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Bureau of Ocean Energy Management

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Assessment of Mud-Capped Dredge Pit Evolution on the OCS, Peveto and Sandy Point SE Borrow Areas

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**PO = Physical Oceanography
PS = Protected Species
FE = Fate & Effect
SE = Social & Economic
BIO = Biology
OT = Other

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Assessment of Mud-Capped Dredge Pit Evolution on the OCS, Peveto and Sandy Point SE Borrow Areas

BOEM Information Need:

Improved understanding of mud-capped dredge pit evolution

- **Evaluate effectiveness of mitigations**
- **Refinement of predictive models**

Date Information is Required: Newly excavated pit provides unique window of opportunity to:

- **Test model predictions and effectiveness of assigned mitigations**
- **Monitor pit geomorphic evolution**
- **Develop monitoring protocols**
- **Refine predictive capability for future projects**

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Tentative Ranking: 7

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Pelican Island Restoration Project

Sandy Point SE Borrow Area Post-Construction Bathymetry November 2012

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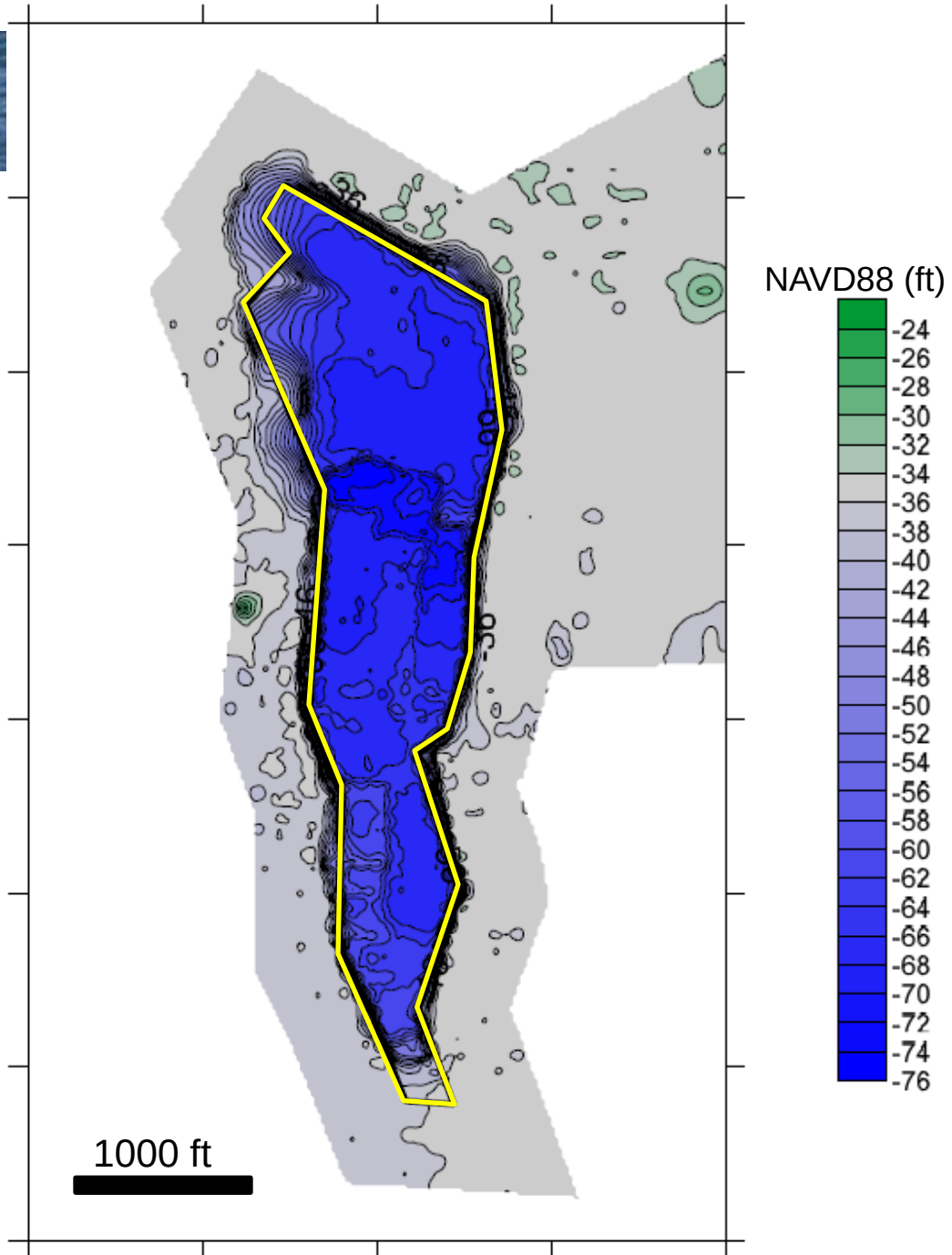

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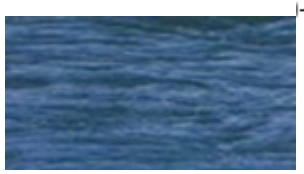

Pelican Island Restoration Project

Sandy Point SE Borrow Area Delta Plot

Pre-con Feb 2012 to Post-con November 2012

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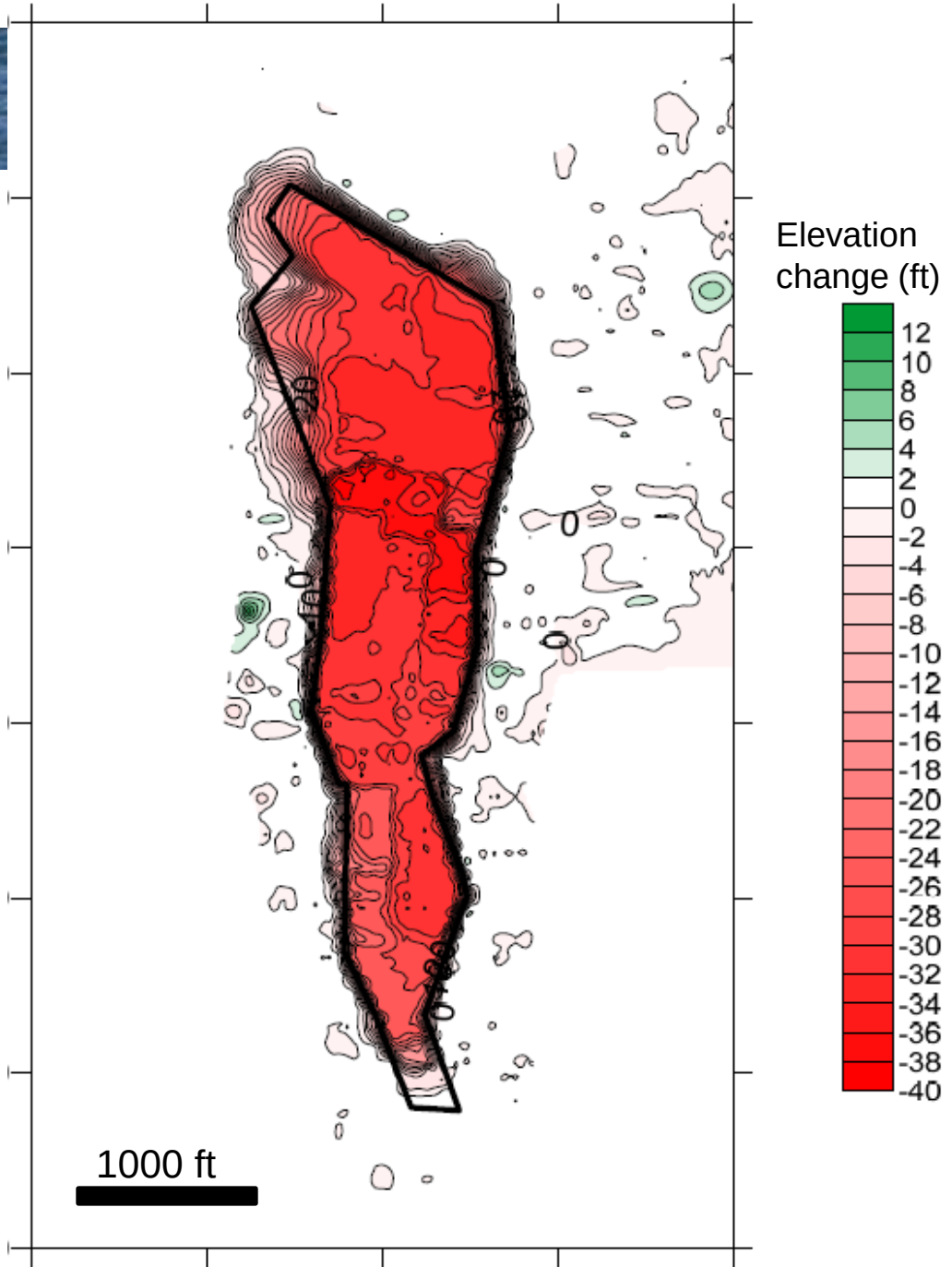

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Assessment of Mud-Capped Dredge Pit Evolution on the OCS, Peveto and Sandy Point SE Borrow Areas

Background:

A) Relationship with Previous Work/Efforts

- **Builds upon BOEM investment in understanding muddy dredge pit evolution:**

Narin et al., 2005, *A study to Address the Issue of Seafloor Stability and the Impact on Oil and Gas Infrastructure in the Gulf of Mexico*

- Provided initial analysis of muddy dredge pit evolution

Narin et al., 2007, *Examination of the Physical and Biological Implications of Using Buried Channel Deposits and other Non-Topographic Offshore Features as Beach Nourishment Material*

- Provided field validation and improvements of predictive model for Peveto Channel and initial framework for predicting other mud-cap pits

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Study's Objectives:

1) Quantify and greatly enhance our understanding of mud-capped dredge pit evolution through development of a geomorphic evolutionary model

2) Provide refined and validated predictive numerical model for dredge pit evolution

3) Assess effectiveness of existing mitigations

4) Provide recommendations for pit monitoring protocols and suggested mitigations based on empirical measurements and refined numerical model

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Study's Methods:

- Focus on Peveto Channel (2002) and Sandy Pt. Southeast (2012) pits

- Swath bathymetry, side-scan sonar, subbottom profiler, vibracores, and physical oceanographic data collected at both pits

- Physical oceanographic parameters measured seasonally with complimentary bathy data collected at SP to track pit evolution over 2 yrs.

- Observational data analyzed and employed to refine existing or develop new numerical and/or statistical models for pit evolution

- Apply new model framework to predict pit evolution, develop a monitoring protocol, and suggest future mitigations

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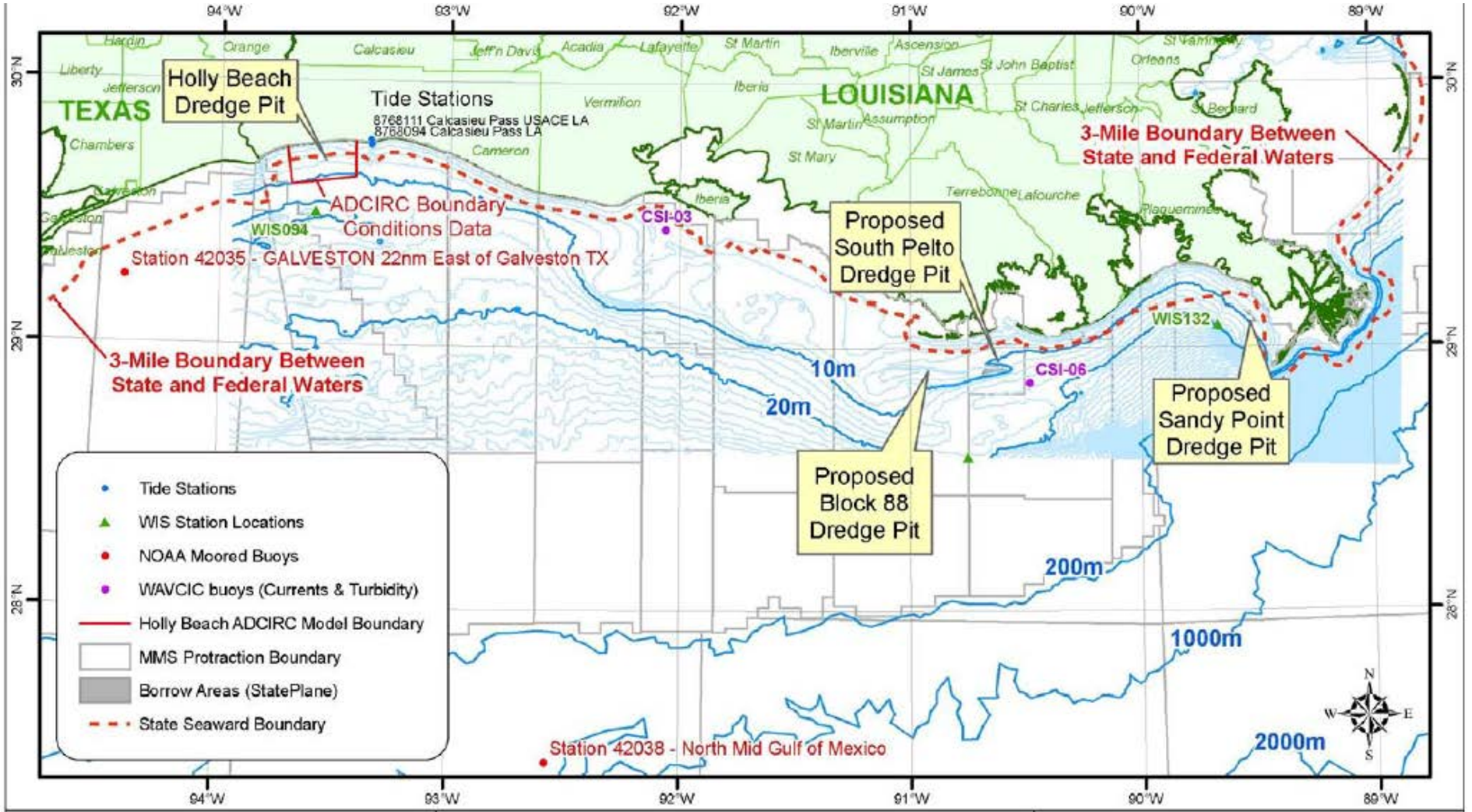

0 30 60 90 120 Kilometers

0 20 40 60 80 Miles

Overview Context Map

1:2,800,000

Projection: StatePlane Louisiana South (FIPS 1702), Feet, NAD83
Nearshore bathymetry from NOAA charts, compiled by Louisiana Oil Spill Coordinator's Office.
Offshore bathymetry from USGS Open-File Report 00-019.

From Narin et al. (2005)