ENVIRONMENTAL IMPACT STATEMENT
APPENDIX I: Federal Consistency Determination for the Georgia Coastal Management Program

SAVANNAH HARBOR EXPANSION PROJECT

Chatham County, Georgia and Jasper County, South Carolina

January 2012

US Army Corps of Engineers
Savannah District
South Atlantic Division

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Federal Consistency Determination
for the
Georgia Coastal Management Program

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1.0 SUMMARY DETERMINATION

The Federal Coastal Zone Management Act (CZMA), 16 U.S.C. 1451 et seq., as amended, requires each Federal agency activity performed within or outside the coastal zone (including development projects) that affects land or water use, or natural resources of the coastal zone to be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs. A direct Federal activity is defined as any function, including the planning and/or construction of facilities, which is performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities. A Federal development project is a Federal activity involving the planning, construction, modification or removal of public works, facilities or other structures, and the acquisition, use or disposal of land or water resources.

To implement the CZMA and to establish procedures for compliance with its Federal consistency provisions, the US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), has promulgated regulations which are contained in 15 C.F.R. Part 930. This Consistency Determination is being submitted in compliance with Part 930.30 through 930.44 of those regulations.

This evaluation was prepared to determine if the proposed Savannah Harbor Expansion Project (SHEP) is consistent with the Georgia Coastal Management Program (GCMP).

The information contained within this Consistency Determination is derived primarily from the EIS prepared for the proposed action. References to that document are included in some of the discussions on the Project's compliance with certain individual state policies. Should further information concerning the proposed project be desired, please refer to the EIS, of which this Determination is a component.

In accordance with the CZMA, Savannah District has determined that the proposed SHEP would be carried out in a manner which is fully consistent with the enforceable policies of the Georgia Coastal Management Program to the maximum extent practicable. The evaluations supporting that determination are presented in Sections 6.00 through 9.00 of this document. In addition, this determination is supported by information and analysis in the EIS which is incorporated by reference to the extent relevant to Georgia coastal zone consistency issues.

This Determination has been updated since the November 2010 Draft EIS which Georgia reviewed concerning the project's consistency with the State's Coastal Management Program. The update is primarily the result of new information that was developed or became available since the Draft EIS. Substantive information that Savannah District provided to GA DNR-CRD since the Draft EIS can be found in Appendix N, Agency Coordination.

2.0 BACKGROUND

2.1 Purpose

This Consistency Determination addresses the consistency of proposed deepening of the existing Savannah Harbor Navigation Project with the Georgia Coastal Management Program, as required by the CZMA. For purposes of the CZMA, the enforceable policies of the Georgia Coastal Management Plan constitute the approved state program.

2.2 Existing Savannah Harbor Federal Navigation Project

This document is an attachment to the Environmental Impact Statement (EIS) for the proposed work. See Section 3.2 of this document and Section 3.01 of the EIS for a description of the current navigation project.

2.3 GCMP Jurisdiction

Savannah Harbor is located within and near Savannah, Georgia. The navigation channel for Savannah Harbor extends from just below the Georgia Highway 25 Bridge to approximately 11 miles off-shore, a distance of about 32 miles. Savannah Harbor is bounded on the north by Jasper County, South Carolina, and on the south by Chatham County, Georgia. For the lower half of the inner harbor (Stations 0+000 – Back River Goes off), the state boundary follows the north toe of the channel. The state boundary then shifts to the middle of Back River until it rejoins the Savannah River at McCoys Cut. Chatham County is one of the six Georgia counties lying adjacent to the coast and is included in the Georgia Coastal Management Plan as one of the eleven counties that are within the coastal area. The Georgia CMP lists dredging, channel improvements, and other navigational works conducted by the US Army Corps of Engineers as being direct Federal activities that are subject to Federal Consistency.

2.4 Authority

The Federal Coastal Zone Management Act (CZMA), 16 U.S.C. SS 1451 et seq., as amended, is the legislative authority regarding the consistency of Federal actions with state coastal policies. Section 1456(c)(1)(A) of the CZMA states: "Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs." A Federal activity is defined as any function, including the planning and/or construction of facilities that is performed on behalf of a Federal agency in the exercise of its statutory responsibilities.

To implement the CZMA and to establish procedures for compliance with its federal consistency provisions, the US Department of Commerce, National Oceanographic and Atmospheric Administration, has promulgated regulations, 15 C.F.R. Part 930. This Consistency Determination was prepared in compliance with SS 930.30 through 930.44 of those regulations.

3.0 PROJECT DESCRIPTION

3.1 Identification of Alternatives

The Savannah Harbor Expansion Project involves various investigations relating to the feasibility and need to deepen the Savannah Harbor Navigation Project. The six detailed alternative plans evaluated include the No Action Alternative (maintaining the existing inner harbor depth of -42 feet MLW between Stations 000+000 and 103+000) as well as deepening the inner harbor channel to -44, -45, -46, -47 or -48 feet MLW. All five of the alternative plans consist of deepening the existing -42 foot channel, as well as deepening and expanding the existing Kings Island Turning Basin, deepening eight berths at the Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9), constructing two meeting areas, constructing two bend wideners along the inner harbor, deepening and extending the existing entrance channel and constructing a bend widener in the entrance channel.

All of the proposed deepening alternatives are designed to maintain the existing side slopes of the channel. Although maintaining the existing side slopes would result in a narrower channel, this design would reduce the environmental impacts associated with deepening the harbor by confining the dredging impacts to the existing channel. Consequently, the adjacent marine and estuarine habitat (substrate and tidal marsh) would not be adversely impacted. Moreover, by not disturbing the existing channel side slopes, sedimentation and shoaling within the new deeper channel would be minimized. The navigation channel side slopes will be 5H:1V in the entrance channel area (Stations 0+000 to -97+680B) and 3H:1V in the rest of the harbor. 5H:1V and 3H:1V means for every 5 and 3 feet of horizontal distance there would be a change of 1 foot of vertical distance. Although maintaining the existing side slopes of the channel would greatly reduce the adverse environmental impacts of the project, some channel widening would be necessary in those areas where the construction of meeting areas and bend wideners are required.

For all dredging alternatives, dredging depths will include 2 feet of allowable over depth and advanced maintenance. The practice of allowing 2 feet of over depth during dredging accounts for the inaccuracies of the dredging process. The practice of advance maintenance dredging (used in heavy shoaling areas) allows the project to remain at the authorized project depth between maintenance dredging cycles.

The environmental impacts and effects of the No Action Alternative and the five deepening plans are found in Chapters 4 and 5 of the EIS, respectively and in Table 5 below. The following is a brief summary of these alternatives that have been evaluated in the EIS:

3.2 Alternatives

Six harbor deepening plans (i.e., No Action Alternative or the Without Project Condition, which is the existing project depth of -42 feet MLW, -44 feet MLW, -45 feet MLW, -46 feet MLW, -47 feet MLW, and -48 feet MLW) were considered in detail for Savannah Harbor. Please see Figure 1 below for a review of the project vicinity. All of the harbor deepening alternatives would include the existing Kings Island Turning Basin (see Table 1), the eight berths at Garden City Terminal (Berths

2, 3, 4, 5, 6, 7, 8, and 9), two proposed meeting areas (see Table 2), three proposed bend wideners (see Table 3). However, the length of the bar channel extension varies with the proposed depth alternative (Table 4).

All of the proposed deepening alternatives would produce a narrower channel at the project depth than currently exists by maintaining the existing side slopes. By slightly decreasing the channel width (by maintaining the existing side slopes at different depths), the adjacent marine and estuarine habitat (substrate and tidal marsh) would not be adversely impacted. Moreover, by not disturbing the existing channel side slopes, the effects on sedimentation and shoaling within the new deeper channel would be minimized.

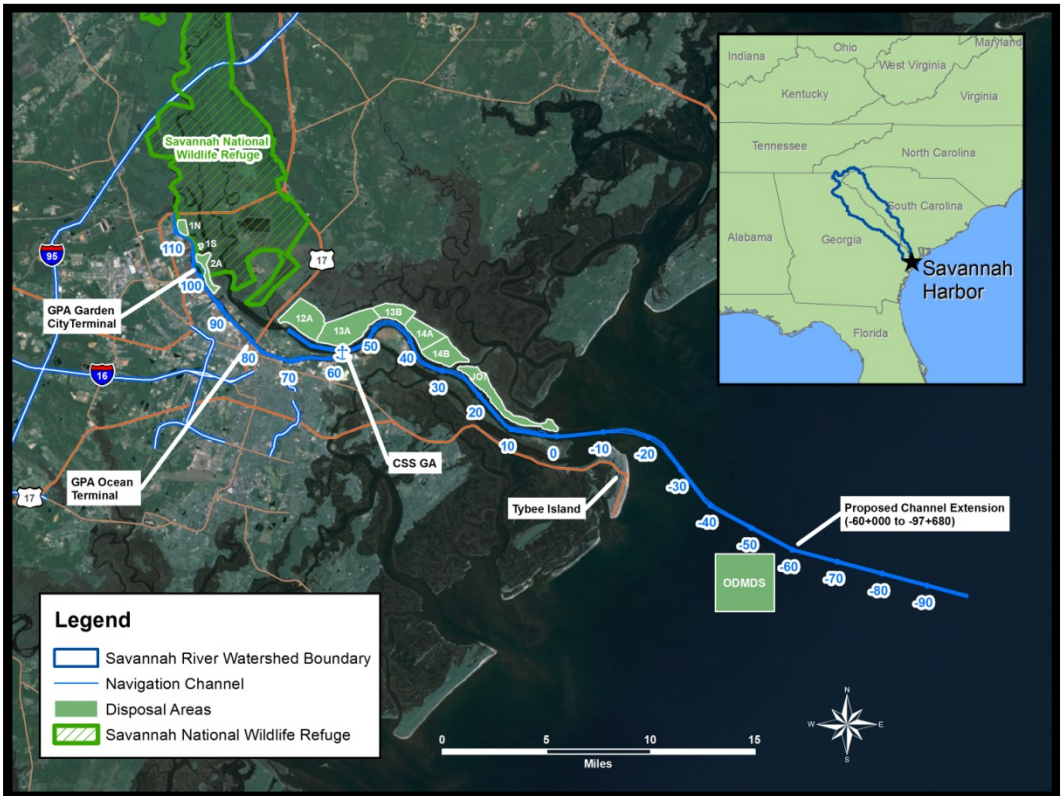

Figure 1. Current Savannah Harbor navigation project.

The navigation channel side slopes will be 5H:1V in the ocean bar area (Stations 0+000 to -98+600B) and 3H:1V in the rest of the harbor. 5H:1V and 3H:1V means for every 5 and 3 feet of horizontal distance there would be a change of 1 foot of vertical distance.

For all dredging alternatives, dredging depths will include 2 feet of allowable overdepth and advanced maintenance. The allowable overdepths and advance maintenance allow for dredging inaccuracies and help the project remain at project depth between maintenance events (see detailed description of these terms, below).

3.3 Alternative A: No Action Alternative (-42 feet depth MLW) and Without Project Condition

Savannah Harbor is an approximately 32 mile Federal navigation project located along the Savannah River in southeastern Georgia. The current Savannah Harbor Navigation Project (Figure 3-1) has an authorized project depth of 30 feet Mean Low Water (MLW) in the inner harbor (Stations112+000 to 105+000), 36 feet MLW (Stations 105+000 to 103+000), 42 feet MLW (Stations 103+000 to 0+000), 42 feet MLW in the entrance channel (Stations 0+000 to –14+000B), and 44 feet MLW in the remainder of the entrance channel (Stations –14+000B to –60+000B). The current channel width is 600 feet across the ocean bar to the entrance channel (Stations -14+000B to -60+000B), 500 feet from the entrance channel to Kings Island Turning Basin (Stations -14+000B to 103+000, with the exception of 400 feet wide from stations 58+000 to 59+000), 400 feet from the Kings Island Turning Basin to the Argyle Island Turning Basin, and 200 feet from the Argyle Turning Basin to the upstream limit of the authorized project.

Annual maintenance dredging requires the removal of about 6 million cubic yards of material from the inner harbor and about 1 million cubic yards of material from the entrance channel. Material removed from the inner harbor is placed in Confined Disposal Facilities (CDFs) located along Savannah Harbor. Material removed from the entrance channel is placed in the Savannah Harbor Offshore Dredged Material Disposal Site (ODMDS), upland CDFs, or Site 2 submerged berm.

3.4 Alternative B: -44-FOOT ALTERNATIVE (2 FEET DEEPER). This plan would involve dredging the inner harbor to -44 feet (2 feet deeper) from the mouth of the harbor (Station 000+000) to the end of the proposed project Station 103+000. Dredging improvements in the inner harbor would also include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner harbor channel deepening would also require the construction of two meeting areas (see Table 2 below), and two bend wideners (see Table 3 below). Improvements in the entrance channel would involve deepening of the existing channel to -46 feet MLW from Stations -14+000B to -60+000B. The depth of -46 feet MLW would extend an additional 35,680 feet for the ocean bar channel extension (from Stations -60+000B to -95+680B). A bend widener would be constructed between Stations -14+000B to -23+000B. The total volume of excavated sediment associated with this project is about 10.3 million cubic yards. Estimated annual volume for maintenance dredging would be approximately 7.2 million cubic yards.

3.5 Alternative C: -45-FOOT ALTERNATIVE (3 FEET DEEPER). This plan would involve dredging the inner harbor to -45 feet MLW (3 feet deeper) from the mouth of the harbor (Station 000+000) to the end of the proposed project Station 103+000. Dredging improvements in the inner harbor would also include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner harbor channel deepening would also require the construction of two meeting areas (see Table 2), and two bend wideners (see Table 3). Improvements in the entrance channel would involve deepening of the existing channel to -47 MLW from Stations -14+000B to -60+000B. The depth of -47 feet MLW would extend an additional 36,880 feet for the ocean bar channel extension (from Stations -60+000B to -96+800B) (Table 4). A bend widener would be

constructed between Stations -14+000B and -23+000B. The total volume of excavated sediment associated with this project is about 14.6 million cubic yards. Estimated annual volume for maintenance dredging would be approximately 7.2 million cubic yards.

Table 1. Present Advance Maintenance Sections

Begin Station	End Station	Authorized Advanced Maintenance (feet)	Required Contract Depth (feet MLLW)
Inner Harbor			
112+500	105+500	2.0	32.0
105+500	103+000	2.0	38.0
103+000	102+000	0.0	42.0
102+000	100+000	2.0	44.0
100+000	79+600	2.0	44.0
79+600	70+000	2.0	44.0
70+000	50+000	4.0	46.0
50+000	37+000	4.0	46.0
37+000	35+000	6.0	48.0
35+000	24+000	4.0	46.0
24+000	0+000	2.0	44.0
Port Wentworth TB		0.0	30.0
Argyle Island TB		0.0	30.0
Kings Island TB		8.0	50.0
Marsh Island TB		0	34.0
Fig Island TB		4.0	38.0
Entrance Channel			
0+000	-14+000(B)	2	44.0
-14+000(B)	-60+000(B)	0	44.0

No advance maintenance is presently performed between Stations 58+000 and 59+000 to reduce potential impacts to the CSS GEORGIA, which is located along that reach.

Table 2. Proposed Two New Meeting Areas (see Figure 3-1)

Location	Description
GA waters: Station 14+000 to 22+000	The existing 400 foot wide channel would be widened 100 feet on the south to provide an average width of 500 feet. Side slopes would be 3H:1V.
GA and SC waters: Station 55+000 to 59+000	The existing 400 foot wide channel would be widened 100 feet to the north to provide an average width of 500 feet. Side slopes would be 3H:1V.

Table 3. Proposed New Channel Bend Wideners (see Figure 3-1)

Widener N	Location	Description
1	SC waters: Stations -23+000 to -14+000	76-foot bottom width plus side slope of ~20 feet. North side of channel.
2	GA waters: Stations 27+500 to 31+500	156-foot bottom width plus slide slope of less than 100 feet. North side of channel
3	SC waters: Stations 52+250 to 55+000	76-foot width plus slope of less than 100 feet. North side of channel.

Table 4. Length of Bar Channel Extension Required for Depth Alternatives

Length of Bar Channel Extension Required for Depth Alternatives		
Depth (Feet)	**Bar Channel Extension (Stations)**	**Length of Extension (Feet)**
44	-60+000B to -95+680B	35,680
45	-60+000B to -96+880B	36,880
46	-60+000B to -97+510B	37,510
47	-60+000B to -97+680B	37,680
48	-60+000B to -98+600B	38,600

3.6 Alternative D: -46-FOOT ALTERNATIVE (4 FEET DEEPER). This plan would involve dredging the inner harbor to -46 feet MLW (4 feet deeper) from the mouth of the harbor (Station 000+000) to the end of the proposed project Station 103+000. Dredging improvements in the inner harbor would also include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner harbor channel deepening would also require the construction of two meeting areas (see Table 2, above), and two bend wideners (see Table 3, above). Improvements in the entrance channel would involve deepening of the existing channel to -48 feet MLW from Stations -14+000B to -60+000B. The depth of -48 feet MLW would extend an additional 37,510 feet for the ocean bar channel extension (from Stations -60+000B to -97+510B) (Table 4). A bend widener would be constructed between Stations -14+000B and -23+000B. The total volume of excavated sediment associated with this project is about 19.0 million cubic yards. Estimated annual volume for maintenance dredging would be approximately 7.2 million cubic yards.

3.7 Alternative E: -47-FOOT ALTERNATIVE (5 FEET DEEPER). This plan would involve dredging the inner harbor to -47 feet MLW (5 feet deeper) from the mouth of the harbor (Station 000+000) to the end of the proposed project Station 103+000. Dredging improvements in the inner harbor would also include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner harbor channel deepening would also require the construction of two meeting areas (see Table 2, above), and two bend wideners (see Table 3 above). Improvements in the entrance channel would involve deepening of the existing channel to -49 feet MLW from Stations -14++000B to -60+000B. The depth of -49 feet MLW would extend an additional 37,680 feet for the ocean bar channel extension (from Stations -60+000B to -97+680B) (Table 4). A bend widener would be constructed between Stations -14+000B and -23+000B. The total volume of excavated sediment associated with this project is about 23.6 million cubic yards. Estimated annual volume for maintenance dredging would be approximately 7.2 million cubic yards.

3.8 Alternative F: -48-FOOT ALTERNATIVE (6 FEET DEEPER). This plan would involve dredging the inner harbor (described in Section 3.01.1, above) to -48 feet MLW (6 feet deeper) from the mouth of the harbor (Station 000+000) to the end of the proposed project Station 103+000. Dredging improvements in the inner harbor would also include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner harbor channel deepening would also require the construction of two meeting areas (see Table 2, above), and two bend wideners (see Table 3 above). Improvements in the entrance channel would involve deepening of the existing channel to -50 feet MLW from Stations -14+000B to -60+000B. The depth of -50 feet MLW would extend an additional 38,600 feet for the ocean bar channel extension (from Stations -60+000B to -98+600B) (Table 4). A bend widener would be constructed between Stations -14+000B and -23+000B. The total volume of excavated sediment associated with this project is about 28.3 million cubic yards. Estimated annual volume for maintenance dredging would be approximately 7.2 million cubic yards.

3.9 SELECTED PLAN:

The District developed and evaluated five channel deepening alternatives, in addition to the No Action Alternative. Each channel deepening alternative contains mitigation features to address adverse environmental impacts that they would otherwise produce. With inclusion of the mitigation features, each depth alternative is environmentally acceptable. The 47-foot depth alternative is the National Economic Development (NED) Plan, the plan that maximizes net economic benefits to the Nation (See GRR). Under current Federal planning policy, the NED plan would be recommended for implementation unless there are overriding considerations that favor recommendation of another plan. Benefits that would accrue from the deepening of Savannah Harbor include reductions in light loading of vessels and vessel delays. Shippers will also be able to use larger, more efficient vessels. The economic benefits increase with each additional increment of channel deepening. Environmental impacts associated with a shallower depth would be less than those associated with the NED plan, but the lesser impacts of the 44-foot depth, 45-foot depth, and 46-foot depth alternatives are not considered sufficient to justify recommendation of these alternatives instead of the NED Plan.

The State of Georgia has asked the Corps to consider the 48-foot depth alternative as the Locally Preferred Plan. After reviewing the comments received on the Draft GRR and DEIS and having further discussions with the non-Federal sponsor, the Corps has elected to select the NED 47-foot depth alternative for implementation.

The selected plan is the 47-foot depth alternative. The following paragraphs describe the features of the selected plan.

4.0 EFFECTS OF PROPOSED PROJECT

State-of-the-art hydrodynamic and water quality models were used to assess potential impacts of the project in the inner harbor. State-of-the-art models were also used to assess potential impacts in the nearshore area. The development of the various models was accomplished through coordination with the various Cooperating Agencies and state resource agencies. Development and approval of the inner harbor models occurred between 1999 and 2005. After the agencies approved use of the models on this project, the tools were applied and the modeling was performed (2006 and 2007). The project-related impacts (without mitigation) predicted by the various models for the deepening alternatives are summarized in Table 5.

Table 5. Summary of Project-Related Impacts Without Mitigation

	---------- DEPTH ALTERNATIVES ----------				
	44-Foot	**45-Foot**	**46-Foot**	**47-Foot**	**48-Foot**
Salinity	Move further into estuary	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount
Freshwater Wetlands	-551 acres	-967 acres	-1,057 acres	-1,177 acres	-1,212 acres
Brackish Marsh (Loss)	-7.2 acres	Same	Same	Same	Same
Dissolved Oxygen	Reductions at mid-depth and bottom	Same effect, but greater amount	Same effect, but greater amount	Same effect, But greater amount	Same effect, but greater amount
Fisheries	Loss (-) of Acceptable Habitat				
- Striped bass spawning	- 8.0 % (-83.0 acres)	- 12.2 % (-127.0 acres)	- 13.0 % (-135.0 acres)	-18.1 % (-188.0 acres)	- 19.7 % (-205.0 acres)
- Striped bass eggs	-9.7 % (-163.0 acres)	- 11.2 % (-188.0 acres)	- 15.9 % (-266.0 acres)	-20.5 % (-344.0 acres)	-24.5 % (-411.0 acres)
- Striped bass larvae	-13.5% (-76.0 acres)	- 18.6 % (-105.0 acres)	- 21.0 % (-119.0 acres)	-13.8 % (-78.0 acres)	- 13.8 % (-78.0 acres)
- American shad (Jan)	0 %	0 %	0 %	0%	0 %
- American shad (May)	0 %	0 %	0 %	0%	0 %
- American shad (Aug)	0 %	0 %	0 %	0 %	0 %
- Shortnose sturgeon adult (January)	- 0.5% (-20.0 acres)	- 0.5 % (-20.0 acres)	-0.8 % (-32.0 acres)	-0.8% (-32.0 acres)	-1.1 % (-44.0 acres)
- Shortnose sturgeon adult (August)	- 3.2 % (- 45.0 acres)	- 6.4 % (- 89.0 acres)	- 9.5 % (- 132.0 acres)	-13.3 % (185.0)	- 15.80 % (- 220.0 acres)
- Shortnose sturgeon juvenile (January)	-5.0 % (-86.0 acres)	-10.4 % (-179.0 acres)	-15.9 % (-274.0 acres)	- 19.0 % (-328.0 acres)	- 21.6 % (-373.0 acres)
- Southern flounder	- 0.3 % (-6.0 acres)	- 2.4 % (-45.0 acres)	- 2.4 % (-45.0 acres)	-7.8 % (-146.0 acres)	0.0 %
Chlorides @ City's M&I Water Treatment Plant	Max hourly increase of 77 mg/L	Max hourly increase of 105 mg/L	Max hourly increase of 121 mg/L	Max hourly increase of 149 mg/L	Max hourly increase of 170 mg/L
Drinking Water Aquifer	Same type of effect, but less than 45-foot alternative	Same type of effect, but less than 46-foot alternative	Same type of effect, but less than 47-foot alternative	Same type of effect, but less than 48-foot alternative	Increase flow through confining unit by 3-4%
Hurricane Surge	Minor, max increase in WSE of 0.3 feet	Minor, max increase in WSE of 0.5 feet	Minor, max increase in WSE of 0.6 feet	Minor, max Increase in WSE of 0.8 feet	Minor, max increase in WSE of 0.9 feet
Beach Erosion	Minor; within accuracy of evaluation	Same	Same	Same	Same
Bank Erosion due to ship traffic	No measurable addition to ongoing erosion	Same	Same	Same	Same
Shoaling	Minimal upstream shift	Same	Same	Same	Same
Velocity	Theoretical reduction, but not measurable	Same	Same	Same	Same

After the expected impacts to these resources were identified, the hydrodynamic and water quality models were used to evaluate ways to reduce those impacts. Major impacts of concern that were evaluated included a predicted increase in upstream salinity levels and a decrease in dissolved oxygen levels that would be caused by harbor deepening. A flow diversion plan was developed for each depth alternative that decreases the amount of salt water entering Middle River and Little Back River and increases the amount of freshwater entering these streams. Consequently, these mitigation plans would minimize the adverse affects to tidal freshwater marsh, striped bass habitat, and Shortnose sturgeon habitat that would result from increased salinity levels.

Previous studies identified oxygen injection as being the best method to improve dissolved oxygen levels in the harbor. Mitigation of low dissolved oxygen levels caused by harbor deepening would require the injection of oxygen at various locations in the Savannah estuary. Studies indicate that construction of three oxygen injection systems would be required to remove the effects of the proposed harbor deepening alternatives. Two of these systems would be constructed on Hutchinson Island and one would be located upstream near Georgia Power's Plant McIntosh. Oxygen would be injected during the summer months (July-September) when dissolved oxygen levels are low in Savannah Harbor.

Even with the flow modification plan and oxygen injection in place, impacts to Striped bass habitat, Shortnose sturgeon habitat, and tidal freshwater marsh were not completely eliminated. The effects of the proposed work are described in detail in Section 5.0 of the Environmental Consequences of the EIS. The Mitigation Plan can be found in Appendix C of the EIS. Table 6 shows the impacts of the deepening alternatives with the flow diversion and oxygen injection plans in place.

The project's mitigation plan (Appendix C) includes funding for the Georgia Department of Natural Resources to stock Striped bass fingerlings in the lower Savannah River to compensate for the loss of spawning, egg, and larvae habitat. The project's monitoring and adaptive management plan (Appendix D) includes a study during the post-construction monitoring to further evaluate the impacts of channel deepening on Striped bass habitat in the lower Savannah River. The hydrodynamic and water quality models would be used along with the field data collected to assess project impacts on Striped bass habitat. Further mitigation could be provided should the results of this study indicate that to be appropriate.

A horseshoe rock ramp fish passage structure at New Savannah Bluff Lock and Dam was proposed in the DEIS as additional mitigation for the loss of Shortnose sturgeon habitat in the lower Savannah River that would be caused by channel deepening. This fish passage facility would permit Shortnose sturgeon (and other species of anadromous fish to move above the dam to traditional upstream spawning areas. Comments expressed during the review of the DEIS indicated that some of the resource agencies had concerns about the fish passage efficiency of the horseshoe rock ramp design (mainly based on flow through the structure). Consequently, the Corps convened a fish passage workshop in April 2011. As a result of this workshop, the Corps revised the design for fish passage at the New Savannah Bluff Lock and Dam. An off-channel rock ramp structure would capture much more of the river flow and is expected to be much more effective in passing fish past that dam (See Appendix C).

As shown in Table 5, the project would affect both tidal freshwater and brackish wetlands. Approximately 15.68 acres of brackish marsh would be lost as a result of various excavation requirements of the project. The excavation requirements (in regards to the amount of wetlands that would be affected) for all five channel depth alternatives are the same. Approximately 2.2 acres would be removed at Station 102+600 and 0.8 acres would be removed as part of the Kings Island Turning Basin expansion. The project would remove brackish marsh from two locations on Hutchinson Island where approximately 3.4 acres would be excavated at Station 88+000 and 0.8 acres at Station 70+00. The project also includes removal of the Tidegate Structure abutments on both the Georgia and South Carolina sides of the river. Removal of the Tidegate Structure abutment on the Georgia side would result in the loss of about 7.63 acres of brackish marsh while about 0.85 acres would be lost on the South Carolina side of the River.

The project's mitigation plan provides for restoration 0f 40.3 acres of brackish marsh in Disposal Area 1S to compensate for the loss of 15.68 acres of brackish marsh from project excavation requirements. Restoration of wetlands on this site would provide the required 138 wetland credits (28.8 acres using Savannah District Regulatory SOP) in-kind mitigation for the impacts of the project. The wetland credits for the additional 11.5 acres of wetland restoration would be used for any additional SHEP wetland mitigation needs and mitigation needs associated with operation and maintenance activities for the Savannah Harbor Navigation Project.

Table 6. Summary of Project-Related Impacts With Mitigation

	---------- DEPTH ALTERNATIVES ----------				
	44-Foot	**45-Foot**	**46-Foot**	**47-Foot**	**48-Foot**
Salinity	Move further into estuary up Front River	Same effect, but greater amount	Same effect, but greater amount	Same effect, But greater Amount	Same effect, but greater amount
Freshwater Wetlands (Conversion)	+ 322 acres	- 32 acres	- 201 acres	-223 acres	- 337 acres
Brackish Marsh (Conversion)	+ 488 acres	+ 861 acres	+959 acres	+964 acres	+1068 acres
Salt Marsh (Conversion)	- 808 acres	-828 acres	-757 acres	-740 acres	-730 acres
Brackish Marsh (Loss)	-15.68 acres	Same	Same	Same	Same
Dissolved Oxygen	Minimal Net improvement	Same	Same	Same	Same
Fisheries	**Loss (-) or Gain (+) of Acceptable Habitat**				
- Striped bass spawning	- 2.9 % (-30.0 acres)	- 9.2 % (-96.0 acres)	- 10.0 % (-104.0 acres)	-13.5 % (-140.0 acres)	- 16.1 % (-167.0 acres)
- Striped bass eggs	- 9.4 % (-157.0 acres)	+5.2 % (+87.0 acres)	0 %	-11.1 % (-186.0 acres)	-10.8 % (-181.0 acres)
- Striped bass larvae	-5.6 % (-32.0 acres)	+ 1.7 % (+9.0 acres)	+ 5.6 % (+32.0 acres)	-5.0 % (-28.0 acres)	-3.5 % (-20.0 acres)
- American shad (Jan)	-0.2 % (- 9.0 acres)	-0.2 % (-9.0 acres)	- 0.2 % (-9.0 acres)	-0.2 % (-9.0 acres)	- 0.2 % (-9.0 acres)
- American shad (May)	- 0.2 % (-12.0 acres)	- 0.2 % (-11.0 acres)	- 0.2 % (-11.0 acres)	-0.2 % (-11.0 acres)	- 0.2 % (-11.0 acres)
- American shad (Aug)	-0.3 % (-16.0 acres)	-0.3 % (-15.0 acres)	-0.2 % (-11.0 acres)	-0.2 % (-11.0 acres)	-0.2 % (-11.0 acres)
- Shortnose sturgeon adult (January)	-3.9 % (-153.0 acres)	-4.6 % (-179.0 acres)	-6.2 % (-240.0 acres)	- 6.9 % (-266.0 acres)	- 8.4 % (-326.0 acres)
- Shortnose sturgeon adult (August)	+19.0 % (+260.0 acres)	+9.8 % (+134.0 acres)	+7.3 % (+100.0 acres)	-+6.5 % (+89.0)	+2.8 % (+39.0 acres)
- Shortnose sturgeon juvenile (January)	- 6.7% (-220.0 acres)	- 7.0 % (-231.0 acres)	-7.3 % (-238.0 acres)	-7.6% (-251.0 acres)	-11.5 % (-376.0 acres)
- Southern flounder	+74.1 % (+1387.0acres)	+ 54.2 % (+1014.0acres)	+ 57.3 % (+1072.0acres)	+57.3 % (+1072.0acres)	+ 52.9 % (+989.0 acres)
Chlorides @ City's M&I Water Treatment Plant	Max hourly increase of 4 mg/L	Max hourly increase of 4 mg/L	Max hourly increase of 4 mg/L	Max hourly increase of 4 mg/L	Max hourly increase of 4 mg/L
Drinking Water Aquifer	Same type of effect, but less than 45-foot alternative	Same type of effect, but less than 46-foot alternative	Same type of effect, but less than 47-foot alternative	Same type of effect, but less than 48-foot alternative	Increase flow through confining unit by 3-4%
Hurricane Surge	Minor, Max increase in WSEL = 0.5 ft	Minor, Max increase in WSEL = 0.6 ft	Minor, Max increase in WSEL = 0.7 ft	Minor, Max Increase in WSEL= 0.8ft	Minor, Max increase in WSEL = 0.8 ft
Beach Erosion	Minor; within accuracy of evaluation	Same	Same	Same	Same
Bank Erosion due to ship traffic	No measurable addition to ongoing erosion	Same	Same	Same	Same
Shoaling	Minimal upstream shift	Same	Same	Same	Same
Velocity	Theoretical reduction, but not measurable	Same	Same	Same	Same

As discussed in the previous paragraphs, indirect impacts associated with the proposed deepening would result in a vegetative shift in 223 acres of tidal freshwater marsh to brackish marsh with implementation of the selected plan (47-foot channel depth alternative) even with the flow routing. Approximately 740 acres of saltmarsh would also be impacted by the flow routing since more freshwater would be introduced into Little Back and Middle Rivers, which could cause some areas of saltmarsh to shift to more brackish species. As previously discussed, the Corps used the EFDC model to evaluate both existing stream salinity levels and salinity levels that would occur with the various channel deepening alternatives in place. However, the EFDC model does not directly predict marsh salinity. Consequently, determining the existing wetland species composition in the estuary, as well as predicting how these species would change with the various channel deepening alternatives, was accomplished using a method where riverine surface salinity levels are extrapolated across the adjacent marshes. This method creates contours that divide the marsh into 5 salinity categories: 0-0.5 ppt, which is considered freshwater, 0.6-1.0 ppt, 1.1-2.0 ppt, 2.1-4.0 ppt, and >4.0 ppt. In turn, distinctions between marsh types and acreage were defined based on the following salinity ranges: (0-0.5 ppt) Freshwater Marsh, (0.5-4 ppt) Brackish Marsh, and (>4ppt) Saltmarsh.

The results of the functional assessment concluded that the differentiation between salt marsh and brackish marsh recommended by the Wetland Interagency Coordination Team and used in the DEIS was somewhat constrained. The salinity range used in the SHEP to differentiate between brackish marsh (0.6-4 ppt) and salt marsh (> 4ppt) was quite restrictive, given that brackish marsh salinities have been reported with a range from 0.5-10 ppt (NOAA, 2010) and in other estuarine systems from 0.5-17 ppt (Judd and Lonard, 2004). An earlier assessment of wetland vegetation coinciding with the salinity range reported for brackish marsh systems (i.e., 5-10 ppt) which occur within the area of potential effect, also supports those findings. The EFDC value for saltmarsh (> 4.0 ppt) is approximately 2.5 times less than that reported by NOAA (2010). Additionally, the NOAA (2010) range for brackish marsh includes areas determined by the EFDC model to be saltmarsh. When considering values reported in the literature, the acreage of saltmarsh conversion (740 acres) which was calculated using the EFDC model is a very inclusive value and includes existing vegetative areas that would not transition to brackish marsh flowing deepening because these areas currently exist within the salinity range of a brackish marsh (0.5-10 ppt). Thus, the salinity range used to quantify salt marsh in the area of potential effect (i.e., > 4 ppt) over estimated the amount of saltmarsh in the system and under estimated the amount of brackish marsh. As such, the described conversion of salt marsh to brackish marsh, which would occur as a result of harbor deepening, would likely be much less if one takes into account vegetative characteristics for wetland environments with associated salinities that are more commonly associated with a brackish marsh (i.e., range between 0.5 and 10 ppt).

Given the wide range of salinity reported in literature for brackish marsh systems, the inherent variability in salinity that exists for all estuarine systems, and the modeling results that report post-deepening salinity concentrations consistent with the aforementioned range, Savannah District concludes that the 740-acre calculated conversion of saltmarsh to brackish marsh if the harbor is deepened to 47-feet is conservative, with actual vegetative shifts unlikely to be identifiable *in situ* in Savannah. That said, the District was inclusive in its assessment of the

potential for project-related effects and elected to include the saltmarsh and brackish marsh conversion in its calculation of minor impacts.

The conversion of 223 acres of freshwater wetland to brackish marsh represents the only significant wetland conversion that is likely to be noticeable if the harbor is deepened to 47-feet as proposed. It is important to note that the ecological values of the impacted 223 acres of freshwater wetlands would not be completely lost. Instead, those acres would be converted to brackish marsh. The Corps' calculation of the number of acres of freshwater wetland that have the potential to be converted to brackish marsh is based on a shift in the location of 0.5 ppt salinity, a traditional rule-of-thumb for differentiating between freshwater marsh and brackish marsh. However, data reported in the literature for Savannah Harbor suggest that a shift in vegetation (from freshwater marsh to brackish marsh) in this estuary does not occur until salinity concentrations approach 2.5 ppt (Latham et al., 1994). Even at oligohaline marsh sites with average salinity concentration of 2.1 ppt, a discriminant function (DF) analysis revealed that only 47% of cases resulted in the correct pairing of environmental variables with vegetative species composition and dominance. At those same oligohaline sites, 37% of the vegetative species composition and dominance were more closely aligned with a freshwater classification (Latham et al., 1994).

Deepening the harbor to a 47-foot depth would result in a conversion of the dominant vegetative species typically observed in approximately 223 acres of freshwater marsh (freshwater to brackish marsh scenario). It is important to note that many of the emergent plant species associated with freshwater marsh systems would still be readily observed in environments that have been defined as brackish marsh (Latham et. al., 1994). Likewise, the 47-foot depth would result in a conversion of the dominant vegetative species typically observed in 740 acres of saltmarsh (saltmarsh to brackish marsh scenario), and dominant saltmarsh species like *Spartina alterniflora* would still be observed in areas which have salinities that define a brackish marsh. However, the overall basic wetland functions typically associated with these systems would not change. A comparison of potential changes in elements of wetland function for both conversion scenarios is provided in the following table.

Table 7. Changes in Wetland Function as a Result of Wetland Conversion

Elements of Wetland Function	Freshwater to Brackish Marsh (Approximately 223 acres)	Saltmarsh to Brackish Marsh (Approximately 740 acres)
Water Purification	Negligible	Negligible
Flood Protection	Negligible	Negligible
Shoreline Stabilization	Negligible	Negligible
Groundwater Recharge	Negligible	Negligible
Streamflow Maintenance	Negligible	Negligible
Retention of Particles	Negligible	Negligible
Surface Water Storage	Negligible	Negligible
Subsurface Storage	Negligible	Negligible
Nutrient Cycling	Negligible	Negligible
Values to Society	Negligible	Negligible
Fish and Wildlife Habitat	Minor Adverse	Negligible

Negligible Effect – the effect on the resource would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resource.

Minor Effect – the effect on the resource is measurable or perceptible, but it is slight.

Adverse Effect: the action is contrary to the interest or welfare of the resource; a harmful or unfavorable result

As illustrated in the table above, the only indirect effect the 47-foot project would have on the function of these wetlands systems would be associated with fish and wildlife habitat. All other elements of wetland function associated with predicted shifts in wetlands classification would be negligible as a result of the anticipated increase in salinity. It should be noted that areas of the Savannah Harbor identified as saltmarsh or brackish marsh support similar fish and wildlife species (Jennings and Weyers, 2003). Any anticipated conversion of saltmarsh to a brackish marsh system would have a negligible impact on the overall function of the wetland system. The USACE recognizes that a comparison of fish and wildlife habitat between freshwater and brackish marsh systems yields fewer similarities. However, the conversion in fish and wildlife habitat will still be minor when considering the total function of the wetland and continued existence of some freshwater vegetation after deepening in wetland areas that would be classified as brackish marsh. For additional information pertaining to the functional assessment, please see EIS-Appendix C, Section VII Consideration of Final Compensatory Mitigation Rule.

Since there would be a minor adverse effect to the fish and wildlife habitat function in 223 acres of tidal freshwater wetlands if the selected plan is implemented, an assessment was conducted to determine how to best mitigate for that impact. Once the extent of the impacts to wetlands was known, the Corps consulted natural resource agencies, the Stakeholders Evaluation Group, and other NGOs. No sites could be identified where tidal freshwater restoration or creation was feasible. Consequently, the acquisition and preservation of lands that would be ecologically significant to the Savannah National Wildlife Refuge was determined to be appropriate mitigation.

The Corps has completed its initial assessment of properties in the SNWR's Acquisition Plan to determine potential properties that could meet the wetland mitigation needs of the SHEP. This assessment (Consideration of 2008 USEPA/USACE Mitigation Rule) is in Appendix C. The lands proposed for preservation consist of bottomland hardwoods, maritime forest and uplands dominated by deciduous forest and regrowth. The bottomland hardwoods are classified as palustrine, forested, broad-leaved deciduous systems that are both temporarily and seasonally flooded. Preserving these areas would ensure wildlife habitat is protected in perpetuity. Moreover, the additional lands would buffer the SNWR from future threats of development such that changes in land use would not occur immediately adjacent to existing areas of the Refuge that do contain estuarine emergent wetland characteristics. Thus, the acquisition and preservation of 2,245 acres of wetland and upland buffer would provide a functional replacement for the minor conversion of the only wetland function (i.e., fish and wildlife habitat) that would be expected as a result of the 223 acre freshwater to brackish marsh conversion.

5.0 OTHER AREAS OF ENVIRONMENTAL CONCERN

Some of the major environmental concerns associated with the SHEP have been previously addressed in this document. Other environmental concerns include the dredging and disposal of sediments with elevated concentrations of naturally occurring cadmium, beach erosion, possible impacts to the Floridan aquifer, and impacts to Threatened and Endangered Species. These impacts are discussed in detail in Section 5.0, Environmental Consequences, of the EIS and the Mitigation Plan in Appendix C.

5.1 Sediment Quality

Three rounds of sediment sampling and analysis were performed for the Savannah Harbor Expansion Project. Each round built upon the results of the previous work. The second round of sampling was performed in 2005 and the analysis was completed in 2006. The conclusions from that evaluation were that the only sediment contaminant of concern for this project is naturally-occurring cadmium found in Miocene clays that would be dredged and/or exposed during construction. The highest concentrations of cadmium (average 21.45 mg/kg) are found between Stations 16+000 and 45+000 (River Mile 3.0 to 8.5) and medium concentrations (average 6.67 mg/kg) are found between Stations 45and000 to 94+000 (River Mile 8.5 to 17.8).

Additional studies were conducted in 2007 to assess the potential pathways by which cadmium could enter the environment during the dredging and disposal process. The additional studies included the following activities:

- Sediment Profile Imaging to locate/verify exposed Miocene clays and assess the potential existence of benthic communities in the clay;
- Side scan sonar survey to identify and map bottom characteristics in the channel;
- Benthic community assessment;
- Sediment sample collection (vibracoring 6 ft into Miocene clay at four locations in the navigation channel, reference sediment sampling, and upland reference soil sampling);

- Collecting dredging water from one location in the Federal navigation channel and one receiving water location in Fields Cut;
- Compositing and processing sediment cores to create “high cadmium” and “low cadmium” composite samples for further testing;
- Analytical testing of bulk sediment, standard elutriates, effluent elutriates, dredging water, and receiving water samples;
- Analytical testing of porewater and SLRP samples at the high cadmium locations only;
- Aquatic bioaccumulation studies and plant uptake studies using high and low cadmium composites; and
- Risk evaluation and report preparation.

Based on the results of the above studies, the following conclusions were reached relative to the dredging and disposal of cadmium-laden sediments associated with the SHEP:

A. The existing bottom habitats within the Savannah Harbor Navigation Channel support benthic communities that are diverse and provide an available food resource.

B. Although substantial benthic communities reside in the clay/sand veneer substrates which have naturally-occurring high levels of cadmium, studies indicate that the cadmium is not freely soluble or readily available bioavailable to organisms.

C. High cadmium composite samples (average concentration of 30 mg/km) and low cadmium composite samples (average of 15 mg/kg) were created from bottom sediments and used for physical and chemical analyses, standard and effluent elutriate creation, simplified laboratory procedure (SLRP), aquatic bioaccumulation testing, and plant uptake studies.

D. Sequential Extraction Procedures (SEP) were used to determine the amount of metal bound in different fractions of the sediment or soil. SEP results can be used to predict the metal concentrations that would most likely be available to aquatic organisms, plants, and wildlife. Results of the SEP for both the high cadmium and the low cadmium composite samples indicated that no cadmium was detected in the exchangeable fraction, and that about 98 percent of the cadmium in the Miocene layer was bound in relatively insoluble forms. These results suggest that the majority of the cadmium is not freely soluble or readily bioavailable.

E. Analysis of site (dredging) water, receiving water, standard elutriate, and effluent elutriate results included both the total and dissolved fractions and comparisons of detected chemical constituents to Federal and state (South Carolina) saltwater acute and chronic water criteria for the protection of aquatic life. In the dredging and receiving water, nutrient and metal concentrations in both the total and dissolved fractions were low, and generally below the USEPA/South Carolina saltwater criteria for the protection of aquatic life. Cadmium was not detected in either the total or dissolved fraction of the dredging water sample or the receiving water sample.

F. Porewater analysis of two core samples collected from high cadmium locations indicate that concentrations of dissolved cadmium in the porewater were low and below the laboratory reporting limit and applicable water quality criteria.

G. For both the standard and the effluent elutriates, the concentrations of metals detected in the total fraction of the standard elutriates created using the high and low cadmium composite samples were high, exceeding South Carolina water quality criteria for the protection of aquatic life. However, cadmium concentrations did not exceed USEPA chronic saltwater criteria in the dissolved fraction of both the standard and the elutriate samples. Therefore, the cadmium detected in the total fraction is most likely bound to the fine grained particles.

H. Aquatic bioaccumulation studies conducted were designed to evaluate the potential of benthic organisms to bioaccumulate contaminants of concern from the dredged material. These tests used *Nereis virens* (sand worm) and *Macoma nasuta* (blunt-nose clam) After 28 days of exposure using the high and low cadmium composite sample and a reference sediment sample from New River, none of the test sediments had significantly lower survival than the reference sediment. After the bioaccumulation testing, the organism tissues were analyzed. In the worm tissue, cadmium concentrations statistically exceeded the reference site tissue concentrations for tissue exposed to sediment from both the high and low cadmium composite samples. In the clam tissue, cadmium tissue concentrations from the high and low cadmium composite samples were not statistically different from the reference.

I. Plant uptake studies (45-day) were conducted using *Cyperus esculentus* (yellow nutsedge), the high and low cadmium composite samples and reference soil collected from a dike in one of the CDFs. Plant tissues were exposed to the prepared soils from the navigation channel. The mean concentration of cadmium in plant tissue exposed to the samples taken from the navigation channel statistically exceeded concentrations in reference tissue for both the high and low cadmium composite samples indicating that uptake from the soil to the plants occurred for each of these concentrations.

A risk assessment was conducted to identify the potential for impacts on human health or the environment from elevated cadmium concentrations in new work sediments that would be dredged. The risk assessment evaluated potential exposures and impacts of cadmium on aquatic and benthic organisms, wildlife, and fishermen in the Savannah River and on plants, aquatic and benthic organisms, and wildlife in the CDF. The risk assessment reached the following conclusions:

A. Cadmium in new work sediments is not likely to cause adverse impacts to aquatic and benthic organisms in the Savannah River. This determination was based on the various tests that indicate that cadmium is bound to the sediments and not readily soluble and bioavailable to aquatic organisms.

B. While cadmium concentrations are likely to be elevated in sediment and water during and after dredging in Savannah Harbor, the limited bioavailability and bioaccumulation potential of cadmium results in relatively low doses to wildlife and no potential for adverse effects. This determination was based on risk analysis studies using food web ingestion models which were used to quantify exposures to evaluate potential adverse impacts to wildlife from cadmium in new work sediments that would be placed in the CDFs.

C. The predicted concentration in game fish was below that protective of human health, indicating there are no adverse impacts to humans. This determination was based on model projections of concentration in flounder which were compared to fish tissue benchmarks protective of human consumption.

D. Cadmium concentrations in dredged material and held at the CDF in a wet condition and in effluent, runoff, and sediment discharged from the CDF are not likely to cause adverse impacts to plants in drainage areas and wetlands. This determination was based on the fact that while total concentrations of cadmium in sediment and water were elevated, the bioavailable concentrations in sediment and the dissolved concentrations of cadmium in effluent elutriates were below benchmarks protective of plants. Cadmium concentrations in the overlying water from the bioaccumulation tests were also below benchmarks.

E. Cadmium in sediments placed in the CDFs is not likely to cause adverse impacts to aquatic and benthic organisms in drainage areas impoundments, and wetland areas of the CDF. This determination is based on the fact that while total concentrations of cadmium in sediment and water were elevated above benchmarks, the bioavailability of cadmium is limited and unlikely to cause adverse impacts. Dissolved concentrations of cadmium in porewater, effluent elutriates, and overlying water from bioaccumulation tests were lower than benchmark concentrations protective of aquatic and benthic organisms. SEP analysis of the sediments demonstrated that more than 98 percent of the cadmium sediments are not likely to be bioavailable to aquatic and benthic organisms. Bioaccumulation tests indicate that test tissue concentrations of cadmium were either similar to reference concentrations or below no-effects residue benchmarks, and estimated tissue concentrations for higher trophic level fish were also below no-effects residue benchmarks.

F. There is a strong indication that cadmium is not likely to cause adverse effects to wildlife using drainage areas, impoundments, and wetlands at the CDF. This determination is based on analyses using food web ingestion models to quantify exposures. The assessment evaluated exposures for birds and mammals that consume plants, fish, and benthic organisms, and modeled doses were compared to no-effects and lowest observable effects benchmarks. Great blue heron, spotted sandpiper, osprey, Canada goose, muskrat, and river otter were used as representative or surrogate receptor species.

G. Evidence from measurement endpoints indicates that there is a limited potential for adverse impacts to plant growth from cadmium in new work sediments placed in the CDF. This determination is based on plant growth observed in the bioassays. Bioaccumualtion test results indicated that plant tissue concentrations for high and low cadmium composites were higher than reference concentration, but the plant tissue concentrations were below tissue residue benchmarks. Plant growth in the bioassays was statistically significantly lower for plants grown on high in high and low cadmium composites than for control and reference treatments. This reduced plant growth may be related to cadmium concentrations and/or the fine grain size of the dredged material.

H. Cadmium concentrations in about 3 million cubic yards of dredged material to be deposited into CDFs 14A and 14B may cause adverse effects to wildlife using uplands. Approximately 7 million cubic yards of dredged material that would be removed from the inner harbor is cadmium laden. About 4 million cubic yards of this sediment is expected to average 6.9 mg/kg cadmium which is below both no-effects and lowest observable effects limiting dose benchmarks. Approximately 3 million cubic yards of this sediment is expected to average 21.4 mg/kg cadmium which exceeds no-effects and lowest observable effects limiting dose benchmarks for soil. Risks to wildlife from cadmium in upland habitats were evaluated using food web ingestion models to quantify exposures. Models included site-specific bioavailability factors developed based on SEP analyses of the sediments and site-specific bioaccumulation factors developed based on sediment bioassays using plants. Modeled doses were compared to no-effects and lowest observable effects benchmarks. The assessment evaluated impacts for birds and mammals that consume plants, invertebrates, and small mammals which included the song sparrow, marsh wren, red-tailed hawk, meadow vole short-tailed shrew and red fox. When modeled based on concentrations in sediment composites and effluent or runoff, modeled doses for song sparrow, marsh wren, and shrew for both low and high cadmium scenarios exceeded both no-effects and low-effects benchmarks. This indicates that there is a potential for adverse effects to these receptors.

Based on the findings of the various studies relating to the dredging and disposal of cadmium-laden sediments, a separate sediment disposal and monitoring plan was developed for the Savannah Harbor Expansion Project. All of the cadmium-laden sediments that would be dredged from the inner harbor would be deposited into existing CDFs 14A and/or 14B. These sediments would be kept in a wet environment until a covering layer of sediments could placed and sediment samples taken from that cover indicate that cadmium concentrations in the surface sediments are less than 4 mg/kg. Studies indicate that allowing the sediments in the CDF to dry would change the behavior of the cadmium in the sediments. Sequential extraction procedures performed on washed and dried sediment showed that cadmium becomes more available in dried sediment. Plant uptake studies showed that plants can accumulate cadmium from dried sediments. An exposure model found that both birds and mammals exposed to the dried cadmium sediments are likely to accumulate cadmium at levels shown to have impacts. Following placement of cadmium-laden sediments, eighty-six (86) grab samples would be collected from a depth of 15 cm to characterize the cadmium levels of surface sediments. The sediments would then be covered with at least two feet of material consisting of sediments that are expected to have cadmium concentrations of 4 mg/kg or less. After this cover has been applied, sediment samples from the cap would be obtained and analyzed. Eighty-six (86) grab samples would be taken from a depth of 30 cm and analyzed for cadmium. If cadmium levels in the cover are less than 4 mg/kg, the sampling would be considered complete. If cadmium levels in the cover are equal to or exceed 4 mg/kg in a cumulative area of 25 acres or greater, an additional cover material from operation and maintenance dredging would be applied as soon as possible. Sediment sampling would then be conducted as previously performed. This process would be repeated until the concentration of cadmium in the samples was less than 4 mg/kg. The cadmium-laden sediments would remain in CDFs 14A and/or 14B and not used for other purposes (dike construction, etc.).

Monitoring would also include evaluation of the inflow and the effluent discharged from the disposal areas. Samples would be taken from the head section of the discharge pipe from the dredge and analyzed for cadmium. Samples of the effluent leaving the disposal area would be taken and analyzed to ensure that state water quality standards are being met. The Section 401 Water Quality Certification issued by the Georgia DNR-EPD requires cadmium concentrations to be monitored on a weekly basis at the point of discharge from the CDFs where cadmium-laden sediments are placed. Monitoring shall continue at these CDFs for as long as the discharge of effluent is present, and until all dredged sediments have been dewatered, stabilized and capped. Following the installation of a stable, clean cap, cadmium must be monitored for one year.

If analytical results indicate standards are not being met, corrective actions include reducing the pumping rate of the dredge and/or boarding up the weir to decrease the amount of effluent being discharged from the CDF.
Other monitoring efforts associated with cadmium-laden sediments include wildlife use surveys in CDFs 14A and 14B, vegetation sampling and removal (if required), and biological monitoring (analysis of cadmium concentrations in birds).

The Corps would perform monthly wildlife surveys of the CDFs. These one-day surveys would record all birds and other major vertebrates seen within CDFs 14A and 14B. Monitoring would be performed during placement of sediment (including any placement of required cover) and for 3 years after any required placement is completed. If there is a concern about the number of birds or other animals or a particular species using the CDFs, some type of hazing may be appropriate (with concurrence of the USFWS).

If analyses of the sediment samples from the cap or cover show that concentrations of cadmium equal or exceed 4 mg/kg, vegetation sampling would be required. This sampling would be conducted on a quarterly basis in “hot spots” to determine cadmium uptake by plants. Samples collected from the CDFs would be compared to control samples taken from areas with low cadmium content found in adjacent CDFs. If vegetation samples have significantly elevated cadmium concentrations, then efforts would be initiated to eradicate vegetation and/or place additional, low-cadmium sediments over the covering layer. These contingency measures would eliminate wildlife exposure should vectors for cadmium uptake be identified. Vegetation sampling would be considered complete once sustained cadmium concentrations in the surface sediments of the cap are less than 4 mg/kg.

Blood samples would be collected birds that use the CDFs and analyzed for cadmium before sediment placement (to obtain baseline data), during placement of cadmium-laden sediments and the cap/cover and for 3 years after placement. The tissue monitoring protocols take into account the hydrologic conditions of the CDF (wet/ dry) and the season since these factors greatly influence which birds are using the CDFs at a given time. Tissue (liver) monitoring would be conducted if cadmium levels in the samples taken during and after sediment placement have significantly higher levels than those observed in the pre-placement samples.

At the end of construction, sediment samples would be taken from the exposed channel bottom sediment surface and analyzed for grain size and metals (aluminum, iron, arsenic, beryllium, cadmium, copper, lead, manganese, mercury, nickel, selenium, silver and zinc). Analysis of the river bottom would provide an assessment of anticipated cadmium concentrations in sediments at the sediment/water interface.

The Georgia Section 401 Water Quality Certification also requires monitoring of maintenance dredging activities that would occur in areas of the channel with known high cadmium concentrations. Sediments to be dredged would require testing for cadmium from two locations that are representative of average sediment accumulation in that reach. This protocol would remain in effect for at least two maintenance dredging cycles and would continue if the sampling indicates cadmium levels of concern.

Details of cadmium monitoring are fully discussed in Appendix M.

5.2 Beach Erosion

It has been long surmised that construction and maintenance of the Savannah Harbor Navigation Project, particularly the entrance channel, plays a major role in beach erosion on Tybee Island. A study completed by ERDC in 2008, Impact of Savannah Harbor Deep Draft Navigation Channel on Tybee Island Shelf and Shoreline" confirmed that construction and maintenance of the entrance channel and the construction of two large jetties near the mouth of the harbor have disrupted sediment pathways across the entrance channel. The major impacts of this disruption are loss of sand from the Tybee shelf which would be available to move towards Tybee Island and erosion of the north end of the Tybee Island beach. The estimated combined shelf and shoreline impact at Tybee Island was calculated to be 78.5 percent. This means that an estimated 78.5 percent of the reduction in sand volume on the Tybee shelf and shoreline is due to the project. The remainder of the erosion is attributed to natural processes.

Further studies were conducted during the SHEP to evaluate the potential impacts of deepening of the inner harbor channel to -48 feet MLW and the entrance channel to -50 feet MLW on beach erosion at Tybee Island. These studies included a bathymetry and volume change analysis to obtain the historical perspective of the Savannah nearshore evolution, numerical modeling of circulation, waves, and sediment transport to compare pre-and post-deepening of the channel impacts on coastal processes. Based on this work, the following determinations were made:

1. Modeling results indicate that deepening of the entrance channel would result in only minor changes in nearhsore wave patterns. Consequently, the proposed deepening project would be expected to have very little impact on the Tybee Island shoreline.

2. The circulation and wave modeling indicate very small changes associated with the proposed deepening project. The proposed deepening project would not change the general overall pattern of sediment transport in the region. The most noticeable changes would occur in the channel. Channel deepening would have only a negligible effect on the Tybee Island Shelf.

4. The current navigation channel appears to be nearly a complete sink for any sediment from moving north to south along the shelf. Placement of dredged sediment back into the nearshore zone of Tybee Island would be a means restoring this supply of sand to the nearshore sand sharing system, including that of Tybee Island.

Based on the results of the studies conducted during the SHEP, much of the loss of sand from the Tybee Island shelf and the erosion of the north end of Tybee Island Beach can be attributed to the existing navigation project. The SHEP cannot mitigate for those impacts.

Deepening of the Savannah Harbor project would have very little impact on the Tybee Island shoreline or the Tybee Shelf. However, the proposed project would provide an opportunity for suitable sediments to be placed in the Tybee nearshore area thereby providing an opportunity for those sediments to enter the sand sharing system for Tybee Island.

The LTMS (USACE 1996) authorized the placement of maintenance sediment within the nearshore area off Tybee Island and into areas just south of the entrance channel to construct feeder berms and placement of suitable maintenance material on the beach at Tybee Island.

Using the concepts developed in the LTMS, several alternative disposal plans for the SHEP were considered, including beneficial uses of dredged material. Suitable dredged sediments (80 percent or better sand content) would be placed in the nearshore zone of Tybee Island to construct feeder berms which would add this sand to the Tybee Island beach system (USACE 2007). The feeder berms would allow wave action to move the sediment towards the beach. These berms would also provide protection from storm events. Initial project plans also provided for five sites (Sites 2-6) just south of the entrance channel where dredged material would be used to construct submerged feeder berms. In addition, two mounds (Sites 11 and 12) would be constructed in deeper water to provide additional fish habitat. The final locations of the sites were based on the results of coordination with the City of Tybee Island and the GA DNR-CRD to obtain the benefit of their input.

Placement of suitable sediment in the nearshore sites and the sites south of the entrance channel would provide beneficial uses of dredged sediment (for both new work and maintenance of the -47 foot project) and would comply with the Georgia Coastal Management Program, including the changes that incorporate Georgia HB 727. The sediment placement sites identified in this plan are shown in Figure 2 and described below:

a. MLW 200 has a total capacity of 217,000 cubic yards and is located west of the North Groin on Tybee Island. The sediment would be placed at the mean low water (MLW) line and be allowed to mound up to mean sea level (MSL) or mid-tide. When filled to capacity, the placement would create a mid-tide berm about 200 feet wide and 3,200 feet long.

b. MLW 500 has a total capacity of 1.9 million cubic yards and is located south of the North Groin on Tybee Island. The sediment would be placed at the MLW line and be allowed to mound up to MSL or mid-tide. When filled to capacity, the placement would create a mid-tide berm about 500 feet wide and 11,000 feet long.

c. ERDC Nearshore has a total capacity of 1.2 million cubic yards and is located below the mean low water contour (MLW) in the nearshore area off Tybee Island. At total capacity, the top elevation of the placement site would be -4 feet so as not to interfere with boaters but allow potential for movement of material towards the Tybee Island shoreline by wave action.

d. Site 2 has a total capacity of 3.2 million cubic yards and is located below the mean low water contour (MLW) in the nearshore area off Tybee Island. At total capacity, the top elevation of the placement site would be at mean high water (Elevation +8 feet MLW). Site 2 would also provide bird and fish habitats.

e. Site 2 Extension has a total capacity of 4.3 million cubic yards and is located below the mean low water contour (MLW) in the nearshore area off Tybee Island. At total capacity, the top elevation of the placement site would extend to -4 feet MLW.

f. Sites 3-6 are located south of the entrance channel and between Site 2 and the ODMDS. These sites were authorized within the LTMS (USACE 1996).

g. Savannah Harbor Ocean Dredged Material Disposal Site (ODMDS). The USEPA-approved ODMDS is a 4.26 square mile (or 2,726.4 acres) site and is centered at 31 56' 54" N and 80 45' 34" W. Total capacity is about 56.8 million cubic yards and at capacity the top elevation would be -26 feet MLW.

h. Site 11 has a total capacity of 2.0 million cubic yards and is located below the mean low water contour (MLW) in the nearshore area off Tybee Island. At total capacity, the top elevation of the placement site would extend to -10 feet MLW. This mound would provide fish habitat.

i. Site 12 has a total capacity of 3.0 million cubic yards and is located below the mean low water contour (MLW) in the nearshore area off Tybee Island. At total capacity, the top elevation of the placement site would extend to -10 feet MLW. This mound would provide fish habitat. This site would provide habitat by establishing a variation in contours of the water bottoms.

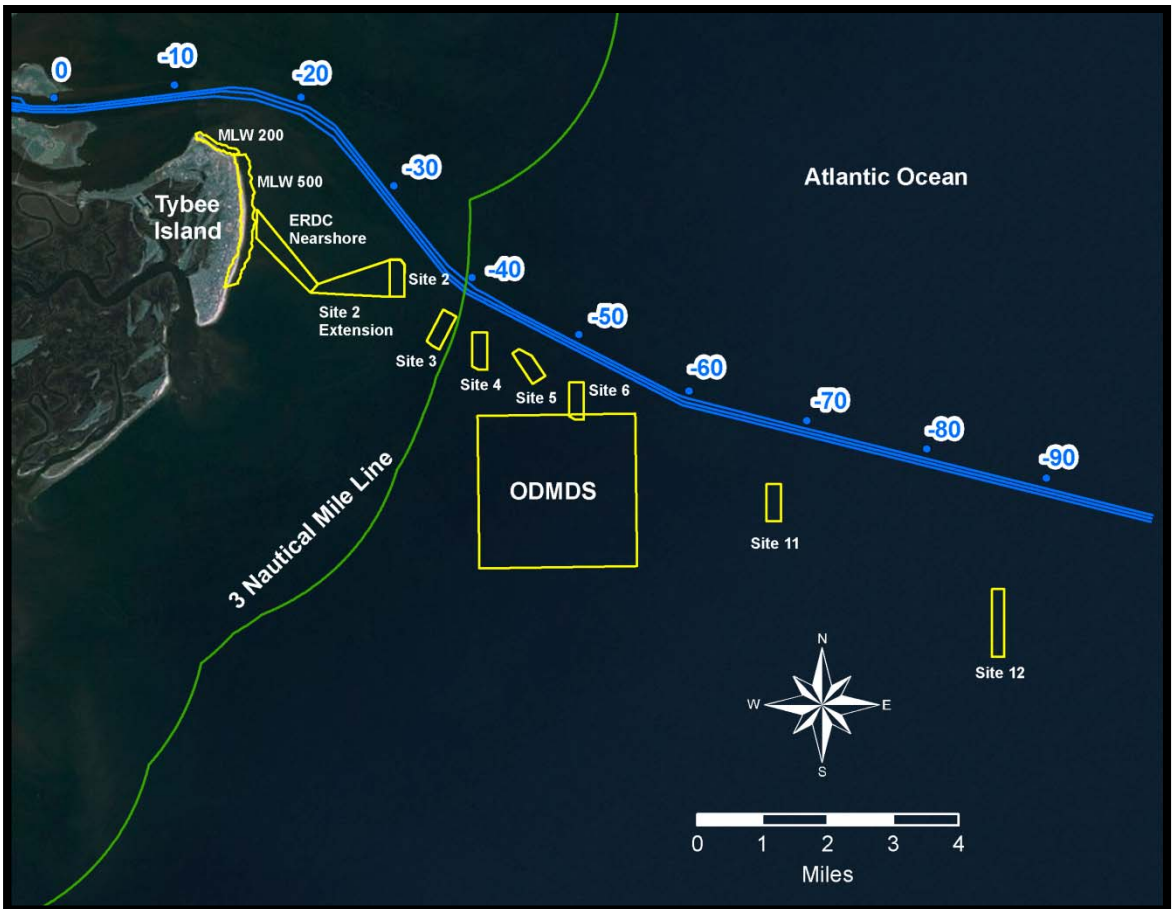

Figure 2. Location of sediment placement sites considered.

To address environmental acceptability, sediments with a fines content exceeding 20 percent would not be placed near the beach. Since sediments located reasonably close to the beach contain more than a very low (5 percent) content of fines, there will be no attempt to create a dry beach (above MHW). All placement of sediment at Tybee would occur at or just oceanward of the MLW line to protect the existing beach from scour during the deposition. The placement of sediment at or below the MLW should also reduce the appearance of clay balls on the beach when construction is complete.

A substantial volume of sediments would be deposited in the nearshore area between the beach and Site 2 (located directly east of the middle of the island). This placement would be an attempt to raise the elevation of some of the nearshore in front of the beach. Also, the shallower depth would increase the likelihood of waves moving sediments toward the beach.

The crest of the deposition in the nearshore sites would occur at -5 feet MLW to ensure recreational boats would not be severely impacted. That elevation represents a balance between producing no impact to recreational boaters and providing sediments that would be affected by both small and large waves. If sediments are too deep to be affected by waves, the waves cannot move those sediments toward the beach.

An intertidal mound would be created at Site 2, roughly 13,000 feet from the beach. The mound would provide isolated resting habitat for sea birds and some shorebirds for a period of time. The mound would serve as a source of sediments pushed by waves toward the beach. Those waves would reduce the size of the island, eventually making it subtidal and of no value to birds. While it is intertidal, the mound would provide shelter from the ocean waves and a varied habitat for fish. The base of this mound (Site 2) would be created using sediments with the poorest quality. Using those sediments as a base ensures they would be beneficially used, while covering them with better sediments ensures that sediments which subsequently migrate from the site would contain a higher sand content.

Sediment placed at Site 11 or 12 (oceanward of the Savannah ODMDS) would be placed in a manner to create a mound rising about 10-feet above the ocean floor. This mound would provide a different habitat for fish than the adjacent ocean floor, thereby improving fish habitat to a small degree. Placing the sediments at that location would also keep them from being disposed of in the Savannah Harbor Ocean Dredged Material Disposal Site, thereby preserving some of the capacity of that site.

The City of Tybee Island reviewed the DEIS including the proposal to place some of the dredged material into the nearshore sites. The City of Tybee Island believes that use of the nearshore sites would adversely affect the quality of the Tybee nearshore environment because of the fines content of the material. The Georgia DNR-CRD concurred with this determination and requested that the nearshore areas not be used for placement of dredged material from the SHEP. The Georgia DNR-CRD also requested that Sites 11 and 12 not be used because of potential adverse effects to marine habitat and commercial and recreational fishing. Consequently, all new work dredged material removed from the entrance channel from the SHEP would be placed in the ODMDS or one of the existing CDFs.

Although none of the nearshore sites or dredged material placement sites south of the entrance channel would be used for placement of new work material, some of these sites would be available for suitable maintenance material. The LTMS authorized placement of suitable maintenance material on the beach at Tybee Island, in the nearshore off Tybee Island and in various areas south of the entrance channel to construct feeder berms. These areas would thus be available for suitable maintenance material from the completed 47-foot project with one exception. EPA has determined that any dredged material placement site beyond the 3-mile line is considered an ocean dredged material disposal site. Consequently, the appropriate site designation studies (Section 103 of the MPRSA) would have to be conducted at such sites and the sites approved by the EPA as ocean dredged material disposal sites. Sites 4, 5, 6, 11 and 12 in Figure 2 are beyond the 3-mile line and thus unavailable for maintenance material unless they are designated by EPA in the future as ocean dredged material disposal sites.

The Georgia DNR-CRD also requested that new work material removed from the area including the entrance channel extension (Station -57+000B to Station -97+680B) be considered for nearshore placement or beach nourishment since this material contains 10% or less fines and minimal marine clays. The material that would be removed to extend the entrance channel would be placed in the ODMDS because this represents the least cost environmentally-acceptable disposal alternative for the SHEP. Use of this material for nearshore placement or

direct beach nourishment would require a non-Federal project sponsor who would be willing to incur the extra costs associated with this disposal alternative versus placing the material in the ODMDS.

5.3 Groundwater

Concern was raised during SHEP studies that deepening of the navigation channel could adversely affect the principal drinking water aquifer in the coastal area-the upper Floridan aquifer. The concern is that excavation of sediment required to deepen the harbor would allow saltwater to enter the freshwater aquifer, thereby degrading its quality and rendering it unacceptable for drinking purposes. Three potential pathways were identified whereby deepening of the navigation channel could possibly increase saltwater intrusion into the aquifer:

1. Deepening of the channel would require the removal of some of the top portion of the aquifer's protective layer (Miocene cap) which could result in saltwater intrusion into the aquifer.

2. Removal of sediments from paleochannels (former Pleistocene-age stream channels that have eroded into the Miocene cap) would increase the potential for intrusion into the aquifer.

3. Water with increased salinity levels could enter could enter aquifer via fractures or joints in the Miocene cap.

Various studies were conducted during the SHEP to address these issues. Based on the results of these studies, the following major conclusions were determined:

1. The primary cause of saltwater intrusion into the Floridan aquifer is long-term pumping from the aquifer to meet groundwater needs. The long-term pumping of water from the Upper Floridan aquifer and surrounding coastal counties has lowered ground water levels and reversed the seaward hydraulic gradient that existed before development. The increased withdrawal of water from the upper Floridan aquifer has resulted in a radial flow directed towards the center of pumping and a cone of depression beneath Savannah. Sustained pumping of water from the aquifer has also resulted in a downward hydraulic gradient and induced significant head differences between the surficial aquifer and the confined Upper Floridan aquifer. This effect has resulted in the downward intrusion of water through the Miocene layer into the aquifer.

2. Improvements (deepening) and maintenance of the Savannah Harbor Navigation Project have also had some impact on the downward migration of water through Miocene layer into the aquifer. Channel dredging has removed portions of the Pleistocene sands and Miocene clays that reside above the upper Floridan aquifer. GIS analysis conducted during the SHEP indicates that about 5 feet of the confining layer that protects the aquifer has been removed. Significant exposure of the Miocene layer appears to be a relatively recent event. GIS studies conducted during the SHEP also indicate that exposures of large stretches of the Miocene along the Bight Channel (Elba Island) and near the Kings Island Turning Basin appeared to have occurred between 1992 and 1998. The 42-foot deep navigation project was completed in 1994. Although deepening of the navigation channel has removed some of the Miocene cap, GIS analysis and

groundwater model studies indicate that historical dredging has probably had minimal influence on the rate of saltwater intrusion into the aquifer.

3. Underneath the navigation channel, the overall thickness of the confining unit ranges from about 30 feet thick near the Tybee high to over 150 feet thick near downtown Savannah. Model studies indicate that the expected increase in the downward flow of saline water from the area underlying the navigation channel due to channel deepening would be very low. The area that would have to be dredged to deepen the channel to 48 feet MLW accounts for a total downward flow between 50 and 250 gallons per minute. Deepening the navigation channel increases the downward flow between 2 and 7 gallons per minute which translates to a 3-4 percent increase. This contribution is negligible when compared to groundwater production in the Savannah area from the aquifer which is about 80 million gallons per day (55,555 gallons per minute).

4. SHEP studies identified eight significant paleochannels that have incised deeply into the Miocene confining layer between Stations 30+000 and -30+000B. Groundwater model study results indicate that the impacts of dredging sediments within the paleochannels would be small when compared to the impacts of dredging elsewhere in the channel where the Miocene unit is impacted. The bottom of the paleochannels represents the areas of minimum thickness of the Miocene confining layer in the harbor. Dredging to these depths would not be required.

5. Analysis conducted during SHEP studies indicates that the Savannah Harbor Project area is not likely characterized by joints or fractures which could serve as pathways for enhanced downward flow of water into the aquifer. This is evidenced by the absence of observable vertical joints in Miocene-aged surface exposures and the lack of evidence of joints or fractures in sub-surface cores of the Miocene. Also, there is no historical evidence (springs, etc.) of joints or fractures in the area.

5.4 Threatened and Endangered Species

A Biological Assessment of Threatened and Endangered Species (BATES) has been prepared for the SHEP. The BATES is included in the EIS as Appendix B. The BATES concludes that the proposed SHEP "may affect-is not likely to adversely affect" piping plover, wood stork, West Indian manatee, right whale and humpback whales, sea turtles, and Shortnose sturgeon. The BATES is subject to the review and approval of the US Fish and Wildlife Service and the National Marine Fisheries Service. The USFWS has issued a letter of concurrence with the determinations in the BATES with respect to those species for which they have responsibility. NOAA Fisheries issued a Biological Opinion. The concurrence letter from the USFWS and the BO issued by the NMFS are included in Appendix Z of the EIS.

6.0 STATE ENFORCEABLE POLICIES

6.1 Introduction

The goals of the Georgia Coastal Management Program are attained by enforcement of the policies of the State as codified within the Official Code of Georgia Annotated. "Policy" or "policies" of the Georgia Coastal Management Program means the enforceable provisions of present or future applicable statutes of the State of Georgia or regulations promulgated duly there under (O.C.G.A. 12-5-322). The statutes cited as policies of the Program were selected because they reflect the overall Program goals of developing and implementing a balanced program for the protection of the natural resources, as well as promoting sustainable economic development of the coastal area.

The list of state laws shown below, which -- along with their associated regulations – describe the legal authority for the state's regulation of its salt marshes, beaches and dune fields, and tidal water bottoms. Each of the coastal resources and use areas of concern is discussed separately in this section, in alphabetical order. For each coastal resources and use areas of concern, a policy statement is provided with a direct citation to Georgia law. The laws are not cited in their entirety. Instead, the purpose of the statute, or a pertinent section of the statute, is cited. The Program policies are the enforceable provisions of the laws cited. A policy statement for each law describes the spirit of the law, directly cited from statements set out in the particular law. In each case, the citation for the statement is provided. The particular statements may or may not be enforceable as written, but the laws to which they relate contain enforceable provisions that have been enacted by the Georgia General Assembly to implement the policies as stated. The policies cited here are, therefore, supported by legally binding laws of the State of Georgia, through which Georgia is able to exert control over impacts to the land and water uses and natural resources in the coastal area. The statutes referenced herein can be found in the Official Code of Georgia Annotated (O.C.G.A.), copies of which are located in headquarters offices of State and local agencies, most public libraries, local courthouses, and numerous other public offices.

A paragraph titled "General Description" is included after each cited policy to serve as a quick reference to the relevant provisions of the law. The General Description is not intended to be, nor should it be interpreted as, law, policy, or restatement of the law. It is merely provided for the convenience of the reader to gain an initial concept as to the content of the related law. The reader is advised to refer to the actual law cited, and not to rely on the General Description as a basis for a legal interpretation of the law on any particular issue. The "Policy Statement" and "General Description" paragraphs were copied directly from the Georgia CZM Program. A paragraph titled "Consistency" follows those two paragraphs to explain Savannah District's position on the extent to which the proposed project is consistent with that enforceable provision.

6.2 List of Pertinent State Laws and Authorities

Georgia Coastal Management Act
Coastal Marshlands Protection Act
Department of Natural Resources Authority
Endangered Wildlife Act
Game and Fish Code
Georgia Aquaculture Development Act
Georgia Air Quality Act
Historic Area Act
Georgia Boat Safety Act
Georgia Administrative Procedures Act (Revocable License Program)
Georgia Comprehensive Solid Waste Management Act
Georgia Environmental Policy Act
Georgia Erosion and Sedimentation Control Act
Georgia Fisheries Law Pertaining to Shellfish
Georgia Hazardous Waste Management Act
Georgia Heritage Trust Act
Georgia Natural Areas Act
Georgia Environmental Policy Act
Georgia Oil and Gas Deep Drilling Act
Georgia River and Harbor Development
Georgia Safe Dams Act
Georgia Safe Drinking Water Act
Georgia Scenic Rivers Act
Georgia Scenic Trails Act
Georgia Surface Mining Act
Georgia Underground Storage Tank Act
Georgia Water Quality Control Act
Groundwater Use Act
Licenses to Dig, Mine, and Remove Phosphate Deposits
Protection of Tidewaters Act
River Corridor Protection Act
Title 31 - Health (Septic Tank Law)
Shore Protection Act
Water Wells Standards Act
Wildflower Preservation Act

6.3 Aquaculture

6.3.1 Policy Statement

Georgia Aquaculture Development Act (O.C.G.A. 27-4-251, et seq.) 27-4-254. Duty of commission to develop aquaculture development plan; contents of plan; meetings of commission; staff support. The commission shall make a thorough study of aquaculture and the potential for development and enhancement of aquaculture in the state. It shall be the duty of the

commission to develop, distribute, and, from time to time, amend an aquaculture development plan for the State of Georgia for the purpose of facilitating the establishment and growth of economically viable aquaculture enterprises in Georgia. (Code 1981. SS 27-4-254, enacted by Ga.L. 1992, p. 1507, SS 8.)

6.3.2 General Description

The Georgia Aquaculture Development Act was enacted in 1992 to study aquaculture development in Georgia. A 14-member Aquaculture Development Commission composed of industry representatives, scientists, agency representatives, and others is created. The Department of Natural Resources, with assistance from the Department of Agriculture and the Department of Industry, Trade, and Tourism provides staff support for the Commission.

6.3.3 Consistency

This policy is not applicable to the proposed project.

6.4 Air Quality

6.4.1 Policy Statement.

Georgia Air Quality Act (0.C.G.A. 12-9-1, et seq.) 12-9-2. Declaration of public policy. It is declared to be the public policy of the State of Georgia to preserve, protect, and improve air quality and to control emissions to prevent the significant deterioration of air quality and to attain and maintain ambient air quality standards so as to safeguard the public health, safety, and welfare consistent with providing for maximum employment and full industrial development of the state. (Code 1933, 88-901, enacted by Ga.L. 1967, p. 581, SS 1; Ga.L. 1978, p. 275, SS 1; Ga.L. 1992, p. 918, SS 2; Ga.L. 1992, p. 2886, SS 1.)

6.4.2 General Description

The Georgia Air Quality Act provides authority to GA DNR's Environmental Protection Division to promulgate rules and regulations necessary to abate or to control air pollution for the State as a whole or from area to area, as may be appropriate. Establishment of ambient air quality standards, emission limitations, emission control standards, and other measures are necessary to provide standards that are no less stringent than the Federal Clean Air Act are mandated. The Act also requires establishment of a program for prevention and mitigation of accidental releases of hazardous air contaminants or air pollutants, training and educational programs to ensure proper operation of emission control equipment, and standards of construction no less stringent than the federal Act. The Environmental Protection Division administers the Georgia Air Quality Act throughout the State. The Memorandum of Agreement between the Georgia Coastal Resources Division and the Environmental Protection Division ensures cooperation and coordination in the achievement of the policies of the Program.

6.4.3 Consistency

The Georgia Department of Natural Resources, Environmental Protection Division, Air Protection Branch (GADNR- EPD, APB) and the South Carolina Department of Health and Environmental Control, Bureau of Air Quality (SC DHEC, BAQ), has air quality jurisdiction for the project area for Chatham County, Georgia and Jasper County, South Carolina, respectively. The ambient air quality for Chatham County, Georgia and Jasper County, South Carolina have been determined to be in compliance with the National Ambient Air Quality Standards, and both counties have been designated as an attainment area (Personal Communication, 20 February 2007, Jim Kelly, GADNR-EPD, APB and Fatina Washburn, SC DHEC, BAQ).

Adverse impacts to air quality stemming from the use of construction equipment would be minimal in extent, temporary in nature, and distributed over 50 miles of area. Construction of the SHEP would improve ambient air quality in Savannah Harbor. With a deeper channel, larger vessels would call at the Port. The total number of container ships calling at the port would decrease in a given year since more goods would be carried in each of the larger vessels. A more detailed description of the impacts of the proposed action on air quality is found in the EIS in Appendix K– Air Emission Inventory. The proposed project is fully consistent with this policy.

6.5 Boating Safety

6.5.1 Policy Statement

Georgia Boat Safety Act (O.C.G.A. 52-7-1. et seq.) 52-7-2. Declaration of policy. It is the policy of this state to promote safety for persons and property in and connected with the use, operation, and equipment of vessels and to promote the uniformity of laws relating thereto. (Ga.L. 1973, p. 1427, SS 2)

6.5.2 General Description

The Georgia Boat Safety Act provides enforceable rules and regulations for safe boating practices on Georgia's lakes, rivers, and coastal waters. This Act establishes boating safety zones for a distance of 1,000 feet from the high-water mark on Jekyll Island, Tybee Island, St. Simons Island, and Sea Island. All motorized craft, including commercial fishing vessels, jet skis, and powerboats, are prohibited from these waters, except at certain pier and marina access points. This Act defines "abandoned vessels" as any left unattended for five days and provides for their removal. The Law Enforcement Section of the Georgia Department of Natural Resources, Wildlife Resources Division and the Georgia Bureau of Investigation enforces these regulations.

6.5.3 Consistency

The proposed deepening of the Federal navigation channel would comply with all required US Coast Guard safety regulations. The deepened channel (including the ocean bar channel) would be identified with the required US Coast Guard buoys and channel markers.

6.6 Coastal Management

6.6.1 Policy Statement.

Georgia Coastal Management Act (0.C.G.A. 12-5-320, et seq.) 12-5-321. Legislative purpose. The General Assembly finds and declares that the coastal area of Georgia comprises a vital natural resource system. The General Assembly recognizes that the coastal area of Georgia is the habitat of many species of marine life and wildlife, which must have clean waters, and suitable habitat to survive. The General Assembly further finds that intensive research has revealed that activities affecting the coastal area may degrade water quality or damage coastal resources if not properly planned and managed. The General Assembly finds that the coastal area provides a natural recreation resource, which has become vitally linked to the economy of Georgia's coast and to that of the entire state. The General Assembly further finds that resources within this coastal area are costly, if not impossible, to reconstruct or rehabilitate once adversely affected by human-related activities and it is important to conserve these resources for the present and future use and enjoyment of all citizens and visitors to this state. The General Assembly further finds that the coastal area is a vital area of the state and that it is essential to maintain the health, safety, and welfare of all the citizens of the state. Therefore, the General Assembly declares that the management of the coastal area has more than local significance, is of equal importance of all citizens of the state, is of state-wide concern, and consequently is properly a matter for coordinated regulation under the police power of the state. The General Assembly further finds and declares that activities and structures in the coastal area must be regulated to ensure that the values and functions of coastal waters and natural habitats are not impaired and to fulfill the responsibilities of each generation as public trustees of the coastal waters and habitats for succeeding generations.

6.6.2 General Description

The Coastal Management Act provides enabling authority for the State to prepare and administer a coastal management program. The Act does not establish new regulations or laws; it is designed to establish procedural requirements for the Department of Natural Resources to develop and implement a program for the sustainable development and protection of coastal resources. It establishes the Department of Natural Resources as the State agency to receive and disburse federal grant moneys. It establishes the Governor as the approving authority of the program and as the person that must submit the program to the Federal government for approval under the Federal Coastal Zone Management Act. It requires other State agencies to cooperate with the Coastal Resources Division when exercising their activities within the coastal area.

6.6.3 Consistency

Preparation of this Consistency Determination is evidence that the Corps of Engineers agrees that Georgia’s coast is a vital natural resource that deserves protection from unwise use. The proposed project fully adheres to the state’s enforceable policies concerning development on the coast. The proposed project is fully consistent with this policy.

6.7 Coastal Marshlands

6.7.1 Policy Statement

Coastal Marshlands Protection Act (O.C.G.A. 12-5-280, et seq.) 12-5-281. Legislative findings and declarations. The General Assembly finds and declares that the coastal marshlands of Georgia comprise a vital natural resource system. It is recognized that the estuarine area of Georgia is the habitat of many species of marine life and wildlife and, without the food supplied by the marshlands, such marine life and wildlife cannot survive. The General Assembly further finds that intensive marine research has revealed that the estuarine marshlands of coastal Georgia are among the richest providers of nutrients in the world. Such marshlands provide a nursery for commercially and recreationally important species of shellfish and other wildlife, provide a great buffer against flooding and erosion, and help control and disseminate pollutants. Also, it is found that the coastal marshlands provide a natural recreation resource, which has become vitally linked to the economy of Georgia's coastal zone and to that of the entire state. The General Assembly further finds that this coastal marshlands resource system is costly, if not impossible, to reconstruct or rehabilitate once adversely affected by man related activities and is important to conserve for the present and future use and enjoyment of all citizens and visitors to this state. The General Assembly further finds that the coastal marshlands are a vital area of the state and are essential to maintain the health, safety, and welfare of all the citizens of the state. Therefore, the General Assembly declares that the management of the coastal marshlands has more than local significance, is of equal importance to all citizens of the state, is of state-wide concern, and consequently is properly a matter for regulation under the police power of the state. The General Assembly further finds and declares that activities and structures in the coastal marshlands must be regulated to ensure that the values and functions of the coastal marshlands are not impaired and to fulfill the responsibilities of each generation as public trustees of the coastal marshlands for succeeding generations. (Code 1981, SS 12-5-281, enacted by Ga.L. 1992, p. 2294, SS 1.)

6.7.2 General Description

The Coastal Marshlands Protection Act provides the Coastal Resources Division with the authority to protect tidal wetlands. The Coastal Marshlands Protection Act limits certain activities and structures in marsh areas and requires permits for other activities and structures. Erecting structures, dredging, or filling marsh areas requires a Marsh Permit administered through the Coastal Management Program. In cases where the proposed activity involves construction on State-owned tidal water bottoms, a Revocable License issued by the Coastal Resources Division may also be required. Marsh Permits and Revocable Licenses are not issued for activities that are inconsistent with the Georgia Coastal Management Program.

The jurisdiction of the Coastal Marshlands Protection Act extends to "coastal marshlands" or "marshlands", which includes marshland, intertidal area, mudflats, tidal water bottoms, and salt marsh area within estuarine area of the state, whether or not the tidewaters reach the littoral areas through natural or artificial watercourses. The estuarine area is defined as all tidally influenced waters, marshes, and marshlands lying within a tide-elevation range from 5.6 feet above mean high-tide level and below. Exemptions from the jurisdiction of the Act include: Georgia Department of Transportation activities, generally; agencies of the United States charged with

maintaining navigation of rivers and harbors; railroad activities of public utilities companies; activities of companies regulated by the Public Service Commission; activities incident to water and sewer pipelines; and, construction of private docks that don't obstruct tidal flow.

Any agricultural or silvicultural activity that directly alters lands within the jurisdictional areas of the Coastal Marshlands Protection Act must meet the permit requirements of the Act and must obtain a permit issued by the Coastal Resources Division on behalf of the Coastal Marshlands Protection Committee. Permits for marinas, community docks, boat ramps, recreational docks, and piers within the jurisdiction of the Coastal Marshlands Protection Act are administered by the Coastal Resources Division. To construct a marina, a marina lease is required. Private-use recreational docks are exempt from the Coastal Marshlands Protection Act, but must obtain a Revocable License and a State Programmatic General Permit.

6.7.3 Consistency

The project would be constructed in Georgia and South Carolina waters and would affect wetlands within the jurisdiction of the Georgia Coastal Marshlands Protection Act. As indicated in the EIS and Mitigation Plan found in Appendix C, approximately 223 acres of tidal freshwater marsh in the Savannah National Wildlife Refuge would convert to brackish marsh if the 47-foot project is constructed. This change would be attributable to an increase in upstream salinity levels caused by deepening of the navigation channel. Approximately 740 acres of salt marsh may convert to brackish marsh (with the 47-foot project) as a result of the flow rerouting mitigation features. The mitigation plan for the SHEP provides for acquisition of about 2,245 acres of lands identified on the Refuge's Acquisition Plan. Lands placed on the acquisition plan have been evaluated and determined to be ecologically significant. The acquired lands would be preserved and become part of the National Wildlife Refuge.

Approximately 3.2 acres of brackish marsh would be lost as result of the expansion of the Kings Island Turning Basin and about 4.0 acres of brackish marsh would be lost as a result of excavation requirements for the project. An additional 7.63 acres of brackish marsh would be lost on the Georgia side of Back River where the Tidegate Structure end wall is removed. In-kind mitigation would be provided for this loss of brackish marsh. Approximately 40.3 acres of estuarine emergent wetlands would be restored in Savannah Harbor. This restoration would be achieved by grading down uplands to marsh elevation (formerly wetlands) in Disposal Area 1S near the juncture of Front River and Middle River. Site preparation would also include the construction of finger streams to ensure the site is subjected to tidal influence.

Since the project provides mitigation for all affected wetlands, the proposed project is consistent with this policy. This document will be coordinated with the GA DNR-CRD for their review and concurrence with this determination.

6.8 Dams

6.8.1 Policy Statement

Georgia Safe Dams Act (O.C.G.A. 12-5-370, et seq.) 12-5-371. Declaration of purpose. It is the purpose of this part to provide for the inspection and permitting of certain dams in order to protect the health, safety, and welfare of all the citizens of the state by reducing the risk of failure of such dams. The General Assembly finds and declares that the inspection and permitting of certain dams is properly a matter for regulation under the police powers of the state. (Ga.L. 1978, p. 795. SS 2)

6.8.2 General Description

The Georgia Safe Dams Act provides for the inspection and permitting of certain dams to protect the health, safety, and welfare of Georgia residents. The Environmental Protection Division of the Georgia Department of Natural Resources is responsible for inspecting and certifying dams.

6.8.3 Consistency

Construction or operation of a dam is not included in this project.

6.9 Department of Natural Resources

6.9.1 Policy Statement

12-2-3. Departmental purposes. It shall be the objectives of the department: a. To have the powers, duties, and authority formerly vested in the Division of Conservation and the commissioner of conservation; b. By means of investigation, recommendation, and publication, to aid: (1) In the promotion of the conservation and development of the natural resources of the state; (2) In promoting a more profitable use of lands and waters; (3) In promoting the development of commerce and industry; and In coordinating existing scientific investigations with any related work of other agencies for the purpose of formulating and promoting sound policies of conservation and development. c. To collect and classify the facts derived from such investigations and from the work of other agencies of the state as a source of information accessible to the citizens of the state and to the public generally, which facts set forth the natural, economic, industrial, and commercial advantages of the state; and d. To establish and maintain perfect cooperation with any and every agency of the federal government interested in or dealing with the subject matter of the department. (Ga. L. 1937, p. 264, SS 4; Ga. L. 1949, p. 1079, SS 1; Ga.L. 1992, p. 6. SS 12.)

6.9.2 General Description

The authority for the Department of Natural Resources is found at O.C.G.A. 12-21, et seq. The objectives for the Department are described, including to aid: in promoting the conservation and development of the State's natural resources; in promoting a more profitable use of lands and waters; in promoting the development of commerce and industry; and in coordinating existing

scientific investigations with related work of other agencies for the purpose of formulating and promoting sound policies of conservation and development. The Act also requires the Department to establish and maintain perfect cooperation with any and every agency of the federal government interested in or dealing with the subject matter of the department."

The powers of the Department are established, including: investigations of the natural mining industry and commercial resources of the State and promotion of the conservation and development of such resources; the care of State parks and other recreational areas now owned or to be acquired by the State; examination, survey, and mapping of the geology, mineralogy, and topography of the State, including their industrial and economic utilization; investigation of the water supply and water power of the State with recommendations and plans for promoting their more profitable use and promotion of their development; investigations of existing conditions of trade, commerce, and industry in the State, with particular attention to the causes that may hinder or encourage their growth, and recommendations of plans that promote development of their interests.

The Department is set up in several Divisions. The Wildlife Resources Division is empowered to acquire land areas and to enter into agreements with landowners and the federal government for purposes of managing wildlife species and establishing specific sanctuaries, wildlife management areas, and public fishing areas. The Wildlife Resources Division administers a management plan for each area, which establishes short- and long-term uses, and guidelines for protection and use of each specific area. These areas owned and/or managed by the Wildlife Resources Division are important resources of the coastal area for conservation of wildlife and also for recreational hunting and fishing opportunities. Wildlife management areas within the jurisdiction of the Coastal Marshlands Protection Act and/or Shore Protection Act receive the additional protection provided by said legislation. The Environmental Protection Division is empowered to manage the State's air and water resources. The Coastal Resources Division is charged with management of coastal resources, which includes implementation of the Coastal Marshlands Protection Act and the Shore Protection Act. The Coastal Resources Division responsibilities also include management of marine fisheries resources. The Pollution Prevention Assistance Division provides technical assistance and education for reducing pollution throughout Georgia, including development of Best Management Practices for various industries. The Historic Preservation Division is charged with cataloging, protecting, and preserving the State's historic sites and areas. The Parks, Recreation, and Historic Sites Division has primary responsibility for development and maintenance of the State's parks and historic sites. The Program Support Division provides administrative support for the Department.

6.9.3 Consistency

The District coordinated mitigation plans for the proposed work with the GA DNR to obtain their views during development of the project. The EIS will be coordinated with GA DNR. The proposed project is consistent with this policy.

6.10 Endangered Wildlife

6.10.1 Policy Statement

Endangered Wildlife Act (0.C.G.A. 2 7-3-130, et seq.) 27-3-132. Powers and duties of department and board. The department shall identify and inventory any species of animal life within this state which it determines from time to time to be rare, unusual, or in danger of extinction; and, upon such determination, such species shall be designated protected species and shall become subject to the protection of this article.

The board shall issue such rules and regulations as it may deem necessary for the protection of protected species and for the enforcement of this article. Such rules and regulations shall not affect rights in private property or in public or private streams, nor shall such rules and regulations impede construction of any nature. Such rules and regulations shall be limited to the regulation of the capture, killing, or selling of protected species and the protection of the habitat of the species on public lands.

6.10.2 General Description

The Endangered Wildlife Act provides for identification, inventory, and protection of animal species that are rare, unusual, or in danger of extinction. Additional species may be added by the Board of Natural Resources at any time. The protection offered to these species is limited to those that are found on public lands of the State. It is a misdemeanor to violate the rules prohibiting capture, killing, or selling of protected species, and protection of protected species habitat on public lands. The rules and regulations are established and administered by the Department of Natural Resources for implementation of this Act.

Projects permitted under the authority of the Coastal Marshlands Protection Act, the Shore Protection Act, and the Revocable License require full compliance with the protection of endangered and protected species. Outside the jurisdiction of these laws, for those areas that are not public lands of Georgia, protection of endangered species is provided by the federal Endangered Species Act, which has jurisdiction over both private and public lands.

6.10.3 Consistency

A Biological Assessment of Threatened and Endangered Species (BATES) [Appendix B of the EIS] has been prepared for the SHEP. The BATES includes an evaluation of potential effects to state listed species. Based on information developed in the BATES, a Summary Effect Determination has been developed to the effect that the project "may affect – is not likely to adversely affect" piping plover, wood stork, West Indian manatee, right whale and humpback whales, sea turtles, and Shortnose sturgeon. The BATES was submitted to the USFWS and NOAA for their review. The report prepared by the USFWS on threatened and endangered species and the BO prepared by NOAA are in Appendix Z. The BO includes reasonable and prudent measures to protect Loggerhead and Kemp's Ridley sea turtles and Shortnose and Atlantic sturgeon.

As shown in Table 6, the proposed 47-foot deepening of the navigation channel would beneficially affect 89 acres of Shortnose sturgeon summer habitat. However, it would also adversely impact up to 266 acres of adult winter Shortnose sturgeon habitat and about 251 acres of juvenile winter Shortnose sturgeon habitat even with implementation of the Mitigation Plan. As additional mitigation for this species, a fish bypass structure (off-channel rock ramp design) would be constructed around the lowest dam on the river, the New Savannah Bluff Lock & Dam (NSBL&D) at Augusta, Georgia. A fishway around the structure would allow migrating fish to access historic spawning areas upstream at the Augusta Shoals. The structure would also open up the upper river and the Shoals to American shad and other anadromous fish species.

Standard manatee, Shortnose sturgeon, sea turtle, and right whale conditions would be included in any construction contract for the work. As required by the Section 401 Water Quality Certification issued for the project, all hopper dredging activities would be restricted to December 15 through March 31, when sea turtles are least abundant. Hopper dredges would have fully functional inflow and outflow screening and protected species observers.

Construction of the SHEP would not adversely affect any plant or animal listed as threatened or endangered in the State of Georgia.

With the proposed mitigation in place for the Shortnose sturgeon, the proposed project is fully consistent with this policy.

6.11 Environmental Policy

6.11.1 Policy Statement

Georgia Environmental Policy Act (0.C.G.A. 12-16-1, et seq.) 12-16-2. Legislative findings. The General Assembly finds that: a. The protection and preservation of Georgia's diverse environment is necessary for the maintenance of the public health and welfare and the continued viability of the economy of the state and is a matter of the highest public priority; b. State agencies should conduct their affairs with an awareness that they are stewards of the air, land, water, plants, animals, and environmental, historical, and cultural resources; c. Environmental evaluations should be a part of the decision-making processes of the state; and d. Environmental effects reports can facilitate the fullest practicable provision of timely public information, understanding, and participation in the decision-making processes of the state. (Code 1981, SS 12-16-2, enacted by Ga. L. 1991, p. 1728, SS 1.)

6.11.2 General Description

The Georgia Environmental Policy Act (GEPA) requires that all State agencies and activities prepare an Environmental Impact Report as part of the decision-making process. This is required for all activities that may have an impact on the environment. Alternatives to the proposed project or activity must be considered as part of the report.

6.11.3 Consistency

This Coastal Zone Management Consistency Determination is a component of the EIS, which evaluates the impacts of the proposed SHEP. The Georgia Ports Authority has been a Cooperating Agency in the preparation of the EIS. The Georgia DOT may be the non-Federal sponsor in the implementation of the project. Although GEPA does not directly apply to a proposed Federal navigation project, Federal agencies must comply with a similar law, the National Environmental Policy Act (NEPA). Preparation of the EIS is fully consistent with both this state law and NEPA.

6.12 Erosion and Sedimentation

6.12.1 Policy Statement

Georgia Erosion and Sedimentation Act (O.C.G.A. 12-7-1. et seq.) 12-7-2. Legislative findings; policy of state and intent of chapter. It is found that soil erosion and sediment deposition onto lands and into waters within the watersheds of this state are occurring as a result of widespread failure to apply proper soil erosion and sedimentation control practices in land clearing, soil movement, and construction activities and that such erosion and sediment deposition result in pollution of state waters and damage to domestic, agricultural, recreational, fish and wildlife, and other resource uses. It is therefore declared to be the policy of this state and the intent of this chapter to strengthen and extend the present erosion and sediment control activities and programs of this state and to provide for the establishment and implementation of a state-wide comprehensive soil erosion and sediment control program to conserve and protect the land, water, air, and other resources of this state. (Ga. L. 1975, p.994, SS 2.)

6.12.2 General Description

The Georgia Erosion and Sedimentation Act requires that each county or municipality adopt a comprehensive ordinance establishing procedures governing land disturbing activities based on the minimum requirements established by the Act. The Erosion and Sedimentation Act is administered by the Environmental Protection Division of the Georgia Department of Natural Resources, and by local governments. Permits are required for specified "land-disturbing activities," including the construction or modification of manufacturing facilities, construction activities, certain activities associated with transportation facilities, activities on marsh hammocks, etc. With certain constraints, permitting authority can be delegated to local governments.

One provision of the Erosion and Sedimentation Act requires that land-disturbing activities shall not be conducted within 25 feet of the banks of any State waters unless a variance is granted (O.C.G.A. 12-7-6-(15)). Construction of single-family residences under contract with the owner are exempt from the permit requirement but are still required to meet the standards of the Act (O.C.G.A. 12-7-17-(4)). Large development projects, both residential and commercial, must obtain a permit and meet the requirements of the Act. According to the Georgia Coastal Management Act, any permits or variances issued under the Erosion and Sedimentation Act must be consistent with the Georgia Coastal Management Program. Permits within the jurisdiction of

the Coastal Marshlands Protection Act and the Shore Protection Act can include requirements that certain minimum water quality standards be met as a condition of the permit.

There are specific exemptions to the requirements of the Erosion and Sedimentation Act (O.C.G.A. 12-7-17 - Exemptions). The exemptions include: surface mining, granite quarrying, minor land-disturbing activities such as home gardening, construction of single-family homes built or contracted by the homeowner for his own occupancy, agricultural practices, forestry land management practices, dairy operations, livestock and poultry management practices, construction of farm buildings, and any projects carried out under the supervision of the Natural Resource Conservation Service of the US Department of Agriculture. Exemptions from the requirements of the Act also apply to any project involving 1.1 acres or less, provided that the exemption does not apply to any land-disturbing activities within 200 feet of the bank of any State waters. Construction or maintenance projects undertaken or financed by the Georgia Department of Transportation, the Georgia Highway Authority, or the Georgia Tollway Authority, or any road or maintenance project undertaken by any county or municipality, are also exempt from the permit requirements of the Act, provided that such projects conform to the specifications used by the Georgia Department of Transportation for control of soil erosion. Exemptions are also provided to land-disturbing activities by any airport authority, and by any electric membership corporation or municipal electrical system, provided that such activities conform as far as practicable with the minimum standards set forth at Code Section 12-7-6 of the Erosion and Sedimentation Act. The Georgia Department of Transportation has developed a "Standard Specifications -- Construction of Roads and Bridges," which describes contractor requirements, including controls for sedimentation and erosion. The specifications describe the requirements for both temporary control measures for use during the construction phase, and permanent erosion and sedimentation control measures that need to be incorporated into the design of the project. Failure to comply with the provisions of the specification will result in cessation of all construction activities by the contractor, and may result in the withholding of moneys due to the contractor according to a schedule of non-performance of erosion control, enforced by the Georgia Department of Transportation. Forestry and agricultural land-disturbing activities are subject to the Best Management Practices of the Georgia Forest Commission and the Georgia Soil and Water Conservation Commission, respectively.

6.12.3 Consistency

The primary land disturbing activity for the proposed action would be within the seven existing upland CDFs. Any dike construction, raising, surface preparation or similar activities would use Best Management Practices and conform to the erosion control requirements of the responsible county.

The Georgia Erosion and Sedimentation Control Act requires that land-disturbing activities not be conducted within 25 feet of the banks of any State waters unless a variance is granted. Buffer zone variances may be required for various project elements including shore bank construction for the oxygen injection systems support structures, the boat ramp, the marsh restoration activities in Disposal Area 1S, cut closures, bank stabilization, etc. The Corps would coordinate plans and specifications as they become available with the Georgia DNR-EPD to determine if buffer variances would be required for the various features of the project. If appropriate, buffer

variances would be obtained from the Georgia DNR-EPD as required. The proposed project is therefore consistent with this policy.

6.13 Game and Fish

6.13.1 Policy Statement

27-1-3. Ownership and custody of wildlife; privilege to hunt, trap, or fish; general offenses. (Game and Fish Code) The ownership of, jurisdiction over, and control of all wildlife, as defined in this title, are declared to be in the State of Georgia, in its sovereign capacity, to be controlled, regulated, and disposed of in accordance with this title. All wildlife of the State of Georgia are declared to be within the custody of the department for purposes of management and regulation in accordance with this title. However, the State of Georgia, the department, and the board shall be immune from suit and shall not be liable for any damage to life, person, or property caused directly or indirectly by any wildlife.

To hunt, trap, or fish, as defined in this title, or to possess or transport wildlife is declared to be a privilege to be exercised only in accordance with the laws granting such privilege. Every person exercising this privilege does so subject to the right of the state to regulate hunting, trapping, and fishing; and it shall be unlawful for any person participating in the privileges of hunting, trapping, fishing, possessing, or transporting wildlife to refuse to permit authorized employees of the department to inspect and count such wildlife to ascertain whether the requirements of the wildlife laws and regulations are being faithfully complied with. Any person who hunts, traps, fishes, possesses, or transports wildlife in violation of the wildlife laws and regulations violates the conditions under which this privilege is extended; and any wildlife then on his person or within his immediate possession are deemed to be wildlife possessed in violation of the law and are subject to seizure by the department pursuant to Code Section 27-1-21.

It shall be unlawful to hunt, trap, or fish except during an open season for the taking of wildlife, as such open seasons may be established by law or by rules and regulations promulgated by the board or as otherwise provided by law.

It shall be unlawful to hunt, trap, or fish except in compliance with the bag, creel, size, and possession limits and except in accordance with such legal methods and weapons and except at such times and places as may be established by law or by rules and regulations promulgated by the board.

It shall be unlawful to hunt, trap, or fish for any game species after having obtained the daily or season bag or creel limit for that species.

A person who takes any wildlife in violation of this title commits the offense of theft by taking. A person who hunts, traps, or fishes in violation of this title commits the offense of criminal attempt. Any person who violates any provision of this Code section shall be guilty of a misdemeanor.

If any court finds that any criminal violation of the provisions of this title is so egregious as to display a willful and reckless disregard for the wildlife of this state, the court may, in its discretion, suspend the violator's privilege to hunt, fish, trap, possess, or transport wildlife in this state for a period not to exceed five years. Any person who hunts, fishes, traps, possesses, or transports wildlife in this state in violation of such suspension of privileges shall be guilty of a misdemeanor of a high and aggravated nature and upon conviction thereof shall be punished by a fine of not less than $1,500.00 nor more than $5,000.00 or imprisonment for a period not exceeding 12 months or both. (Ga. L. 1968, p. 497, SS 1; Code 1933, SS 45-201, enacted by Ga. L. 1977, p. 396, SS 1; Ga. L. 1978, p. 816, SS 13, 14; Ga. L. 1992, p. 2391, SS 1.) 27-1-4.

Powers and duties of board generally. The board shall have the following powers and duties relative to this title:

a. Establishment of the general policies to be followed by the department under this title;

b. Promulgation of all rules and regulations necessary for the administration of this title including, but not limited to, rules and regulations to regulate the times, places, numbers, species, sizes, manner, methods, ways, means, and devices of killing, taking, capturing, transporting, storing, selling, using, and consuming wildlife and to carry out this title, and rules and regulations requiring daily, season, or annual use permits for the privilege of hunting and fishing in designated streams, lakes, or game management areas; and

c. Promulgation of rules and regulations to protect wildlife, the public, and the natural resources of this state in the event of fire, flood, disease, pollution, or other emergency situation without complying with Chapter 13 of Title 50, the "Georgia Administrative Procedure Act." Such rules and regulations shall have the force and effect of law upon promulgation by the board. (Ga. L. 1911, p. 137, SS 1; Ga. L. 1924, p. 101, SSSS 1, 3,4; Ga. L. 1931, p. 7, SS 25; Ga. L. 1937, p. 264, SSSS 1, 4, 9; Ga. L. 1943, p. 128, SSSS 1, 2, 14; Ga. L. 1955, p. 483, SS 3; Ga. L. 1972, p. 1015, SS 1527; Ga. L. 1973, p. 344, SS 1; Code 1933, SS 45-103, enacted by Ga. L. 1977, p. 396, SS 1; Ga. L. 1978, p. 816, SS 7; Ga. L. 1979, p. 420, SS 3; Ga. L. 1987, p. 179, SS 1)

6.13.2 General Description

The Official Code of Georgia Annotated, Title 27, Chapter I (known as the Game and Fish Code) provides the ownership of, jurisdiction over, and control of all wildlife to be vested in the State of Georgia. The section declares that custody of all wildlife in the State is vested with the Georgia Department of Natural Resources for management and regulation. The Wildlife Resources Division is the principal State agency vested with statutory authority for the protection, management and conservation of terrestrial wildlife and fresh water wildlife resources, including fish, game, non-game, and endangered species. All licensing of recreational and commercial fish and wildlife activities, excluding shellfish, is performed by the Wildlife Resources Division. The Coastal Resources Division issues shellfish permits, regulates marine fisheries activities including the opening and closing of the commercial shrimp harvesting season, areas of shrimp harvest, regulates marine species size and creel limits, and enforces the National Shellfish Sanitation Program. The Commissioner of the Department of Natural

Resources has directed that there will be cooperation and coordination between the Divisions of the Department in the administration of their respective responsibilities.

6.13.3 Consistency

The proposed project includes no feature to hunt, trap, fish, possess or transport any recreational and commercial fish or wildlife species. Therefore, no such license is required by the project.

6.14 Georgia Heritage

6.14.1 Policy Statement

Georgia Heritage Trust Act (O.C.G.A. 12-3-70, et seq.) 12-3-71. Legislative purpose. The General Assembly finds that certain real property in Georgia, because it exhibits unique natural characteristics, special historical significance, or particular recreational value, constitutes a valuable heritage, which should be available to all Georgians, now and in the future. The General Assembly further finds that much of this real property, because of Georgia's rapid progress over the past decade, has been altered, that its value as part of our heritage has been lost, and that such property, which remains, is in danger of being irreparably altered. The General Assembly declares, therefore, that there is an urgent public need to preserve important and endangered elements of Georgia's heritage, so as to allow present and future citizens to gain an understanding of their origins in nature and their roots in the culture of the past and to ensure a future sufficiency of recreational resources. The General Assembly asserts the public interest in the state's heritage by creating the Heritage Trust Program which shall be the responsibility of the Governor and the Department of Natural Resources and which shall seek to protect this heritage through the acquisition of fee simple title or lesser interests in valuable properties and by utilization of other available methods. (Ga. L. 1975, p. 962, SS 2.)

6.14.2 General Description

Georgia's Heritage Trust Act of 1975 seeks to preserve certain real property in Georgia that exhibits unique natural characteristics, special historical significance, or particular recreational value. This Act created the Heritage Trust Commission, composed of 15 members appointed by the Governor who represent a variety of interests and expertise. The Commission served as an advisory body to the Governor and to the Board of the Department of Natural Resources, making recommendations concerning the identification, designation, and acquisition of heritage areas. Although this Act is still in Georgia law, the Commission's term expired and the implementation and administration of many of the goals of the Act has been superseded by the Heritage 2000 Program.

6.14.3 Consistency

There are no known designated heritage areas within the proposed project area.

The USACE is developing a survey strategy to understand the effects the proposed project will have on significant submerged resources and will be implementing a Programmatic Agreement

(PA) as specified under 36 CFR 800.14b(1)(ii). The PA will allow the USACE to complete needed studies, determine significance and develop mitigation plans if significant resources cannot be avoided. The PA has been reviewed and signed by the Georgia and South Carolina State Historic Preservation Officers. The *CSS Georgia*, a Confederate ironclad, is a significant resource that may be impacted by the proposed project. The resource is owned by the US Navy. As the owner of the vessel, the Navy requested signatory status and has signed the PA. The agreement has also been coordinated with appropriate federally recognized tribes. The PA is included as Appendix G in the final Environmental Impact Statement.

The project is consistent with this policy.

6.15 Groundwater Use

6.15.1 Policy Statement.

Groundwater Use Act (O.C.G.A. 12-5-90, et seq.) 12-5-91. Declaration of policy. The general welfare and public interest require that the water resources of the state be put to beneficial use to the fullest extent to which they are capable, subject to reasonable regulation in order to conserve these resources and to provide and maintain conditions, which are conducive to the development and use of water resources. (Ga. L. 1972, p. 976, SS 2.)

6.15.2 General Description

The Groundwater Use Act charges the Board of Natural Resources with the responsibility to adopt rules and regulations relating to the conduct, content, and submission of water conservation plans, including water conservation practices, water drilling protocols, and specific rules for withdrawal and utilization of groundwater. The Environmental Protection Division administers these rules and regulations. Groundwater withdrawals of greater than 100,000 gallons per day require a permit from the Environmental Protection Division. Permit applications that request an increase in water usage must also submit a water conservation plan approved by the Director of Environmental Protection Division (O.C.G.A. 12-5-96). The Environmental Protection Division has prepared a comprehensive groundwater management plan for coastal Georgia that addresses water conservation measures, protection from saltwater encroachment, reasonable uses, preservation for future development and economic development issues. The Memorandum of Agreement with the Environmental Protection Division ensures that permits issued under the Groundwater Use Act must be consistent with the Coastal Management Program.

6.15.3 Consistency

Sections 4.02 and 5.02 within the EIS discuss groundwater within the project area. As discussed previously in this document, deepening of the navigation channel would have a negligible effect on the movement of saltwater through the Miocene layer into the upper Floridan aquifer. However, The Georgia DNR-EPD has requested a detailed monitoring plan be implemented to provide early detection of potential chloride migration into the aquifer as a condition of the Section 401 Water Quality Certification for the project. Monitoring of chloride levels in the

upper Floridan aquifer must be conducted along critical groundwater flow paths to ensure that the SHEP does not result in the significant migration of chlorides downward through the confining layer that could move towards production wells in the Savannah area. The monitoring would involve the establishment of sentry wells along critical groundwater flow paths. These wells would be installed near the top of the aquifer to monitor downward migration of chlorides through the confining unit and deeper in the aquifer to monitor how horizontal flow of freshwater within the aquifer mixes with and dilutes the chloride.

Monitoring wells would also be established up-gradient of critical groundwater flow paths to provide information on background chloride concentrations associated with groundwater withdrawals in the Savannah area independent of SHEP dredging activities. Background wells would be established near the top of the aquifer and deeper in the aquifer to establish background concentrations. Annual monitoring of these wells would be conducted for the life of the project and differences in the long-term trends of chloride concentrations in the sentry and background wells would be used to evaluate the impacts of the SHEP from impacts of groundwater withdrawal on chloride concentrations in the aquifer.

Groundwater monitoring would also include the establishment of benchmark chloride concentrations for each sentry well. These benchmark chloride concentrations would be established to protect Savannah area production wells. The monitoring would also include development of a mitigation plan if monitoring indicates that the Savannah area production wells may be affected by downward migration of chloride through the confining unit as a result of SHEP dredging activities.

These monitoring requirements have been included in the project's monitoring plan. (See Appendix D of the EIS).

The proposed project is fully consistent with this policy.

6.16 Hazardous Waste

6.16.1 Policy Statement

Georgia Hazardous Waste Management Act (0.C.G.A. 12-8-60, et seq.) F-20 12-8-61. Legislative policy. It is declared to be the public policy of the State of Georgia, in furtherance of its responsibility to protect the public health, safety, and well-being of its citizens and to protect and enhance the quality of its environment, to institute and maintain a comprehensive state-wide program for the management of hazardous wastes through the regulation of the generation, transportation, storage, treatment, and disposal of hazardous wastes. (Ga. L. 1979, p. I 1 27, SS 2; Ga. L. 1992, p. 2234, SS 5.)

6.16.2 General Description

The Georgia Hazardous Waste Management Act describes a comprehensive, statewide program to manage hazardous wastes through regulating hazardous waste generation, transportation, storage, treatment, and disposal. Hazardous waste is defined by the Board of Natural Resources, and it includes any waste that the Board concludes is capable of posing a substantial present or future hazard to human health or the environment when improperly treated, transported, stored, disposed, or otherwise managed, based on regulations promulgated by the US Environmental Protection Agency. The Hazardous Waste Management Act is administered and implemented by the Environmental Protection Division.

6.16.3 Consistency

A survey of areas outside of the inner harbor navigation channel (bend wideners, etc.) that would be dredged was conducted to ensure that no hazardous or toxic wastes would be encountered during the dredging process. No such materials were discovered. Contractors that assist with construction of the project would be required to abide by all applicable toxic and hazardous waste regulations such as those that regulate the cleanup of spills and storage of any hazardous materials. The proposed project is fully consistent with this policy.

6.17 Historic Areas

6.17.1 Policy Statement

Historic Areas (0.C.G.A. 12-3-50, et seq.) 12-3-50. 1. Grants for the preservation of "historic properties"; additional powers and duties of department. It is declared to be the public policy of the State of Georgia, in furtherance of its responsibility to promote and preserve the health, prosperity, and general welfare of the people, to encourage the preservation of historic properties, which have historical, cultural, and archeological significance to the state. (Code 1981, SS 12-3-50.1, enacted by Ga. L. 1986, p. 399, SS 1; Ga. L. 1996, p. 6, SS 12.)

6.17.2 General Description

The authority found at O.C.G.A. 12-3-50 provides the Department of Natural Resources with the powers and duties to "promote and increase knowledge and understanding of the history of this State from the earliest times to the present, including the archeological, Indian, Spanish, colonial, and American eras, by adopting and executing general plans, methods, and policies for permanently preserving and marking objects, sites, areas, structures, and ruins of historic or legendary significance, such as trails, post roads, highways, or railroads; inns or taverns; rivers, inlets, millponds, bridges, plantations, harbors, or wharves; mountains, valleys, coves, swamps, forests, or Everglade; churches, missions, campgrounds, and places of worship; schools, colleges, and universities; courthouses and seats of government; places of treaties, councils, assemblies, and conventions; factories, foundries, industries, mills, stores, and banks; cemeteries and burial mounds; and battlefields, fortifications, and arsenals. Such preservation and marking may include the construction of signs, pointers, markers, monuments, temples, and museums, which structures may be accompanied by tablets, inscriptions, pictures, paintings, sculptures,

maps, diagrams, leaflets, and publications explaining the significance of the historic or legendary objects, sites, areas, structures, or ruins." The Department is also required to "promote and assist in the publicizing of the historical resources of the State by preparing and furnishing the necessary historical material to agencies charged with such publicity; to promote and assist in making accessible and attractive to travelers, visitors, and tourists the historical features of the State by advising and cooperating with State, federal, and local agencies charged with the construction of roads, highways, and bridges leading to such historical-points." The Historical Preservation Division is charged with carrying out these duties, and coordinates its activities in the coastal area with the Coastal Resources Division.

6.17.3 Consistency

The USACE is developing a survey strategy to understand the effects the proposed project will have on significant cultural resources and will be implementing a Programmatic Agreement (PA) as specified under 36 CFR800.14b(1)(ii). The PA will allow the USACE to complete needed studies, determine significance and develop mitigation plans if significant resources cannot be avoided. The PA has been reviewed and signed by the Georgia and South Carolina State Historic Preservation Officers. The *CSS Georgia*, a Confederate ironclad, is a significant resource that will be impacted by the proposed project. The resource is owned by the US Navy. As the owner of the vessel, the Navy requested signatory status and has also signed the PA. The agreement has been coordinated with appropriate federally recognized tribes. The PA is included as Appendix G in the final Environmental Impact Statement.

The project is consistent with this policy.

6.18 Natural Areas

6.18.1 Policy Statement

Georgia Natural Areas Act (O.C.G.A. 12-3-90, et seq.) 12-3-91. Legislative findings and declaration of purpose. The General Assembly finds that there is an increasing nation-wide concern over the deterioration of man's natural environment in rural as well as urban areas; that there is a serious need to study the long-term effects of our civilization on our natural environment; that while the State of Georgia is still richly endowed with relatively undisturbed natural areas, these areas are rapidly being drastically modified and even destroyed by human activities; that it is of the utmost importance to preserve examples of such areas in their natural state, not only for scientific and educational purposes but for the general well-being of our society and its people. Therefore, it shall be the purpose and function of the Department of Natural Resources to:
a. Identify natural areas in the State of Georgia, which are of unusual ecological significance;
b. Use its influence and take any steps within its power to secure the preservation of such areas in an undisturbed natural state in order that such areas may:

(1) Be studied scientifically;
(2) Be used for educational purposes;
(3) Serve as examples of nature to the general public; and

(4) Enrich the quality of our environment for present and future generations; and
c. Recommend areas or parts of areas for recreational use. (Ga.L. 1969, p. 750, SS 2; Ga.L. 1972, p. 10 1 5, SS 151 1.) 12-3-92.

"Natural areas" defined. As used in this article, the term "natural areas" means a tract of land in its natural state which may be set aside and permanently protected or managed for the purpose of the preservation of native plant or animal communities, rare or valuable individual members of such communities, or any other natural features of significant scientific, educational, geological, ecological, or scenic value. (Ga. L. 1966, p.330, SS 2; Ga. L. 1969, p.750, SS 3.)

6.18.2 General Description

The Georgia Natural Areas Act authorizes the Department of Natural Resources to identify areas in the State of Georgia, which are of unusual ecological significance, and to secure the preservation of such areas in an undisturbed natural state. The purpose for such acquisition is to allow scientific study of the property, to educate, to "serve as examples of nature to the general public," and to "enrich the quality of our environment for present and future generations." Natural areas, as defined by the Act, are tracts of land in their natural state that are to be set aside and permanently protected or managed for the purpose of preserving natural plant or animal communities, rare or valuable members of such communities, or any other natural features of significant scientific, educational, geologic, ecological, or scenic value.

6.18.3 Consistency

The Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Conservation Section provided an updated list of Georgia's Known Occurrences of Conservation Areas on or near the Savannah Harbor Navigation Project, Chatham County, Georgia.

Georgia's Known Occurrences of Conservation Areas

Fort Pulaski National Monument [National Park Service]	Adjacent to project area
Greenspace [Chatham County]	Near project area
Hunter Army Airfield [US Department of' Defense]	Near project area
Little Tybee-Cabbage Island Natural Area [Georgia DNR]	Near project area
Savannah NWR [US Fish and Wildlife Service]	Near project area
Savannah River [High Priority Stream]	On site
Skidaway Island State Park [Georgia DNR]	Near project area
Tybee Island Tract [Georgia DNR]	Near project area
Wormsloe Historic Site [Georgia DNR]	Near project area

The following conservation areas in Chatham County, Georgia will not be adversely affected by the proposed deepening of the navigation channel since they are located on uplands (Greenspace in Chatham County, Hunter Army Airfield, and Tybee Island Tract) or some distance from the project site (Little Tybee Island and Cabbage Island, Skidaway Island State Park, Wormsloe historic site.

The following conservation areas may be affected by the proposed action:

Fort Pulaski National Monument [National Park Service]. Ship wake studies were conducted and no significant impacts to ongoing shoreline erosion rates are expected from the proposed action (see Section 5.06 of the EIS).

Savannah National Wildlife Refuge (SNWR) [US Fish and Wildlife Service]. Deepening of the Savannah Harbor Navigation Channel to -48 feet MLW would increase salinity levels in the vicinity of the SNWR. This would adversely affect fishery habitat and tidal freshwater marshes. The SHEP mitigation plan includes various features to mitigate these predicted impacts. Aspects of the SHEP mitigation plan that specifically address these issues include implementation of the flow diversion measures to minimize anticipated upstream increases in salinity, injection of dissolved oxygen at strategic locations in Savannah Harbor, and purchase of about 2,245 acres of land for preservation to offset the conversion of tidal freshwater marsh to brackish marsh. Approximately 3.2 acres of brackish marsh in the SNWR would be excavated as part of the Kings Island Turning Basin Expansion. In-kind restoration would be provided by restoring about 40.3 acres of estuarine emergent wetlands in Disposal Area 1S near the juncture of Front River and Middle River.

Savannah River [High Priority Stream]. The anticipated impacts from construction of the SHEP on the water quality regime in the Savannah River and the mitigation measures to offset those impacts are addressed in the previous paragraph and in detail in Appendix C of the EIS. Without mitigation, construction of the SHEP would impact the dissolved oxygen regime in Savannah Harbor. Therefore, the project includes the construction and operation of three oxygen injection systems to mitigate for the project's expected impacts. Injection of oxygen during the summer months would remove the incremental effects of the SHEP on the dissolved oxygen regime in Savannah Harbor.

The proposed project with mitigation features fully implemented is fully consistent with this policy.

6.19 Oil and Gas and Deep Drilling

6.19.1 Policy Statement

Georgia Oil and Gas and Deep Drilling Act (O.C.G.A. 12-440, et seq.) 12-441. Legislative findings and declaration of policy. The General Assembly finds and declares that its duty to protect the health, safety, and welfare of the citizens of this state requires that adequate protection of underground fresh water supplies be assured in any drilling operation which may penetrate through any stratum which contains fresh water. This duty further requires that adequate protection be assured in any drilling or the use of such drilled wells in certain other environmentally sensitive areas or in other circumstances where the result of such drilling and use may endanger the health, safety, and welfare of the citizens of this state. It is not the policy of the General Assembly to regulate the drilling of shallow exploration or engineering holes except in such environmentally sensitive areas as defined in this part. The General Assembly further finds and declares that, with the current energy shortage which this state and nation face,

it must encourage oil and gas exploration to identify new sources of energy, but not at the expense of our important natural resources such as residential, municipal, and industrial supplies of fresh water. The General Assembly further finds and declares that with an increase in oil exploration, it must provide assurances to persons engaging in such exploration that adequate safeguards regarding results of exploration will remain privileged information for a specified time. The General Assembly further finds and declares that it is in the public interest to obtain, protect, and disseminate all possible geologic information associated with drilling operations in order to further the purposes of future energy related research. (Ga. L. 1975, p. 966, SS 1.)

6.19.2 General Description

Georgia's Oil and Gas and Deep Drilling Act regulates oil and gas drilling activities to provide protection of underground freshwater supplies and certain “environmentally sensitive" areas. The Board of Natural Resources has the authority to implement this Act. The Act establishes requirements for drilling, casing, and plugging of wells for oil, gas, or mineral exploration: (1) to alleviate escape of gas or oil from one stratum to another; (2) to prevent the pollution of freshwater by oil, gas, salt water or other contaminants; (3) to prevent drowning of any stratum that might reduce the total ultimate recovery of gas or oil; and, (4) to prevent fires, waste, and spillage of contaminants such as oil.

6.19.3 Consistency

No oil and/or gas drilling operations are proposed for this project.

6.20 Phosphate Mining

6.20.1 Policy Statement

Licenses to dig, mine, and remove phosphate deposits; restrictions on license holders. (O.C.G.A. 12-4-100, et seq.) 12-4-101. Restrictions on license holders. Whenever any person discovers phosphate rock or phosphatic deposits in the navigable streams or waters of this state or in any public land on their banks or margins and files with the Secretary of State notice of such discovery and a description of the location thereof, he shall be entitled to receive from the Secretary of State a license giving him or his assigns the exclusive right, for ten years from the date of the license, of digging, mining, and removing from such location and from an area for a distance of five miles in any or all directions there from the phosphate rock and phosphatic deposits that may be found therein, provided that persons receiving or holding such licenses shall in no way interfere with the free navigation of the streams and waters or the private rights of any citizen residing on or owning the lands upon the banks of such navigable rivers and waters; provided, further, that as long as the license remains in effect, no person, natural or artificial, shall have the privilege of locating a claim within 20 miles of any other claim for which he has received a license. (Ga. L. 1884-85, p. 125, SS 1; Civil Code 1895, SS 1726; Civil Code 1910, SS 1977; Code 1933, SS 43-401.)

6.20.2 General Description

The laws found at O.C.G.A. 12-4-100, et seq., describe the State's management of phosphate deposits. There is great interest in phosphate mining in Georgia. In fact, the citizens of Georgia developed the Coastal Marshlands Protection Act in an effort to limit potential adverse environmental impacts from a proposed phosphate mining operation. The Secretary of State is charged with the administration of this statute, and is networked with the Georgia Coastal Management Program.

6.20.3 Consistency

No mining of phosphates is proposed for this project.

6.21 Protection of Tidewaters

6.21.1 Policy Statement.

Protection of Tidewaters Act (O.C.G.A. 52-1-1. et seq.) 52-1-2. Legislative findings and declaration of policy. The General Assembly finds and declares that the State of Georgia became the owner of the beds of all tidewaters within the jurisdiction of the State of Georgia as successor to the Crown of England and by the common law. The State of Georgia continues to hold title to the beds of all tidewaters within the state, except where title in a private party can be traced to a valid Crown or state grant which explicitly conveyed the beds of such tidewaters. The General Assembly further finds that the State of Georgia, as sovereign, is trustee of the rights of the people of the state to use and enjoy all tidewaters which are capable of use for fishing, passage, navigation, commerce, and transportation, pursuant to the common law public trust doctrine. Therefore, the General Assembly declares that the protection of tidewaters for use by the state and its citizens has more than local significance, is of equal importance to all citizens of the state, is of state-wide concern, and, consequently, is properly a matter for regulation under the police powers of the state. The General Assembly further finds and declares that structures located upon tidewaters which are used as places of habitation, dwelling, sojournment, or residence interfere with the state's proprietary interest or the public trust, or both, and must be removed to ensure the rights of the state and the people of the State of Georgia to the use and enjoyment of such tidewaters. It is declared to be a policy of this state and the intent of this article to protect the tidewaters of the state by authorizing the commissioner of natural resources to remove or require removal of certain structures from such tidewaters in accordance with the procedures and within the timetable set forth in this article. (Code 1981, SS 52-1-2, enacted by Ga. L. 1992, p. 2317, SS 1.)

6.21.2 General Description

The Protection of Tidewaters Act establishes the State of Georgia as the owner of the beds of all tidewaters within the State, except where title by a private party can be traced to a valid British Crown or State land grant. The Act provides the Department of Natural Resources the authority to remove those "structures" that are capable of habitation, or incapable of or not used for transportation. Permits for such structures may not extend past June 30, 1997. The Act provides

procedures for removal, sale, or disposition of such structures. (This is similar to the Right of Passage Act, except that it is specific to tidewaters rather than all waters of Georgia.)

6.21.3 Consistency

It is understood that the State of Georgia has ownership of the beds of all tidewaters within the state. No structures associated with habitation would be built on these lands. Pilings maybe needed to locate equipment required by the mitigation plans. The proposed project is fully consistent with this policy.

6.22 Recreational Docks

6.22.1 Policy Statement

50-16-61. General supervision and office assignment (Under the Administrative Procedures Act, Revocable License Program) The Governor shall have general supervision over all property of the state with power to make all necessary regulations for the protection thereof, when not otherwise provided for.

6.22.2 General Description

The provisions of O.C.G.A. 50-16-61 describe the general supervision of State properties as the responsibility of the Governor. Under this authority, the Department of Natural Resources, Coastal Resources Division issues Revocable Licenses for recreational docks on State-owned tidal water bottoms. In 1995, the Georgia Supreme Court found that the State owns fee simple title to the foreshore on navigable tidal waters and, as a result, owns the river's water bottoms up to the high water mark and may regulate the use of these tidelands for the public good. (Dorroh v. McCarthy 265 Ga. 750, 462 S.E. 2d 708 (1995). The opinion of the State Attorney General states: "In managing tidelands, the Department of Natural Resources acts under the authority of this section and the Department's employment of the extension of property lines method of allocating use of State-owned water bottoms may be generally acceptable, but rigid adherence to such a policy when it denies deep water access to a riparian or littoral owner, may cause inequitable results (1993 Opinion Attorney General No. 93-25). As described in the State Properties Code (O.C.G.A. 50-16-30, et seq.), the term "Revocable License" means "the granting, subject to certain terms and conditions contained in a written revocable license or agreement, to a named person or persons (licensee), and to that person or persons only, of a revocable privilege to use a certain described parcel or tract of the property to be known as the licensed premises for the named purpose." A Revocable License may be revoked, canceled, terminated, with or without cause, at any time by the licensor.

6.22.3 Consistency

The mitigation plan provides for the construction of a boat ramp in Back River which would be located on State owned tidal water bottoms. This boat ramp would replace fishermen access to Back River lost as result of the closure of Rifle Cut. This proposal has been fully coordinated with the Georgia DNR. Therefore, this project is fully consistent with this policy.

6.23 Right of Passage

6.23.1 Policy Statement Right of Passage Act (O.C.G.A. 52-1-30, et seq.) 52-1-31. Legislative findings and declaration of policy. The General Assembly finds and declares that by the common law the citizens of this state have an inherent right to use as highways all navigable streams and rivers which are capable of transporting boats loaded with freight in the regular course of trade either for the whole or part of the year and that this right of use extends to the entire surface of the stream or river from bank to bank. The General Assembly further finds that the common law regarding such right of use has not been modified by statute nor is it incompatible with the federal or state constitutions. Therefore, the General Assembly declares that ensuring the right of use by all the citizens of this state of navigable streams and rivers which are capable of transporting boats loaded with freight in the regular course of trade either for the whole or part of the year as highways has more than local significance, is of equal importance to all citizens of the state, is of state-wide concern, and, consequently, is properly a matter for regulation under the police powers of the state. The General Assembly further finds and declares that structures located upon navigable streams and rivers which are used as places of habitation, dwelling, sojournment, or residence interfere with the citizens' right to use the entire surface of such streams and rivers which are capable of transporting boats loaded with freight in the regular course of trade either for the whole or part of the year from bank to bank as highways and must be removed to ensure the rights of the citizens of this state to such usage. It is declared to be a policy of this state and the intent of this article to ensure such rights of the citizens of this state by authorizing the commissioner of natural resources to remove or require removal of certain structures from such streams and rivers which are capable of transporting boats loaded with freight in the regular course of trade either for the whole or part of the year in accordance with the procedures and within the timetable set forth in this article. (Code 1981, SS 52-1-31, enacted by Ga. L. 1992, p. 2317, SS 1.)

6.23.2 General Description

The Right of Passage Act declares the right of use of all navigable waterways of the state by all citizens of Georgia. The Act establishes the mechanism to remove “structures" that are capable of being used as a place of habitation, are not used as or are not capable of use as a means of transportation, and do not have a permit under the Act. Permits shall not be issued for a term ending after June 30, 1997. The Right of Passage Act is implemented by the Department of Natural Resources Law Enforcement Division. (This is similar to the Protection of Tidewaters Act, except that it is specific to all navigable waters rather than tidewaters Georgia.)

6.23.3 Consistency

The mitigation features of the proposed deepening project include closure of Rifle Cut which would impede the public's passage between Middle River and Little Back River. Although boaters would have to travel a longer distance, the public would still have access to both of these waterways. A boat ramp would be constructed at the location of the Tidegate on the Georgia side to provide additional access to lower Back River and Middle River. Therefore the proposed project is consistent with this act.

6.24 River Corridors

6.24.1 Policy Statement Mountain and River Corridor Protection Act (O.C.G.A. 12-2-1. et seq.) 12-2-8. Promulgation of minimum standards and procedures for protection of natural resources, environment, and vital areas of the state. The local governments of the State of Georgia are of vital importance to the state and its citizens. The state has an essential public interest in promoting, developing, sustaining, and assisting local governments. The natural resources, environment, and vital areas of the state are also of vital importance to the state and its citizens. The state has an essential public interest in establishing minimum standards for land use in order to protect and preserve its natural resources, environment, and vital areas. The purpose of this Code section shall be liberally construed to achieve its purpose. This Code section is enacted pursuant to the authority granted the General Assembly in the Constitution of the State of Georgia, including, but not limited to, the authority provided in Article 111, Section VI, Paragraphs I and 11(a)(1) and Article IX, Section 11, Paragraphs Ill and IV.

The department is therefore authorized to develop minimum standards and procedures, in accordance with paragraph (2) of subsection (b) of Code Section 50-8-7.1 and in accordance with the procedures provided in Code Section 50-8-7.2 for the promulgation of minimum standards and procedures, for the protection of natural resources, environment, and vital areas of the state, including, but not limited to, the protection of mountains, the protection of river corridors, the protection of watersheds of streams and reservoirs which are to be used for public water supply, for the protection of the purity of ground water, and for the protection of wetlands, which minimum standards and procedures shall be used by local governments in developing, preparing, and implementing their comprehensive plans as that term is defined in paragraph (3) of subsection (a) of Code Section 50-8-2. (Code 1981, SS 12-2-8, enacted by Ga. L. 1989, p. 1317, SS 5. 1; Ga. L. 199 1, p. 1719, SS 1; Ga. L. 1992, p. 6. SS 12; Ga. L. 1993, p. 91, SS 12.)

6.24.2 General Description

The statute that is informally known as the Mountain and River Corridor Protection Act (O.C.G.A. 12-2-8) authorizes the Department of Natural Resources to develop minimum standards for the protection of river corridors (and mountains, watersheds, and wetlands) that can be adopted by local governments. The Act is administered by the Environmental Protection Division. All rivers in Georgia with an average annual flow of 400 cubic feet per second are covered by the Act, except those within the jurisdiction of the Coastal Marshlands Protection Act. Some of the major provisions of the Act include: requirements for a 100-foot vegetative buffer on both sides of rivers; consistency with the Georgia Erosion and Sedimentation Act; and local governments must identify river corridors in land-use plans developed under their respective comprehensive planning acts.

Regional Development Centers are instrumental in helping local governments enact the provisions of this Act. The Coastal Georgia Regional Development Center prepared a Regional River Corridor Protection Plan for counties within their jurisdiction. The Plan describes the ten local governments and the associated rivers that are affected by the River Corridor Protection Act, and puts forward a regional plan for the protection of river corridors. Regional plans are preferable to having local governments prepare individual plans. The plan provides for

construction of road crossings, acceptable uses of river corridors, maintenance of a vegetative buffer along the river for a minimum of 100 feet from the river's edge (residential structures are allowed within the buffer zone), timber production standards, wildlife and fisheries management, recreation, and other uses. The local governments within the Coastal Regional Development Center jurisdiction affected by the River Corridor Protection Act, and their respective rivers are listed below. Eight coastal counties and two coastal cities (Richmond Hill and Woodbine) are affected.

Adoption of language addressing the River Corridor Protection Act is required in local comprehensive plans. The following counties and cities have adopted a Regional River Corridor Protection Plan.

COUNTY/CITY	RIVER
Bryan County	Canoochee River Ogeechee River
City of Richmond Hill	Ogeechee River
Camden County	Satilla River St. Mary's River
City of Woodbine	Satilla River
Chatham County	Savannah River
Effingham County	Ogeechee River Savannah River
Glynn County	Altamaha River
Liberty County	Canoochee River
Long County	Altamaha River
McIntosh County	Altamaha River

Jurisdiction of the River Corridor Protection Act extends along the above named rivers from the limit of Coastal Marshlands Protection Act jurisdiction upstream through the coastal counties.

6.24.3 Consistency

Waters adjacent to the project area are under the jurisdiction of the Coastal Marshlands Protection Act, rather than the River Corridor Protection Act. The proposed project is fully consistent with this policy.

6.25 River and Harbor Development (Includes Burke-Day requirements)

6.25.1 Policy Statement

Rivers and Harbor Development (O.C.G.A. 52-9-2). The State of Georgia recognizes the need for maintaining navigation inlets, harbors, and rivers to promote commercial and recreational uses of our coastal waters and their resources. The State of Georgia further recognizes that dredging activities to deepen or maintain navigation channels within tidal inlets, as well as the entrances to harbors and rivers, often alter the natural drift of sand resources within the littoral zone. This alteration can be exacerbated when the sand resources are deposited in designated upland or offshore disposal areas instead of being returned to the natural river-sand transport-beach system. This alteration can adversely impact natural resources, recreation, tourism, and associated coastal economies. Moreover, the State of Georgia believes in the duties of government to protect life and property. Therefore, it is the policy of this state that there shall be no net loss of sand from the state's coastal barrier beaches resulting from dredging activities to deepen or maintain navigation channels within tidal inlets, as well as the entrances to harbors and rivers. Ga. L. 1967, p. 516; Ga. L. 1972, p. 1015, § 1516; Ga. L. 2002, p. 569, § 2; Ga. L. 2004, p. 784, § 1; Ga. L. 2005, p. 60, § 52/HB 95.

6.25.2 General Description

Disposal of sand and sediment originating from water navigation related projects

(a) With regard to all sand that is suitable for beach replenishment originating from the dredging of navigation channels within tidal inlets, as well as the entrances to harbors and rivers:

(1) Such sand shall be used to replenish the adjacent coastal beaches, if feasible, either by deposition of sand into the nearshore littoral zone or direct placement on affected beaches;

(2) If such sand is placed elsewhere, then a quality and quantity of sand from an alternate location necessary to mitigate any adverse effects caused by the dredging shall be used to replenish affected coastal beaches; provided, however, that this paragraph shall apply only where beach replenishment is necessary to mitigate effects from the dredging and dredged material removal from the natural river-sand transport-beach system of a specific project and beach replenishment from another source is the least costly environmentally sound mitigation option;

(3) The disposition of sand shall be completed in cooperation with and, when required by applicable state or federal law, with the approval of the local governing authority and the Department of Natural Resources according to the requirements of Part 2 of Article 4 of Chapter 5 of Title 12, the "Shore Protection Act"; and

(4) All such activities shall provide protection to coastal marshlands as defined in paragraph (3) of Code Section 12-5-282 and to nesting sea turtles and hatchlings and their habitats.

(b) The Department of Natural Resources and the party undertaking the dredging shall coordinate to determine the option under subsection (a) of this Code section for beach replenishment that is most beneficial to the adjacent or affected coastal beaches, including, where applicable, identifying an alternate source of sand for purposes of paragraph (2) of subsection (a) of this Code section, after taking into consideration environmental impacts and any limitation of applicable state and federal law.

6.25.3 Consistency

The potential impacts of the SHEP on Tybee Beach and the Tybee Island Shelf were evaluated. The results of this analysis indicate that channel deepening would have very little impact on Tybee Beach and would not significantly contribute to depletion of the Tybee Shelf.

The Draft EIS proposed placement of some of the new work dredged sediment from the entrance channel in nearshore areas of Tybee Beach where the sediment would be available to move towards the beach. The sediment placed in those nearshore sites would have been material with a fines content of 20 percent or less. The Georgia DNR-CRD and the City of Tybee Island requested that those sites not be used since the sediments are not comprised of <10 percent fines. As a result, the District removed nearshore placement from the project. All new work material would be placed in the existing CDFs or the ODMDS.

The Georgia DNR-CRD also requested that material from the area of the entrance channel extension (Station -57+000B to Station -97+680B) be considered for nearshore placement or beach nourishment. The Corps must use the least cost environmentally acceptable method of disposal. In this case, placement of the sediments from the entrance channel extension into the Savannah Harbor ODMDS is the least costly environmentally acceptable alternative. Placement of that sediment into nearshore areas or directly onto Tybee Beach would require a non-Federal sponsor to incur the extra costs of placing it in those areas.

The Georgia DNR-CRD also requested that future maintenance dredging material from Stations -30+000B to -40+000B and Stations 28+000 to 0+000 be used for beach nourishment. The least cost environmentally acceptable method of disposal for O&M sediments from Stations -30+000B to -40+000B would be in the ODMDS or Site 2 and Site 3 adjacent to the entrance channel. Similarly, maintenance sediments from Stations 28+000 to 0+000 would be placed in the existing CDFs along the river. The maintenance material disposal plans for these two reaches of the harbor comply with NOAA and US Army Corps of Engineers policy and regulations. Use of the channel sediments for beach nourishment from these two portions of the harbor would require a non-Federal sponsor who would be willing to pay the additional costs that would be required to place the material on the beach.

This practice is consistent with current Federal laws and regulations concerning cost sharing. Consequently, the SHEP is consistent with Georgia Port and Harbor Development Act to the maximum extent practicable.

6.26 Safe Drinking Water

6.26.1 Policy Statement

Georgia Safe Drinking Water Act (0.C.G.A. 12-5-1 70, et seq.) 12-5-171. Declaration of policy; legislative intent; Environmental Protection Division to administer part. As a guide to the interpretation and application of this part, it is declared to be the policy of the State of Georgia that the drinking waters of the state shall be utilized prudently to the maximum benefit of the people and that the quality of such waters shall be considered a major factor in the health and

welfare of all people in the State of Georgia. To achieve this end, the government of the state shall assume responsibility for the quality of such waters and the establishment and maintenance of a water-supply program adequate for present needs and designed to care for the future needs of the state.

This requires that an agency of the state be charged with this duty and that it have the authority to require the use of reasonable methods, that is, those methods which are economically and technologically feasible, to ensure adequate water of the highest quality for water-supply systems. Because of substantial and scientifically significant variations in the characteristics, usage, and effect upon public interest of the various surface and underground waters of the state, uniform requirements will not necessarily apply to all waters or segments thereof. It is the intent of this part to confer discretionary administrative authority upon such agency to take the above and related circumstances into consideration in its decisions and actions in determining, under the conditions prevailing in specific cases, those procedures to best protect the public interests. The Environmental Protection Division of the Department of Natural Resources shall be the state agency to administer the provisions of this part consistent with the above-stated policy. (Code 1933, SS 88-2601, enacted by Ga. L. 1964, p.499, SS 1; Ga. L. 1977, p.351, SS 1.)

6.26.2 General Description

The Georgia Safe Drinking Water Act of 1977 charges the Environmental Protection Division with the responsibility for maintaining the quality of drinking water and for maintaining a water-supply program adequate for present and future needs of the State. The Environmental Protection Division is designated as the agency to establish rules and policies for the proper administration of drinking water management programs.

6.26.3 Consistency

The proposed deepening of the existing navigation channel would not adversely impact the principal drinking water aquifer (upper Floridan) in the coastal area. The proposed project would not be expected to adversely impact aquifer and production wells in and around Savannah. As previously discussed in this document, in the Section 401 Water Quality Certification the Georgia DNR-EPD required the Corps implement a detailed monitoring plan to ensure the project does not result in substantial chloride intrusion into the aquifer. The Corps will comply with that condition of the certification.

Studies conducted for this project indicate that the SHEP would increase chloride levels in Abercorn Creek at the intake of the City of Savannah's Water Treatment Plant during low flow and high tide conditions. Impacts would not occur under normal or high river flows. The mitigation plan for the project includes the construction of a raw water storage impoundment which would allow the City to store water for use during times of high chloride events. The project would monitor chloride levels at the City of Savannah's water intake during construction and five years after construction is complete to ensure predicted levels of impacts are not exceeded.

The proposed project is consistent with this Act.

6.27 Scenic Rivers

6.27.1 Policy Statement.

Georgia Scenic Rivers Act (O.C.G.A. 12-5-350, et seq.) 12-5-352. Rivers comprising the Georgia Scenic River System. The Georgia Scenic River System shall be comprised of the following:

a. That portion of the Jacks River contained within the Cohutta National Wilderness Area and located in Fannin and Murray counties, Georgia, which portion extends a length of approximately 16 miles;

b. That portion of the Conasauga River located within the Cohutta National Wilderness Area and located in Fannin, Gilmer, and Murray counties, Georgia, which portion extends a length of approximately 17 miles;

c. That portion of the Chattooga River and its West Fork which are now designated as part of the Chattooga National Wild and Scenic River and located in Rabun County, Georgia, which portion extends a length of approximately 34 miles; and (4) That portion of Ebenezer Creek from Long Bridge on County Road S 393 to the Savannah River and located in Effingham County, Georgia, which portion extends a length of approximately seven miles. The Georgia Scenic River System shall also be comprised of any river or section of a river designated as a scenic river by Act or resolution of the General Assembly. (Ga. L. 1969, p. 933, SS 3; Ga. L. 1978, p. 2207, SS 1; Ga. L. 1981, p. 459, SS 1.)

6.27.2 General Description

The Georgia Scenic Rivers Act of 1969 defines "scenic river" to mean certain rivers or section of rivers that have valuable scenic, recreational, or natural characteristics that should be preserved for the benefit and enjoyment of present and future generations. Certain sections of rivers are named in the Act, and the process for designating other sections of Georgia rivers is described. The Georgia Scenic Rivers Act is administered by the Environmental Protection Division.

6.27.3 Consistency

The project area does not include any rivers covered under this act. The project is fully consistent with this policy.

6.28 Scenic Trails

6.28.1 Policy Statement

Georgia Scenic Trails Act (O.C.G.A. 12-3-110, et seq.) 12-3-111. Legislative purpose.

In order to provide for the increasing outdoor recreation needs of an expanding population with an increasing amount of leisure time, in order to promote the enjoyment and appreciation of the outdoor areas of Georgia, and in order to provide for a healthful alternative to motorized travel, trails should be established in urban, suburban, rural, and wilderness areas of Georgia. Therefore, the purpose of this article is to provide for a Georgia Scenic Trails System. (Ga. L. 1972, p. 142, SS 2.)

6.28.2 General Description

The Georgia Scenic Trails Act authorizes the Department of Natural Resources to establish a Scenic Trails System in Georgia. The Department is authorized to construct, maintain, and manage trails on lands acquired through purchase, easement, lease or donation. The purpose is to create a balanced system of trails throughout the State, including urban, bicycle, horse, rural hiking, primitive hiking, historical, bikeways and combination trails. The Georgia Department of Transportation is authorized to construct the bicycle trails and bikeways after the Department of Natural Resources has determined their routes.

6.28.3 Consistency

The SHEP would not involve lands that could be considered suitable for establishing a scenic trail. The proposed project is fully consistent with this policy.

6.29 Septic Tanks

6.29.1 Policy Statement

Title 31 -- Health (O.C.G.A. Title 31 generally) (Septic Tank Law) 31-2-7. Standards for individual sewage management systems.
The Department of Human Resources shall have the authority as it deems necessary and proper to adopt statewide minimum standards for on-site, individual sewage management systems, including but not limited to standards for the size and construction of septic tanks. The Department is authorized to require that any on-site, individual sewage management system be examined and approved prior to allowing the use of such system in the state. Any on-site, individual sewage management system which has been properly approved shall, by virtue of such approval and by operation of law, be approved for installation in every county of the state; provided, however, that such on-site, individual sewage management system shall be required to meet local regulations authorized by law. Upon written request of three or more health districts, the department is authorized to require the reexamination of any such system or component thereof, provided that documentation is submitted indicating unsatisfactory service of such system or component thereof. Before any such examination or reexamination, the department

may require the person, persons, or organization manufacturing or marketing the system to reimburse the department or its agent for the reasonable expenses of such examination. (Code 1981, SS 31-2-7, enacted by Ga. L 1992, p. 3308, SS 1; Ga. L. 1994, p. 1777, SS 1.) 31-3-5.1. Regulations for septic tanks for individual sewage management systems in unincorporated areas; conformity to building permit.

No building permit for the construction of any residence, building, or other facility which is to be served by a septic tank or individual sewage management system shall be issued by or pursuant to the authority of a county governing authority unless the septic tank or individual sewage management system installation permit is in conformity with any statewide minimum standards for sewage management systems or the rules and regulations of the county board of health adopted pursuant to the authority of subsection (a) of this Code section. No person, firm, corporation, or other entity shall install a septic tank or individual sewage management system in violation of any state-wide minimum standards or the regulations of a county board of health adopted pursuant to the authority of subsection (a) of the Code section. Each county governing authority shall provide by ordinance or resolution for the enforcement of the provisions of this subsection. (Code 198 1, SS 31-3-5. 1, enacted by Ga. L. 1986, p. 227, SS 1; Ga. L. 1992, p. 3308. SS 2; Ga. L. 1994, p. 1777, SS 2.)

6.29.2 General Description

As stated above, the standards and regulations for individual sewage management systems are found at O.C.G.A. 31-2-7 and 31-3-5.1. The Department of Human Resources and the county boards of health are described and established by Title 31. There are other references for managing septic systems throughout the Code, including references within the River Corridor Protection Act (O.C.G.A. 12-2-8), the Georgia Water Quality Control Act (O.C.G.A. 12-5-20), and others, which make reference to safe siting of septic systems to ensure that leakage from those systems does not infiltrate the waters of the State. The county board(s) of health is provided the authority and the responsibility to ensure safe installation and maintenance of septic systems.

6.29.3 Consistency

No septic tanks are proposed as part of this project. The proposed project is fully consistent with this policy.

6.30 Shellfish

6.30.1 Policy Statement

Game and Fish Code (O.C.G.A. 27-1-1. et seq.) 27-4-190. Master collecting and picker's permits; hours for taking shellfish; recreational harvesting.

(a) It shall be unlawful to take or possess shellfish in commercial quantities or for commercial purposes without first having obtained a master collecting permit or without proof of purchase that such shellfish were purchased from a certified shellfish dealer. Master collecting permits shall specify whether the permittee is authorized to take oysters, clams, or other shellfish

and shall only be issued to persons certified by the Department of Agriculture to handle shellfish unless permission to take and possess shellfish for mariculture purposes has been granted by the department as described in subsection (d) of Code Section 27-4-197. Such permits shall be provided annually at no cost by the department but shall only be issued to persons with the right to harvest shellfish pursuant to Code Sections 44-8-6 through 44-8-8 or to holders of leases from such persons. A permittee may request authorization from the department for employees or agents, who shall be referred to as pickers, of such permittee to take shellfish from permitted areas. Such request shall be in writing to the department and shall include the name, address, and personal commercial fishing license number of the picker. It shall be unlawful for pickers to take or possess shellfish as authorized under their employer's master collecting permit unless they carry on their person while taking or in possession of shellfish a picker's permit as provided by the department indicating the exact area and circumstances allowed for taking. Such pickers' permits and charts shall be provided annually by the department at no cost and shall be in a form as prescribed by the department. Pickers must possess a valid personal commercial fishing license as provided for in Code Section 27-4-110 and, when a boat is used, a valid commercial fishing boat license as provided in Code Section 27-2-8. Master collecting permits and pickers' permits shall not be issued to persons who have been convicted three times in the two years immediately preceding the filing of an application for a permit of violations of this Code section, subsection

(b) of Code Section 27-4-193, subsections (a) and (b) of Code Section 27-4-195, or Code Section 27-4-199. Master collecting permits and pickers' permits issued to master collecting permittee’s agents shall be surrendered to the department upon termination of Department of Agriculture certification for handling shellfish, upon termination of right to harvest shellfish, or upon violation of any provision of this title. If a picker is removed from authorization to take shellfish by the master collecting permittee, that picker shall immediately surrender to the department his picker's permit. It shall be unlawful to possess unauthorized pickers' permits or pickers' permits issued to another person.

(c) It shall be unlawful for any person to take or possess shellfish from unauthorized locations and during unauthorized periods of taking. It shall be unlawful to take shellfish except between the hours of one-half hour before sunrise and one-half hour after sunset.

(Code 1981, SS 27-4-190, enacted by Ga. L. 1991, p. 693, SS 6.) 27-4-193. Taking shellfish from unapproved growing areas; operating facility for controlled purification of shellfish.

(a) As used in this Code section, the term "approved growing area" means that area or areas approved by the department for shellfish harvesting and "unapproved growing area" means all other areas.

(b) It shall be unlawful to take or possess shellfish from unapproved growing areas except at such times and places as the department may establish. The department is authorized to close approved growing areas to allow transplanting at any time between January 1 and December 31. It shall be unlawful to engage in transplanting of shellfish from unapproved growing areas without written authorization from the department. Such authorization may condition the transplanting upon compliance with current, sound principles of wildlife research and management. In approving growing areas, the department shall consider such current guidelines as have been established by the National Shellfish Sanitation Program at the time of approval of the growing areas and current, sound principles of wildlife research and management. (Code 1981, SS 27-4-193, enacted by Ga. L. 1991, p. 693, SS 6; Ga. L. 1992, p. 6, SS 27.)

6.30.2 General Description

The provisions of O.C.G.A. Title 27 (Game and Fish Code), Part 4 describe the regulation of shellfish in Georgia. The provisions describe the requirements for a commercial shellfish harvester to have a license, issued by the Department of Natural Resources pursuant to the requirements of the US Department of Agriculture. The Department also is authorized to approve shellfish growing areas for commercial harvest, and must consider the guidelines established by the National Shellfish Sanitation Program. The Department conducts water sampling in areas that are approved for shellfish in conjunction with the National Shellfish Sanitation Program.

6.30.3 Consistency

No commercial shellfish harvesting areas would be impacted as part of this project. According to GA DNR-CRD, there are three shellfish harvesting leases near the project area, these are the Chatham County Recreational Shellfish Harvest Area and two commercial leases; Halfmoon and Wilmington. All three shellfish harvesting areas are located a sufficient distance from the proposed project area to ensure that they would not be adversely affected. The EIS will be coordinated with Coastal Resources Division, GA DNR. The proposed project is fully consistent with this policy.

6.31 Shore Protection

6.31.1 Policy Statement

Shore Protection Act (O.C.G.A. 2-5-230, et seq.) 12-5-231. Legislative findings and declarations. The General Assembly finds and declares that coastal sand dunes, beaches, sandbars, and shoals comprise a vital natural resource system, known as the sand-sharing system, which acts as a buffer to protect real and personal property and natural resources from the damaging effects of floods, winds, tides, and erosion. It is recognized that the coastal sand dunes are the most inland portion of the sand-sharing system and that because the dunes are the fragile product of shoreline evolution, they are easily disturbed by actions harming their vegetation or inhibiting their natural development. The General Assembly further finds that offshore sandbars and shoals are the system's first line of defense against the potentially destructive energy generated by winds, tides, and storms, and help to protect the onshore segment of the system by acting as reservoirs of sand for the beaches. Removal of sand from these bars and shoals can interrupt natural sand flows and can have unintended, undesirable, and irreparable effects on the entire sand-sharing system, particularly when the historical patterns of sand and water flows are not considered and accommodated. Also, it is found that ocean beaches provide an unparalleled natural recreation resource which has become vitally linked to the economy of Georgia's coastal zone and to that of the entire state. The General Assembly further finds that this natural resource system is costly, if not impossible, to reconstruct or rehabilitate once adversely affected by man related activities and is important to conserve for the present and future use and enjoyment of all citizens and visitors to this state and that the sand-sharing system is an integral part of Georgia's barrier islands, providing great protection to the state's marshlands and estuaries. The General Assembly further finds that this sand-sharing system is a vital area of the state and is essential to

maintain the health, safety, and welfare of all the citizens of the state. Therefore, the General Assembly declares that the management of the sand-sharing system has more than local significance, is of equal importance to all citizens of the state, is of state-wide concern, and consequently is properly a matter for regulation under the police power of the state. The General Assembly further finds and declares that activities and structures on offshore sandbars and shoals, for all purposes except federal navigational activities, must be regulated to ensure that the values and functions of the sand-sharing system are not impaired. It is declared to be a policy of this state and the intent of this part to protect this vital natural resource system by allowing only activities and alterations of the sand dunes and beaches which are considered to be in the best interest of the state and which do not substantially impair the values and functions of the sand-sharing system and by authorizing the local units of government of the State of Georgia to regulate activities and alterations of the ocean sand dunes and beaches and recognizing that, if the local units of government fail to carry out the policies expressed in this part, it is essential that the department undertake such regulation. (Code 1981, SS12-5-231, enacted by Ga. L. 1992, p.1362, SS 1.)

6.31.2 General Description

The Shore Protection Act is the primary legal authority for protection and management of Georgia's shoreline features including sand dunes, beaches, sandbars, and shoals, collectively known as the sand-sharing system. The value of the sand-sharing system is recognized as vitally important in protecting the coastal marshes and uplands from Atlantic storm activity, as well as providing valuable recreational opportunities.

The Shore Protection Act limits activities in shore areas and requires a permit for certain activities and structures on the beach. Construction activity in sand dunes is limited to temporary structures such as crosswalks, and then only by permit from the Georgia Coastal Resources Division. Structures such as boat basins, docks, marinas, and boat ramps are not allowed in the dunes. Shore Permits, which are administered by the Coastal Resources Division, are not granted for activities that are inconsistent with the Georgia Coastal Management Program. The Shore Protection Act prohibits operation of any motorized vehicle on or over the dynamic dune fields and beaches, except as authorized for emergency vehicles, and governmental vehicles for beach maintenance or research. The Shore Protection Act also prohibits storage or parking of sailboats, catamarans, or other marine craft in the dynamic dune field.

Direct permitting authority regarding any proposed facilities located within the jurisdictional area the Shore Protection Act lies with the Shore Protection Committee. These permits are administered by the Georgia Coastal Resources Division. This authority is a very important aspect of the Georgia Coastal Management Program, since recreation at the water's edge is a significant demand. Providing public access and recreational opportunities at or near the beach while protecting the sand sharing system is an important component of the Program.

6.31.3 Consistency

As discussed previously in this document, studies have concluded that construction and maintenance of the existing Savannah Harbor Project has deflated the Tybee shelf and beach.

Resolution of these issues could be addressed through a separate study between Savannah District and the City of Tybee Island.

Construction of the SHEP would have little impact on Tybee Beach or the Tybee Shelf. The Corps evaluated the potential beneficial use of the new work sediments by depositing them in the nearshore area off Tybee Island, but GA DNR-CRD and the City of Tybee Island requested the project not deposit those sediments in that location. No sediment would be placed on the beach and no construction would occur in dune areas.

Maintenance material from the first part of the inner harbor or the entrance channel could be placed directly on the beach at Tybee Island or in the nearshore area off Tybee Island as provided for in the LTMS. However, a non-Federal sponsor would have to pay any additional costs to put the material into these areas over the costs of the Base Plan (most cost effective and environmentally acceptable) for these two channel segments.

The proposed SHEP is consistent with the provisions of the Shoreline Protection Act.

6.32 Solid Waste Management

6.32.1 Policy Statement

Georgia Comprehensive Solid Waste Management Act (0.C.G.A. 12-8-21, et seq.) 12-8-21. Declaration of policy; legislative intent.
(a) It is declared to be the policy of the State of Georgia, in furtherance of its responsibility to protect the public health, safety, and well-being of its citizens and to protect and enhance the quality of its environment, to institute and maintain a comprehensive state-wide program for solid waste management which will assure that solid waste facilities, whether publicly or privately operated, do not adversely affect the health, safety, and well-being of the public and do not degrade the quality of the environment by reason of their location, design, method of operation, or other means and which, to the extent feasible and practical, makes maximum utilization of the resources contained in solid waste.
(b) It is further declared to be the policy of the State of Georgia to educate and encourage generators and handlers of solid waste to reduce and minimize to the greatest extent possible the amount of solid waste which requires collection, treatment, or disposal through source reduction, reuse, composting, recycling, and other methods and to promote markets for and engage in the purchase of goods made from recovered materials and goods which are recyclable. (Code 1981, SS 12-8-21, enacted by Ga. L. 1990, p. 412, SS 1; Ga. L. 1992, p. 3259, SS 1; Ga. L. 1993, p. 399, SSSS 1, 2.)

6.32.2 General Description

The Georgia Comprehensive Solid Waste Management Act defines the rules regarding solid waste disposal in the State. Solid waste handling facilities must be permitted by the State unless an individual is disposing of waste from his own residence onto land or facilities owned by him and disposal of such waste does not adversely affect human health (O.C.G.A. 12-8-30.10). State

law mandates that a county, municipality, or group of counties beginning a process to select a site for municipal waste disposal must first call at least one public meeting.
In addition to the above-named jurisdictions, a regional solid waste management authority must hold at least one meeting within the jurisdiction of each participating authority. Meetings held to make siting decisions for any publicly or privately owned municipal solid waste disposal facility must be publicized before the meeting is held (O.C.G.A. 12-8-26). Each city and county is required to develop a comprehensive solid waste management plan that, at a minimum, provides for the assurance of adequate solid waste handling capability and capacity for at least ten years. This plan must identify those sites that are not suitable for solid waste facilities based upon environmental and land use factors (O.C.G.A. 12-8-3 1. 1); these factors may include historic and archeological sites. Solid waste facilities within 5,708 yards of a national historic site are not permitted (O.C.G.A. 12-8-25. 1). Solid waste facilities on property owned exclusively by a private solid waste generator are generally exempt from these provisions. Local governments have the authority to zone areas of environmental, historic, or cultural sensitivity and to protect those sites from becoming waste disposal areas regardless of whether they are public or privately owned.

6.32.3 Consistency

The dredged sediments do not meet the definition of a solid waste and, therefore, do not require to be treated as such. The proposed project is fully consistent with this policy.

6.33 Surface Mining

6.33.1 Policy Statement

Georgia Surface Mining Act (O.C.G.A. 12-4-70, et seq.) 12-4-71. Legislative purpose; duty of Environmental Protection Division to administer part.

(a) The purposes of this part are:

(1) To assist in achieving and maintaining an efficient and productive mining industry and to assist in increasing economic and other benefits attributable to mining;

(2) To advance the protection of fish and wildlife and the protection and restoration of land, water, and other resources affected by mining;

(3) To assist in the reduction, elimination, or counteracting of pollution or deterioration of land, water, and air attributable to mining;

(4) To encourage programs which will achieve comparable results in protecting, conserving, and improving the usefulness of natural resources to the end that the most desirable conduct of mining and related operations may be universally facilitated;

(5) To assist in efforts to facilitate the use of land and other resources affected by mining so that such use may be consistent with sound land use, public health, and public safety, and to this end to study and recommend, wherever desirable, techniques for the improvement, restoration, or protection of such land and other resources.

(b) The Environmental Protection Division of the department shall administer this part consistent with the above-stated purposes. (Ga. L. 1968, p. 9, SS 2.)

6.33.2 General Description

Georgia's Surface Mining Act regulates all surface mining in Georgia, including the coastal zone. Dredging or ocean mining of materials are not directly regulated by State authority, except that sand and gravel operations are subject to the Shore Protection Act.

6.33.3 Consistency

The proposed deepening of the Federal navigation channel is not considered a mining operation. The resultant sediment from the channel would not be sold or processed. The proposed project is fully consistent with this policy.

6.34 Underground Storage Tanks

6.34.1 Policy Statement

Georgia Underground Storage Tank Act (O.C.G.A. 12-3-1. et seq.) 12-13-2. Public policy.

(a) It is declared to be the public policy of the State of Georgia, in furtherance of its responsibility to protect the public health, safety, and well-being of its citizens and to protect and enhance the quality of its environments, to institute and maintain a comprehensive state-wide program for the management of regulated substances stored in underground tanks.

(b) It is the intent of the General Assembly that the Environmental Protection Division of the Department of Natural Resources shall be designated as the state agency to administer the provisions of this chapter. The director of the Environmental Protection Division of the Department of Natural Resources shall be the official charged with the primary responsibility for the enforcement of this chapter. In exercising any authority or power granted by this chapter and in fulfilling duties under this chapter, the director shall conform to and implement the policies outlined in this chapter.

(c) It is the intent of the General Assembly to create an environmental assurance fund which, in addition to those purposes set forth in subsections (f) and (g) of Code Section 1 2-1 3-9, may also be used by owners and operators as an alternate to insurance purchased from insurance companies for purposes of evidencing financial responsibility for taking corrective action and compensation of third parties for bodily injury and property damage caused by sudden and non-sudden accidental releases arising from operating underground storage tanks. (Code 1981, SS 12-13-2, enacted by Ga.L. 1988, p. 2072, SS 1; Ga.L. 1989, p. 14, SS 12.)

6.34.2 General Description

The Underground Storage Tank Law provides the authority for the Environmental Protection Division to define the State criteria for operating, detecting releases, corrective actions, and enforcement of the utilization of underground storage tanks (USTs). The rules, found at Chapter 391-3-15 of the Rules and Regulations of the State of Georgia, establish minimum standards and procedures to protect human health and safety and to protect and maintain the quality of groundwater and surface water resources from environmental contamination that could result from any releases of harmful substances stored in such tanks. These requirements reflect the federal law regulating underground storage tanks as well as the applicable State rules. All

facilities with underground storage tanks are subject to these requirements. The Memorandum of Agreement between the Coastal Resources Division and the Environmental Protection Division ensures cooperation and coordination in the implementation of UST standards within the coastal area.

6.34.3 Consistency

No installation of USTs is proposed for this project. The proposed project is fully consistent with this policy.

6.35 Water Quality

6.35.1 Policy Statement

Georgia Water Quality Control Act (O.C.G.A. 12-5-20) 12-5-21. Declaration of policy, legislative intent.

(a) The people of the State of Georgia are dependent upon the rivers, streams, lakes, and subsurface waters of the state for public and private water supply and for agricultural, industrial, and recreational uses. It is therefore declared to be the policy of the State of Georgia that the water resources of the state shall be utilized prudently for the maximum benefit of the people, in order to restore and maintain a reasonable degree of purity in the waters of the state and an adequate supply of such waters, and to require where necessary reasonable usage of the waters of the state and reasonable treatment of sewage, industrial wastes, and other wastes prior to their discharge into such waters. To achieve this end, the government of the state shall assume responsibility for the quality and quantity of such water resources and the establishment and maintenance of a water quality and water quantity control program adequate for present needs and designed to care for the future needs of the state, provided that nothing contained in this article shall be construed to waive the immunity of the state for any purpose.

(b) The achievement of the purposes described in subsection (a) of this Code section requires that the Environmental Protection Division of the Department of Natural Resources be charged with the duty described in that subsection, and that it have the authority to regulate the withdrawal, diversion, or impoundment of the surface waters of the state, and to require the use of reasonable methods after having considered the technical means available for the reduction of pollution and economic factors involved to prevent and control the pollution of the waters of the state.

(c) Further, it is the intent of this article to establish within the executive branch of the government administrative facilities and procedures for determining improper usage of the surface waters of the state and pollution of the waters of the state, and to confer discretionary administrative authority upon the Environmental Protection Division to take these and related circumstances into consideration in its decisions and actions in determining, under the conditions and specific cases, those procedures which will best protect the public interest. (Ga. L. 1957, p. 629, SS 2; Ga. L. 1964, p. 416, SS 2; Ga. L. 1977, p. 368, SS 1.)

6.35.2 General Description

The Georgia Water Quality Control Act grants the Environmental Protection Division authority to ensure that water uses in the State of Georgia are used prudently, are maintained or restored to a reasonable degree of purity, and are maintained in adequate supply. In the administration of this law, the Environmental Protection Division can revise rules and regulations pertaining to water quality and quantity, set permit conditions and effluent limitations, and set permissible limits of surface water usage for both consumptive and non-consumptive uses through the Board of Natural Resources. Through a Memorandum of Agreement between the Environmental Protection Division and the Coastal Resources Division, the rules and permits of the Environmental Protection Division are administered in a manner consistent with the enforceable policies of the Coastal Management Program.
The authority to regulate the rivers, streams, lakes, and subsurface waters throughout the State for public and private water supply and agricultural, industrial, and recreational uses is provided to the Environmental Protection Division. The Act makes it unlawful for any person to dispose of sewage, industrial wastes, or other wastes, or to withdraw, divert, or impound any surface waters of the State without a permit. Tourism and recreational entities, manufacturing and transportation facilities, and other activities found in the coastal zone covered under the policies of the Georgia Coastal Management Program are responsible for compliance with the regulations implementing the Georgia Water Quality Control Act.

6.35.3 Consistency

Water quality would be routinely monitored during construction to ensure that applicable water quality standards are not violated**.** Effluent leaving the weirs in the seven CDFs would be routinely monitored for physical parameters such as dissolved oxygen, pH, suspended solids, etc.). As previously discussed in this document, a stringent monitoring plan would be implemented for Disposal Areas 14A and 14B where the cadmium-laden sediments would be placed.

Without mitigation, deepening the channel in Savannah Harbor would impact the dissolved oxygen regime in Savannah Harbor. Mitigation of this potential adverse effect is critical since the section of the Savannah River between Fort Pulaski (mile 0.0) and the Seaboard Coastline Railroad Bridge (Mile 27.4) is on the State of Georgia's Section 303(d) list as impaired for dissolved oxygen. The EPA has issued a Revised Draft Total Maximum Daily Load (TMDL) for dissolved oxygen

Model studies indicate that oxygen injection can be used to remove the effects of the SHEP on the dissolved oxygen regime. The SHEP mitigation plan includes installation and operation of an oxygen injection system at three locations that would remove the incremental effects of harbor deepening on the dissolved oxygen regime. Due to their wide spacing, those systems would also incidentally increase dissolved oxygen levels above their present levels over much of the harbor. The Georgia DNR-EPD has mandated that the two oxygen injection systems on Hutchinson Island be installed and operating before the SHEP inner harbor dredging begins. The oxygen injection system that would be located further upstream near Georgia Power's Plant

McIntosh would be installed and operating within one year after commencement of the inner harbor dredging.

The proposed project has been issued a Section 401 Water Quality Certification by the Georgia DNR Environmental Protection Division.

The proposed project is fully consistent with this policy.

6.36 Water Wells

6.36.1 Policy Statement

Water Wells Standards Act (O.C.G.A. 12-5-120, et seq.) 12-5-121. Legislative intent. It is the intent of the General Assembly to provide in this part for the application of standards for the siting, construction, operation, maintenance, and abandonment of wells and boreholes so as to protect the public health and the water resources of this state. (Ga.L. 1976, p. 974, SS 2; Ga.L. 1985, p. 1192, SS 1.)

6.36.2 General Description

The Water Wells Standards Act of 1985 provides standards for siting, constructing, operating, maintaining, and abandoning wells and boreholes. The Act requires that individual and non-public wells must be located as far removed from known or potential sources of pollutants as possible. Licensing requirements for drilling contractors are established by the Act, as well a State Water Well Standards Advisory Council. The Council is authorized to adopt and amend rules and regulations that are reasonable to govern the licensing of well contractors. Compliance with the Water Wells Standards Act is required for all activities that utilize well water. The provisions of the Act are enforceable under Georgia law. The Council may file a petition for an injunction in the appropriate superior court against any person that has violated any provisions of the Act.

6.36.3 Consistency

Borings and test wells that were taken or installed during the study period complied with the state standards for casing, capping and plugging. Additional similar work, including monitoring wells, would also be conducted in a manner that complies with these standards. The proposed project is fully consistent with this policy.

6.37 Wildflower Preservation

6.37.1 Policy Statement

The Wildflower Preservation Act (O.C.G.A. 12-6-170, et seq.) 12-6-172. Powers and duties of Department and Board of natural Resources as to wildflower preservation.
(a) The Department of Natural Resources shall from time to time designate as a protected species and species of plant life within this state which it may determine to be rare, unusual, or in danger

of extinction, and upon such designation such species will become subject to the protection of this article. (Ga.L. 1973, p. 333, SS 3; Ga.L. 1982, p. 3, SS 12.)

6.37.2 General Description

The Wildflower Preservation Act provides for designation of and protection of plant species that are rare, unusual, or in danger of extinction. Additional species may be added by the Board of Natural Resources at any time. The protection offered to these species is limited to those that are found on public lands of the State. It is a misdemeanor to transport, carry, convey, sell, cut, pull up, dig up, or remove protected species listed by this Act.

6.37.3 Consistency

The proposed work would not impact any land which contain wildflowers that are considered rare, unusual, or in danger of extinction. The proposed project is fully consistent with this policy.

7.0 OTHER MANAGEMENT AUTHORITIES

The paragraphs in this section describe management authorities which provide the Coastal Resources Division with additional tools and mechanisms to accomplish the goals of the Georgia Coastal Management Program. Although these authorities are not listed as policies of the Program, they are laws of the State. Most of the statutes referenced here are primarily procedural. These laws and programs are not considered enforceable policies of the Georgia Coastal Management Program and thus are not used in preparing or reviewing Federal Consistency Determinations and certifications.

7.1 Coordinated and Comprehensive Planning by Counties

(Informally known as the Georgia Planning Act) The Georgia Planning Act (O.C.G.A. 45-12-200, et seq.) requires each local government to develop a comprehensive plan to guide growth and development as a condition to receive State funding assistance. Under the Georgia Planning Act, minimum planning standard was developed for the preparation, adoption, and implementation of local comprehensive plans. The planning standards constitute a three-step planning process: inventory and assessment; needs and goals; and implementation and strategy. The Act establishes Regional Development Centers (RDCs) throughout Georgia. Three of these Centers have jurisdiction within the coastal zone: the Southeast Georgia RDC includes Brantley and Charlton counties; the Heart of Georgia RDC includes Wayne County; and the Coastal Georgia RDC includes the remaining eight counties (Bryan, Camden, Chatham, Effingham, Glynn, Liberty, Long, and McIntosh). The role of the RDCs is to work with local and county governments individually and on a regional basis to improve services and programs, consistent with local comprehensive plans, to benefit residents of the region. The Coastal Management Program works closely with the RDCs to implement the policies of the Program. Many of the goals, objectives and policies of the Georgia Coastal Management Program can be achieved by

local comprehensive planning processes and implemented through local land-use controls and the public infrastructure.

The proposed work would take place in Georgia and South Carolina. The Coastal Georgia RDC has jurisdiction for projects located within Chatham County. The proposed project will be coordinated with interested agencies, the public, and the Coastal Georgia RDC. It is not expected that the proposed work would conflict with any aspect of an existing long term comprehensive land use plan.

7.2 Georgia Administrative Procedures Act

The Georgia Administrative Procedures Act (O.C.G.A. 50-13-4, et seq.) establishes the procedural requirements for adoption, amendment, or repeal of rules and regulations, among other things. New rules require at least 30 days notice of intended action. Similar public comment requirements are required for federal regulatory actions. Public comment and input is important for any regulatory action, both to provide an opportunity for presentation of citizens' ideas and concerns and to provide time for implementation by those entities that may be potentially impacted.

The 45-day public comment period for the DEIS and the 30-day public comment period for the FEIS which are requirements of the NEPA process provide a formal avenue for the public to provide input on the proposed project. A public information meeting was also held during the 45-day comment period on the DEIS. The proposed project complies fully with the spirit of the Georgia Administrative Procedures Act.

7.3 Georgia Litter Control Law

The Georgia Litter Control Law (O.C.G.A. 16-7-40, et seq.) makes it unlawful for any person or persons, "...to dump, deposit, throw, or leave or to cause or permit the dumping, placing, throwing, or leaving of litter on any public or private property in this state or any waters in this state" unless the situation meets one of three conditions. Litter may be disposed at a site if (1) the property is designated as a litter disposal site, (2) litter is placed in a proper receptacle, and/or (3) litter is disposed of by permission of the property owner in a manner consistent with the public welfare.

Construction contracts would contain provisions which require the contractors to remove all construction debris from the project sites as part of their demobilization activities. The proposed SHEP complies with the intent of the Georgia Litter Control Law.

7.4 Georgia Uniform Conservation Easement Act

The Georgia Uniform Conservation Easement Act (O.C.G.A. 44-10-1, et seq.*)* defines "conservation easement" to mean a non-possessory interest in real property, with limitations or affirmative obligations, the purposes of which include retaining or protecting natural property; assuring its availability for agricultural, forest, recreational, or open space use; protecting natural resources; maintaining or enhancing air or water quality; or preserving the historical,

archeological, or cultural aspects of real property. A landholder may be a government agency or a charitable organization.

The proposed action would not include or adversely affect any “conservation easements” and therefore the proposed action is in compliance with this act.

8.0 STATE PROGRAMS

The following State programs contribute towards effective management of Georgia's coastal resources. As non-regulatory programs, they do not constitute enforceable policies of the Program and are not used in Federal consistency reviews. The District has included a discussion of these programs in this Consistency Determination because of the goals of these programs. In general, these programs would be expected to apply to work in Georgia.

8.1 Acres for Wildlife Program

The Acres for Wildlife Program is administered by the Non-game and Endangered Wildlife Program of the Georgia Department of Natural Resources to provide technical assistance to private landowners for resource and habitat management. The Program helps to identify wildlife habitat and provides advice to help the landowner manage the property for the welfare of the wildlife.

This program does not apply to the proposed SHEP.

8.2 Certified Burner Program

The Certified Burner Program is administered by the Georgia Forestry Commission to educate the citizens of Georgia about safe burning techniques. The Georgia General Assembly declared that prescribed burning is a resource protection and land management tool that benefits the safety of the public, Georgia's forest resources, the environment and the economy of the State (O.C.G.A. 12-6-146).

The proposed action does not include any prescribed burning.

8.3 Community Wildlife Project

The Community Wildlife Project is the only wildlife habitat certification program directed to the community as a whole. It is designed to encourage and improve management of wildlife habitats found in urban, suburban, and semi-rural areas. The program is administered by local garden clubs affiliated with the Garden Clubs of Georgia in concert with the Non-game and Endangered Wildlife Program of the Georgia Department of Natural Resources. The Community Wildlife Project establishes minimum criteria for community-based habitat management projects.

This policy does not apply to the proposed action.

8.4 Forest Stewardship Program

The Forest Stewardship Program is administered by the Georgia Forestry Commission in cooperation with the Non-game and Endangered Wildlife Division of the Department of Natural Resources. The Program is designed to provide technical assistance to private landowners for management of forest lands. A concomitant Stewardship Incentive Program provides State funding on a cost-sharing basis to implement certain aspects of the program.

This policy does not apply to the proposed action.

8.5 Heritage 2000

Heritage 2000 is a public-private partnership program designed by Governor Miller to acquire historic property and resources throughout Georgia. The initiative is modeled after Preservation 2000.

This policy does not apply to the proposed action.

8.6 Georgia’s Non-game Wildlife Conservation and Habitat Fund

Georgia's Non-game Wildlife Conservation and Habitat Fund (O.C.G.A. 12-3-600, et seq.) provides the Department of Natural Resources a mechanism to establish non-game wildlife conservation and habitat acquisition, as well as education programs to enhance the protection of non-game flora and fauna. The Department of Natural Resources may solicit voluntary contributions through an income tax return contribution mechanism, by offers to match contributions, or by fund raising or other promotional techniques. Any funds collected are placed into a "Non-game Wildlife Conservation and Wildlife Habitat Acquisition Fund."

This policy does not apply to the proposed action.

8.7 Preservation 2000

Preservation 2000 is a three-year program implemented by Governor Miller in 1994 to acquire approximately 100,000 acres for the State of Georgia to preserve natural areas, historic sites, parks, wildlife management areas and similar sites. It is funded by a $65 million bond fund, approximately $1.45 million in gifts, and small amounts of Federal funds. Since its inception, over 84,000 acres have been acquired and approximately 33,000 acres are under negotiation during the summer of 1997. There were over 450 nominations of various parcels throughout the State. Currently, there are four natural areas and two wildlife management areas designated within the coastal area as a result of Preservation 2000. Some of the 33,000 acres under negotiation lies within the coastal area. The areas acquired provide such uses as protection for bald eagles and other endangered species, hunting, fishing, boating, nature observation, primitive camping, scientific study and protection of water quality for shellfish. A concomitant part of the Preservation 2000 program is the Georgia Greenways Council, a coalition of trail organizations and local, State and Federal agencies involved with trail development. The coalition promotes the protection of linear corridors and coordinates trail development throughout the State. A

proposed Coastal Water Trail, the aquatic equivalent of the Appalachian Trail, would run along Georgia's coast from the Savannah River to the St. Mary's River. This trail would provide routing for sea kayaks and other small craft, and include access trails, boat launching sites and camping areas.

This policy does not apply to the proposed action.

8.8 River Care 2000

River Care 2000 is a public-private partnership program designed by Governor Miller to acquire natural areas and historic property along Georgia's riverbanks. The initiative is modeled after Preservation 2000. River Care 2000 is intended to provide recreation and park land, and to allow better flood management.

This policy does not apply to the proposed action.

9.0 LOCAL LAND USE PLANS

The EIS has been coordinated with interested parties in Georgia and South Carolina. The proposed action is in compliance with all local land use plans.

10.0 CONCLUSION

In accordance with the CZMA, 16 U.S.C. SS 1456(c), as amended, it has been determined that the proposed deepening of the Federal navigation channel would be carried out in a manner which is fully consistent with the enforceable policies of the Georgia Coastal Management Plan. This determination applies to the preferred alternative (-47 foot MLW depth alternative) and the effects of the preferred alternative on the land or water uses or natural resources of the coastal zone, as directed by 15 C.F.R. SS 930.39.

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ENVIRONMENTAL IMPACT STATEMENT
APPENDIX I: Federal Consistency Determination for the Georgia Coastal Management Program

SAVANNAH HARBOR EXPANSION PROJECT

Chatham County, Georgia and Jasper County, South Carolina

January 2012

ATTACHMENT A

NOAA Letter to GADNR-CRD

US Army Corps of Engineers
Savannah District
South Atlantic Division

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT
Silver Spring, Maryland 20910

SEP 16 2005

Mr. Brad Gane
Assistant Director for Ecological Services
Coastal Resources Division
Georgia Department of Natural Resources
One Conservation Way
Brunswick, GA 31520

Dear Mr. Gane:

Thank you for your request dated August 15, 2005, to incorporate changes to the Georgia Coastal Management Program (GCMP). You requested that these program changes be incorporated as routine program changes (RPCs) pursuant to the Coastal Zone Management Act (CZMA) regulations at 15 C.F.R. part 923, subpart H and the Office of Ocean and Coastal Resource Management's (OCRM's) Program Change Guidance (July 1996).

After evaluating your submittal, we concur with your determination that the addition of GA. CODE ANN. §§ 52-9-1, and 52-9-2 (May 14, 2004) are RPCs and should be approved as an enforceable policy of the GCMP. The April 2004 Memorandum of Understanding (MOU) between the U.S. Army Corps of Engineers (Corps) and Georgia Department of Natural Resources (GADNR) is also incorporated as part of the GCMP, however, as described below, federal consistency will not apply to the MOU.

SECTIONS APPROVED

O.C.G.A. Title 52, Chapter 9, River and Harbor Development
Sections added: GA. CODE ANN. §§ 52-9-1, and 52-9-2 (May 14, 2004)

Memorandum of Understanding
"Memorandum of Understanding Between U.S. Army Corps of Engineers, Savannah District and the Georgia Department of Natural Resources" (April 2004)

As described in your August 15, 2005, request, the "limitation of applicable state and federal law" in GA. CODE ANN. § 52-9-2 (May 14, 2004) considers the availability of state, local and/or sponsor funding and federal cost-sharing requirements in regard to beneficial use of dredged materials. Therefore, when applying federal consistency to federal dredging activities, Georgia will consider the applicable beneficial use and federal cost-sharing requirements of the Water Resources Development Act (WRDA) and implementing regulations.

Federal consistency will not apply to the April 2004 MOU between the Corps and GADNR. As described in item No. 7 of the April 2004 MOU, the document is not legally binding or

enforceable under state law. Therefore, although the April 2004 MOU is incorporated into the GCMP with this approval, federal consistency will not apply to the MOU because it does not contain enforceable policies as defined in 15 C.F.R. § 930.11(h).

Federal consistency shall apply to the approved changes to GA. CODE ANN. §§ 52-9-1, and 52-9-2 (May 14, 2004) only after you publish notice of this approval pursuant to 15 C.F.R. § 923.84(b)(4). Please include in the public notice the list of changes to enforceable policies provided in this letter and send a copy of the notice to OCRM.

Thank you for your cooperation in this review. Please contact Bill O'Beirne at (301)713-3155 extension 160, if you have any questions.

Sincerely,

John King, Chief
Coastal Programs Division

cc: James R. Thornton, Jr.
Acting District Counsel
Department of the Army
Savannah District, Corps of Engineers
100 W. Oglethorpe Ave.
Savannah, GA 31401-3640

ENVIRONMENTAL IMPACT STATEMENT
APPENDIX I: Federal Consistency Determination for the Georgia Coastal Management Program

SAVANNAH HARBOR EXPANSION PROJECT

Chatham County, Georgia and Jasper County, South Carolina

January 2012

APPENDIX I-1

Grain Size Analysis for New Work Sediment and Maintenance Material in the Savannah Harbor Expansion Project

US Army Corps of Engineers
Savannah District
South Atlantic Division

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Table 4-1 provides the results of the Grain Size Analysis for O&M sediments in the Federal navigation channel.

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T27-N	+27,000 North	94.0	94.0	0.0	521
T27-C	+27,000 Center	95.2	95.3	-0.1	574
T27-S	+27,000 South	46.3	48.8	-2.5	416
T26-N	+26,000 North	99.2	99.3	-0.1	363
T26-C	+26,000 Center	95.2	95.2	0.0	654
T26-S	+26,000 South	97.1	97.2	-0.1	337
T25	+25,000	93.2	93.3	-0.1	415
T25-N	+25,000 North	87.7	87.8	-0.1	525
T25-C	+25,000 Center	91.7	91.7	0.0	562
T25-S	+25,000 South	96.9	97.0	-0.1	373
T24-N	+24,000 North	92.4	92.5	-0.1	677
T24-C	+24,000 Center	92.7	92.7	0.0	537
T24-S	+24,000 South	98.2	98.3	-0.1	274
T23-N	+23,000 North	98.8	98.9	-0.1	505
T23-C	+23,000 Center	99.4	99.5	-0.1	579
T23-S	+23,000 South	98.1	98.2	-0.1	276
T22-N	+22,000 North	99.6	99.6	0.0	374
T22-C	+22,000 Center	99.9	99.9	0.0	436
T22-S	+22,000 South	78.6	79.0	-0.4	578
T21-N	+21,000 North	90.5	90.5	0.0	466
T21-C	+21,000 Center	97.7	97.7	0.0	484
T21-S	+21,000 South	97.0	97.1	-0.1	245
T20-N	+20,000 North	94.0	94.1	-0.1	656
T20-C	+20,000 Center	97.6	97.6	0.0	566
T20-S	+20,000 South	91.0	92.3	-1.3	147
T19-N	+19,000 North	97.6	97.7	-0.1	392
T19-C	+19,000 Center	98.7	98.7	0.0	548
T19-S	+19,000 South	97.1	97.3	-0.2	299
T18-N	+18,000 North	78.9	79.1	-0.2	652
T18-C	+18,000 Center	85.6	85.7	-0.1	608
T18-S	+18,000 South	96.2	96.3	-0.1	332
T17-N	+17,000 North	53.4	55.1	-1.7	462
T17-C	+17,000 Center	93.2	93.2	0.0	830
T17-S	+17,000 South	97.2	97.2	0.0	414
T16-N	+16,000 North	79.6	79.7	-0.1	865
T16-C	+16,000 Center	34.9	36.2	-1.3	461
T16-S	+16,000 South	96.1	96.1	0.0	461
T15	+15,000	89.2	89.3	-0.1	679
T15-N	+15,000 North	37.5	38.0	-0.5	897
T15-C	+15,000 Center	96.4	96.4	0.0	545
T15-S	+15,000 South	95.6	95.6	0.0	503
T14-N	+14,000 North	98.2	98.2	0.0	408
T14-C	+14,000 Center	97.8	97.9	-0.1	639

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T14-S	+14,000 South	98.8	98.8	0.0	668
T13-N	+13,000 North	87.1	87.3	-0.2	289
T13-C	+13,000 Center	98.9	99.0	-0.1	568
T13-S	+13,000 South	95.9	95.9	0.0	648
T12-N	+12,000 North	96.7	96.7	0.0	450
T12-C	+12,000 Center	83.5	83.9	-0.4	873
T12-S	+12,000 South	85.2	85.5	-0.3	513
T11-N	+11,000 North	66.1	66.4	-0.3	480
T11-C	+11,000 Center	86.4	86.8	-0.4	619
T11-S	+11,000 South	59.7	60.9	-1.2	605
T10-N	+10,000 North	95.8	95.8	0.0	580
T10-C	+10,000 Center	91.1	91.3	-0.2	775
T10-S	+10,000 South	82.4	82.6	-0.2	564
T9-N	+9,000 North	91.8	91.9	-0.1	460
T9-C	+9,000 Center	89.6	90.0	-0.4	591
T9-S	+9,000 South	66.3	66.3	0.0	794
T8-N	+8,000 North	98.1	98.1	0.0	472
T8-C	+8,000 Center	92.7	92.7	0.0	722
T8-S	+8,000 South	95.7	95.7	0.0	659
T7-N	+7,000 North	75.7	76.4	-0.7	486
T7-C	+7,000 Center	85.5	85.5	0.0	747
T7-S	+7,000 South	88.6	88.6	0.0	526
T6-N	+6,000 North	96.4	96.4	0.0	477
T6-C	+6,000 Center	95.0	95.0	0.0	548
T6-S	+6,000 South	92.4	92.5	-0.1	615
T05	+5,000	90.8	91.0	-0.2	535
T5-N	+5,000 North	76.4	77.0	-0.6	611
T5-C	+5,000 Center	77.6	77.7	-0.1	998
T5-S	+5,000 South	98.7	98.8	-0.1	248
T4.5-N	+4,500 North	70.7	71.1	-0.4	843
T4.5-C	+4,500 Center	95.1	95.1	0.0	572
T4-N	+4,000 North	88.5	89.7	-1.2	449
T4-C	+4,000 Center	88.3	88.7	-0.4	1064
T4-S	+4,000 South	93.7	94.1	-0.4	169
T3.5-N	+3,500 North	55.9	56.1	-0.2	1235
T3.5-C	+3,500 Center	85.9	86.1	-0.2	986
T3.5-S	+3,500 South	96.0	96.0	0.0	500
T3-N	+3,000 North	88.6	89.1	-0.5	704
T3-C	+3,000 Center	98.0	98.1	-0.1	552
T3-S	+3,000 South	55.7	56.2	-0.5	600
T2.5-N	+2,500 North	89.5	89.8	-0.3	585
T2.5-C	+2,500 Center	90.3	90.7	-0.4	546
T2.5-S	+2,500 South	88.8	89.5	-0.7	415

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T2-N	+2,000 North	98.7	98.7	0.0	707
T2-C	+2,000 Center	90.6	90.7	-0.1	626
T2-S	+2,000 South	80.9	81.2	-0.3	821
T1.5-N	+1,500 North	98.9	98.9	0.0	363
T1.5-C	+1,500 Center	90.4	90.5	-0.1	574
T1.5-S	+1,500 South	78.6	79.1	-0.5	674
T1-N	+1,000 North	97.3	97.4	-0.1	421
T1-C	+1,000 Center	94.6	94.7	-0.1	712
T1-S	+1,000 South	93.0	93.2	-0.2	453
T0.5-N	+500 North	99.0	99.0	0.0	323
T0.5-C	+500 Center	84.6	84.9	-0.3	639
T0.5-S	+500 South	81.3	81.7	-0.4	567
T0-N	0 North	95.6	95.7	-0.1	277
T0-C	0 Center	78.8	79.1	-0.3	824
T0-S	0 South	72.2	72.9	-0.7	514
T0.5B-N	-500 North	95.3	95.4	-0.1	531
T0.5B-C	-500 Center	80.8	80.9	-0.1	817
T0.5B-S	-500 South	88.7	89.4	-0.7	370
T1B-N	-1,000 North	98.4	98.4	0.0	432
T1B-C	-1,000 Center	86.3	86.3	0.0	824
T1B-S	-1,000 South	87.3	87.4	-0.1	998
T1.5B-N	-1,500 North	97.2	97.3	-0.1	513
T1.5B-C	-1,500 Center	98.5	98.5	0.0	766
T1.5B-S	-1,500 South	93.2	93.2	0.0	616
T2B-N	-2,000 North	84.9	85.4	-0.5	198
T2B-C	-2,000 Center	65.3	65.3	0.0	653
T2B-S	-2,000 South	97.2	97.2	0.0	601
T2.5B-N	-2,500 North	95.6	96.5	-0.9	162
T2.5B-C	-2,500 Center	97.3	97.4	-0.1	581
T2.5B-S	-2,500 South	98.9	99.0	-0.1	730
T3B-N	-3,000 North	91.6	92.5	-0.9	159
T3B-C	-3,000 Center	97.7	97.9	-0.2	393
T3B-S	-3,000 South	96.1	96.1	0.0	525
T3.5B-N	-3,500 North	97.0	97.9	-0.9	196
T3.5B-C	-3,500 Center	99.1	99.3	-0.2	434
T3.5B-S	-3,500 South	84.1	84.6	-0.5	663
T4B-N	-4,000 North	77.2	77.5	-0.3	350
T4B-C	-4,000 Center	95.3	95.4	-0.1	426
T4B-S	-4,000 South	93.7	94.1	-0.4	445
T4.5B-N	-4,500 North	89.5	90.6	-1.1	185
T4.5B-C	-4,500 Center	99.9	99.9	0.0	387
T4.5B-S	-4,500 South	95.0	95.1	-0.1	495
T5B	-5,000	84.1	85.8	-1.7	428

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T5B-N	-5,000 North	71.0	71.8	-0.8	283
T5B-C	-5,000 Center	97.9	98.0	-0.1	502
T5B-S	-5,000 South	93.1	93.4	-0.3	424
T5.5B-N	-5,500 North	80.4	82.0	-1.6	309
T5.5B-C	-5,500 Center	90.2	90.3	-0.1	600
T5.5B-S	-5,500 South	98.7	98.8	-0.1	580
T6B-N	-6,000 North	87.8	88.8	-1.0	409
T6B-C	-6,000 Center	99.0	99.3	-0.3	800
T6B-S	-6,000 South	95.2	95.4	-0.2	1281
T6.5B-N	-6,500 North	57.9	87.3	-29.4	269
T6.5B-C	-6,500 Center	84.7	85.8	-1.1	332
T6.5B-S	-6,500 South	79.9	79.9	0.0	919
T7B-N	-7,000 North	95.5	96.1	-0.6	421
T7B-C	-7,000 Center	93.9	94.0	-0.1	1319
T7B-S	-7,000 South	94.7	94.9	-0.2	953
T7.5B-N	-7,500 North	51.5	54.0	-2.5	222
T7.5B-C	-7,500 Center	93.6	93.8	-0.2	467
T7.5B-S	-7,500 South	92.5	93.2	-0.7	451
T8B-N	-8,000 North	24.5	26.7	-2.2	193
T8B-C	-8,000 Center	98.1	98.8	-0.7	293
T8B-S	-8,000 South	77.2	77.6	-0.4	665
T8.5B-N	-8,500 North	44.3	47.5	-3.2	281
T8.5B-C	-8,500 Center	76.4	80.4	-4.0	109
T8.5B-S	-8,500 South	81.9	84.6	-2.7	184
T9B-N	-9,000 North	40.7	43.7	-3.0	155
T9B-C	-9,000 Center	68.7	71.2	-2.5	101
T9B-S	-9,000 South	66.8	69.7	-2.9	150
T9.5B-N	-9,500 North	41.1	42.9	-1.8	226
T9.5B-C	-9,500 Center	91.7	94.2	-2.5	105
T9.5B-S	-9,500 South	73.5	76.8	-3.3	139
T10B-N	-10,000 North	42.9	46.0	-3.1	229
T10B-C	-10,000 Center	93.7	96.3	-2.6	128
T10B-S	-10,000 South	86.5	88.9	-2.4	221
T10.5B-N	-10,500 North	64.9	65.6	-0.7	533
T10.5B-C	-10,500 Center	74.9	77.0	-2.1	304
T10.5B-S	-10,500 South	78.1	81.0	-2.9	121
T11B-N	-11,000 North	71.8	72.1	-0.3	535
T11B-C	-11,000 Center	95.3	96.5	-1.2	293
T11B-S	-11,000 South	69.2	72.7	-3.5	159
T11.5B-N	-11,500 North	48.4	49.8	-1.4	368
T11.5B-C	-11,500 Center	89.6	89.9	-0.3	665
T11.5B-S	-11,500 South	80.0	83.9	-3.9	101
T12B-N	-12,000 North	42.8	44.7	-1.9	399

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T12B-C	-12,000 Center	98.8	98.9	-0.1	392
T12B-S	-12,000 South	67.0	70.4	-3.4	92
T12.5B-N	-12,500 North	79.9	81.6	-1.7	544
T12.5B-C	-12,500 Center	95.2	95.7	-0.5	753
T12.5B-S	-12,500 South	63.2	67.0	-3.8	95
T13B-N	-13,000 North	86.5	87.0	-0.5	716
T13B-C	-13,000 Center	96.4	96.5	-0.1	721
T13B-S	-13,000 South	54.2	57.5	-3.3	94
T13.5B-N	-13,500 North	90.1	90.7	-0.6	553
T13.5B-C	-13,500 Center	92.2	92.5	-0.3	706
T13.5B-S	-13,500 South	79.7	82.2	-2.5	153
T14B-N	-14,000 North	74.2	74.9	-0.7	593
T14B-C	-14,000 Center	80.0	80.6	-0.6	452
T14B-S	-14,000 South	68.3	71.0	-2.7	99
T15B	-15,000	77.9	80.6	-2.7	104
T15B-CL	-15,000	81.1	83.6	-2.5	253
T15B-N	-15,000 North	82.8	83.4	-0.6	720
T15B-C	-15,000 Center	80.0	80.1	-0.1	188
T15B-S	-15,000 South	71.7	74.9	-3.2	363
T16B-N	-16,000 North	82.0	82.6	-0.6	777
T16B-C	-16,000 Center	96.5	97.4	-0.9	676
T16B-S	-16,000 South	68.1	69.7	-1.6	117
T17B-N	-17,000 North	93.6	95.9	-2.3	439
T17B-C	-17,000 Center	84.1	84.3	-0.2	696
T18B-N	-18,000 North	95.2	95.2	0.0	1047
T18B-C	-18,000 Center	95.5	95.8	-0.3	916
T18B-S	-18,000 South	88.7	89.0	-0.3	671
T19B-N	-19,000 North	91.8	92.0	-0.2	966
T19B-C	-19,000 Center	99.4	99.4	0.0	1020
T19B-S	-19,000 South	54.9	56.5	-1.6	624
T20B-N	-20,000 North	95.8	95.9	-0.1	1008
T20B-C	-20,000 Center	97.6	97.6	0.0	1070
T20B-S	-20,000 South	71.3	73.7	-2.4	799
T21B-N	-21,000 North	96.7	97.4	-0.7	410
T21B-C	-21,000 Center	96.3	96.4	-0.1	1042
T21B-S	-21,000 South	98.6	98.6	0.0	728
T22B-N	-22,000 North	74.6	74.9	-0.3	638
T22B-C	-22,000 Center	98.4	98.5	-0.1	935
T22B-S	-22,000 South	90.8	90.9	-0.1	366
T23B-N	-23,000 North	95.2	95.5	-0.3	479
T23B-C	-23,000 Center	93.5	93.7	-0.2	612
T23B-S	-23,000 South	97.5	98.1	-0.6	162
T24B-N	-24,000 North	97.5	98.2	-0.7	450

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T24B-C	-24,000 Center	90.4	90.6	-0.2	865
T24B-S	-24,000 South	75.1	77.9	-2.8	121
T25B	-25,000	82.0	85.1	-3.1	136
T25B-N	-25,000 North	81.4	82.7	-1.3	263
T25B-C	-25,000 Center	98.2	98.5	-0.3	169
T25B-S	-25,000 South	72.5	75.6	-3.1	152
T26B-N	-26,000 North	97.1	97.8	-0.7	532
T26B-C	-26,000 Center	98.1	98.7	-0.6	178
T26B-S	-26,000 South	44.8	47.9	-3.1	127
T27B-N	-27,000 North	49.6	51.5	-1.9	255
T27B-C	-27,000 Center	97.6	98.5	-0.9	117
T27B-S	-27,000 South	36.1	40.5	-4.4	125
T28B-N	-28,000 North	97.4	97.5	-0.1	423
T28B-C	-28,000 Center	97.0	97.9	-0.9	135
T28B-S	-28,000 South	43.4	48.4	-5.0	108
T29B-N	-29,000 North	97.7	98.2	-0.5	162
T29B-C	-29,000 Center	94.9	95.9	-1.0	122
T29B-S	-29,000 South	34.8	39.2	-4.4	119
T30B-N	-30,000 North	95.0	95.1	-0.1	204
T30B-C	-30,000 Center	78.2	81.3	-3.1	120
T30B-S	-30,000 South	60.0	63.7	-3.7	100
T31B-N	-31,000 North	82.3	84.7	-2.4	141
T31B-C	-31,000 Center	95.6	96.6	-1.0	121
T31B-S	-31,000 South	55.8	60.9	-5.1	100
T32B-N	-32,000 North	90.5	90.8	-0.3	164
T32B-C	-32,000 Center	95.6	96.5	-0.9	132
T32B-S	-32,000 South	54.0	57.6	-3.6	94
T33B-N	-33,000 North	65.3	69.3	-4.0	101
T33B-C	-33,000 Center	94.5	96.0	-1.5	107
T33B-S	-33,000 South	56.9	60.5	-3.6	126
T34B-N	-34,000 North	75.7	80.3	-4.6	94
T34B-C	-34,000 Center	95.9	97.2	-1.3	130
T34B-S	-34,000 South	45.0	48.1	-3.1	237
T35B	-35,000	77.4	80.4	-3.0	112
T35B-N	-35,000 North	95.6	96.0	-0.4	145
T35B-C	-35,000 Center	48.7	50.9	-2.2	143
T35B-S	-35,000 South	77.3	80.2	-2.9	163
T36B-N	-36,000 North	79.7	84.1	-4.4	98
T36B-C	-36,000 Center	94.3	96.1	-1.8	104
T36B-S	-36,000 South	64.4	68.6	-4.2	207
T37B-N	-37,000 North	71.1	76.5	-5.4	90
T37B-C	-37,000 Center	90.7	92.6	-1.9	134
T37B-S	-37,000 South	70.2	74.5	-4.3	128

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T38B-N	-38,000 North	83.7	85.6	-1.9	153
T38B-C	-38,000 Center	95.5	97.4	-1.9	199
T38B-S	-38,000 South	77.8	81.8	-4.0	142
T39B-N	-39,000 North	82.0	87.3	-5.3	177
T39B-C	-39,000 Center	93.1	94.9	-1.8	406
T39B-S	-39,000 South	76.7	81.1	-4.4	116
T40B-N	-40,000 North	78.7	83.0	-4.3	99
T40B-C	-40,000 Center	69.0	69.1	-0.1	1019
T40B-S	-40,000 South	80.6	84.4	-3.8	147
T41B-N	-41,000 North	89.1	91.3	-2.2	165
T41B-C	-41,000 Center	90.5	91.5	-1.0	621
T41B-S	-41,000 South	79.5	83.3	-3.8	116
T42B-N	-42,000 North	51.5	54.8	-3.3	116
T42B-C	-42,000 Center	98.0	99.1	-1.1	141
T42B-S	-42,000 South	77.1	81.2	-4.1	87
T43B-N	-43,000 North	69.2	74.0	-4.8	103
T43B-C	-43,000 Center	96.3	97.6	-1.3	145
T43B-S	-43,000 South	62.4	65.3	-2.9	103
T44B-N	-44,000 North	86.4	88.2	-1.8	112
T44B-C	-44,000 Center	97.3	98.3	-1.0	243
T44B-S	-44,000 South	57.7	60.9	-3.2	106
T45B	-45,000	72.4	75.3	-2.9	146
T45B-N	-45,000 North	90.7	92.0	-1.3	163
T45B-C	-45,000 Center	99.5	99.5	0.0	1406
T45B-S	-45,000 South	23.5	25.2	-1.7	127
T46B-N	-46,000 North	70.2	74.1	-3.9	104
T46B-C	-46,000 Center	95.8	96.3	-0.5	280
T46B-S	-46,000 South	75.1	78.2	-3.1	105
T47B-N	-47,000 North	75.5	78.5	-3.0	116
T47B-C	-47,000 Center	95.6	96.9	-1.3	383
T47B-S	-47,000 South	67.6	70.6	-3.0	111
T48B-N	-48,000 North	71.3	76.1	-4.8	104
T48B-C	-48,000 Center	85.9	86.4	-0.5	636
T48B-S	-48,000 South	80.8	82.8	-2.0	138
T49B-N	-49,000 North	96.0	96.6	-0.6	153
T49B-C	-49,000 Center	77.3	77.4	-0.1	921
T49B-S	-49,000 South	92.3	94.6	-2.3	188
T50B-N	-50,000 North	93.9	94.9	-1.0	142
T50B-C	-50,000 Center	87.0	87.0	0.0	1088
T50B-S	-50,000 South	82.7	85.0	-2.3	173
T51B-N	-51,000 North	77.2	79.0	-1.8	320
T51B-C	-51,000 Center	90.8	91.1	-0.3	409
T51B-S	-51,000 South	83.6	85.6	-2.0	360

TABLE 4-1 Results of Grain Size Analysis

Sample ID	Location	Percent Sand or Larger[a] (#200 Sieve Cutoff)	Percent Sand or Larger[a] (#230 Sieve Cutoff)	Difference in Percent Sand with #200 and #230 Sieves	Average Grain Size of Sand Fraction (um)
T52B-N	-52,000 North	86.9	89.3	-2.4	114
T52B-C	-52,000 Center	79.4	79.4	0.0	1510
T52B-S	-52,000 South	81.0	81.5	-0.5	1012
T53B-N	-53,000 North	94.6	95.8	-1.2	158
T53B-C	-53,000 Center	92.4	92.4	0.0	1293
T53B-S	-53,000 South	95.8	96.1	-0.3	342
T54B-N	-54,000 North	95.3	95.6	-0.3	167
T54B-C	-54,000 Center	92.9	93.3	-0.4	377
T54B-S	-54,000 South	97.4	97.5	-0.1	690
T55B	-55,000	99.2	99.3	-0.1	389
T55B-N	-55,000 North	96.0	96.4	-0.4	194
T55B-C	-55,000 Center	86.1	86.1	0.0	1317
T55B-S	-55,000 South	98.3	98.6	-0.3	275
T56B-N	-56,000 North	96.0	96.1	-0.1	249
T56B-C	-56,000 Center	98.2	98.2	0.0	627
T56B-S	-56,000 South	97.2	97.4	-0.2	253
T57B-N	-57,000 North	97.7	97.8	-0.1	213
T57B-C	-57,000 Center	85.5	85.5	0.0	1209
T57B-S	-57,000 South	95.4	95.6	-0.2	261
T58B-N	-58,000 North	97.7	97.7	0.0	325
T58B-C	-58,000 Center	96.2	96.2	0.0	819
T58B-S	-58,000 South	95.8	95.9	-0.1	337
T59B-N	-59,000 North	91.1	91.1	0.0	342
T59B-C	-59,000 Center	94.4	94.4	0.0	322
T59B-S	-59,000 South	97.5	97.6	-0.1	240
T60B-N	-60,000 North	97.1	97.2	-0.1	326
T60B-C	-60,000 Center	97.0	97.1	-0.1	261
T60B-S	-60,000 South	97.3	97.4	-0.1	194

a) Includes shell hash/gravel/cobble fraction

Tables 2 and 3 (taken from the DMMP) show the O&M Sediment characterization by reach for the Inner Harbor by reach.

Table 2: Sediment Characterization by Station

Station	Channel	% Sand	% Fines
5+250	Inner	94.4	5.6
15+000	Inner	88.2	11.8
25+000	Inner	93.7	6.3
35+000	Inner	12.1	87.9
36+000	Inner	0.0	100.0
44+000	Inner	32.2	67.8
55+750	Inner	27.2	72.5
56+000	Inner	10.6	89.4
61+500	Inner	13.4	86.6
64+000	Inner	2.7	97.3
67+250	Inner	78.4	21.6
75+000	Inner	5.7	94.3
90+000	Inner	9.6	90.2
99+000	Inner	14.4	85.6
2+750	Sed Basin	17.5	82.5
5+250	Sed Basin	0.0	100.0
8+000	Sed Basin	0.0	100.0
10+500	Sed Basin	17.6	82.4

Table 3: Sediment Characterization by Reach

STATIONS	SAND (CY)	SAND (%)	FINES (CY)	FINES (%)	TOTAL (CY)
112+5000 to 105+000	83,600	80	20,900	20	104,500
105+000 to 79+000	896,850	68	422,050	32	1,318,900
79+000 to 63+000	87,500	10	787,100	90	874,600
63+000 to 40+000	247,850	20	991,400	80	1,239,250
40+000 to 0+000	584,900	60	389,900	40	974,800
Sediment Basin	321,850	10	2,896,650	90	3,218,500
TOTAL	**2,222,500**		**5,508,100**		**7,730,600**

Table 6 (taken from the updated DMMP) contains a breakdown of the amount of new work dredged sediment by reach and characteristics of that sediment in the Inner Harbor. The volume to be dredged is based on a 48-foot deepening with 100% for overdepth (that portion of the dredging template below the authorized depth, usually two feet in Savannah Harbor).

Table 6: New Work Material by Reach

Station	% Sand	Volume CY	% Fines	Volume CY
0+000				
	87	2,199,947	13	328,728
24+000				
	36	882,538	64	1,568,956
40+000				
	69	1,486,522	32	699,540
50+000				
	68	2,906,215	32	1,367,630
70+000				
	70	706,426	30	302,754
79+000				
	54	2,229038	46	1,898,810
103+000				

The following tables show the percent fines of new work material found in the Entrance Channel that were originally proposed for placement in the nearshore areas.

Entrance Channel Stations	Depth (Inol am/od)	Excavation Volume (CY)	% Fines	Placement Site	Top Elev (ft)	Original Capacity (CY)	Working Capacity (CY)	Capacity After Placement (CY)	Deficit (CY)	Placement Design	Placement Rationale
0 - +4,000 (upriver)	46	21,594	14	MLW200	Mean Tide(+4)	217,000	217,000	0	-179,997	200' berm, ext west from North Groin 3200'	Good quality sediments
	48	123,076	13	MLW500	Mean Tide(+4)	1,896,000	1,896,000	1,716,003			Beneficially use, if possible
	49	186,339									
	50	267,220	13								
	52	396,997	14								
0 - 10,000	46	438,715	21	MLW500	Mean Tide(+4)	1,896,000	1,716,003	226,262		600' berm, ext south from North Groin 11,000'	Good quality sediments
	48	772,033	17								Beneficially use, if possible
	49	948,536									
	50	1,128,617	16								
	52	1,489,751	17								
10,000 - 20,000	46	328,512	33	SITE 2	MHW(+8)	3,226,000	3,226,000	1,396,514			Sediments contain more fines
	48	771,196	31								Beneficially use, if possible
	49	1,031,147									No placement near beach
	50	1,297,629	30								
	52	1,828,486	29								
20,000 - 30,000	46	365,322	18	MLW500	Mean Tide(+4)	1,896,000	226,262	0	-1,694,833	600' berm, ext south from North Groin 11,000'	Good quality sediments
	48	877,023	17	ERDC	-4	1,165,000	1,165,000	0	-529,833		Beneficially use, if possible
	49	1,138,727		SITE 2 EXT	-4	4,251,000	4,251,000	3,721,167			
	50	1,400,959	16								
	52	1,921,085	16								
30,000 - 40,000	46	1,118,617	16	ERDC	-4	1,165,000	0				Good quality sediments
	48	1,663,506	29	SITE 2 EXT	-4	4,251,000	3,721,167	966,525			Beneficially use, if possible
	49	1,931,090									Top EL to allow some shoreward migration
	50	2,208,117	28								
	52	2,755,642	29								
40,000 - 45,000	46	272,367	10	SITE 2 EXT	-4	4,251,000	965,525	0	-45,723		Good quality sediments
	48	516,138	14	SITE 2	MHW(+8)	3,226,000	1,396,514	1,350,791			Beneficially use, if possible
	49	641,480									Top EL to allow some shoreward migration
	50	765,796	15								
	52	1,011,248	14								
45,000 - 50,000	46	196,976	10	SITE 2	MHW(+8)	3,226,000	1,350,791	508,012			Good quality sediments
	48	416,098	14								Beneficially use, if possible
	49	524,391									Deposit large volume for shoreward migration
	50	631,604	15								
	52	842,779	14								

Entrance Channel Stations	Depth (Inol am/od)	Excavation Volume (CY)	% Fines	Placement Site	Top Elev (ft)	Original Capacity (CY)	Working Capacity (CY)	Capacity After Placement (CY)	Deficit (CY)	Placement Design	Placement Rationale
0 - +4,000 (upriver)	46	21,594	14	MLW200	Mean Tide(+4)	217,000	217,000	0	-179,997	200' berm, ext west from North Groin 3200'	Good quality sediments
	48	123,076	13	MLW500	Mean Tide(+4)	1,896,000	1,896,000	1,716,003			Beneficially use, if possible
	49	186,339									
	50	267,220	13								
	52	396,997	14								
0 - 10,000	46	438,715	21	MLW500	Mean Tide(+4)	1,896,000	1,716,003	226,262		600' berm, ext south from North Groin 11,000'	Good quality sediments
	48	772,033	17								Beneficially use, if possible
	49	948,536									
	50	1,128,617	16								
	52	1,489,751	17								
10,000 - 20,000	46	328,512	33	SITE 2	MHW(+8)	3,226,000	3,226,000	1,396,514			Sediments contain more fines
	48	771,196	31								Beneficially use, if possible
	49	1,031,147									No placement near beach
	50	1,297,629	30								
	52	1,828,486	29								
20,000 - 30,000	46	365,322	18	MLW500	Mean Tide(+4)	1,896,000	226,262	0	-1,694,833	500' berm, ext south from North Groin 11,000'	Good quality sediments
	48	877,023	17	ERDC	-4	1,165,000	1,165,000	0	-529,833		Beneficially use, if possible
	49	1,138,727		SITE 2 EXT	-4	4,251,000	4,251,000	3,721,167			
	50	1,400,959	16								
	52	1,921,085	16								
30,000 - 40,000	46	1,118,617	16	ERDC	-4	1,165,000	0				Good quality sediments
	48	1,663,506	29	SITE 2 EXT	-4	4,251,000	3,721,167	966,525			Beneficially use, if possible
	49	1,931,090									Top EL to allow some shoreward migration
	50	2,208,117	28								
	52	2,755,642	29								
40,000 - 45,000	46	272,367	10	SITE 2 EXT	-4	4,251,000	965,525	0	-45,723		Good quality sediments
	48	516,138	14	SITE 2	MHW(+8)	3,226,000	1,396,514	1,350,791			Beneficially use, if possible
	49	641,480									Top EL to allow some shoreward migration
	50	765,796	15								
	52	1,011,248	14								
45,000 - 50,000	46	196,976	10	SITE 2	MHW(+8)	3,226,000	1,350,791	508,012			Good quality sediments
	48	416,098	14								Beneficially use, if possible
	49	524,391									Deposit large volume for shoreward migration
	50	631,604	15								
	52	842,779	14								
50,000 - 53,500	46	55,226	11	SITE 2	MHW(+8)	3,225,000	508,012	2,497			Good quality sediments
	48	206,833	11								Beneficially use, if possible
	49	282,657									Deposit large volume for shoreward migration
	50	357,713	10								
	52	505,515	12								

Entrance Channel Stations	Depth (incl am/od)	Excavation Volume (CY)	% Fines	Placement Site	Top Elev (ft)	Original Capacity (CY)	Working Capacity (CY)	Capacity After Placement (CY)	Deficit (CY)	Placement Design	Placement Rationale		
53,500 - 57,000	46	88,669	11	ODMDS	-26	56,807,000	56,807,000	56,414,519			Good quality sediments		
	48	241,598	11								Beneficially use, if possible		
	49	317,433									Large volume of sediments		
	50	392,481	10								Located adjacent to ODMDS		
	52	540,283	12										
57,000 - 61,000	46	100,626	N/A	SITE 11	-10	2,076,000	2,076,000	1,460,976			Good quality sediments		
	48	274,079	N/A								Beneficially use, if possible		
	49	360,747									Submerged berm for fish habitat		
	50	446,527	2										
	52	615,424	9										
61,000 - 64,500	46	2,301	N/A	SITE 11	-10	2,076,000	1,460,976	1,255,301			Good quality sediments		
	48	16,901	N/A								Beneficially use, if possible		
	49	36,434									Submerged berm for fish habitat		
	50	70,346	9										
	52	205,276	7										
64,500 - 68,000	46	0	N/A	SITE 11	-10	2,076,000	1,255,301	1,027,512			Good quality sediments		
	48	4,446	N/A								Beneficially use, if possible		
	49	31,435									Submerged berm for fish habitat		
	50	87,597	9										
	52	227,789	7										
68,000 - 72,000	46	0	N/A	SITE 11	-10	2,076,000	1,027,512	701,650			Good quality sediments		
	48	17,093	N/A								Beneficially use, if possible		
	49	74,227									Submerged berm for fish habitat		
	50	157,020	2										
	52	325,862	6										
72,000 - 75,500	46	0	N/A	SITE 11	-10	2,076,000	701,650	419,294			Good quality sediments		
	48	17,793	5								Beneficially use, if possible		
	49	66,128									Submerged berm for fish habitat		
	50	134,677	4										
	52	282,356	3										
75,500 - 79,000	46	0	N/A	SITE 11	-10	2,076,000	419,294	197,939			Good quality sediments		
	48	941	5								Beneficially use, if possible		
	49	19,380									Submerged berm for fish habitat		
	50	74,233	4										
	52	221,356	3										
79,000 - 82,500	46	0	N/A	SITE 11	-10	2,076,000	197,939	9,908			Good quality sediments		
	48	1,444	N/A								Beneficially use, if possible		
	49	20,836									Submerged berm for fish habitat		
	50	62,614	2										
	52	188,031	3										
82,500 - 85,000	46	0	N/A	SITE 11	-10	2,076,000	9,908	-1,436			Good quality sediments		
	48	0	N/A								Beneficially use, if possible		
	49	0									Submerged berm for fish habitat		
	50	0	3										
	52	11,344	3										

Entrance Channel Stations	Depth (incl am/od)	Excavation Volume (CY)	% Fines	Placement Site	Top Elev (ft)	Original Capacity (CY)	Working Capacity (CY)	Capacity After Placement (CY)	Deficit (CY)	Placement Design	Placement Rationale		
0 - +4,000 (upriver)	52	396,997	14	MLW200	Mean Tide(+4)	217,000	217,000	0	-179,997	200' berm, ext west from North Groin 3200'	Good quality sediments		
				MLW500	Mean Tide(+4)	1,896,000	1,896,000	1,716,003			Beneficially use, if possible		