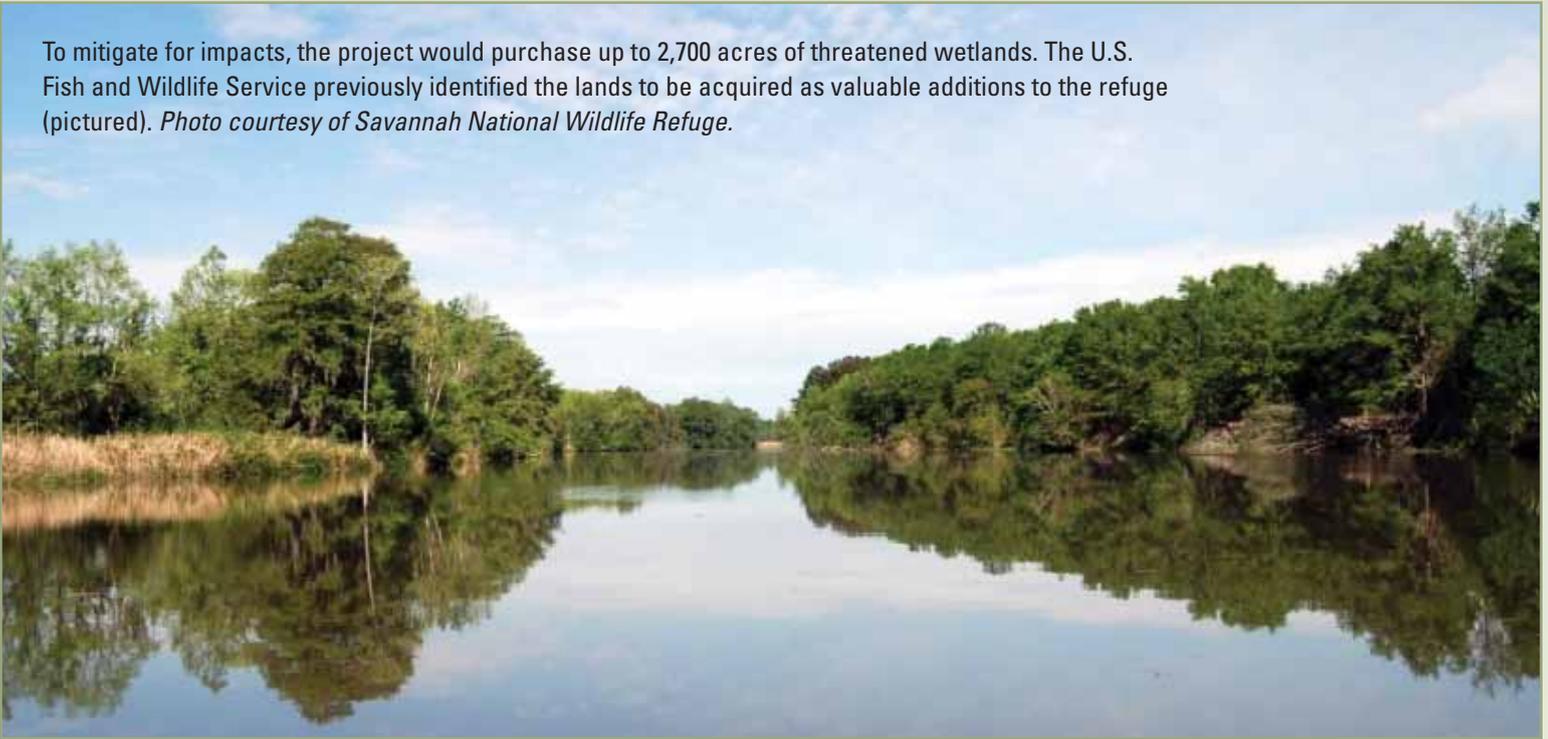


Mitigating for Environmental Impacts

To mitigate for impacts, the project would purchase up to 2,700 acres of threatened wetlands. The U.S. Fish and Wildlife Service previously identified the lands to be acquired as valuable additions to the refuge (pictured). *Photo courtesy of Savannah National Wildlife Refuge.*



Environmental Review

Agency coordination on the report included the U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) Fisheries Service, state agencies in Georgia and South Carolina, and others. Substantial coordination with the public also occurred through multiple meetings of a Stakeholders Evaluation Group. The process included both the normal steps followed during a typical Corps civil works study as well as additional steps to meet the unique congressional authorization, which stipulates the final report must be approved by four federal agencies.

From a broad perspective, environmental mitigation planning consists of three major steps:

- 1) avoid impacts,
- 2) reduce impacts, and;
- 3) mitigate / compensate for unavoidable impacts.

The final report concludes that the environmental impacts of deepening the shipping channel to 47 feet can be mitigated to an acceptable level. Mitigation features account for **45 percent** of the total project cost (Estimated total cost is \$652 million; mitigation cost is \$292 million. *All costs are associated with Fiscal Year 2012 levels*). The final report addresses these environmental mitigation features:

Flow Re-routing and Freshwater Marsh

The 47-foot plan includes several modifications to a portion of the braided segment of the Savannah River.

These changes will re-direct the flow of freshwater to significantly reduce the amount of impacts to freshwater marsh, which the Wetlands Interagency Coordination Team determined in 2003 to be the highest priority wetland natural resource in the Savannah River Basin. That team included representatives from Georgia, South Carolina, USEPA, USFWS and NOAA Fisheries. The flow re-routing plan essentially will direct more freshwater into the Back River area on the South Carolina side of the river.

Without flow re-routing, the harbor deepening would increase salinity in 1,177 acres of freshwater tidal wetlands, converting it to brackish marsh. However, with flow re-routing, the project will only convert 223 acres of freshwater wetlands to brackish marsh. The additional freshwater may also convert 740 acres of salt marsh to brackish marsh. This conversion will be mitigated with the acquisition and preservation of 2,245 acres of freshwater wetlands for the Savannah National Wildlife Refuge, at a cost of \$12.4 million. The USFWS previously identified the lands to be acquired as valuable additions to the refuge.

Marsh Restoration

The 47-foot plan would excavate 16 acres of tidal brackish marsh in Georgia to remove Back River tide gates and expand the Kings Island Turning Basin. To mitigate for those impacts, 28 acres of brackish marsh will be restored on Onslow Island, Ga., a former dredged material disposal site in the upper portion of the harbor, at a cost of \$17.9 million.

Striped Bass

The Striped bass, a popular game fish, is making a comeback in the lower Savannah River as a result of a Georgia Department of Natural Resources stocking program. The deepening project would provide \$3.3 million in funds for additional stocking to compensate for increased salinity in areas used by this species for spawning. The plan also includes construction of a boat ramp to restore boating access for fishermen on the Back River, at the request of the South Carolina Department of Health and Environmental Control.

Sturgeon

Harbor deepening would allow additional saltwater to enter the harbor and travel further upstream into areas currently used by endangered sturgeon species. The increased salinity would reduce the suitability of some of these areas. To compensate for those impacts, the project includes construction of a large fish bypass around the first dam up the Savannah River (New Savannah Bluff Lock and Dam). The design will enable the sturgeon and other species to swim upstream, as well as restore access to historical sturgeon spawning grounds. The gates at the dam will remain closed at flows less than 9,000 cubic feet per second (cfs) to allow 100 percent of the river flow to pass through the off-channel rock ramp. The design was coordinated closely with NOAA Fisheries and other natural resource agencies with an estimated cost of \$30.2 million. NOAA Fisheries provided a Biological Opinion concluding that with the mitigation plan, the project will have no significant impact to these species.

Dissolved Oxygen

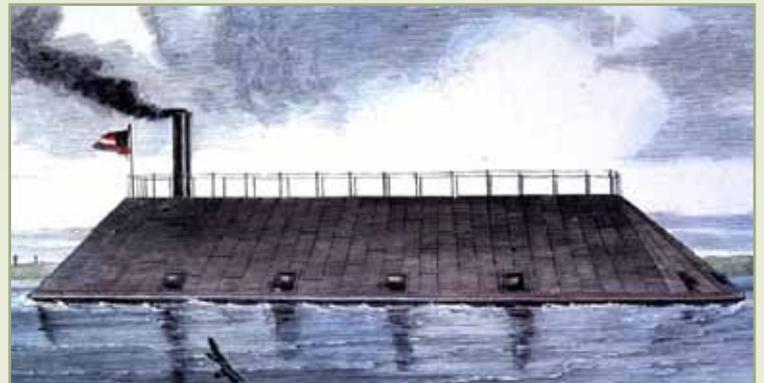
The deepening project includes the installation, operation and maintenance of 12 devices called Speece Cones, which will inject oxygen into the river to maintain necessary dissolved oxygen (DO) levels during hot, dry months, when oxygen levels typically drop. Two of the 12 Speece Cones will serve as back-up units. The total cost for the DO injection system is estimated at \$72.2 million, with annual operation and maintenance costs at \$1.2 million. The modeling that indicates oxygen levels would be impacted by harbor deepening also indicates that DO levels would exceed the existing conditions in well over 90 percent of the estuary with the DO system in place.



Engineers redesigned and expanded the fish passage around the New Savannah Bluff Lock and Dam near Augusta. This passage will allow endangered sturgeon to enter spawning grounds closed to them since 1937.

CSS Georgia

The historic ironclad CSS Georgia rests some 40 feet below the river's surface on the channel side slope and at the edge of the navigation channel. The harbor deepening plan calls for the data recovery, removal and conservation of this cultural resource before dredging in that area begins, at an estimated cost of \$14.2 million.



Rendering of Confederate ironclad warship CSS Georgia which will be recovered from the Savannah River before deepening begins.

Post-Construction Monitoring and Adaptive Management

The final report identifies a post-construction monitoring period of 10 years (increased from five years in the draft report at the request of USEPA, USFWS, and NOAA Fisheries). This period provides the Corps increased time and resources to monitor the various mitigation features and make adjustments as necessary. The cost for this selective 10 year monitoring period is estimated at \$61.4 million. 

*By Tracy Robillard, Corporate Communications Office
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