

Navigation features added

Studying engineering alternatives

Since the last major navigation improvements were completed by the Corps of Engineers, Savannah District in April 1994, the Savannah Harbor has experienced significant growth in containerized cargo volume, vessel traffic, and the size and frequency of container ships calling at the port.

A study undertaken by the Savannah District proposes to deepen the harbor from its current authorized depth of 42 feet down to a maximum authorized depth of 48 feet. It also identifies improvements that would increase the efficiency and safety of cargo vessel operations. The study identifies and evaluates alternatives that will:

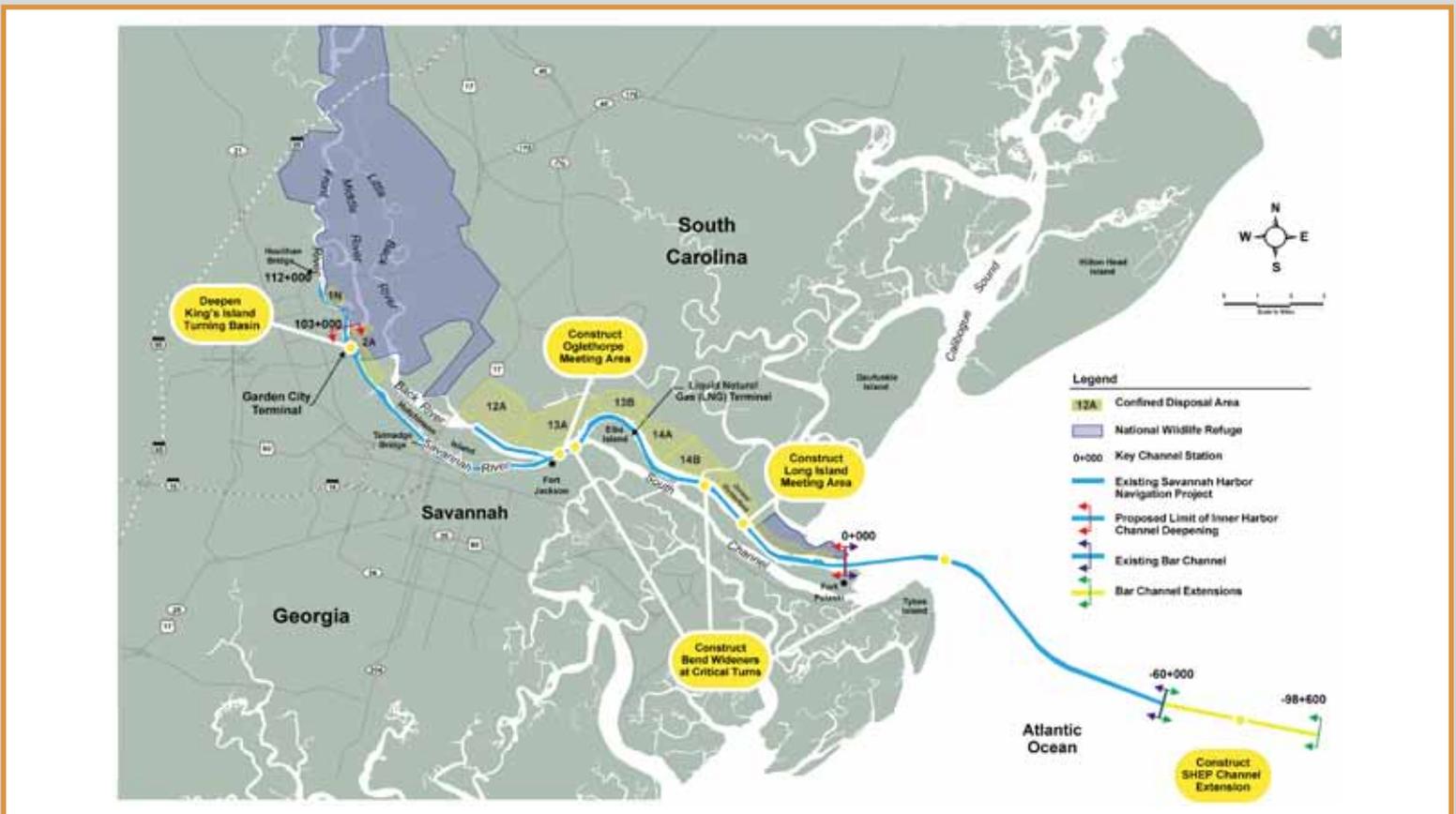
- ▶ Reduce congestion and improve the efficiency of operations for container ships within the navigation channel
- ▶ Accommodate recent and anticipated future growth in containerized cargo and container ship traffic expected to call on the port in Savannah

Navigation Features

The journey for cargo vessels traveling on the Savannah River, from ocean buoy to berth, requires carefully timed passage and skillful maneuvering. Using computer models of water and wave actions, computer-simulated ship movements, and engineering analysis, the Savannah District has devised navigation features that would accommodate a new generation of deep draft container ships expected to call on the port in Savannah. The improvements would:

- ▶ Extend the harbor entrance channel across the ocean bar an additional 7.3 miles
- ▶ Deepen the navigation channel up to an additional 6 feet
- ▶ Construct vessel meeting areas at Long Island and Oglethorpe Ranges to allow large vessels to meet thereby preventing delays while navigating the channel
- ▶ Widen the Kings Island Turning Basin to accommodate the dimensions of the larger container ships

General Navigation Features



The study undertaken by the Savannah District identified navigation features which will improve the efficiency and safety of the shipping channel.

- ▶ Widen the channel at three bends to allow the larger ships to safely navigate these areas

Other Studies

The Corps undertook more than 40 engineering studies that included:

- ▶ Ship simulations to aid in channel design, including vertical ship motion study
- ▶ Ship wake analysis to develop shoreline erosion estimates
- ▶ Soil borings for physical characterization of materials to be dredged
- ▶ Slope stability analysis to determine impacts to side slopes and banks
- ▶ Geologic field investigation & modeling to determine groundwater impacts to the aquifer
- ▶ Coastal erosion analysis to determine impacts to Tybee Island
- ▶ Nearshore placement of dredged material to provide a beneficial use
- ▶ Shoaling and sedimentation analysis
- ▶ Hydrodynamic & water quality modeling for impact determination and mitigation plan development, including oxygen injection
- ▶ Analysis of chloride impacts to the City of Savannah's water supply on Abercorn Creek
- ▶ Analysis of dredged material, including physical & chemical analysis
- ▶ Impacts to Savannah Harbor Operation & Maintenance practices, including a dredged material management plan
- ▶ Mitigation feature design, including oxygen injection system, boat ramp and marsh restoration
- ▶ Cost estimating & cost risk analysis for all depth alternatives
- ▶ Value engineering study
- ▶ Sea level rise risk analysis

River Banks and Drinking Water

Geotechnical engineers investigated the effect of deepening on the river banks. The proposed design (diagram 1) would not widen the navigation channel along River Street but would instead extend the existing side slopes down further, resulting in a deeper and narrower channel with minimal effects to the river bank. The Corps also conducted a bank erosion analysis that focused on locations where vessel waves could cause shoreline erosion. The analysis found the larger vessels would not cause more erosion than is presently occurring. The harbor pilots move vessels past River Street at a slow speed which does not generate waves that could erode the shore.

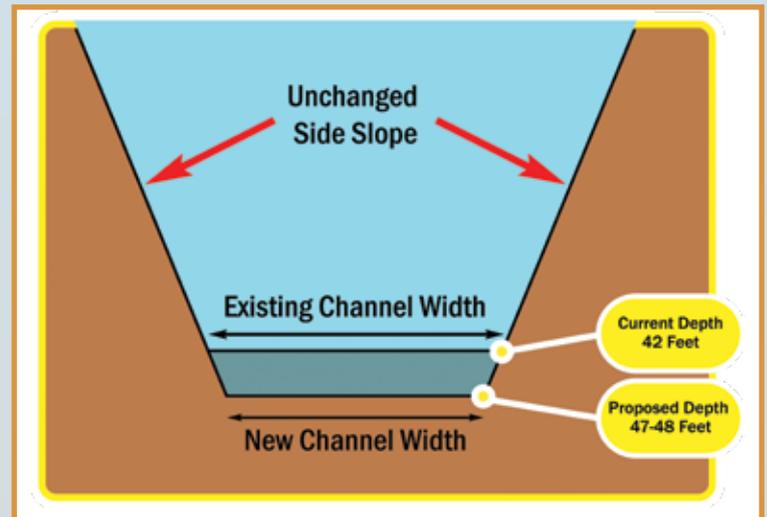


Diagram 1 shows how the proposed channel design would extend the existing side slopes down further, resulting in a deeper and narrower channel with minimal effects to the river banks.

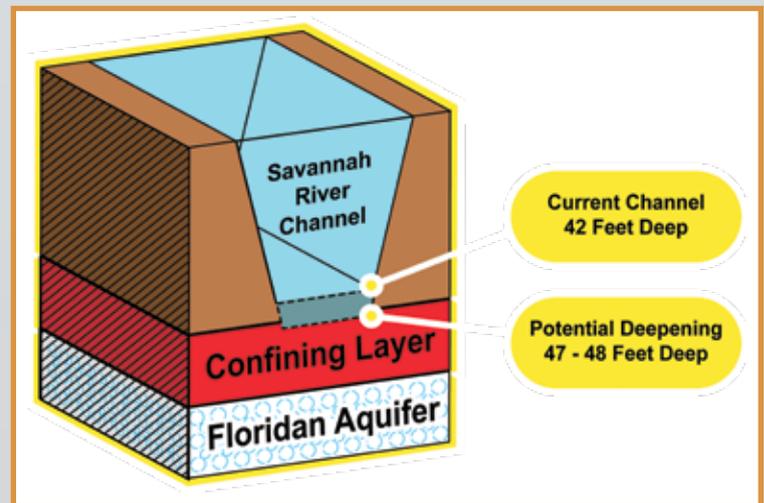


Diagram 2 illustrates the insignificant effects to drinking water due to harbor deepening.

Geologists and engineers also studied the effect of harbor deepening on drinking water from the aquifer (diagram 2). Deepening the harbor to the proposed 47-48 feet will have an insignificant impact on drinking water and the aquifer. The extensive study, conducted in cooperation with the Georgia Department of Natural Resources Environmental Protection Division, the South Carolina Department of Health and Environmental Control, and the U.S. Geological Survey, showed that deepening will not significantly increase the rate of saltwater intrusion below the Savannah area, and therefore will pose little measurable change to the water quality in the aquifer. The analysis clearly shows that the greatest impact to the Floridan aquifer is the high withdrawal and use rate, not harbor deepening. 

Illustrations by George Jumara