

Consultant Involvement
In the Subsidence Control Sub-Team of the
CALFED Levee and Channel Technical Team

There are several critical factors that influence the development of an effective, Delta-wide subsidence mitigation strategy; depth of the peat soil, subsidence rates, percent organic matter, land use, island location and available and appropriate management practices for subsidence control. The depth of peat influences the extent of future subsidence that can occur. For example, those islands that have shallow peat soils would have a lower priority for subsidence control than deep peat islands because once the peat completely disappears by oxidation, there is not a continued subsidence threat. Islands with large subsidence rates pose a greater threat to levee stability than those with lower subsidence rates.

The location of the island also weighs in the development of subsidence mitigation strategies in that levee failure on western Delta islands poses a greater threat to water quality (salinity) than levee failure on central Delta islands. There is some historic information for spatially variable subsidence rates, depth of peat soils and percent organic matter in the Delta that can be used, in conjunction with data for land use and geographic data, to develop a preliminary Delta-wide subsidence-mitigation implementation plan.

The overall objective is to develop a subsidence control strategy for the Delta. The specific objectives of the project are to 1) collect and evaluate existing spatial data for factors that affect subsidence and levee stability; 2) prioritize islands and portions of islands for subsidence control and 3) develop a preliminary plan for subsidence control in the Delta.

The overall approach is the utilization of a Geographic Information System (GIS) to store and analyze data for key variables affecting subsidence, for the assessment of priority areas for subsidence control. The Department of Water Resources currently maintains a GIS for the Delta that includes all the essential geographic features. During the next 6 months, all existing data for factors that will influence the susceptibility of an island or parts of islands to levee failure will be collected. There is available data for historic subsidence rates, depth of peat soils, soil organic matter content and levee stability. This available data will be evaluated and screened for quality and entered into the GIS database.

Spatial analysis using the GIS will be conducted to answer questions regarding the relationship among the spatial data and where subsidence control is most needed. These questions include but are not limited to: Where are the areas of highest subsidence and deepest organic soils? Where in the western Delta (a key area for subsidence control because of water quality concerns) are subsidence rates the highest? Where do high rates of subsidence and critical areas for levee maintenance coincide? As a result of this analysis, a prioritization of areas for

subsidence control will be developed. Results from ongoing research and demonstration projects being conducted by DWR, USGS and consultants will be used to identify the appropriate subsidence control measures for different areas in the Delta.

Specific products include 1) spatial analysis and maps of key factors affecting subsidence 2) map showing priority areas for subsidence control and 3) map showing preliminary distribution of subsidence control measures.