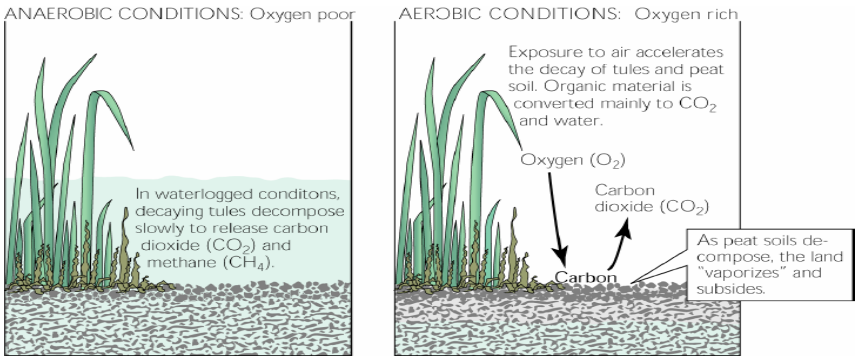
Objectives Managed flooding of islands to halt and reverse subsidence and potentially provide carbon credits.

Halt Subsidence

Establish tule wetlands



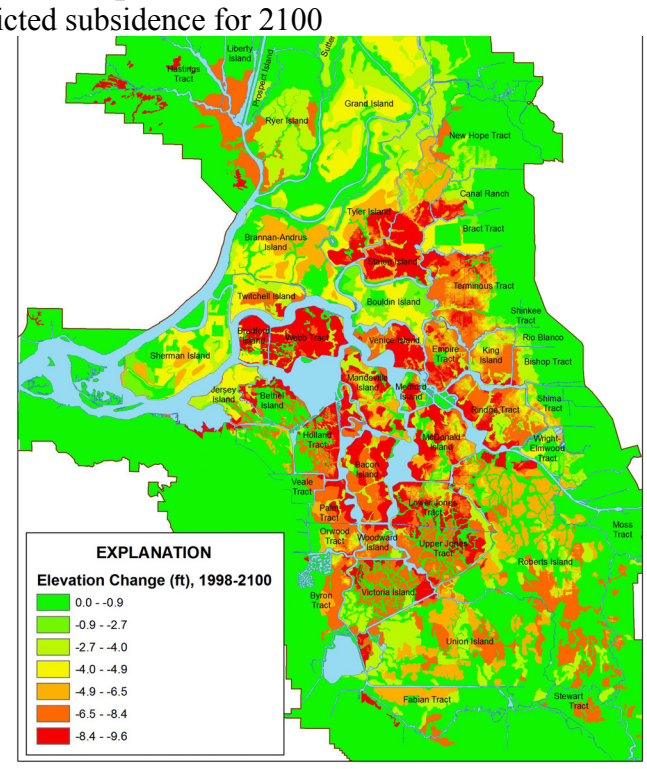
Reverse subsidence

Vegetation matter accumulated over 8 years

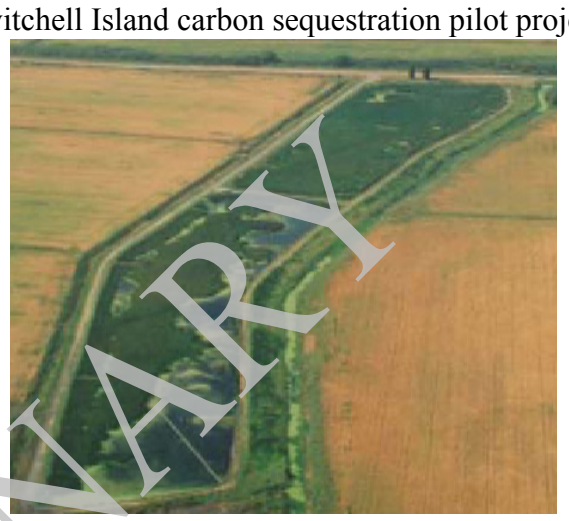
- Twitchell Island Ponds show increases of 1.6 inches/year in addition to preventing subsidence of ~1 inch/year
- Predicted change in net subsidence of 11 feet by 2050

Carbon Sequestration Sites

Predicted subsidence for 2100



Twitchell Island carbon sequestration pilot project ponds



Potential Islands for Implementation

Islands were identified where subsidence and levee fragility were greatest and the value of infrastructure and agricultural production were least. These islands were:

- Venice Island
- Webb Tract
- Holland Tract
- Bradford Island
- Mandeville Island
- Medford Island
- Twitchell Island

Project Benefits

- The key benefits of subsidence reversal include:
  - Reduced likelihood of levee breach in future years (improved levee fragility), and
  - Reduced salinity intrusion in future years due to a reduced island gulp.
- Other benefits of carbon sequestration include improved biodiversity, a reduction in greenhouse gases, and reduced costs for levee maintenance.
  - Carbon sequestration sites will provide important habitat for endangered flora and fauna species throughout the Delta (duck-hunting, recreation).
  - The net reduction in greenhouse gas generation is estimated at about 4 metric tons of CO_2e per year.

Project Constraints

- The constraints to carbon sequestration include the loss of agricultural production on islands and increased costs to protect infrastructure.
- Social and transaction costs associated with land use change

Project Findings

- Wetlands can be used successfully to reverse subsidence on Delta peat islands where ponding depth and plant species are optimized.
- The elevation of any Delta islands typically varies by about 3 to 4 feet about the mean. Therefore island earthwork to reduce this variability and achieve an optimal ponding depth is substantial.

Project Costs

- Conceptual estimates for construction costs are typically $20,000 to $27,000 per acre and the costs for earthwork comprise about 85% of these costs.
- Total conceptual cost estimate for seven islands (including earthwork for leveling) is $600M.
- Opportunities exist to reduce this cost by changing land use practices and allowing islands to naturally level over time, or alternatively by using natural island contours to achieve optimal ponding depths on separate island segments.
- Revenue from carbon credits may partially offset annual operating costs

PRELIMINARY