SUMMARY

This effort was an essential first step to enhance understanding of shallow water system responses to climate change. Existing information was integrated with the best current understanding of system processes, to produce a clear and practical assessment of potential futures for Virginia’s estuarine shallow water environments.

Several key findings can be incorporated into future strategies

- Within Virginia tidal waters, approximately 11.1% of shoreline has been hardened and 27% of riparian lands are developed. Shoreline hardening continues at an average rate of 29 km/yr. Alternative approaches to erosion control, such as living shorelines, and restricted riparian development will promote ecosystem resilience in the face of sea level rise.

- Coastal habitats were estimated to experience significant reductions under forecasted climate change. Preserving landscapes that allow for the transgression of the Bay’s essential shallow-water habitats should be a high conservation priority.

- Data limitations currently prevent precise prediction of sea level rise effects. Effective management of resources is hindered by the lack of high precision bathymetric and topographic data, as well as the need for updated inventories of critical coastal habitats (e.g. tidal wetlands).

- Modeled shifts in coastal habitat features can provide the basis for an ecosystem-based evaluation of ecological consequences of climate change (e.g. effects of tidal marsh loss on fish productivity).

These and similar spatial analyses can be used to inform forward-looking management efforts to identify and protect areas where habitat complexes are most likely to be sustainable, as well as preserve opportunities for migration of habitat elements in an evolving system.