

Texas General Land Office COOP Update: Texas Submerged Lands and Outer Continental Shelf Offshore Sediment Inventory



A cooperative approach



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EDUCATION

ENERGY

VETERANS

HISTORY

LAND

RECOVERY

COASTAL PROTECTION

COASTAL RESOURCES

COASTAL FIELD OPERATIONS

Coastal Erosion Plan and Response Act Program

Coastal Management Program

Planning Program

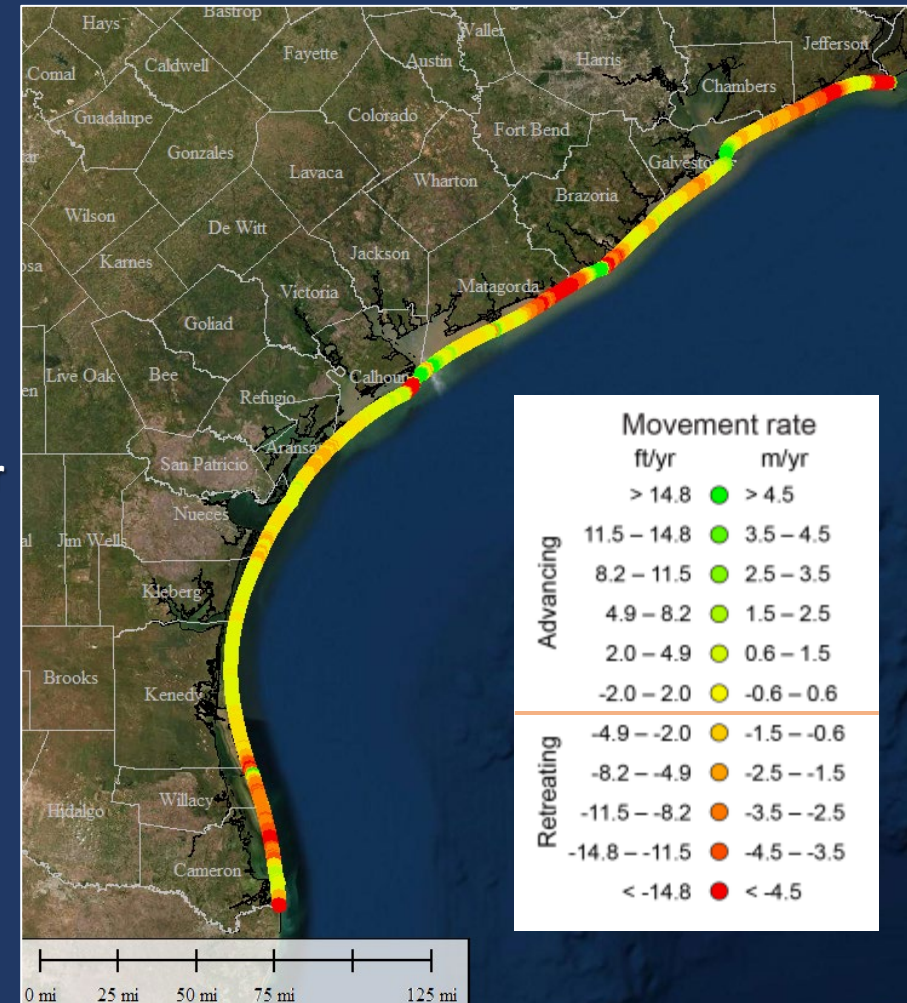
Erosion Response Projects

- 367 miles of gulf-facing coastline; 3,300 miles of bay shoreline
- ~80% retreat on Gulf of Mexico shorelines
- Sea-level rise, subsidence, and interruption of sediment budgets and transport systems combined with erosive forces and tropical storm surge are causing advanced change along the shorelines of Texas

Sediment Management Plan

Coastal Texas Study

Texas Coastal Resiliency Master Plan





Development of the Texas Sediment Management Plan

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Sediment Management Plan Structure and Intent

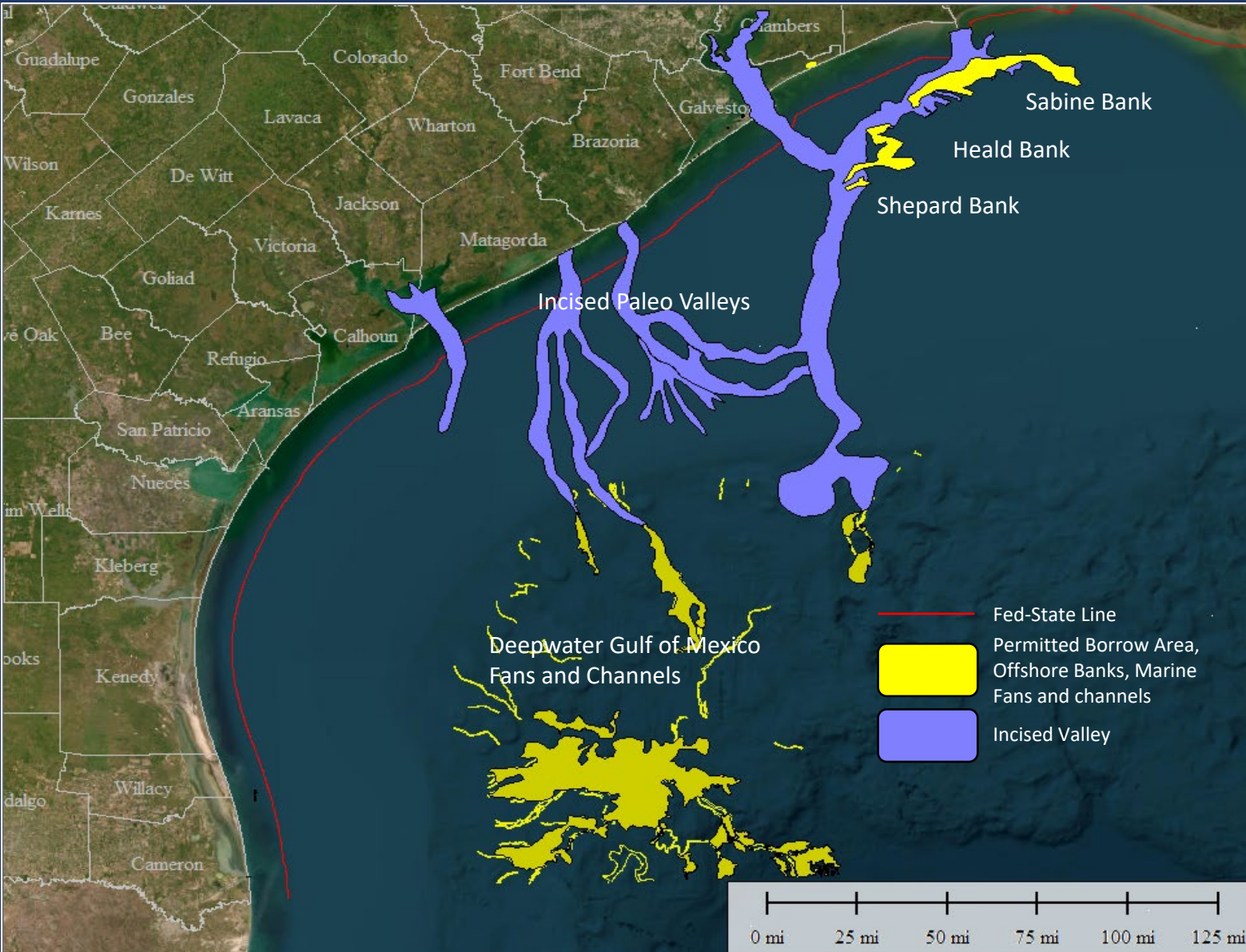
Anticipated Completion in 2024

Introduction	<ul style="list-style-type: none"> ▪ Outline Sediment Resource Management Authorities and Involvement ▪ Geological History, Geomorphology, and Sediment Cycle of Texas Coast
Identify and Develop Sediment Resources	<ul style="list-style-type: none"> ▪ Protocols and intended timeline for Geophysical Surveys, Geotechnical Surveys, and Agency Coordination to characterize borrow areas in uplands, state waters, and the OCS
Permit Use of Sediment Resources	<ul style="list-style-type: none"> ▪ Develop a Regional General Permit for Beach Nourishment ▪ Guidance for Individual Permits and Borrow Area Authorization
Inventory Sediment Resources	<ul style="list-style-type: none"> ▪ Present functionality of tools available for sediment inventory and visualization and plans for tool improvement
Allocate Sediment	<ul style="list-style-type: none"> ▪ Develop borrow area matrix to appropriately match borrow source to site ▪ Develop a prioritization model to effectively allocate sediment and financial resources
Monitor Sediment Resources and Budgets	<ul style="list-style-type: none"> ▪ Intended protocols for regular shoreline change monitoring, post-storm monitoring, and beach monitoring ▪ Incorporation of data into maintenance and project planning
Develop or Modify Policy for Sediment Resources	<ul style="list-style-type: none"> ▪ Address multiple use conflict with development of a Geographic Location Description to extend CMP Federal Consistency Review into OCS to safeguard sediment resources, updates to energy infrastructure policies, and improved data sharing policies ▪ Potential new policies to promote beneficial use of dredged material
Define State Priorities for State Coastal Erosion Response	<ul style="list-style-type: none"> ▪ Plans for addressing data gaps ▪ Define Priority Areas for Restoration and Resiliency Projects



Identify and Develop Borrow Areas

Current Borrow Areas or Known Sand Sources in Texas



Texas has very few permitted borrow areas or identified sediment resources

- Few state submerged lands offshore borrow areas
- Deep incised valleys-lots of overburden
- Offshore banks in Outer Continental Shelf
- Offshore deepwater fans and channels

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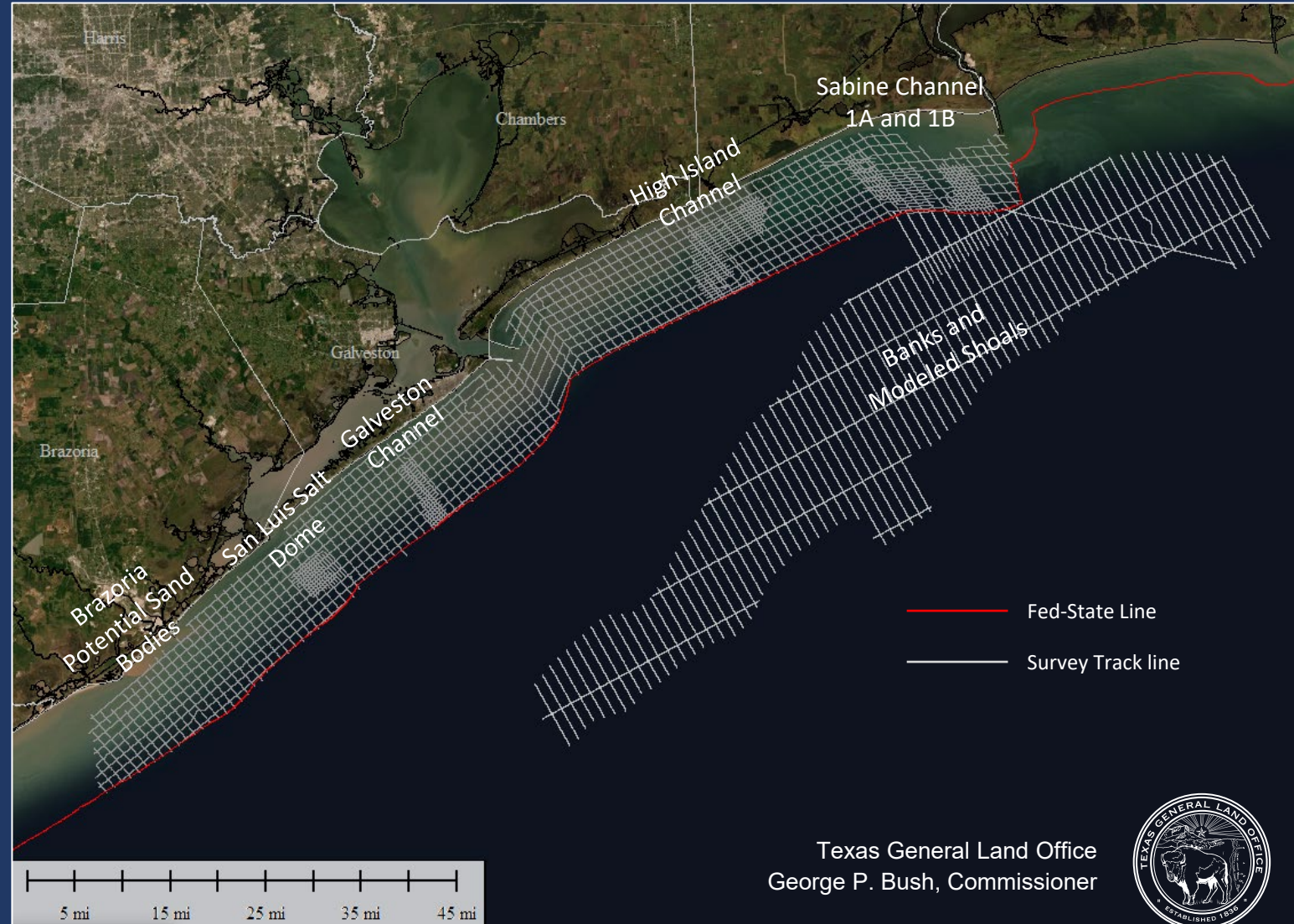


Identify and Develop Borrow Areas

Upper Texas Coast State-side and Outer Continental Shelf

Contracted through APTIM, The Water Institute of the Gulf, and the University of Texas Institute for Geophysics project teams

- 1-mile grid survey offshore state waters
 - Survey was completed on 10/16/2020
 - Successfully acquired 2,200 nm
- 1-mile grid survey offshore Outer Continental Shelf waters
 - Tie lines were set at 5 mile spacing
 - Survey was completed on 11/14/2020
 - Successfully acquired 1,133 nm
- Both surveys primarily focused on identifying potential sand bodies, channels or features indicative of sand that are cost-effective for recovery
 - small amounts of overburden
 - thick enough to develop
 - close to shore but not within the confines of the shoreline's sand system



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Identify and Develop Borrow Areas

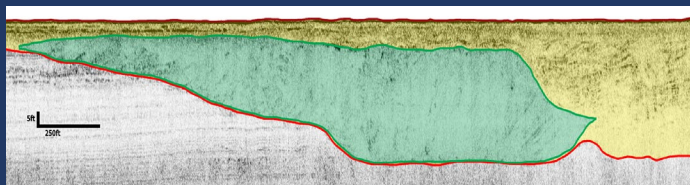
Upper Texas Coast State-side and Outer Continental Shelf Surveys

State-side Mapped Features

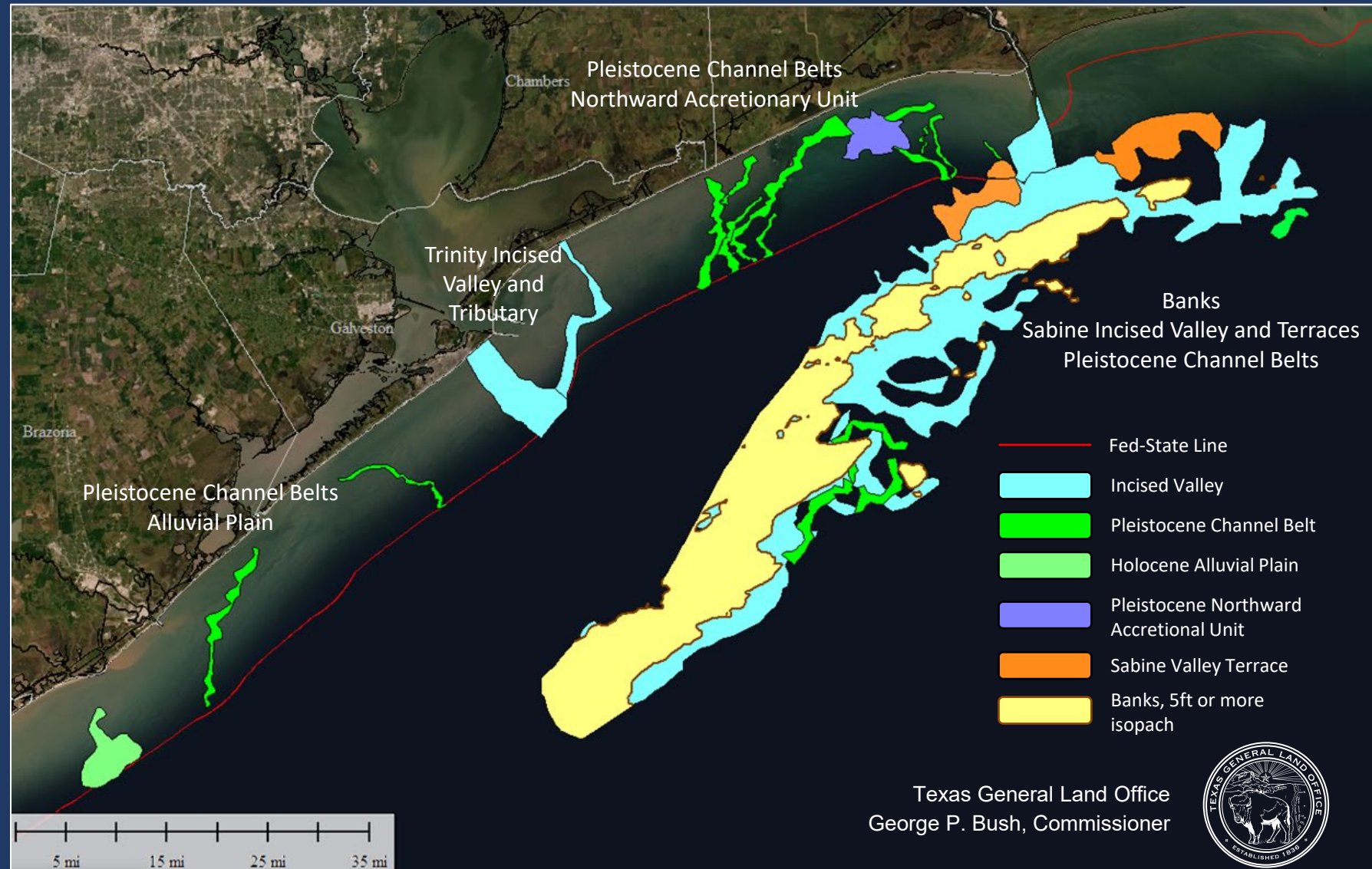
- Brazos Alluvial Plain and Channel Belts
- Galveston Channel Belt and Trinity Incised Valley and Tributary
- Trinity/Neches/Sabine Channel Belts
- Northward Accretionary Unit
- Localized Features

OCS Mapped Features

- Sabine, Heald, Shepard banks
- Sabine Incised Valley and Terraces
- Channel Belts



Localized Features (not shown)



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Identifying Sediment Resources Offshore Texas

Texas General Land Office Submerged Land and Bureau of Ocean Energy Management Outer Continental Shelf Surveys

Region 1 GLO and Upper Texas OCS Surveys

- Surveys completed Fall 2020
- Acquired 3,333 nautical miles of data
- Identified multiple geological features with small amounts of overburden (less than 20ft) that are considered thick enough to develop
- Next steps are geotechnical surveys for granulometric analysis

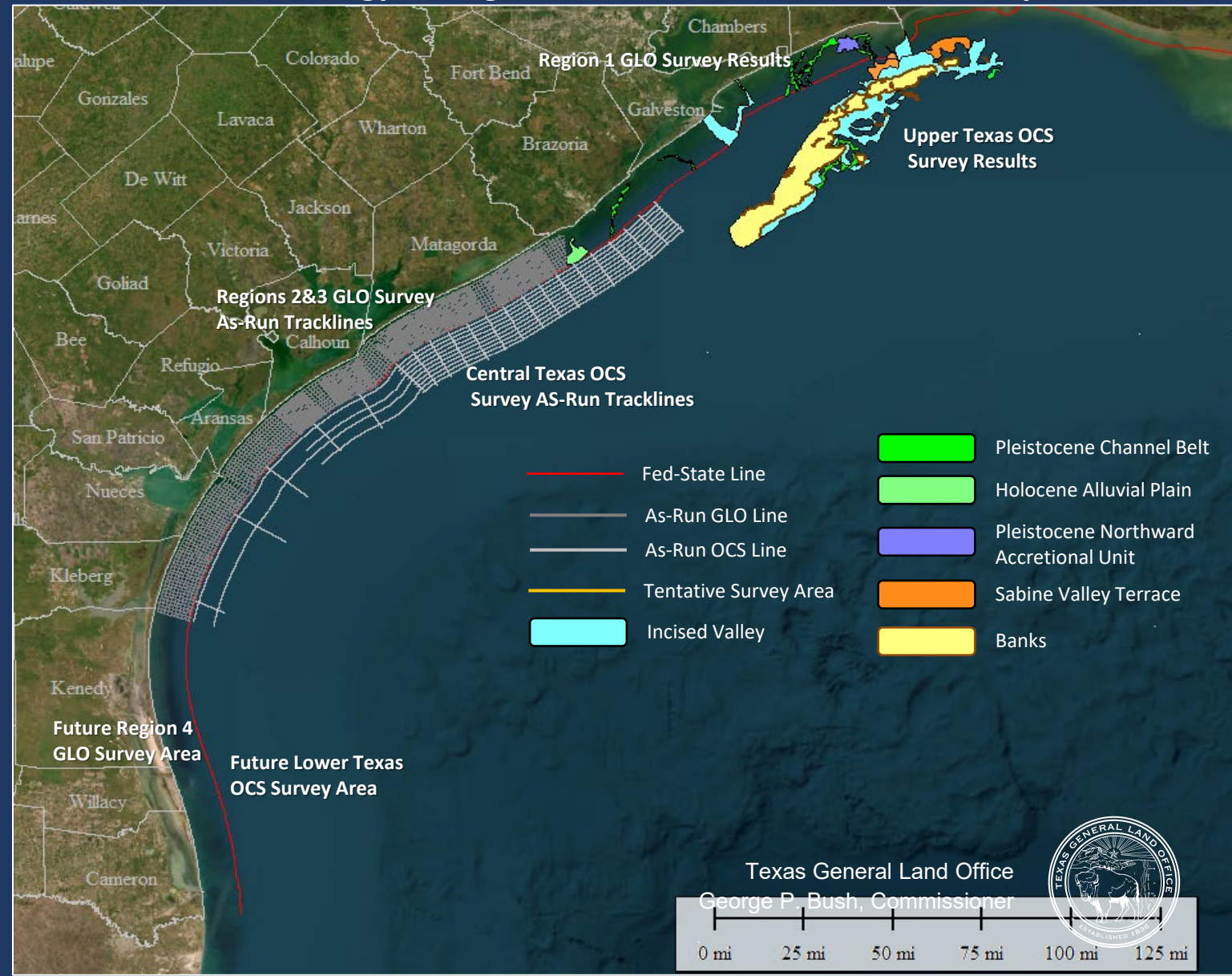
Regions 2&3 and Central Texas OCS Surveys

- Surveys completed Fall 2022
- Acquired 4,579 nautical miles of data
- Next steps are data processing and interpretation and reporting

Total Funding for Completed Surveys and Reporting to Date= \$5, 161, 270.00

Future Region 4 GLO and Lower Texas OCS Surveys

- Tentative Area of Survey Interests being developed
- Next steps are securing all funds for surveys

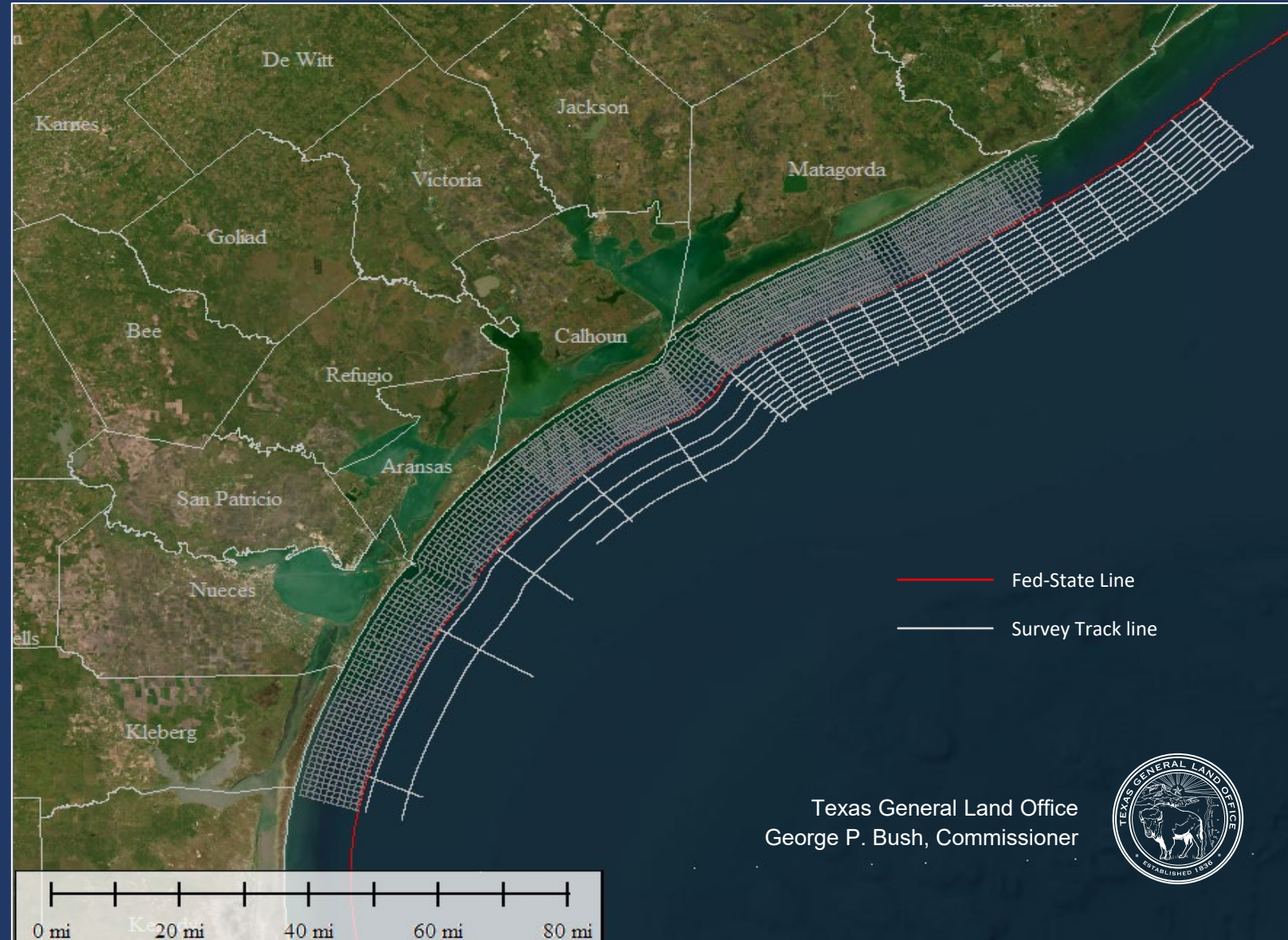


Identify and Develop Borrow Areas

Texas General Land Office Submerged Land and Bureau of Ocean Energy Management Outer Continental Shelf Surveys

Contracted through APTIM, The Water Institute of the Gulf, and the University of Texas Institute for Geophysics project teams

- 1-mile grid survey offshore state waters
 - Survey was completed on 9/14/2022
 - Successfully acquired 3,359 nm
- Variable grid survey offshore OCS waters
 - Survey was completed on 10/14/2022
 - Successfully acquired 1,220 nm
- Both surveys primarily focused on identifying potential sand bodies, channels or features indicative of sand that are cost-effective for recovery
 - small amounts of overburden
 - thick enough to develop
 - close to shore but not within the confines of the shoreline's sand system



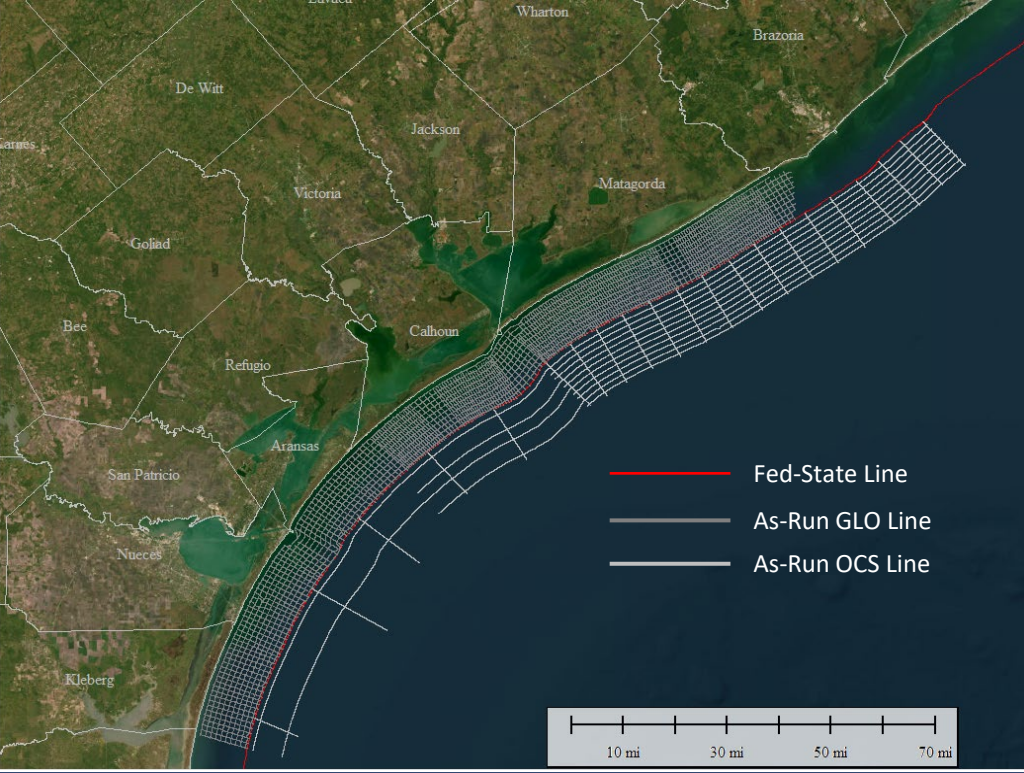
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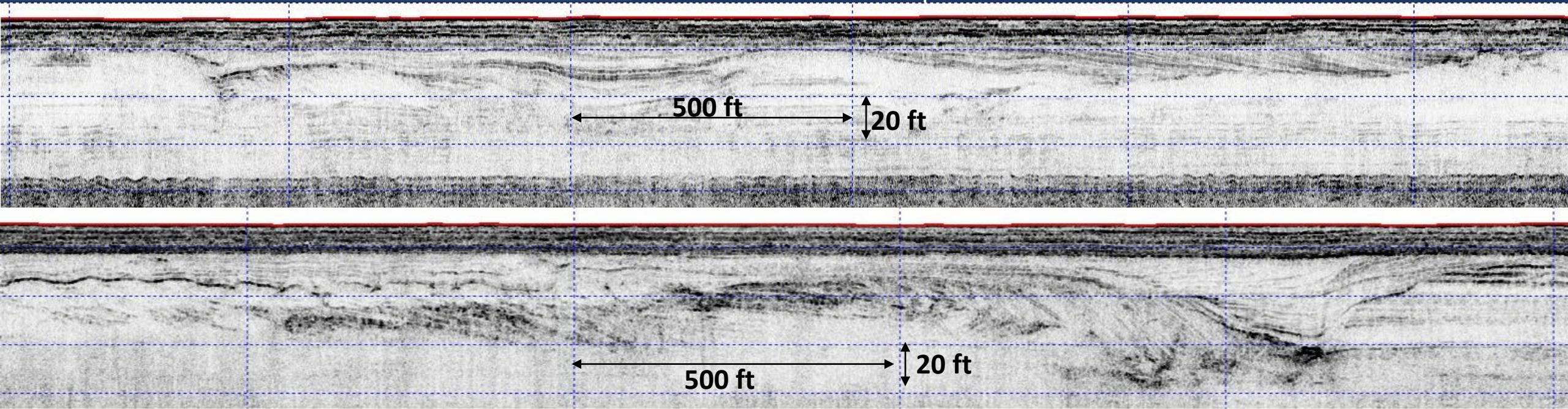
Identify and Develop Borrow Areas

Texas General Land Office Submerged Land and Bureau of Ocean Energy Management Outer Continental Shelf Surveys

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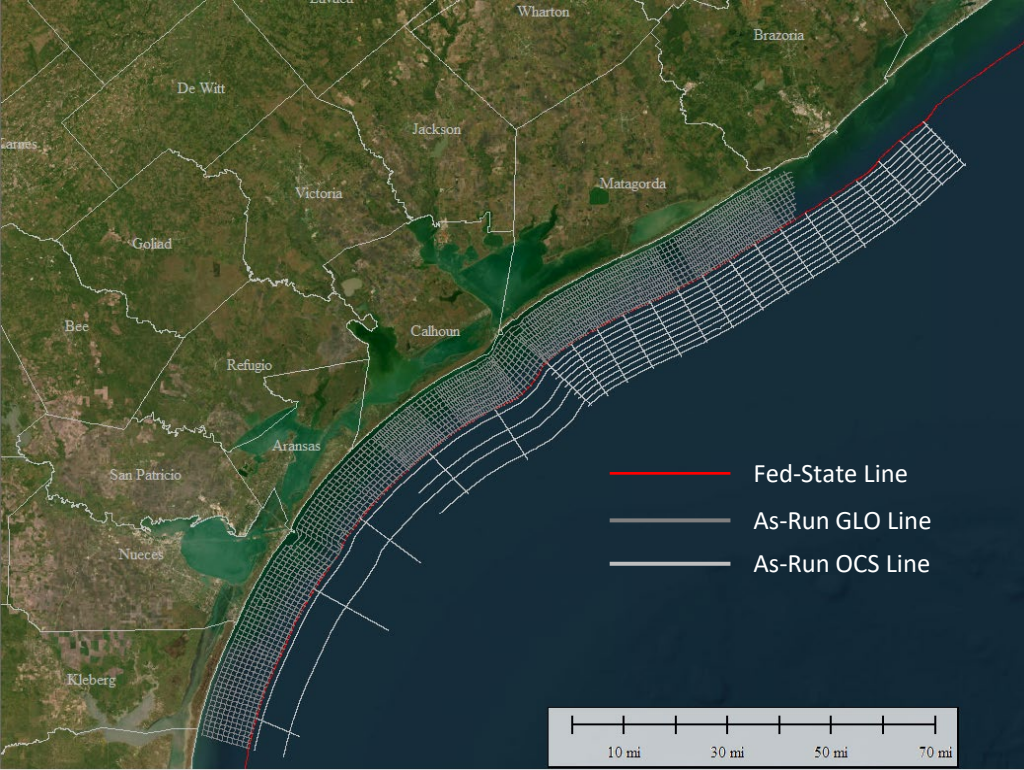
Sub-bottom line examples in Central Texas Outer Continental Shelf Tract



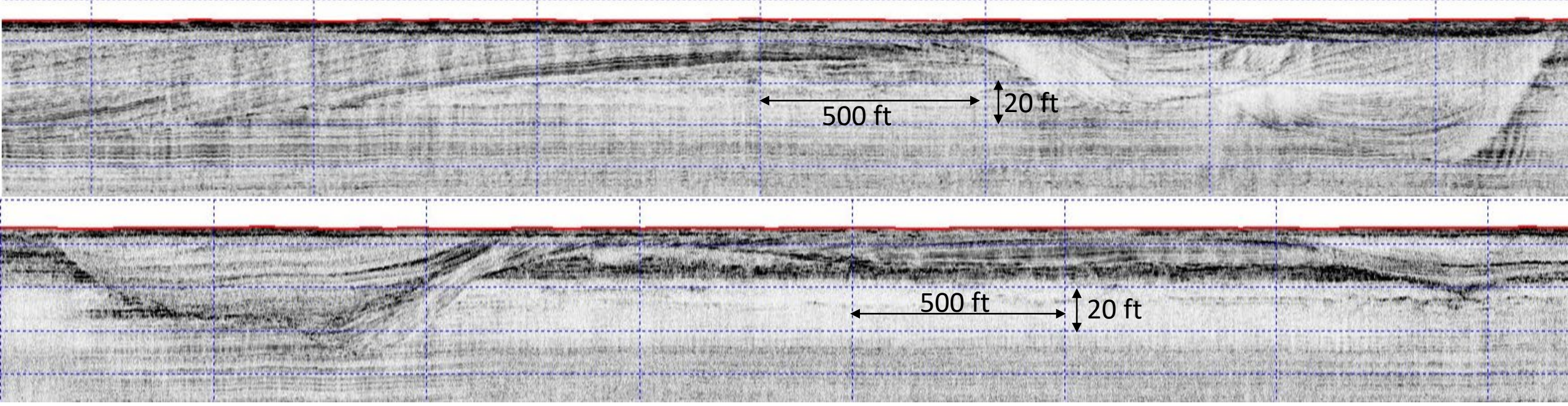
Identify and Develop Borrow Areas

Texas General Land Office Submerged Land and Bureau of Ocean Energy Management Outer Continental Shelf Surveys

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Sub-bottom line examples in Central Texas Outer Continental Shelf Tract



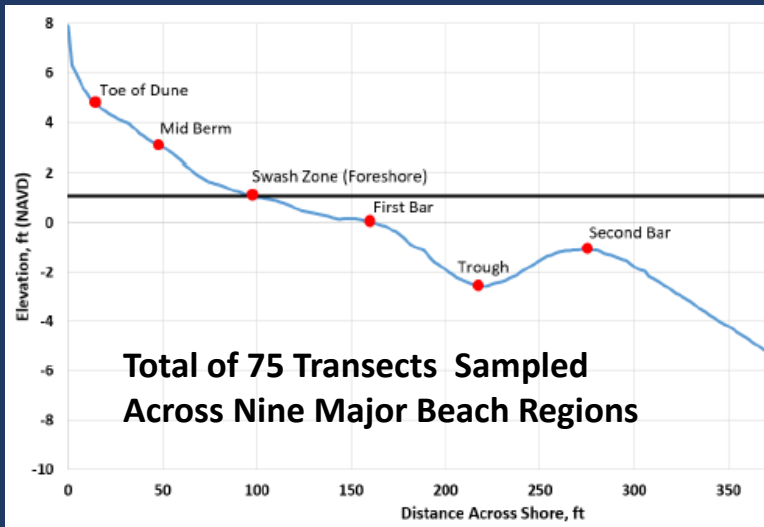


Allocate Sediment from Borrow Areas to Texas Beaches

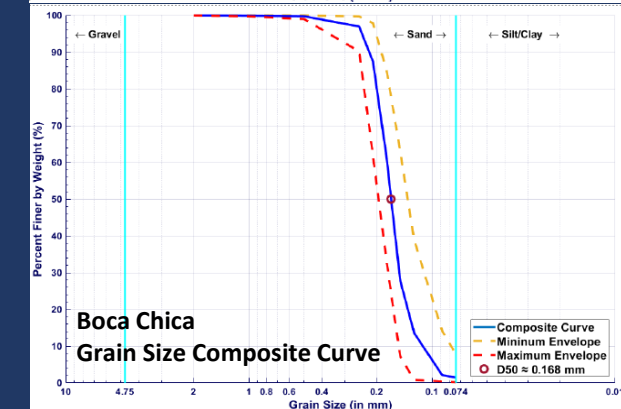
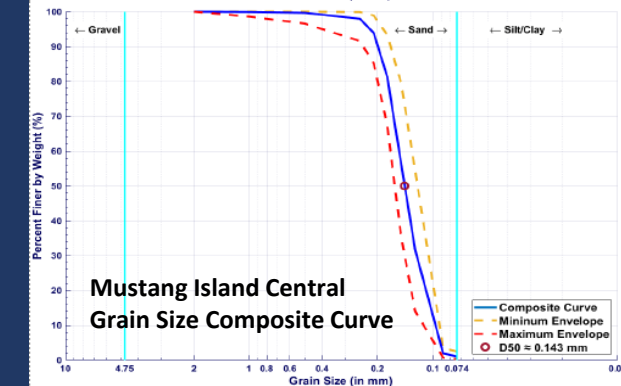
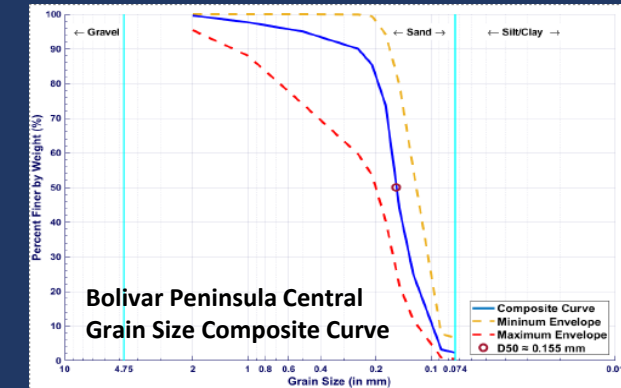
Determining Native Sediment Characteristics of Texas Beaches

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Geotechnical Study Completed in Nov 2022



- Median grain sizes ranged from 0.12 mm to 0.19 mm
- Typical beach profiles contained less than 3% fines
 - Sargent Beach was the exception, with 12.2% fines
- Sand collected from all regions tended to be 'well sorted' to 'very well sorted'
- The upper coast displayed greater variability in grain size than the lower coast





GLO Future Survey and Sediment Management Plan Work

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- Perform state-side submerged land and Outer Continental Shelf surveys of Lower Texas
- Carry out 1st level geotechnical surveys for borrow area development
- Designate Design level survey areas for all offshore Texas
- Carry out Design level geotechnical, geophysical, and cultural surveys
- Develop borrow areas from acquired data, best management practices, and lessons learned
- Permit borrow areas
- Develop tools to best allocate and match borrow areas to coastal restoration project needs
- Monitor borrow area usage and placement



GLO Offshore Sediment Surveys and Sediment Management Plan

Discussion

Questions?

For more information on the GLO's Sediment Management Plan please contact:

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