

Closure of Rollover Pass, Galveston Co. Texas:

- ✓ *Reduce GIWW Dredging Requirements*
- ✓ *Reduce Gulf Coast Beach Erosion*
- ✓ *Restore Pre-Pass Salinity to East Bay*

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Newby, P.G., and Chris Ellis**

*Engineering With Nature: Designing Navigation
Infrastructure for Greater Environmental Sustainability
USACE Workshop, Charleston, SC September 2011*



Rollover Pass, Galveston County



Image courtesy of the U.S. Geological Survey

km | 5, 10, 15
mi | 4, 8





US Army Corps
of Engineers®
Galveston District

GIWW – Gulf Intracoastal Waterway High Island to Port Bolivar



Gulf Intracoastal Waterway

East Galveston Bay

Constructed – 1955, for Recreational Fishing

Gilchrist, Texas

Rollover Pass
Ebb Tide

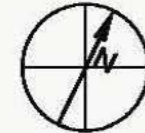
Ongoing Shoaling, Gulf Intracoastal Waterway
Ongoing Erosion, Gulf Beach
Salinity Changes, East Galveston Bay



Gulf of Mexico

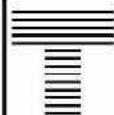
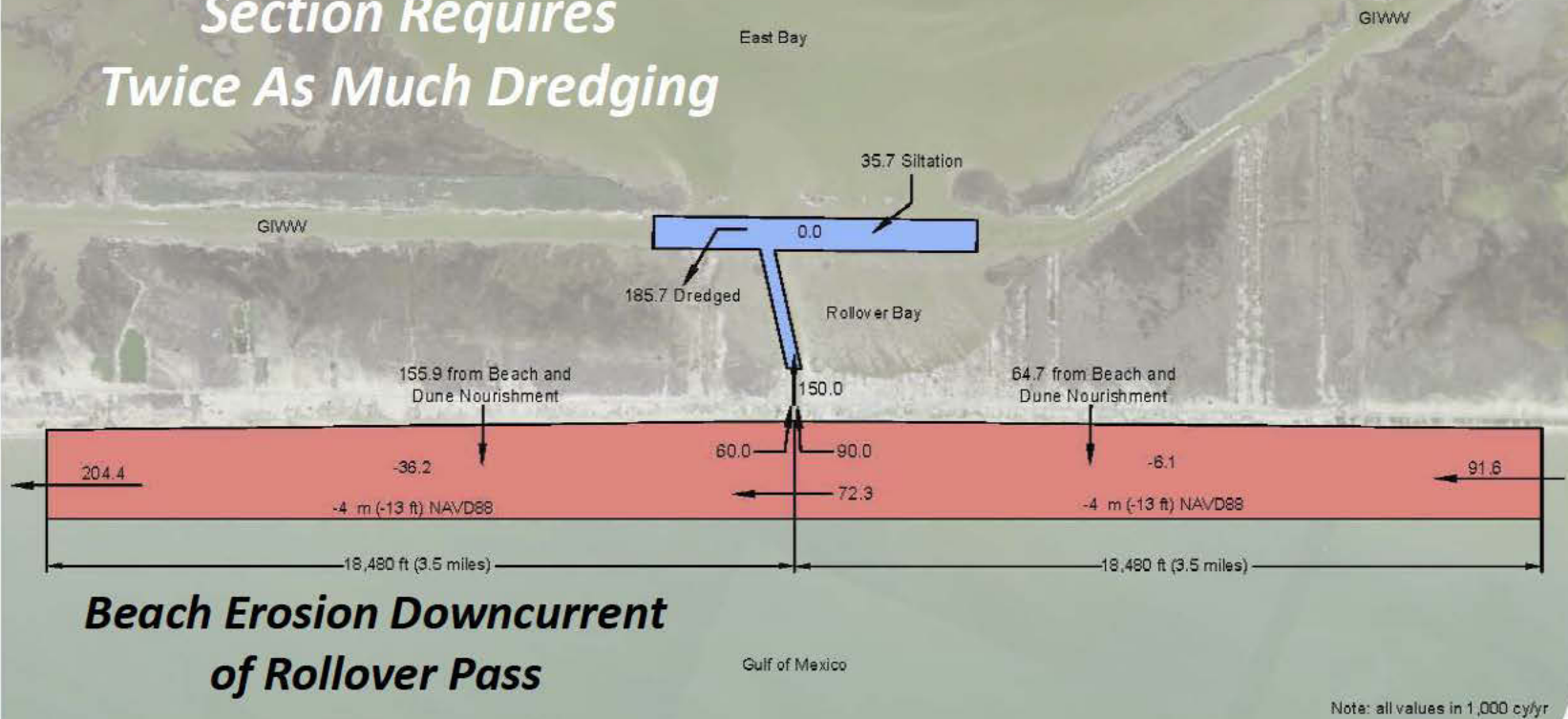


Sediment Budget, Rollover Pass



0 4,000' 8,000'
SCALE: 1" = 4,000'

*GIWW Rollover Pass
Section Requires
Twice As Much Dredging*



TAYLOR ENGINEERING INC.

10151 Deerwood Park Blvd., Bldg. 300, Suite 300
Jacksonville, Florida 32256

CERTIFICATE OF AUTHORIZATION # 4815

Figure 6
Sediment Budget Alternative 2

PROJECT	C2009-063
DRAWN BY	JCH
DATE	NOV 2009

Downdrift Erosion with Annual Beach Nourishment

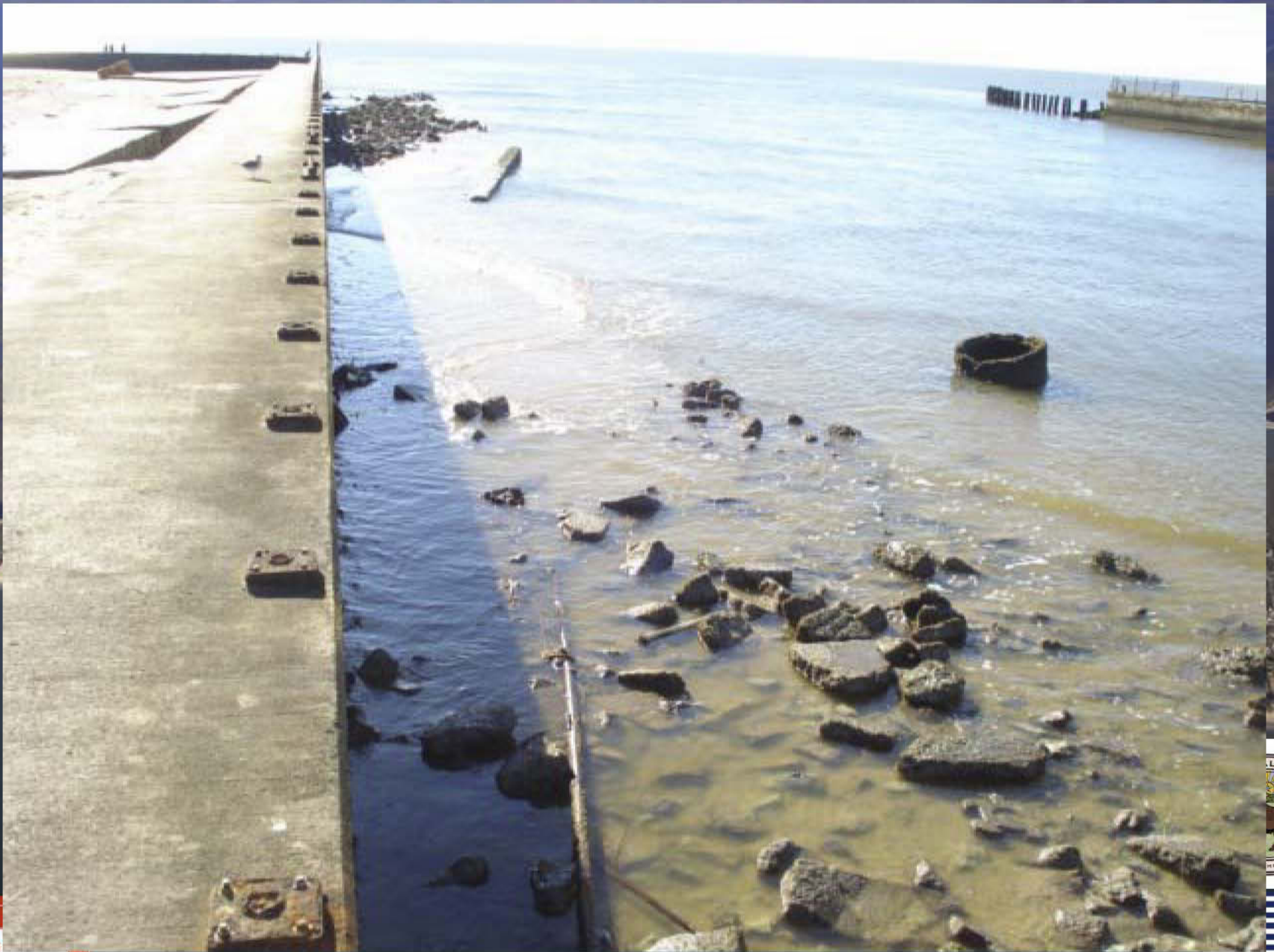


2008

Pass conditions prior to Hurricane Ike

***Pass in poor condition; failing sheetpile walls,
Beach erosion ongoing; accelerating?
USACE interested in dredging cost sharing, pass
closure alternatives***







Hurricanes are a fact of life on Bolivar Peninsula



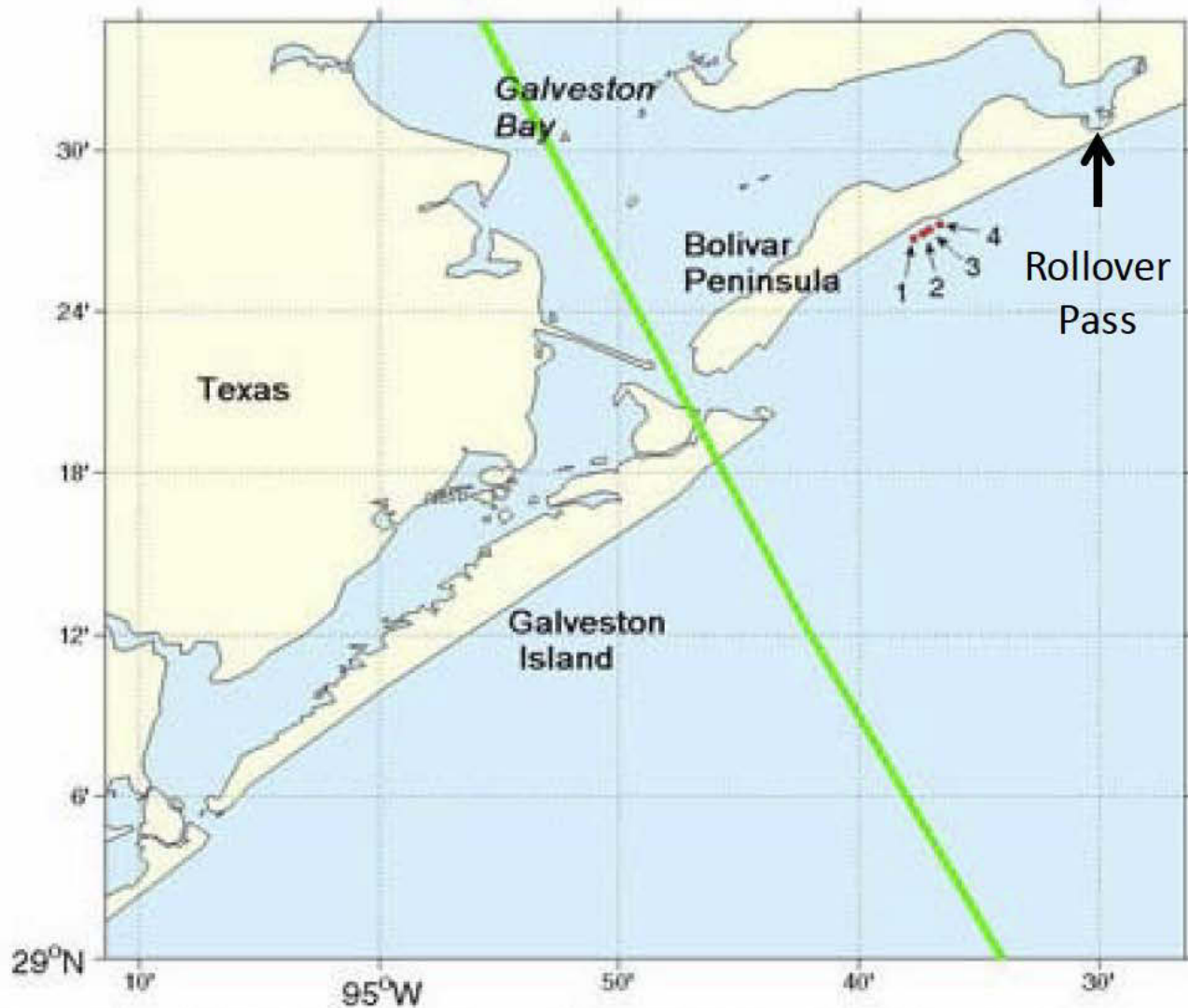
BEACH FRONT PROPERTY AFTER SEPTEMBER 14, 1961

Rollover Pass after Sept 14, 1961 Hurricane



Gilchrist, Texas – 400+ permanent residences





Locations index for photo pairs of Bolivar Peninsula, TX.
 Green line represents the storm track of Hurricane Ike.

Hurricane Ike, September 9, 2008



Gilchrist, Texas, Pre-Ike Condition





Gilchrist, Texas
September 14, 2008



Hurricane Ike presented the Texas Legislature the opportunity to close Rollover Pass

1. Legislative Property Buyout and Closure Funding – 2008
2. Pass Closure Feasibility Study, Permitting (US Army Dredge and Fill Permit), Design: 2009 – 2011
3. Construction 2012






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 YOUR CERTIFICATE OF REGISTRATION NO. _____
 SEAL

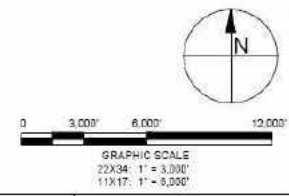
DRAFT
 ENG
 PROJECT TITLE
ROLLOVER PASS CLEANUP PROJECT
 GALVESTON COUNTY, TEXAS

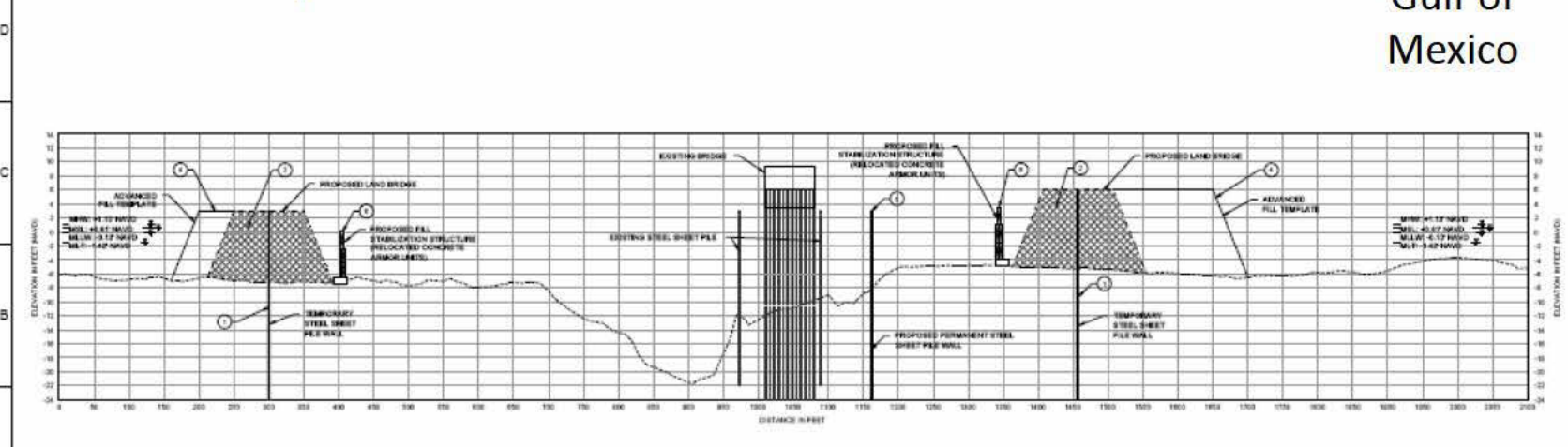
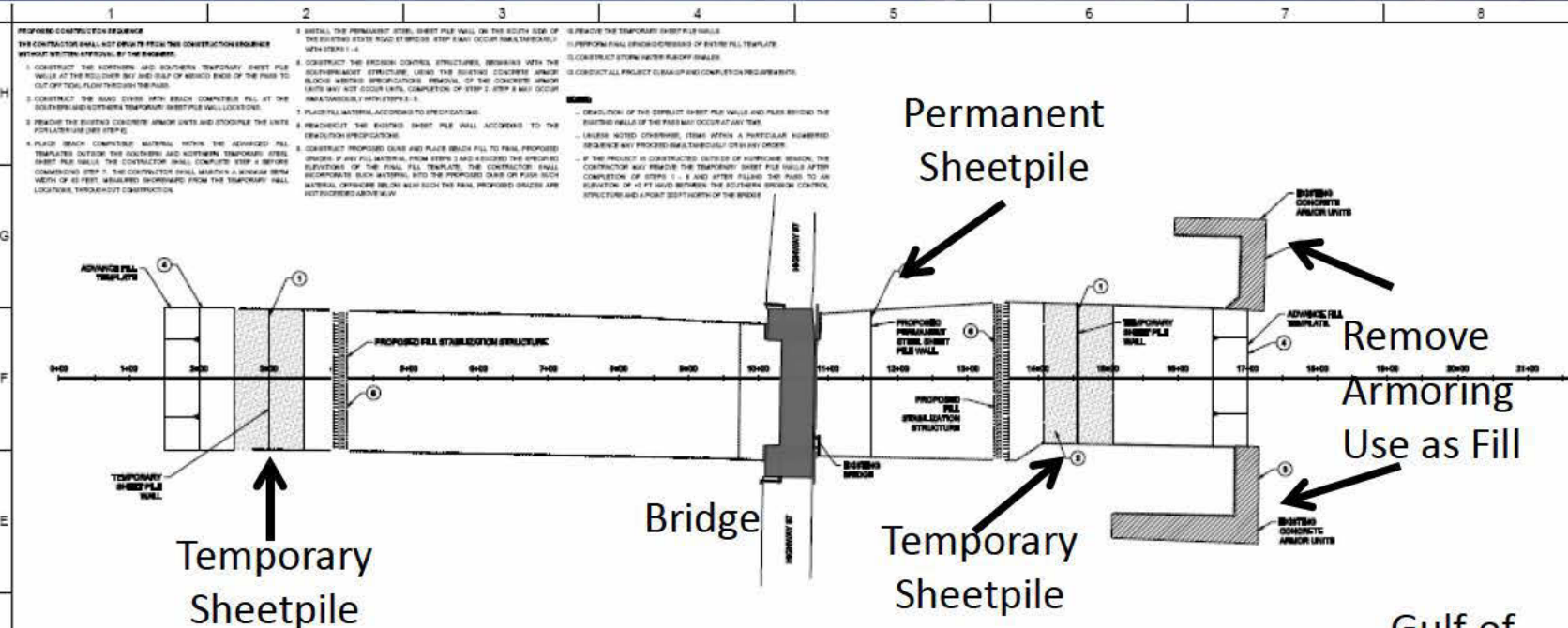
PRELIMINARY DRAWINGS; THESE ARE NOT IN FINAL FORM, BUT ARE TRANSMITTED FOR AGENCY REVIEW.

PROJECT NO	C2011026
DATE	AUG 8, 2011
DESIGNED BY	
DRAWN BY	AP
CHECKED BY	
REVIEWED BY	
SCALE	AS SHOWN

DRAWING TITLE
APPROVED BORROW LOCATIONS

C-3
 SHEET 11 OF 21





CONSTRUCTION SEQUENCE - STEPS 1 THROUGH 6
 2004 1" = 40'
 1200' 1" = 30'

Permanent Sheetpile

Remove Armoring Use as Fill

Gulf of Mexico

- PERFORM CONSTRUCTION SEQUENCE**
 THE CONTRACTOR SHALL NOT DEVIATE FROM THE CONSTRUCTION SEQUENCE WITHOUT WRITTEN APPROVAL BY THE ENGINEER.
- CONSTRUCT THE NORTHERN AND SOUTHERN TEMPORARY SHEET PILE WALLS AT THE ROLLER PASS AND EAST OF BRIDGE END OF THE PASS TO CUT OFF TIDE FLOW THROUGH THE PASS.
 - CONSTRUCT THE ROAD DRIVE WITH BRIDGE COMPENSATOR FILL AT THE NORTHERN AND SOUTHERN TEMPORARY SHEET PILE WALL LOCATIONS.
 - REMOVE THE EXISTING CONCRETE ARMOR UNITS AND STOCKPILE THE UNITS FOR LATER USE (SEE STEP 6).
 - PLACE BRIDGE COMPENSATOR MATERIAL WITHIN THE ADVANCED FILL TEMPLATE OUTSIDE THE NORTHERN AND SOUTHERN TEMPORARY SHEET PILE WALLS. THE CONTRACTOR SHALL COMPLETE STEP 4 BEFORE COMMENCING STEP 5. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 8" MINIMUM WIDTH OF 12" REBAR SPACING FROM THE TEMPORARY SHEET PILE WALLS THROUGHOUT CONSTRUCTION.
 - INSTALL THE PERMANENT STEEL SHEET PILE WALL IN THE SOUTH SIDE OF THE EXISTING DRIVE ROAD AT BRIDGE STEP EAST OCCUR MULTIBARRELS WITH STEPS 1 - 4.
 - CONSTRUCT THE BRIDGE CONTROL STRUCTURES, BEGINS WITH THE SOUTHWARD STRUCTURE. LEAVE THE EXISTING CONCRETE ARMOR BLOCKS WITHIN SPECIFICATIONS. REMOVAL OF THE CONCRETE ARMOR UNITS MAY OCCUR LEVEL COMPLETION OF STEP 2. STEP 3 MAY OCCUR MULTIBARRELS WITH STEPS 1 - 4.
 - PLACE FILL MATERIAL ACCORDING TO SPECIFICATIONS.
 - RECONSTRUCT THE EXISTING SHEET PILE WALL ACCORDING TO THE REMOVAL SPECIFICATIONS.
 - CONSTRUCT PROPOSED DRIVE AND PLACE BRIDGE FILL TO FINAL PROPOSED GRADE. IF ANY FILL MATERIAL FROM STEPS 1 AND 4 ENTERS THE SPECIFIED ELEVATION OF THE FILL FILL TEMPLATE, THE CONTRACTOR SHALL INCORPORATE SUCH MATERIAL INTO THE PROPOSED DRIVE OR FILL BRIDGE MATERIAL. OTHERWISE REMOVE SUCH THE FILL PROPOSED GRADE ARE NOT SPECIFIED ABOVE.
 - REMOVE THE TEMPORARY SHEET PILE WALLS.
 - PERSONAL FILL UNDER EXISTING OF EXISTING FILL TEMPLATE.
 - CONSTRUCT STONE FILLER ABOVE BRIDGE.
 - CONSTRUCT ALL PROJECT CURB AND CONCRETE REGISTRATION.

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DRAFT

PROJECT TITLE
ROLLOVER PASS CLOSURE PROJECT
 GULFSTREAM COUNTY, TEXAS

PRELIMINARY DRAWING THESE DRAWINGS ARE NOT TO BE USED FOR BIDDING AND BEING TRANSMITTED FOR AGENCY REVIEW.

NO.	DATE	BY	REVISION

PROJECT NO. C-211-000
 DATE: JULY 8, 2011
 DRAWN BY: AP
 CHECKED BY: []
 REVISIONS BY: []
 SCALE: AS SHOWN
 DRAWING TITLE
CONSTRUCTION SEQUENCE STEPS 1 THROUGH 6

C-4
 SHEET 12 OF 23

Project Costs and Benefits

Project Costs:

Design, Permitting, Construction: \$6 million

Lost Recreational Benefits Mitigation: \$3 Million

Sustainability Benefits

- ✓ Reduces Rollover Bay-GIWW dredging costs by 50%
- ✓ Reduces dredging-related air pollution by 50%
- ✓ Uses GIWW dredged material for fill
- ✓ Uses old Pass materials for closure construction
- ✓ Eliminates pass-related beach erosion
- ✓ Creates additional turtle nesting beach (Kemp's ridley turtle)
- ✓ Returns the salinity of Rollover Bay / East Bay to pre-pass estuarine conditions (oysters, juvenile fish nursery)





Sustained Benefits:

Reduced Environmental Impacts

Reduced Environmental Risks

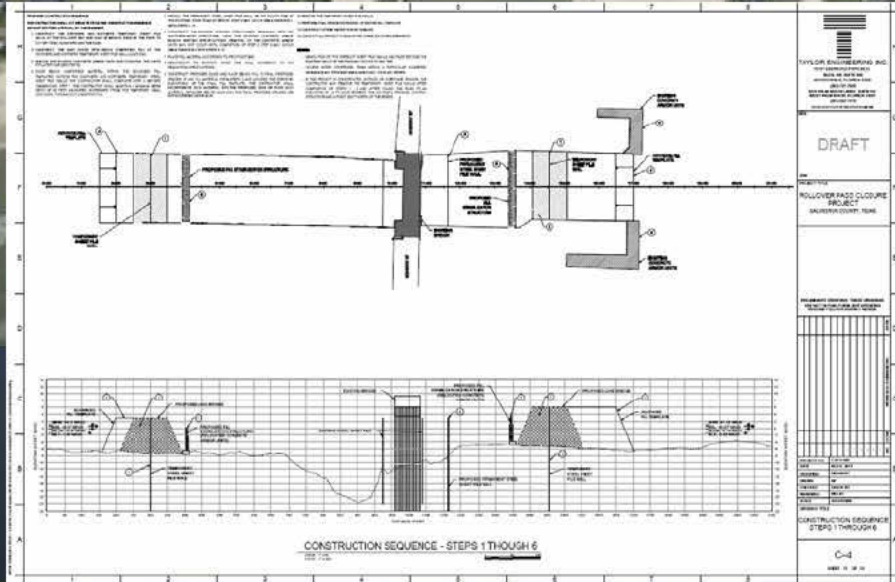
Reduced Physical Changes from Dredging

Community Costs:

Regional Recreation Benefit and Related Income Eliminated

Mitigation will provide pedestrian fishing access





THANK YOU!
Questions?

