

THE FUTURE OF THE TEXAS COAST : COASTAL ENGINEERING CONCERNS AND IMPLEMENTATION CHALLENGES

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THE TEXAS GENERAL LAND OFFICE AND THE COAST

- Since 1836 - Manager of Tidally-Influenced State-Owned Submerged Lands
- Lead Agency Responsible for:
 - Coastal Management Program;
 - Beach and Dune Protection;
 - State Coastal Erosion Program
 - Coastal Oil Spill Response
 - Disaster Recovery Program



- 367 miles of Gulf shoreline
- more than 3,300 miles of bay shoreline
- 18 coastal counties (26% of State's pop.)



PORTS

DID YOU KNOW?

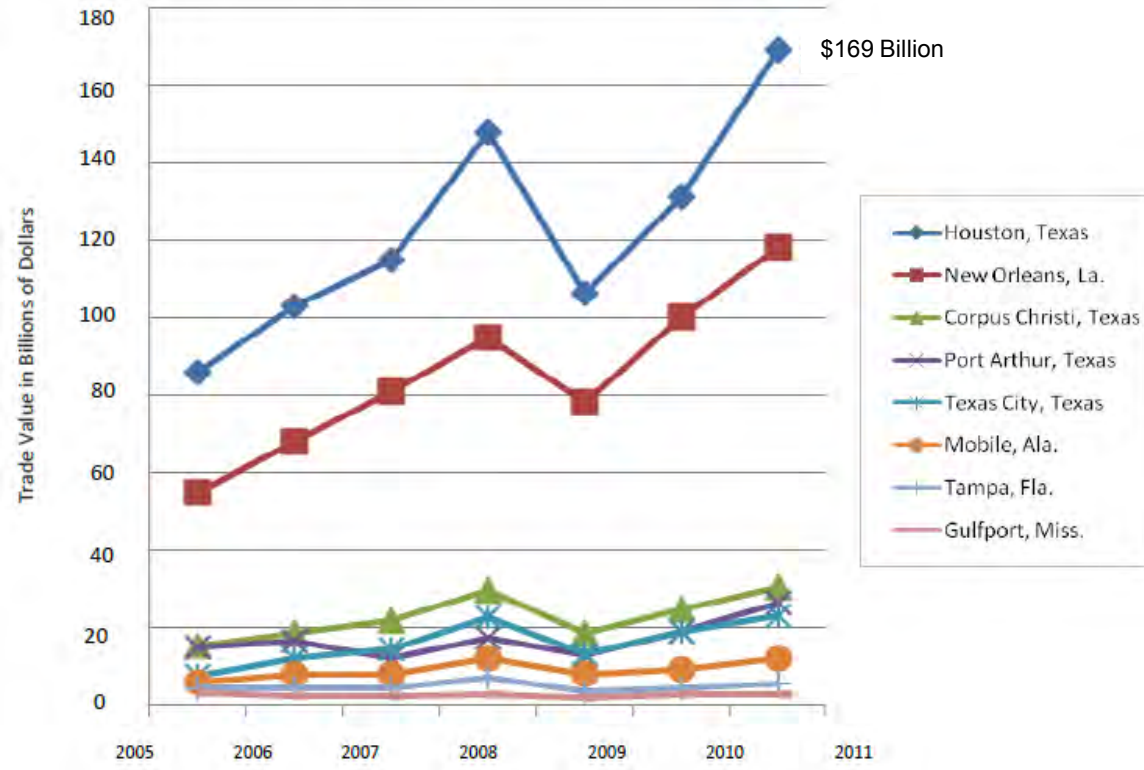
\$6.5
BILLION

Tax revenues generated by the Texas ports in 2011.

\$6
BILLION

Value of agricultural commodities produced by Texas farmers and ranchers exported each year through Texas ports.

Total Annual Trade Value at Major Gulf of Mexico Seaports



Source: WISERTrade. Data from U.S. Census Bureau, Foreign Trade Division, U.S. Port Level Data



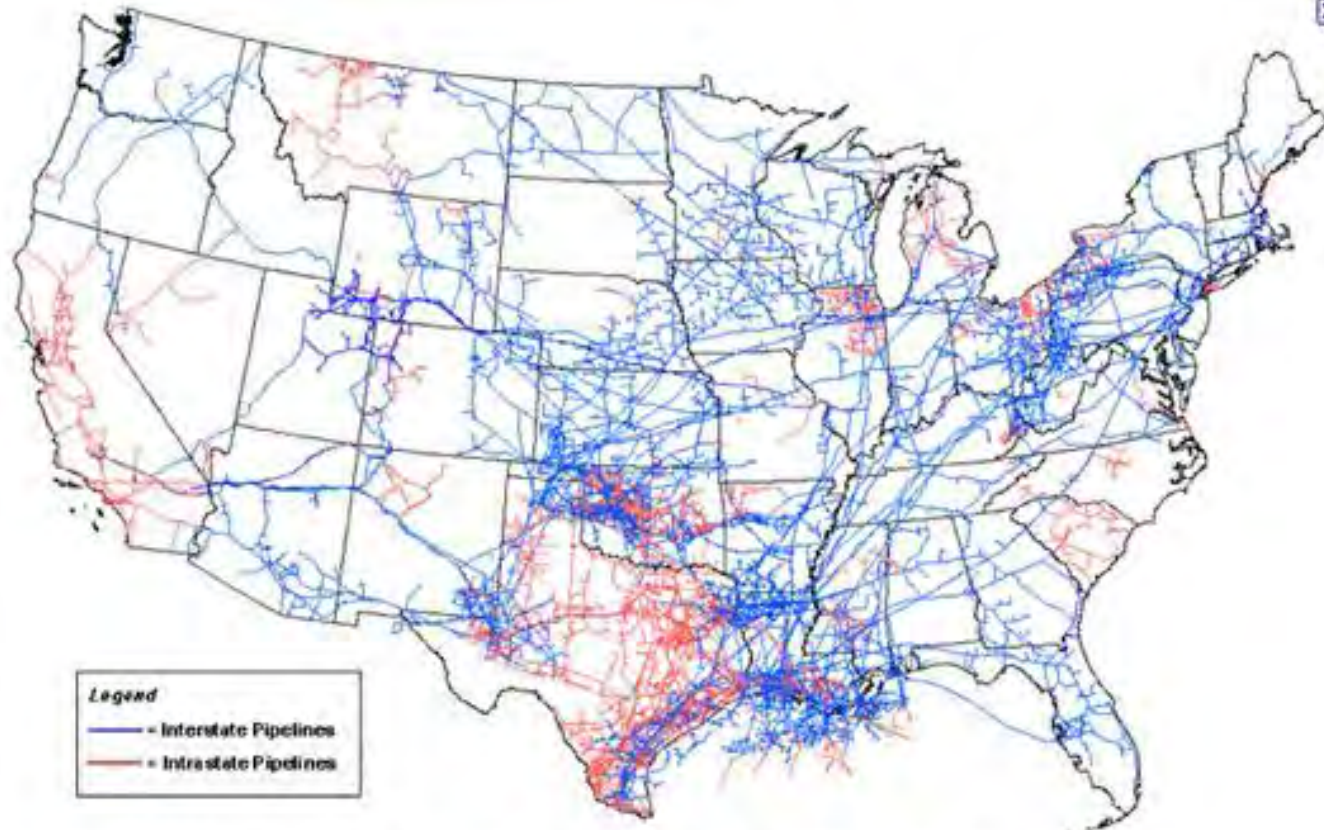
OIL & GAS



The Texas coast is the largest petrochemical complex in the world.

➤ 25% of the nation's refining capacity

➤ \$57 billion of petroleum & coal products exported in 2012



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System





TOURISM

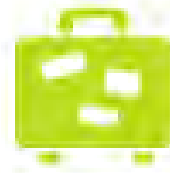
DID YOU KNOW?

MORE THAN \$1 BILLION WAS SPENT IN 2010 ON CRUISES DEPARTING FROM TEXAS, CREATING 16,500 JOBS AND \$828 MILLION IN WAGES.



360

Number of public beach access points in Texas, a major draw for residents and visitors.



\$14
BILLION

Amount spent by tourists visiting the Texas Coast in 2011, generating about 143,000 jobs.





\$2
BILLION

The economic impact of saltwater fishing in Texas in 2011.



\$240
MILLION

Value of seafood landed at Texas ports in 2011.

COMMERCIAL & RECREATIONAL FISHERIES

DID YOU KNOW?

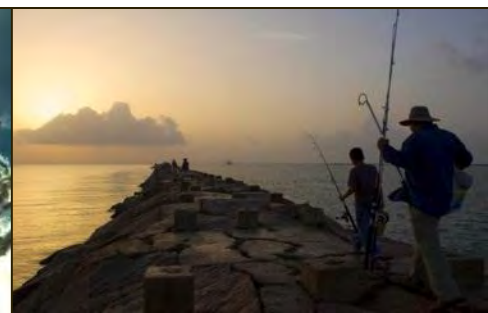
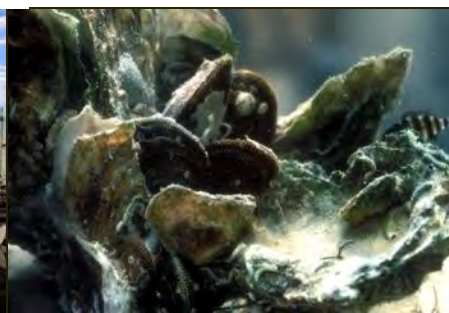


16,819

Number of jobs created in 2011 by recreational saltwater fishing.

\$64
MILLION

The harvest value of commercial oysters in 2011.



WETLANDS

DID YOU KNOW?

Healthy bays, wetlands and estuaries provide the critical foundation for sustainable environments and thriving economies, both along the coast and throughout Texas. Yet these priceless coastal landscapes are stressed in many places to their breaking point, endangering the tremendous benefits they provide.



95%

Percent of recreational and commercial fish species in the Gulf of Mexico that depend on healthy wetlands to survive.



\$5.8
BILLION

Value of Galveston Bay coastal wetlands, based on replacement cost of \$6,000 per acre.



\$12.6
MILLION

Amount that seagrass contributes annually to regional economies, due to their recreational value and importance to commercial fisheries.



TOP ISSUES OF CONCERN COASTWIDE



Wetlands &
Habitat Loss



Impacts to Fish &
Wildlife



Gulf Beach/Dune
Erosion



Water Quality &
Quantity



Tourism & Local
Economy



Bay Shoreline
Erosion



Flooding & Storm
Surge



Impacts to Marine
Resources

Coastal Engineering Concerns:

- Limited knowledge of coastal processes
 - Sediment transport
 - Sediment budgets
 - Inlet and beach dynamics
 - Estuarine processes (salinity and hydrodynamics)
 - Numerical model validation



Coastal Processes

San Luis Pass

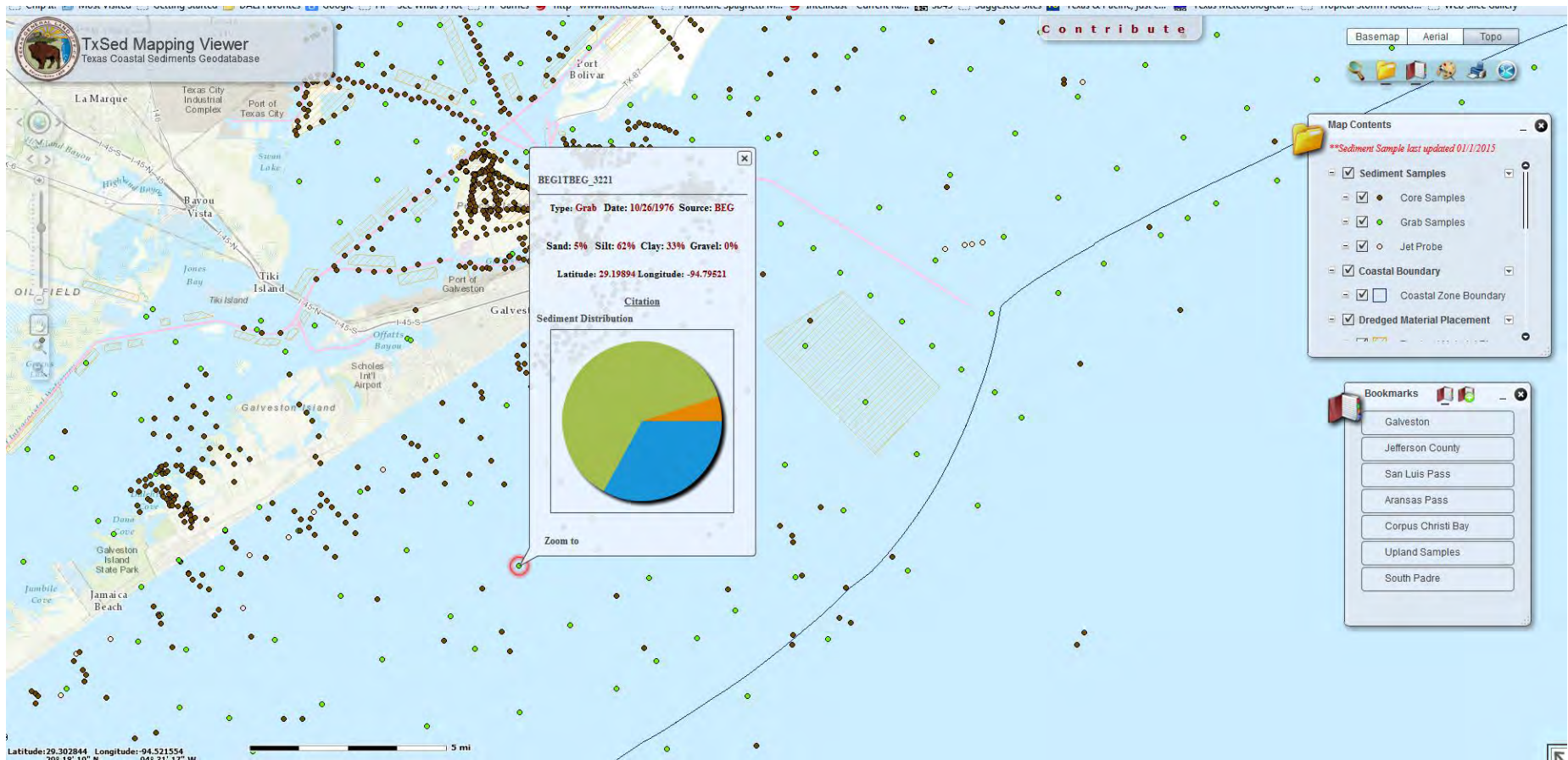


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- Lack of cost-efficient sediment sources
 - Sand source investigations
 - Sediment inventories
 - Regional sediment management



TxSed Coastal Sediments Geodatabase



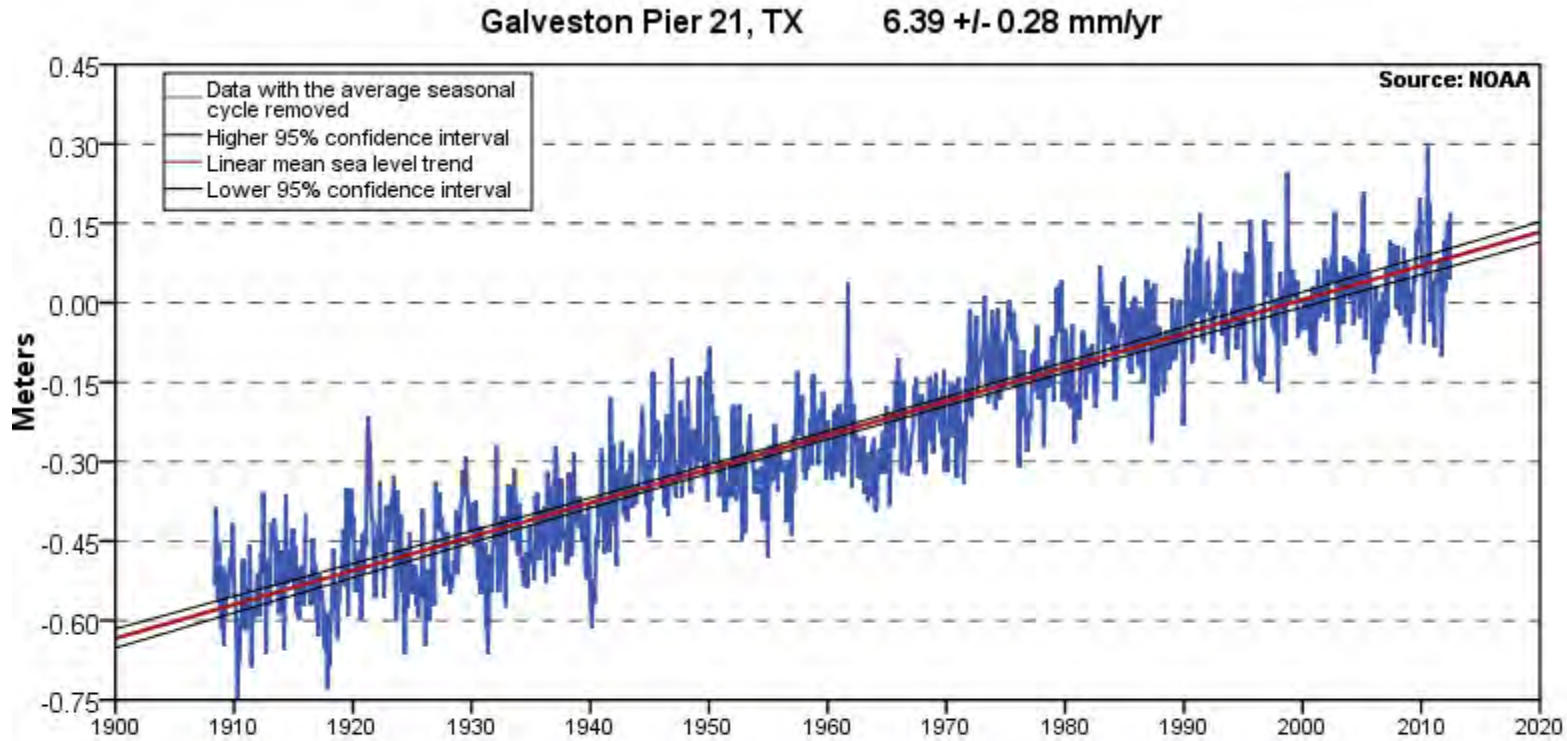
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- Designing for Climate Change & Relative Sea Level Rise
 - How high and when?
 - Impact on storm surges
 - Modeling morphological changes
 - Effects on critical infrastructure (transportation and public safety)
 - Effects on natural systems (wetlands, deltas, and barrier islands)



Rising Seas

Relative Sea Level Rise at Galveston



The mean sea level trend is 6.39 millimeters/year with a 95% confidence interval of +/- 0.28 mm/yr based on monthly mean sea level data from 1908 to 2006 which is equivalent to a change of 2.10 feet in 100 years.





\$29
BILLION

Property damages due to Hurricane Ike, one of the costliest hurricanes in U.S. history.



\$142
BILLION

Total statewide economic losses in the year after Hurricane Ike.

Receding Shores & Rising Seas

Texas has some of the highest erosion rates in the nation. Shores are retreating an average of 4 feet per year, with some areas experiencing losses greater than 30 feet per year, placing communities, infrastructure, and natural habitats at risk.



► Dunes help prevent loss of life and property by absorbing the impact of storm surge and wave action. They also slow shoreline erosion and replenish eroded beaches after storms.



Implementation Challenges:

- Funding
 - Never seems to be enough
 - Little planning to prioritize and allocate resources
- Increased coastal development
 - Many new residents unfamiliar with coastal hazards
 - Increased pressure on natural resources
 - Increased pressure on infrastructure
 - Water quality impacts
- Lack of public/political awareness of coastal needs
 - Is Texas a coastal state or a state with a coast?
 - 18 coastal counties vs. 236 inland counties
 - Little comprehensive coastal planning

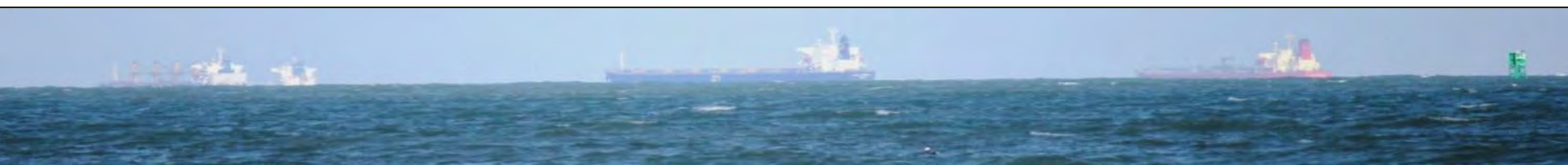


The Texas Coast: Shoring up our Future

- To inform the legislature, local officials and the public on critical coastal areas and the importance of the ecologic health, economic growth and future sustainability.
- To serve as a tool for local governments for informing on coastal protection and critical area enhancement in their region.



www.ShoringUpTexas.org



LOOKING AHEAD

- USACE Coastal Texas Study - Texas Coastal Resiliency Plan
- Deepwater Horizon oil spill Settlement/RESTORE Act funding
- Gulf of Mexico Energy Security Act (GOMESA) funds from Outer Continental Shelf oil and gas activities
- Development of decision support tools to identify critical areas and needs will help guide and enhance planning, funding, and performance of how those needs are addressed.



Thank you for your time! Questions?

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