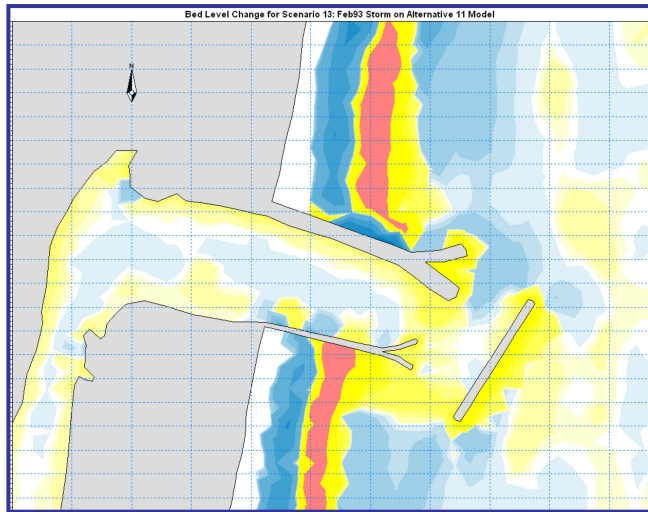


SALT PONDS INLET MANAGEMENT PLAN

Client: Kimley-Horn & Associates

The objective of the Salt Ponds Inlet Management Plan (IMP) was to develop a plan for engineering improvements and other management actions designed to reduce the cost of maintenance



dredging to the City of Hampton. A major component of this study was a dynamic model designed to gain a better understanding of the inlet's hydraulics and local sediment transport dynamics in order to improve the reliability of recommendations for engineering actions to reduce shoaling. The study analyzed a series of engineering alternatives intended to reduce the frequency of maintenance dredging by use of an integrated computational modeling approach, which included two-dimensional simulations of sedimentation patterns resulting from each of the engineering alternatives evaluated in the study. The results of the sediment transport modeling and structural alternatives analysis were summarized in the final report. The IMP was developed by Kimley-Horn and Associates, Inc. (KHA) based on modeling assistance and technical input provided by Coastal Tech.

Five engineering modifications were selected for evaluation by the inlet model. A two-dimensional integrated model dynamically coupling wave, hydrodynamics and morphology was developed to simulate inlet processes and optimize proposed alternatives. Jetties and breakwaters included in the simulations were modeled as solid, impermeable and non-overtoppable structures. A total of 13 alternative configurations were analyzed throughout the process.

Based on the simulation results of the modifications included in this study, it was recommended to raise, armor and extend the existing south timber/vinyl sheetpile jetty by construction of a rubble-mound structure over the existing jetty, in conjunction with the potential construction of a large breakwater offshore of the Salt Ponds Inlet entrance. The effect on maintenance dredging frequency associated with this recommended Alternative is expected to be a doubling of time between dredging events compared to the current situation.

Key Elements

- ☉ Sediment Transport
- ☉ Sediment Budget
- ☉ Numerical Modeling
- ☉ Plan Formulation

Date: 2009-2010

Fees: \$103,938.

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