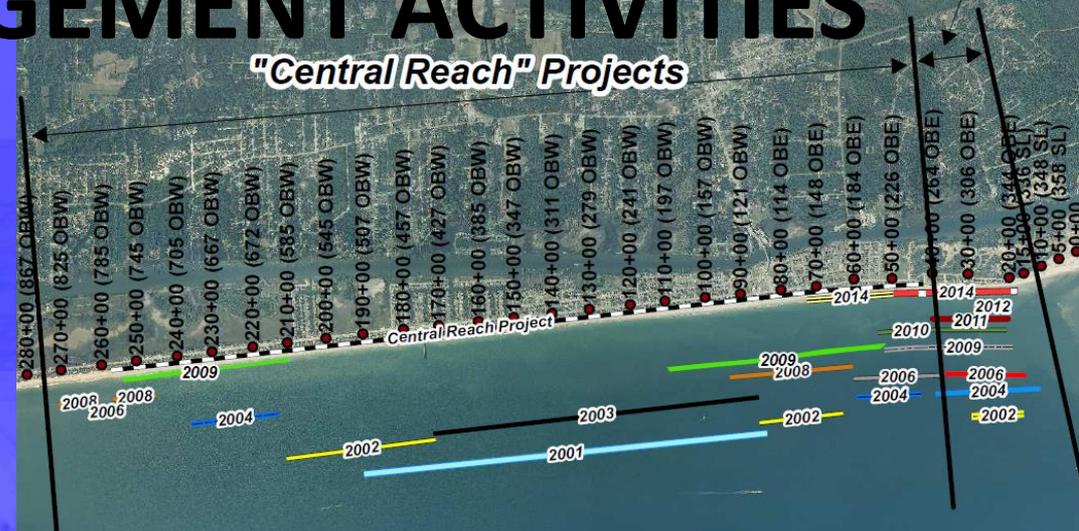


May 8, 2012 Inter-Agency Meeting at NCDENR

Terminal Groin Project



ONGOING HB BEACH MANAGEMENT ACTIVITIES



- Central Reach Const.
- Terminal Groin Project
- Shallow Draft Inlet Permitting
- Annual Monitoring Data Collection & Reporting

FEDERAL PROJECTS

- LWFIX(PIGGYBACK)
- LWF Outer Channel Dredging (Sidecaster, Murden)

Extra Slides

