



Savannah Harbor Expansion Project

Frequently Asked Questions (FAQs)

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

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1) When did construction begin on the Savannah Harbor Expansion Project (SHEP)?

- Construction began in January 2015 when archeologists mobilized for the first contract on the [recovery of the CSS Georgia](#) ironclad. The remains of the [CSS Georgia](#), a Confederate ship, rested on the bottom of the Savannah River adjacent to the shipping channel, near Old Fort Jackson. The location of CSS Georgia impeded the channel expansion.
- The Savannah District awarded the [first dredging contract](#) in March 2015 and the deepening began on Sept. 10, 2015. This contract covers the deepening of the outer harbor and the extension of the shipping channel further into the Atlantic Ocean. The outer harbor extends from approximately Fort Pulaski into the Atlantic Ocean. The channel must be deepened to 47 feet and extended an additional 7 miles to reach water naturally 47 feet deep or deeper. By contract, the outer harbor deepening must be complete by July 2018.
- **[Updated]** Construction on the dissolved oxygen injection system and the raw water storage impoundment began in early 2016 and a dike raising began in spring 2016. Other contracts will follow in 2016.

2) **[New]** What is the raw water storage impoundment and why is it needed?

- We studied the impacts of deepening on water in Abercorn Creek, upstream from the harbor, to determine the deepening's impact on chlorides in the city's water intakes. The SHEP mitigation plan includes the construction of an impoundment that will provide an additional source of freshwater for use on extremely rare days when low river flow and high tides may push salt water further upstream, potentially affecting the quality of water withdrawn by the City of Savannah through their uptakes at Abercorn Creek. The impoundment will allow the city to continue to provide very low chloride water. The impoundment will primarily benefit industrial users of the water during these rare occasions.
- Even without the impoundment, Savannah's water would remain well within clean water standards. The impoundment ensures no change to the high quality of water provided by the City of Savannah.

3) **[New]** Why did you select the current location for the raw water storage impoundment?

- **[New]** During Feasibility and Design phases, a total of 9 different sites were considered for this mitigation feature of SHEP. The evaluation criteria developed were utilized to identify the most practicable location for the impoundment. The District released a Draft Environmental Assessment in July 2013 to solicit the public's views on the alternatives. As a result of that evaluation and coordination, we revised the design for construction of the raw water storage impoundment (RWSI) to its present site between I-95 and Georgia Highway 21 (near the Rice Hope development).
- **[New]** Relative to the other eight sites considered, construction of the RWSI at the selected site minimizes the acres of wetland impacts, minimizes potential land use compatibility issues. It also locates the impoundment further away from residential developments, minimizing risk to human health and safety due to flooding.

4) **[New]** During construction of the raw water storage impoundment many hundreds of dump truck runs will pass through a residential neighborhood. Why not use adjacent I-95? What other routes were considered? What about the safety of the neighborhood? What about additional wear-and-tear on the streets? What about the impacts on my property values during construction?

- **[New]** During the design process we investigated accessing the site from I-95. The Federal Highway Administration will not allow a construction entry from I-95 for this project since the impoundment is not part of a federal highway project. Additionally, we determined that there was not enough space on I-95 for proper acceleration and deceleration lanes between the existing visitors' center and exit 109. Plus no viable median

crossing exists in the vicinity of the proposed entry. Interstate access is not constructed or allowed for short term construction projects.

- **[New]** In addition to consideration of using I-95, we also discussed other alternatives but they were not carried forward for further consideration due to the Clean Water Act section 404(b)(1) analysis undertaken as part of the NEPA analysis¹. The alternative we selected was the Least Environmentally Damaging Practical Alternative (LEDPA). One of the other two alternative routes considered was access from GA SR-21 near Wendy's. This option was infeasible because it would require building a culvert crossing or bridge over Black Creek, which would be cost prohibitive and impact wetlands. We also discussed using several other potential access points north of Lakeside Blvd but all of these options would require construction of a long stretch of gravel road along the power easement to access the project site, which also comes with environmental impacts.
- **[New]** Construction traffic will run during daylight hours and the contractor will avoid rush hours as much as practicable. The contractor has an excellent safety record and will make drivers aware of the additional need for alertness in the residential neighborhood.
- **[New]** During a public workshop held on Feb. 29, 2016, there were two haul routes identified and explained. When the contractor hauls material from the borrow pit on Old Augusta Road (Pit #1), trucks may turn left into the Rice Hope subdivision. When the contractor hauls material from the second borrow pit off Midland Road (Pit #2), trucks must turn right when entering the subdivision. See maps of the routes [here](#).
- **[New]** In order to ensure a safe environment the contractor will provide flagmen at the entrance to the site and also at the traffic circle during periods of high truck traffic, but especially during school hours and when students are in transit between home and school.
- **[New]** The contractor reinforced the roads before heavy truck traffic began in order to minimize the construction traffic impacts.
- **[New]** The construction and any impact are temporary and will be similar to other projects of similar size conducted throughout this region. The terms of the contract require the contractor to restore the road to the original (or better) condition upon completion of the project.

5) [New] When did construction of the raw water storage impoundment begin and how long will it last?

- Active construction on the raw water storage impoundment (RWSI) began in March 2016.
- We estimate active construction will take 18 – 21 months depending on weather and other factors.

6) [New] What have you done to communicate your plans about construction of the raw water storage impoundment? Why did news of the pending construction only appear a few weeks before commencing construction?

- **[New]** We first provided design information on the raw water storage impoundment (RWSI) with the release of the Savannah Harbor Expansion Project General Re-Evaluation Report (GRR) and the Environmental Impact Statement (EIS) in 2011. Local and regional news media reported on many aspects of the SHEP including the RWSI and its proposed location at that time. We also sought public input during coordination of a Draft Environmental Assessment (EA) in 2013 which evaluated several potential sites for the location of the RWSI. The media reported on this change as well.
- **[New]** We held discussions with local officials and with the Georgia Department of Transportation about the construction of the RWSI beginning in 2012.
- **[New]** We held a public information workshop on Feb. 29, 2016, to provide another opportunity for the public,

¹ The 404(b)(1) Guidelines provide that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. §230.10(a). An alternative is practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. §230.10(a)(2). If a project that involves the filling of wetlands is not water dependent, the Corps must presume that practicable alternatives exist that do not impact wetlands unless the project applicant clearly demonstrates otherwise. In the case of a civil works project, we need to convince ourselves of this in our analysis.

elected officials and the media to obtain additional information about the construction. We continue to engage directly with representatives of the Rice Hope developer and the Rice Hope Home Owners Association to address questions and concerns related to the project in an effort to correct misunderstandings and avoid any unnecessary impacts to the community.

7) When did construction begin on the dissolved oxygen injection system?

- **[Updated]** Although we awarded the construction contract for this feature in July 2015, one of the unsuccessful bidders filed a protest with the Government Accountability Office (GAO). The protest delayed beginning the work until the GAO denied the protest on Oct. 8, 2015. The notice to proceed was issued Oct. 21, 2015. Workers began clearing the land for construction in February 2016. Heavy construction began in April 2016.

8) [Updated] A contractor protested the award of the dissolved oxygen (DO) injection system. How long did the protest delay construction of the DO system?

- The protest added about two months to the completion estimate for the DO injection system.

9) Will the delay affect the completion date for SHEP or its cost?

- The delay of dissolved oxygen system construction did not affect its cost. It does have the potential to slightly prolong completion of the SHEP. Before dredging the inner harbor can begin one of the two DO system plants, the one on Hutchison Island, must be complete, operational, and shown to perform as expected.

10) [New] How are you limiting impacts to endangered species, especially sea turtles and shortnose sturgeon during dredging?

- **[New]** Savannah District tracks the project wildlife takes as part of our normal environmental compliance monitoring. We report the information about takes to the natural resources agencies in the manner that they have requested.
- **[New]** We regret the death, officially known as a taking, of any species; however, some adverse impacts are an unavoidable result of keeping the waterways open for commerce. We assessed those potential impacts to endangered and threatened species as part of the Environmental Impact Statement. In the natural resource agencies' approvals for the project, the agencies – NOAA and the USFWS in particular – recognized that some endangered species would be adversely impacted. Those agencies' approvals include a limit to the extent of those impacts.
- **[New]** Our dredging contract plus the SHEP biological opinion spells out a long list of precautions and actions the dredge operator must take to ensure protection of the environment and of wildlife. The list is too long to go over here, but to see the list visit our SHEP site: <http://1.usa.gov/1PNSEqf>
- **[New]** The Corps implemented relocation trawling to reduce the potential for impacts to endangered species. We use a contractor trawl in front of working hoppers to collect and remove endangered species that may otherwise encounter the dredge. We relocate fish or turtles that we collect in this trawling away from the navigation channel.

11) Why do you need to remove the remains of the CSS Georgia from the Savannah River?

- The remains of the [historic CSS Georgia](#), scuttled in 1864 by her crew, sit alongside the shipping channel. The Savannah Harbor Expansion Project would have damaged those remains. The Corps of Engineers is removing the remains from their current location to protect them from further damage. (Previous recovery efforts, marine organisms, and maintenance dredging have damaged the relic over the years.) [Protecting the remains of this vessel](#) remains a priority with the Savannah District.

12) What have you recovered from the CSS Georgia so far?

- Archeologists have recovered more than 29,700 artifacts, most of which are related to the mechanics of the vessel. They've also recovered five cannon, 241 pieces of ordnance, a propeller with attached shaft, parts of the propulsion system and a wide variety of [small items](#) from the era.
- One of the five cannon turned out to be 9,000-pound Dahlgren cannon; a pleasant surprise to archaeologists because they previously thought it was a smaller and different type of cannon. In September 2015 workers discovered and removed [a second](#), previously undiscovered Dahlgren cannon.

13) Were you able to recover the casemates from the CSS Georgia?

- We recovered more than 43,500 pounds of casemate. The larger east and west casemate sections still remain in the river. These larger pieces contained much more material and heavier than originally estimated. Prior to Inner Harbor Dredging we will work with the consulting parties to recover the 2 remaining casemate sections, the east and west casemate.
- Our expert teams have done, and continue to do an excellent job in this recovery process. They've worked in a combination of the worst conditions: up to 50 feet underwater in total darkness, a high-velocity river, only 60 – 90 minutes per dive at slack tides during day-light hours and adjacent to the fourth busiest container port in the USA.

14) What will you do with the remains of the CSS Georgia after you remove them from their current location?

- All the items we brought up, including casemate sections, were shipped to the Conservation Research Laboratory at Texas A&M University where they will be in the conservation process for 1 to 3 years.
- No final decision has been made on the ultimate disposition of the remaining artifacts. The remains are the responsibility of the U.S. Navy. The Savannah District incorporated removal of the wreck from the beginning of planning for the harbor expansion.
- In 2013 workers [removed a loose section](#) of the casemate of the CSS Georgia from the Savannah River and shipped it to Texas. There experts in marine archeology from Texas A&M University began studying the condition of the artifact to help determine the best methods for handling the remains as the Corps removes them from the river.
- In January 2015, divers with marine archeology expertise began mapping the CSS Georgia wreck site. The divers, who worked in almost complete darkness, helped establish the best methods for removing the vessel's remains from the river. They have also [removed small artifacts](#) from the river bottom for examination, study and preservation.
- For more information on the current status of work at the CSS Georgia wreck site, visit the [CSS Georgia website](#).

15) How long will the project take to construct?

- The time it takes to complete the project depends on a number of factors including, but not limited to acquiring lands, entering into construction contracts, and timely funding. The state of Georgia provided their cost share up front and we moved forward with the first construction features with this funding.

16) What kind of funding do you expect to receive from Congress?

- The Savannah Harbor must compete for funds with other national projects. The nation, through its elected representatives, gives priority and funding to the projects as they see fit.

17) Why is the U.S. Army Corps of Engineers even involved in a navigation plan like the Savannah Harbor Expansion Project?

- Congress charged the U.S. Army Corps of Engineers (USACE) with the responsibility for improving harbors under the Rivers and Harbors Act of 1899. That responsibility remains with the Corps of Engineers. As part of this mission, we must ensure that commerce has safe and adequate access to ports throughout the USA.
- Congress provides funding to the Corps to study potential harbor improvements around the country. These studies provide Congress with information to decide which projects are justified and would best benefit the nation.
- The Savannah District is the long-term operations and maintenance agent for the harbor. The district routinely dredges the harbor and shipping channel to its currently authorized depth of 42 feet.
- The non-federal sponsors for the project, the Georgia Department of Transportation and the Georgia Ports Authority, participate in the project by sharing the costs of deepening the harbor and providing such items as real estate.

18) What is the Corps of Engineers current role in the expansion project?

- Congress charged the Corps of Engineers with evaluating all practical expansion alternatives to the deepening

that it authorized in 1999. We began with looking at alternatives to deepening the harbor. We found that none of those preliminary measures would provide the same level of transportation efficiencies as would deepening to the Garden City Terminal. The Corps analyzed each harbor deepening alternative—dredging to depths from 42 to 48 feet—in detail using computer models of water and wave actions, computer-simulated ship movements, and analyzed engineering and economic data as part of the Final General Re-evaluation Report (GRR).

- In addition, the Savannah District prepared an Environmental Impact Statement (EIS) that describes the impacts of each depth alternative. By law, we also provided a mitigation plan for the significant environmental impacts. In other words, the Corps identified what steps must be taken to avoid impacts, reduce impacts and replace/compensate for impacts to the environment at each alternative dredging depth.

19) What was the outcome of the study?

- The study reflected an extensive analysis of the engineering alternatives, environmental impacts, and economic costs and benefits of deepening the Savannah Harbor and shipping channel. It detailed our recommendations and included the selected alternative of -47 feet, that depth which provides the greatest benefits to the nation. The final General Re-Evaluation Report and Environmental Impact Statement were accepted by three other federal agencies and withstood the scrutiny of a formal independent external peer review. The Corps' Chief of Engineers issued a "Record of Decision," a formal document that announces the selected depth that is supported by the overall analysis in 2012. The Record of Decision was signed by Assistant Secretary of the Army (Civil Works) Jo-ellen Darcy, Oct. 26, 2012.

20) Why has this process taken so long?

- The Savannah Harbor Expansion Project is a vastly complex effort. Engineering, economic and environmental studies simply take time. During the August 2008 internal Corps review, we discovered the need for additional analyses for certain aspects of the study, including economics, engineering and environmental. Each of these major study components affects the others. If the output of one changes, that change alters something in the analyses contained in the other two. These revisions have been very time consuming but are vital to this report's credibility as we entered into reviews by independent panels – both inside and outside of the Corps of Engineers.
- All of this work was conducted in concert with the agencies that cooperated in preparing the Environmental Impact Statement. These include the Georgia Ports Authority (GPA), the US Fish and Wildlife Service, NOAA Fisheries and the Environmental Protection Agency. The studies that were performed and the impact analyses were also conducted in cooperation with the state natural resource agencies.

21) Who pays for the harbor expansion?

- The cost to expand the harbor will be shared between the federal government and the State of Georgia with the federal government covering 60 percent of the costs. The State of Georgia will provide the remaining 40 percent.

22) What was determined through the economic portion of the study?

- The Corps is a steward of taxpayer money and must determine which projects are good investments for the nation. It's charged with making the best use of the country's resources.
- The Corps determines engineering feasibility, economic viability, and environmental acceptability; Congress determines which projects the nation invests in.
- We looked at the issues from a national perspective. We considered actions that will increase the net value of the national output of goods and services. In the case of the proposed deepening, we looked at future shipping fleet configurations, projections on trade, and the state of the economy now and projected into the future. At the end of our evaluation, we identified the plan that best benefits the nation from an economic perspective.
- The Savannah District selected the 47-foot dredging depth as being in the best interest to the nation. This depth reasonably maximizes net national economic development benefits. We determined that deepening to 47 feet provides the greatest net benefits to the nation. (Regional economic benefits are not used for project economic justification by the Corps of Engineers since they would not affect the entire nation.) We concluded that 47 feet reached the best balance between enhancing the national economy and mitigating for impacts to the environment.

23) How did you determine the net national economic benefits?

- A deeper shipping channel allows larger and fewer ships to move the same amount of goods at a lower transportation cost. Fewer, larger ships also would lessen congestion in the harbor, according to the GRR. A deeper channel means larger ships can enter and leave with less delay waiting for high tides.
- With regard to the benefits, the basic economic benefit is the reduction in the costs to transport the commodities. This reduction represents a national economic development (NED) gain because when transportation costs are reduced, those dollars are available for productive use elsewhere in the economy. We do not try to estimate where exactly these resources are used; from a NED perspective it would be almost impossible to do so.
- Our reports indicate an estimated net annual economic benefit to the nation of \$174 million for the selected 47-foot depth. This is an increase over our estimate in the draft report. The increase in net annual benefits between the amount estimated in the draft report and in the final report comes from new data on increased fuel costs and a review of new efficiencies in the projected shipping fleet.
- The term “efficiencies” means a savings in transportation costs. Those savings may be passed on to the consumer through lower prices in the goods purchased.
- The Corps of Engineers can only consider national benefits when determining the recommended plan. Other benefits (state or regional) may exist but cannot be considered by the Corps.

24) What are the costs and benefits to the nation to deepen the Savannah Harbor?

- The Corps of Engineers calculated that the nation will save \$213 million in transportation costs each year by deepening the Savannah harbor to 47 feet. After the project’s construction costs are included, the annual net benefits of the project would be \$174 million. The economic study evaluated benefit years 2015 through 2065.
- At the 47-foot depth, the construction and environmental mitigation costs are \$706 million (approximately) with an annual benefit of \$174 million to the nation. This leads to a benefit-to-cost ratio (BCR) of up to 5.5 to 1. This means for every dollar invested in the project, the nation will receive nearly \$6 in economic benefits from transportation efficiency increases. This is an increase in BCR from early estimates. The BCR increase came from new data on increased fuel costs and a review of new efficiencies in the projected shipping fleet.
- Local and regional benefits, which the Corps cannot consider, may exist. These benefits can be considered by the State of Georgia in its funding justification.

25) Will deepening create jobs? If so, how many?

- Based on the amount of money to be spent during the construction phase of the project, we calculated that more than 11,000 1-year jobs nationwide will be created for each year of construction. Of these there will be more than 3,700 bi-state jobs (Georgia and South Carolina) and approximately 2,400 local jobs.
- The Corps of Engineers used a standard formula for calculating job creation based on construction dollars spent. These jobs will not be all construction jobs, but will include those in support of the entire effort. We do not predict the number of permanent jobs that may be created based on the deepening.

26) How are you balancing the environmental and economic issues?

- The Corps of Engineers is charged by Congress to oversee the nation’s ports, including the Savannah Harbor. Our studies and recommendations considered the economic needs of the nation plus environmental protection and mitigation. We conducted the studies to ensure we can meet both goals. Mitigating for environmental impacts will be a significant portion of the total project cost.
- Mitigation plans call for opening additional habitat for the endangered short-nose sturgeon upstream by building a large fish bypass around the New Savannah Bluff Lock & Dam. We plan to add special devices to inject oxygen into the estuary to replace what may be impacted as a result of deepening efforts. We also plan a full-scale stocking program for young striped bass to mitigate for loss of some spawning habitat.
- We plan to purchase more than 2,200 acres of freshwater marsh to add to the Savannah National Wildlife Refuge to mitigate for the anticipated change of 223 acres of freshwater tidal wetlands into brackish marsh. We also plan to restore 28 acres of brackish marsh formerly used as a dredged material disposal site.

27) What will be the impact on Savannah's water?

- Our studies indicate that impacts to the Floridan Aquifer will be *insignificant* at all depth alternatives studied. The “confining layer” of ancient material beneath the riverbed that protects the aquifer varies from about 40 feet thick near Tybee Island to more than 100 feet thick along River Street in downtown Savannah, even after deepening. The concerns to the aquifer come from heavy usage, not from deepening.
- We also studied the impact of deepening on the Savannah water intakes on Abercorn Creek, upstream from the harbor, to determine the impact of chlorides. The plan provides for the construction of a freshwater impoundment that will provide a temporary supply of freshwater for use on extremely rare days when low river flow and high tides may push salt water too far upstream, potentially affecting water uptakes at Abercorn Creek. The impoundment will allow the City of Savannah to continue to provide very low chloride water. The impoundment will primarily benefit industrial users of the water during these rare occasions.
- Even without the impoundment, Savannah's water would remain well within clean water standards. The impoundment ensures no change to the high quality of water provided by the City of Savannah.

28) Is the material currently dredged from beneath the river safe to place in the disposal area and will material dredged from the deepening also be safe?

- The material dredged from the harbor during routine dredging washes down from upstream or is pushed into the river by tides. The dredged material is composed of sands and other materials in varying amounts depending on which span of the channel is being dredged at any given time. The channel near the ocean tends to have more sand, while the channel and harbor turning basin tend to have other materials. We pump the material into the disposal site and allow the solid material to settle out of the water. Once the water is clear enough we discharge it either into the Wright River or the Savannah River. We then allow the disposal area to dry during which we manage the area for wildlife habitat and to prepare it for future dredge disposal.
- Cadmium, a naturally occurring heavy metal, is found in some locations in the undisturbed material beneath the Savannah River that would need to be removed to deepen the harbor. At the levels found in the clay soil, it only poses a danger to small wildlife. We [will monitor](#) these [impacts before](#), during and after the deepening. We plan to place the sediment containing cadmium into a confined area and cover it with at least two feet of clean material to prevent long term exposure to wildlife. In addition, if any portion of this site later becomes the site of a proposed port in Jasper County, S.C., the cadmium, already covered by clean sediment material, would be further covered with concrete and asphalt.
- This cadmium beneath the Savannah River dates from the Miocene Epoch and is at least five million years old. Contrary to some reports, this cadmium is not the byproduct of industrial use or electrical generation. The cadmium in this Miocene layer is molecularly bound to other material in the layer.

29) Will the Savannah National Wildlife Refuge lose a significant portion of freshwater habitat?

- The 47-foot plan includes several modifications to tidal creeks in the upper harbor. These changes will re-direct the flow of saltwater to significantly reduce the amount of impacts to freshwater marsh, which was determined the highest priority wetland natural resource in the Savannah River Basin (determined in 2003 by the Wetlands Interagency Coordination Team, which 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.
- With flow re-routing, the project will only affect 223 acres of freshwater wetland. This impact will be mitigated with the acquisition and preservation of 2,245 acres of freshwater marsh 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.
- Flow re-routing would reduce salinity in 740 acres of salt marsh, converting it to brackish marsh (essentially making it less salty, but not exceeding four parts per thousand of salinity). Studies show the wetlands will retain the same functional value, thus constituting “no net loss” of wetlands.
- The 47-foot plan would excavate 16 acres of tidal brackish marsh to remove Back River tide gates and deepen the Kings Island Turning Basin. To mitigate for those impacts, 28 acres of brackish marsh will be restored on Onslow Island, a former dredged material disposal site in the upper portion of the harbor, for \$17.9 million.

30) What impacts will the deepening have on dissolved oxygen in the Savannah River?

- Harbor deepening and saltwater intrusion lead to a decrease in the already low dissolved oxygen content in the lower Savannah River. During hot summer months, dissolved oxygen drops below the state standards, which are set to protect fish and shellfish in the estuary. We conducted extensive analyses to identify the effects of the project and evaluate possible mitigation. Those analyses identified oxygen injection in several places in the lower Savannah River as the best solution. Although we are not permitted to improve the existing low dissolved oxygen levels under this project, we are permitted to offset its impacts so that the dissolved oxygen would not be any lower as a result of a harbor deepening.
- We plan to use special injection devices to oxygenate river water which will then be mixed back into the river. This technology has been used successfully elsewhere. Construction and placement of the devices is included in construction costs. Operation and maintenance of the oxygen injection system will be part of the on-going, routine costs of maintaining the harbor.

31) How will use of an oxygen injection system improve dissolved oxygen in the river as a result of deepening?

- The deepening project includes the installation, operation and maintenance of 12 oxygen injection devices, which will inject heavily oxygenated water into the river to maintain oxygen levels at their present levels during hot, dry months, when oxygen levels typically drop. Two of the 12 devices will serve as back-up units. The total cost for the dissolved oxygen (DO) injection system is estimated at \$99.6 million, with annual operations and maintenance costs at \$2 million. Tests conducted in the harbor of the DO injection devices showed them to be effective in adding oxygen to the water. Modeling performed for SHEP indicates that the devices should increase DO levels above the existing conditions in well over 90 percent of the estuary. In general the devices work by pumping water from the river and mixing it with oxygen pulled from the ambient air. The oxygen/water mixture is then put back into the river, where it mixes with the water column and is distributed by tidal currents.
- Because the pure oxygen dissolves into the water inside the devices, no bubbles will be present where the water returns to the river. Calling the devices “bubblers” as some have done, is inaccurate.

32) How would the harbor deepening affect the endangered shortnose sturgeon and other marine species?

- The harbor deepening will adversely impact habitat for one endangered species, the shortnose sturgeon. Harbor deepening would allow additional saltwater to enter the harbor and travel further upstream into areas currently used by this 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 passageway around the first dam up the Savannah River (New Savannah Bluff Lock & Dam). This passage would restore access to historical spawning grounds for the shortnose sturgeon. 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 with an estimated construction cost of \$35 million.

33) What will the Corps of Engineers do to make sure environmental mitigation projects are working as intended throughout construction and post-construction?

- The final report identifies a post-construction monitoring period of 10 years (increased from 5 years in the draft report) at the request of USEPA, USFWS, and NOAA Fisheries. This period provides the Corps of Engineers increased time and resources to monitor the various mitigation features and make adjustments as necessary. The cost for this 10-year monitoring period is estimated at \$60 million.

34) How will the longer, wider ships capable of transiting the expanded Panama Canal travel safely into and out of the Savannah Harbor?

- We used an existing ship called the Susan Maersk as our design vessel. It measures 141 feet wide by 1,158 feet long. It can carry 8,200 20-foot equivalent units (TEUs), the international standard for shipping containers. Ships even larger than the Susan Maersk, such as the GMA Figaro, already arrive safely at the Port of Savannah today, but are light-loaded (not filled to weight capacity) and face tide restrictions.
- We designed the new channel and its navigation features using the specifications of the future shipping fleet,

expected to call at Savannah after the Savannah Harbor Expansion Project.

- We designed a wider and deeper turning basin to accommodate the larger ships.
- We designed two reaches of the channel and three critical bends to allow wider turns to increase safety clearances.

35) What consideration did you give to just deepening to the site of the proposed Jasper Ocean Terminal? Why not just deepen to that point?

- We studied alternate port sites for Savannah, including a location that's been proposed for a port in Jasper County. None had the level of completeness, effectiveness, efficiency, and acceptability of deepening to the Garden City Port.
- No port currently exists on the South Carolina side of the Savannah River. We can't evaluate projects that do not exist.
- Should a port be built in Jasper County in the future, it will directly benefit from any deepening constructed on the Savannah River. The currently proposed site has an elevation too low for a port. Filling the site with dredged material from the deepening would preclude the need to bring fill material to the site from a much further distance. In addition, a deepening to the Garden City port would place a deeper channel directly adjacent to the proposed Jasper port.
- The states of South Carolina and Georgia have already formed a joint agency to develop a port in Jasper County, which would complement Savannah's Garden City Terminal. Should these plans continue, the first phase of the project could be scheduled to open no earlier than 2025.

36) What direction did Congress give the Corps regarding the perpetual easements the Corps holds for the federal government at the proposed site of the Jasper Ocean Terminal?

- On behalf of the federal government, the Corps of Engineers holds a perpetual easement to land along the Savannah River in Jasper County, S.C., for disposal of material dredged from the river. These essential sites include the area proposed for a new port.
- Congress directed the Corps of Engineers to study the impact of releasing the easements on the current federal harbor project. So far, Congress has not appropriated funds to conduct the study.

37) What would be the differences in environmental impact if a Jasper County facility were constructed capable of taking ships requiring greater depth of water?

- There have been no studies on the impact to the environment of building all the facilities, roads, railroads, and other infrastructure for a port in Jasper County. In addition, we have not studied the detailed impacts of the loss of a major dredge disposal site where the Jasper port might be built.

38) Why not deepen other ports on the East Coast instead of Savannah?

- The Corps of Engineers was directed by Congress to study deepening the Savannah harbor, but we addressed alternative ports as part of the process. Our studies show that future shipping growth will require deepening Savannah and Charleston harbors, as well as creating a port in Jasper County, S.C. In fact, all major South Atlantic ports will need deepening or improvements to accommodate projected cargo growth from 2015 to 2050. No single port could accommodate all the growth in container volume expected in the region.
- We conducted a Regional Port Analysis to study current and projected port capacities, demands for growth, and environmental impacts for major South Atlantic ports. This analysis included the ports of: Charleston, S.C., Norfolk, Va., Wilmington, N.C., Savannah, Ga., Jacksonville, Fla., and the proposed Jasper Ocean Terminal site in Jasper County, S.C.
- We also conducted an alternative sites study that examined eight different locations along the Savannah River as potential alternative sites for deepening. This study included four sites in South Carolina and four sites in Georgia. As part of this study, the Corps did a thorough analysis on the Jasper Ocean Terminal proposed site.
- A third study, a Multi-Port Analysis, examined highway mileage and shipping cost efficiencies on the service lands and roads surrounding the five major South Atlantic ports (Charleston, S.C., Norfolk, Va., Wilmington, N.C., Savannah, Ga., Jacksonville, Fla.) This study concluded that the proposed deepening of the Savannah harbor

would not take business from another port, because the shipping cost efficiencies would not outweigh the additional landside transportation costs.

- Our studies determined that expansion of any South Atlantic port or creation of a port along the Savannah River would cause environmental impacts, and that no one port is a feasible alternative to deepening the Savannah harbor at this time. It also concluded that building a Jasper Ocean Terminal in lieu of improving Savannah's harbor is not a feasible alternative, considering the tremendous cost associated with the project (estimated at \$4 billion), environmental impacts, and timing. Jasper does not exist at present and cannot be constructed in time to meet the growth in demand Savannah and other South Atlantic ports are currently facing.

39) What is South Carolina's role in the Savannah Harbor deepening?

- The Corps submitted its application for a Section 401 Water Quality Certification and a Coastal Zone Management Consistency Determination (CZM) to the South Carolina Department of Health and Environmental Control (SC DHEC) with the publication of the Draft Savannah Harbor Expansion Project (SHEP) Environmental Impact Statement (EIS) in November 2010. The SC DHEC issued both certifications almost a year later shortly before a legal deadline. After entering into the Settlement Agreement in May 2013, SC DHEC issued a new Section 401 Water Quality Certification and a Coastal Zone Management Consistency Determination for SHEP in June 2013.
- The Corps' application complied with its standard practices and was consistent with national environmental laws, which require the Corps to comply with state water quality certification and CZM whenever such compliance is practical.

40) Agencies and groups in South Carolina, including the legislature, have filed various actions to object to the deepening. What do you intend to do about these actions?

- There are no current actions delaying the continuation of the Savannah Harbor Expansion Project.

41) You closed portions of the New Savannah Bluff Lock & Dam to the public citing continuing deterioration of the downstream portion of the riverside lock wall and its foundation. With the lock in this condition, wouldn't it be wiser just to take out the New Savannah Bluff Lock & Dam instead of spending millions of dollars building a fish passage around it?

- We closed portions of the New Savannah Bluff Lock & Dam in May 2014 because of concerns about the stability of the lock wall and the safety of those in the area. Over the decades since the lock and dam was constructed, the condition of the structure has deteriorated and it now needs a substantial rehabilitation. During that same time period, local communities and industries have come to rely on the pool formed by the dam for several purposes, including water supply and recreation. While the Corps of Engineers previously recommended removal of the New Savannah Bluff Lock & Dam, we recognize the communities' economic tie to the dam's pool. Congress authorized the Corps to rehabilitate the lock and dam and turn it over to local government. The Corps awaits funds to conduct the rehabilitation.

42) How can I review the Corps' study?

- View the reports at <http://www.sas.usace.army.mil/Missions/CivilWorks/SavannahHarborExpansion.aspx>

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