ENVIRONMENTAL ASSESSMENT

of Modifications to the

RAW WATER STORAGE IMPOUNDMENT

APPENDIX E: 404(b)(1) EVALUATION

SAVANNAH HARBOR EXPANSION PROJECT

Chatham County, Georgia and Jasper County, South Carolina

September 2013

US Army Corps of Engineers
Savannah District
South Atlantic Division

SECTION 404 (b) (1) EVALUATION

CONSTRUCTION AND OPERATION OF A RAW WATER STORAGE IMPOUNDMENT FOR THE CITY OF SAVANNAH AS A MITIGATION FEATURE FOR THE SAVANNAH HARBOR EXPANSION PROJECT

1.0 INTRODUCTION

Section 404 (b) (1) of the Clean Water Act of 1972 requires that any proposed discharge of dredged or fill material into waters of the United States must be evaluated using the guidelines developed by the Administrator of the U.S. Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army. These guidelines are located in Title 40, Part 230 of the Code of Federal Regulations (40 CFR Part 230). The following Section 404 (b) (1) evaluation is prepared in accordance with those guidelines. This Section 404 (b) (1) evaluation analyzes all activities associated with the construction and operation of a Raw Water Storage Impoundment (RWSI) proposed as a mitigation feature for the Savannah Harbor Expansion Project (SHEP) that involve the discharge of dredged material into waters of the United States.

The purpose of the Section 404 (b) (1) guidelines is to "restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material". Fundamental to these guidelines is the precept that "dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern".

This Section 404 (b) (1) Evaluation focuses on aspects of the RWSI project that would involve the discharge of dredged material into waters of the United States. A Final Environmental Impact Statement (FEIS) was completed in 2012 which provides a comprehensive analysis of the other environmental issues associated with the SHEP project.

2.0 PROJECT DESCRIPTION

The City of Savannah operates and maintains a raw water pipeline between Abercorn Creek and its Industrial and Domestic Water Treatment Plant in Port Wentworth, Georgia (EA Appendix A; Figures 3a and 3b). The pipeline delivers raw water that the City treats and then uses primarily as a water supply for local industries for specific plant processes, but also for drinking water to residences in west Savannah, Pooler, and south Effingham County.

After SHEP was approved, Savannah District began detailed engineering and environmental design studies as part of its preparation of contract drawings and specifications. As those studies progressed, it became apparent that alternate locations should be considered to minimize environmental effects and maximize the efficiency of the RWSI. The following table summarizes the changes that are proposed as a result of the detailed studies.

Table 1: Changes in RWSI from 2012 SHEP EIS

Issue	2012 EIS	RWSI EA
Project Purpose	Mitigate chloride impacts to City of Savannah Abercorn Creek water intake	Unchanged
Location	Parcel 3 of GPA's Savannah International Trade Park near Mulberry Grove	New location (Site 4)
Threatened & Endangered Species	No effect	Unchanged
Wetlands	Potential for impacts to small amount of wetlands	Impacts to 13.5 acres (2.1 acres under restrictive covenant)
Size	Approximately 35 acres	33 acres
Cultural Resources	No effect	Unchanged

The primary changes to the approved design are its location and the extent of wetland impacts that would occur.

The RWSI is now proposed for construction at a site between the City of Savannah's raw water pumping station at Abercorn Creek and its Industrial and Domestic Water Treatment Plant in Port Wentworth, Georgia. The selected parcel of land (117 acres) is between the City's raw water pipeline and Interstate 95. The property would be acquired by the non-Federal sponsor (NFS) for SHEP and used to construct and operate an above-ground raw water storage impoundment on approximately 33 acres of the property. A 3,300-foot access road (1.7 acres) located on top of the existing raw water pipeline is included in the proposed action. Borrow material will be required for the construction of the earthen dikes around the impoundment and will be obtained from an off-site source.

The 33-acre RWSI facility includes an earthen dike surrounding the impoundment that is approximately 3,400 feet in total length, with a maximum height of 29 feet, requiring a total material volume of approximately 440,000 cubic yards. The impoundment would have a maximum storage capacity of 62.5 Million Gallons per Day (MGD). It includes the placement of a High Density Polyethylene (HDPE) liner; associated piping and valves; a mechanical mixing system; a 1 megawatt generator with fuel storage; a pump station and electrical building; a powdered activated carbon system with a silo and feed equipment; a groundwater well, a hydropneumatic tank, and fencing around the entire facility. Influent and effluent pipelines will be required between the impoundment and the existing City of Savannah water lines. The

proposed action also includes upgrades to 19 existing pipeline air release valves and construction of 3 new valves (most from 6 to 8 or 10 inches) on the City of Savannah's existing raw water pipeline. Although USACE Civil Works activities are not governed by the USACE Section 404 regulatory permitting process, upgrades to existing valves (and new valves that may be required) that occur within wetlands within the pipeline right of way would be performed with in the Nationwide Permit 12 (Utility Line Activities). After construction of the RWSI and associated features is completed, the facility would be turned over to the City of Savannah for operations and maintenance.

3.0 LOCATION OF THE PROPOSED ACTION

The proposed action is sited within a large tract of timberland whose current and historical land use is silviculture, and includes jurisdictional wetlands, excavated ponds and ditches (EA Appendix A; Figure 4). Some of the timber has been recently harvested in clear cuts and the pine timber is naturally regenerating from seed in these areas. Some of the existing timber stands were planted and some were naturally produced. The topography of the subject site ranges from 7 to 17 feet above mean sea level (msl) at the following coordinates: Latitude 32 degrees, 12 minutes, 15 N seconds; Longitude 81 degrees, 11 minutes, 10 W seconds.

The City's raw water pipeline is located in northern Chatham County between Georgia Highway 21 and I-95 (Figure 1). The intake is on Abercorn Creek, a tributary of the Savannah River, and the pipeline runs southward 7.25 miles to the Industrial and Domestic Water Treatment Plant in Port Wentworth, Georgia.

4.0 DESCRIPTION OF ALTERNATIVES CONSIDERED

As part of the SHEP project, the RWSI would be constructed to mitigate for potential impacts to the City of Savannah's municipal and industrial water supply intake located on Abercorn Creek. During the feasibility phase, six potential sites (Figure 1 below) for the RWSI were identified and screened for suitability, environmental impacts, and costs to design and construct. As scoping for the detailed design progressed, three additional sites were identified and included in this screening process. Screening criteria were as follows:

- Soils and constructability (hydric vs. non-hydric soils, suitability for use in constructing dams/levees, depth to water table, subsurface condition risk)
- Hydrology on site (flooding frequency)
- Wetlands (likelihood of presence, potential impacts and mitigation required)
- Presence of restrictive covenants and impacts of altering these
- Endangered species (likelihood of impacts)
- Cultural resources (likelihood of impacts)
- Noise and visibility impacts
- Environmental liability risks (contamination)
- Land use compatibility (zoning, proximity to inhabited structures)
- Flood risk to adjacent properties
- Risk to infrastructure (roadways, railways, utility lines)
- Availability of the site for purchase

- Proximity to City's raw water pipeline
- Proximity to City's water plant
- Design and construction costs
- Schedule risks
- Uncertainty

The nine potential alternative sites were chosen for investigation by examining satellite imagery and/or aerial photos and identifying land areas that were undeveloped and located in between the City's raw water intake and the water treatment facility. After examining imagery, site visits were conducted to ascertain if the sites appeared buildable and acceptable for further investigation. Each site was screened for practicability and reasonableness using the criteria listed above. At critical points during the feasibility phase, the design and layout of the facility changed considerably. Initial plans called for a much larger impoundment than the one that was eventually included in the SHEP report documents and approved for construction. Alternative sites were screened and evaluated as the design progressed; therefore, more detailed data were available for sites screened later in the process (Phase 2). In addition, as part of the Phase 2 analysis, new sites were considered that were not previously available during Phase 1. A summary of the criteria affecting site selection are discussed in the narrative below.

4.1 No-Action Alternative

The CEQ regulations prescribe inclusion of the No Action Alternative as the benchmark against which federal actions are evaluated. Under the No Action Alternative, the proposed RWSI would be constructed as part of the SHEP project. Impacts from construction of SHEP would occur and the RWSI would be constructed as described in the 2012 SHEP EIS. The SHEP EIS identified Parcel 3 of GPA's Savannah International Trade Park near Mulberry Grove as the location for the RWSI. The site is described as Site 5 in the following section and in Figure 1. Since the site had already been permitted for industrial development, the EIS stated that no wetland impacts were expected. The EIS went on to state that if detailed design studies reveal that wetlands would be impacted, the Corps would prepare a site-specific wetland mitigation plan and coordinate it with Georgia Department of Natural Resources and the Federal natural resource agencies. Since the impacts from the detailed design are more than anticipated, the Corps has elected to prepare a full Environmental Assessment of the design changes from the SHEP EIS.

4.2 Phase I Alternative Analysis

Alternative Sites Eliminated from More Detailed Analysis (Figure 1 shows the location of sites evaluated in both phases of alternatives analysis)

Alternative Site 9: This 144-acre site is almost entirely wetland, with only a small portion of upland. Use of this site would require extensive mitigation for impacts to wetlands. The Natural Resources Conservation Service (NRCS) Soil Resource Report for this site lists the water table at the ground surface, inhibiting constructability.

Two cemeteries lie within or near the upland portion of site 9. These cemeteries limit the amount of upland available for developing the RWSI on this site since preliminary investigation indicates that most of this tract is classified as wetlands. Detailed wetland and cultural resource surveys would be required for this property. There is good potential for some prehistoric occurrences to exist on the higher ground margins of this particular site. The closest site eligible for listing on the National Register of Historic Places (NRHP) is the railroad corridor. Part of the site is under a restrictive covenant according to US Army Corps of Engineers Savannah District Regulatory Division. Altering this covenant could require triple-mitigating for wetlands. In addition, a natural gas line runs through the site.

Site 9 was eliminated from further consideration on the basis of the large acreage of wetland impacts, high probability of impacting cultural resources, risk to infrastructure, and reduced constructability due to high water table.

Alternative Site 5: This 76-acre site is Parcel 3 of GPA's Savannah International Trade near Mulberry Grove. It is bounded on the west by a railroad line/corridor that has been previously determined as a National Register-eligible historic property. Site 5 has been previously surveyed for cultural resources (Braley 2005). Several historic and prehistoric sites are recorded within the tract. Many of the recorded sites have undetermined NRHP status and would require further evaluation if the RWSI could not be designed to avoid impacting the sites. Since this is an active railroad track, there is a risk of contaminated soil and/or groundwater associated with the railroad track impacting the proposed site.

Notably, constructing the RWSI on this site would require installation of four 36-inch supply and return water pipelines that would pass underneath the railroad track. A rail or pipeline accident in this vicinity could interrupt both City water supply and rail access. In a worst-case scenario, a rail accident could damage or release a contaminant into the City's water supply, or a rupture or failure in the high pressure water line could compromise the railroad bed. Either of these results would endanger human health and safety. In addition, it is unknown when USACE could obtain the required approvals from the railroad. Based on previous interactions with the railroad, the decision process would take an indeterminate amount of time but not less than two years after design is complete.

Site 5 was eliminated from further consideration on the basis of the difficulty of approval and time required to install water supply pipelines underneath the rail line, risk of existing contamination (environmental liability), risk of impacting significant cultural resources, and risk of a railway accident or pipeline rupture endangering human health and safety and infrastructure.

Alternative Site 3: This 128-acre site straddles the Chatham-Effingham County line and is located on the west side of Georgia Highway 21. Preliminary data based on the NRCS Soil Resource Report for this site indicates the water table at the ground surface, which could inhibit constructability. The National Wetland Inventory (NWI) maps identify over half of this site as wetlands. The southern half of the site (in Chatham County) has been developed for single and multi-family residential developments. Wetlands in this portion of the site have been filled. Recent aerial photography (Google Earth Pro) shows 10 apartment buildings and several single-family homes on site. If the RWSI is built on the undeveloped portion of this site, it would be located in wetlands in the northern half of the site, 700 feet from the residential development.

Noise, visibility, and the potential risk to human health and safety should the impoundment's dike break poses a considerable risk.

Site 3 is located a distant 4,000 feet from the City's raw water pipeline and 6.5 miles from the City's water plant, greatly increasing cost of construction and operation. Optimally, the site would be located adjacent to the existing raw water pipeline and as close as possible to the City's municipal and industrial water treatment facility, thereby maximizing the use of the existing pumps at Abercorn Creek and minimizing new pipeline and pumping costs. Location of the RWSI at Site 3 would also require construction of a pipeline that would cross Georgia State Highway 21. This presents a risk of service interruption or contamination of the City's water supply in the event of an accident that damaged or ruptured the pipeline and could also compromise the highway road bed.

Site 3 was eliminated from further consideration on the basis of proximity to the raw water pipeline, risk to infrastructure, risk to human health and safety, cost to run a pipeline nearly 1 mile and under a major highway, and the proximity to residential development, and reduced constructability due to high water table.

Alternative Site 1: This 110-acre site is located 1,700 feet from the City's raw water pipeline and 7.4 miles from the City's water plant. The distance from the water plant would increase cost of construction and operation. The NRCS Soil Resource Report for this site shows the water table at the ground surface, inhibiting constructability.

Site 1 was eliminated from further consideration based on distance to the raw water pipeline and to the City's water plant, the additional costs needed to run ½ mile pipeline to the existing raw water pipe, and reduced constructability due to high water table.

Alternative Site 2: This 132-acre site is located adjacent to the City's raw water pipeline but is 6.2 miles from the City's water plant, greatly increasing cost of construction and operation. Site 2 is the furthest proposed site from the water treatment plant, along the pipeline. Compared to other potential sites, approximated 100 additional horsepower would be needed in pump capacity to deliver the water, increasing construction and operations and maintenance costs. The NRCS Soil Resource Report for this site shows the water table at the ground surface, inhibiting constructability.

Site 2 was eliminated from further consideration based on distance to the City's water plant, increased costs compared to other alternatives, and reduced constructability due to high water table.

Alternative Site 7: This 31-acre site is adjacent to the raw water pipeline but is 5.2 miles from the City's water plant, greatly increasing cost of construction and operation. This site is barely large enough to contain the proposed 30-acre RWSI. It affords no opportunity to reconfigure or move the RWSI within the site to minimize adverse impacts, and no room for a buffer between the RWSI and adjacent properties. For instance, although NWI shows no wetlands on the site, 100% of the site has hydric or partially hydric soils, suggesting that wetlands may be present. If this is the case, the small size of the site would preclude reconfiguring the design to avoid wetlands.

Although the site is 1,400 feet from the nearest occupied dwelling, it is zoned Residential Single Family, and a tract bordering this site is being developed for a subdivision. Should the RWSI be located on this site, there is a high risk that future land use compatibility and noise/visibility impacts could become significant with this planned development. In addition, a Phase I Cultural Resource Survey would be required prior to development of this property.

Site 7 was eliminated from further consideration based on distance to the City's water plant, and design constraints imposed by the small size of the site relative to the size of the proposed RWSI.

Alternative Site 6: This 34-acre site is adjacent to the raw water pipeline but is 5.0 miles from the City's water plant, greatly increasing cost of construction and operation. This site is barely large enough to contain the proposed 30-acre RWSI. It affords no opportunity to reconfigure or move the RWSI within the site to minimize adverse impacts, and no room for a buffer between the RWSI and adjacent properties. For instance, although NWI shows no wetlands on the site, 100% of the site has hydric or partially hydric soils, suggesting that wetlands may be present. If this is the case, the small size of the site would preclude reconfiguring the design to avoid wetlands. Although the site is 1,100 feet from the nearest occupied dwelling, it is zoned Residential Single Family, and a tract bordering this site is being developed for a subdivision. Should the RWSI be located on this site, there is a high risk that future land use compatibility and noise/visibility impacts could become significant with this planned development.

This 34-acre site was included in the Georgia Department of Transportation's NaviGAtor System for Hurricane Evacuation project archaeological assessment (No author, N.D.). No cultural resources sites were recorded within the site; however, the survey did not entail intensive field investigations (Phase I Cultural Resource Survey). A Phase I Cultural Resource Survey would be required prior to development of this property.

Site 6 was eliminated from further consideration based on distance to the City's water plant, and design constraints imposed by the small size of the site relative to the size of the proposed RWSI.

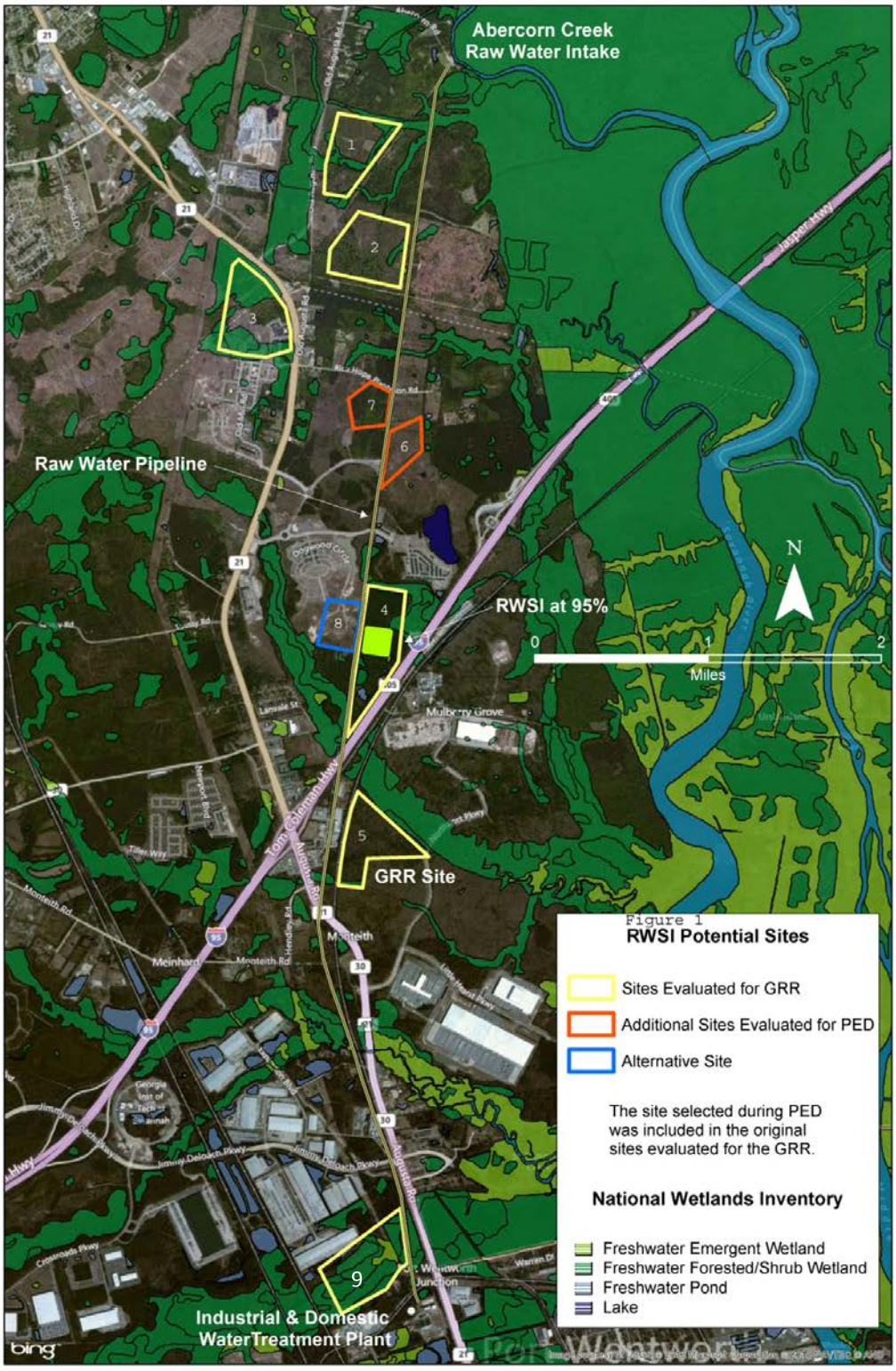

Figure 1 - Location of 9 Potential Sites for RWSI (see EA Appendix A for larger map)

4.3 Phase II Alternative Analysis

After completion of the feasibility phase of the SHEP (Phase I), additional site alternatives were screened based on more detailed engineering design criteria for the RWSI. In addition, a new site (Site 8) that was not previously available was evaluated. A summary of the criteria affecting site selection are discussed in the narrative below. Figure 2 shows the location of sites evaluated in this phase.

Alternative Site 4: This 117-acre site is adjacent to the raw water pipeline and 3.8 miles from the City's water plant. A 65% design has been prepared that places the 33-acre impoundment footprint within the site. Wetlands have been delineated in the field on the entire 117-acre tract. The RWSI footprint as currently designed would encroach on a total of 13.5 acres of wetlands. The total mitigation cost is estimated to be $666,330. This figure includes mitigation for two actions affecting wetlands: 1) amending an existing Section 404 permit to remove a restrictive covenant on 2.1 acres of forested wetlands and 2) placement of fill into 13.5 acres of forested and recently clear-cut wetlands. The first action is the sole responsibility of the non-Federal sponsor for SHEP; the second action would be cost-shared between the Corps and the non-Federal sponsor as outlined in the SHEP General Re-evaluation Report.

The entire site has been cleared for presence of cultural resources, endangered species, and other environmental liabilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The NRCS Soil Resource Report for this site and field investigations show the water table at approximately 1 foot or below within the footprint of the impoundment, which would not significantly reduce constructability. There are no known subsurface condition risks since the site is under natural conditions (planted pines, mixed pine-hardwoods). The current footprint places the RWSI 1,330 feet from the nearest residential dwellings. Therefore, the potential adverse impacts from noise and aesthetics (visibility) from the proposed facility are not significant and would result in better land use compatibility when compared to other site alternatives.

No increase in design or construction costs or schedule would be incurred for this alternative.

Alternative Site 4 Reconfigured: This alternative moves the 33-acre RWSI footprint 500 feet southward in the 102-acre Site 4 tract so that the footprint does not encroach on the wetlands protected by restrictive covenant. As with the original configuration for Site 4, this alternative places the RWSI adjacent to the raw water pipeline and 3.8 miles from the City's water plant. This alternative would impact approximately 14 acres of wetlands. The entire site has been cleared for presence of cultural resources, endangered species, and other environmental liabilities. The proposed footprint places the RWSI 1,500 feet from the nearest residential dwellings, so noise/visibility present low risk for adverse impacts and land use compatibility is acceptable when compared to other site alternatives.

This alternative would place the southern portion of the RWSI on wetlands that include water-filled borrow pits from the construction of Interstate 95. These borrow pits present increased design and construction costs. The tract narrows between the water pipeline and Interstate 95,

preventing shifting the southern embankment to higher ground. Construction cost to fill the borrow pits would be much higher than using the current design for Site 4. The design footprint for this alternative would encroach into the 100-year floodplain, conflicting with Executive Order 11988: Floodplain Management.

Design costs would increase by $400,000, construction costs would increase by $1.0 to $4.0 million, and the schedule would lengthen by 4 months if this alternative is pursued.

Alternative Site 8: This alternative would place the 33-acre RWSI on an adjacent property immediately west of Site 4. As with the original configuration for Site 4, this alternative places the RWSI adjacent to the raw water pipeline and 3.8 miles from the City's water plant. The site is part of a planned subdivision that was never completed. Approximately 16 acres within the 33-acre footprint are wetlands that were filled in 2005 for construction of the subdivision. The quality of fill that was used is unknown and would require investigation during the design phase, if this alternative was implemented. This alternative would impact approximately 0.9 acres of wetlands that were not filled in 2005. Additionally, construction of the impoundment on this site, which is higher in elevation, could save approximately $2.5 to $4 million in construction costs, assuming the embankment height (and consequently amount of fill required) would decrease.

The NRCS Soil Resource Report (USDA 2013) for this site shows the water table on the site prior to placement of fill at approximately 1 foot or below within the footprint, which would not significantly reduce constructability. There are subsurface condition risks since the fill material used is of unknown quality. This alternative would place the 30-foot high RWSI dike 170 feet from the nearest residential development, posing a higher risk to human health and safety due to flooding in the event of a failure of that structure. The State of Georgia Safe Dams Program administered by GA DNR-EPD requires that a failure flood analysis to be completed for this site. Unless additional dike failure flood analysis modeling is performed, it is unknown at this time whether this site would pose a greater threat in the event of dike failure. If constructed, additional permitting and monitoring may be required. The closer proximity of the RWSI to the Rice Hope residential development poses a potentially unacceptable land use compatibility with a high risk for impacts associated with noise/visibility.

Site 8 was included in the Georgia Department of Transportation's NaviGAtor System for Hurricane Evacuation project archaeological assessment (No author, N.D.). No cultural resources sites were recorded within the site; however, the survey did not entail intensive field investigations. Although USACE has not surveyed for cultural resources and endangered species, both resources are considered to have a low probability of occurrence on the site based on work performed by the previous land owner/Section 404 permittee. A Phase I Cultural Resource Survey would be required prior to development of this property.

Design costs would increase by $1.0 to $1.5 million and the schedule would lengthen by 8 months if this alternative is pursued.

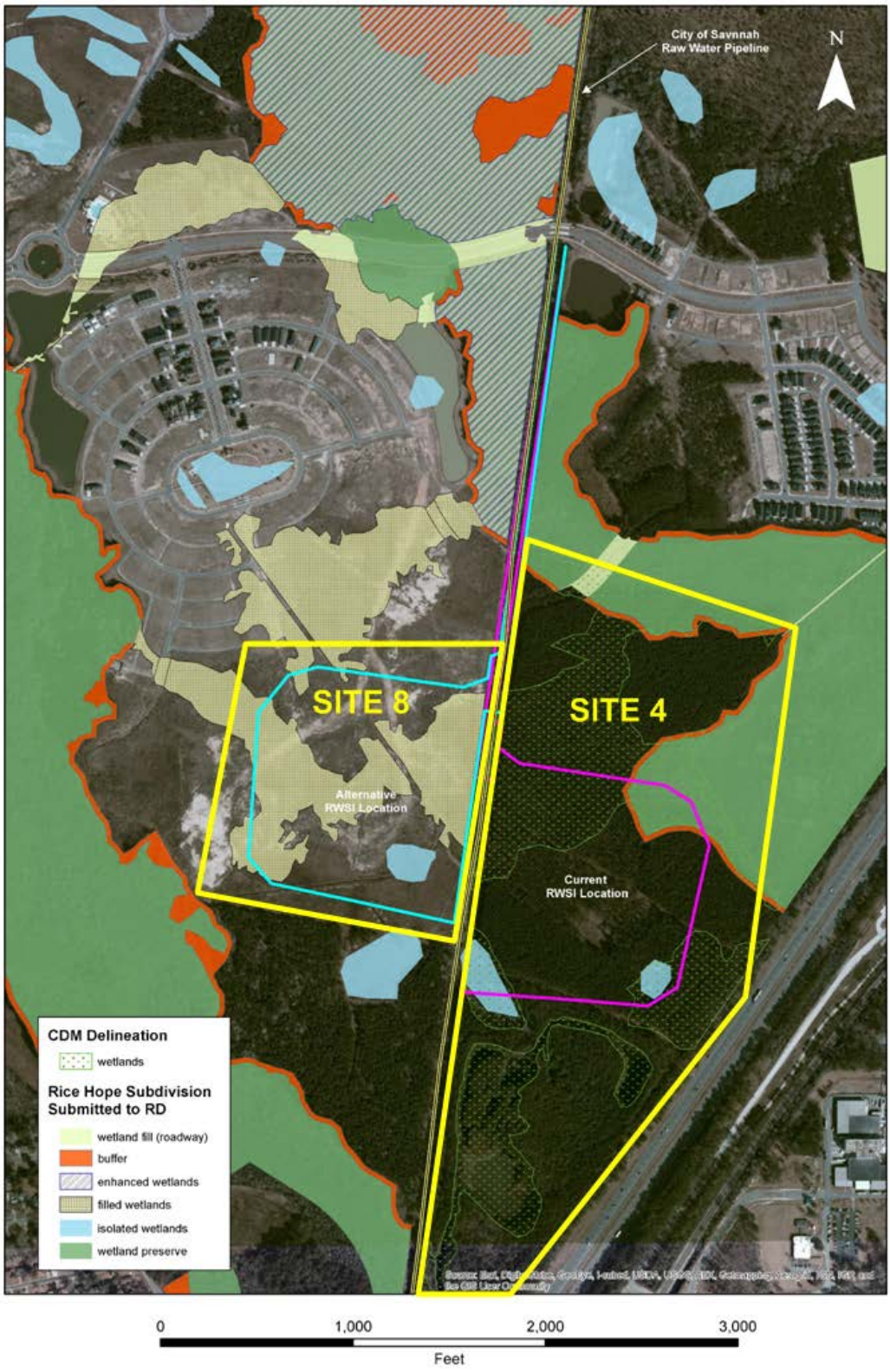

Figure 2 - Location of Phase 2 Alternatives Analysis (Sites 4 and 8)

4.4 Final Alternative Analysis

Through refinement of the alternative screening process and progress in the detailed design of the project, Site 4, Site 4 Reconfigured, and Site 8 emerged as viable alternatives. A more detailed description of the pros and cons for these three alternatives is listed below.

4.4.1. Neutral Factors

The factors below showed no significant difference among the three sites:

- Soils very limited in use for dikes/levees – fill would need to be brought in
- Hydric and partially hydric soils predominate (pre-fill on Site 8)
- Environmental Assessment needed for any site

4.4.2. Site 8 Pros and Cons

Using the criteria in Table 1 and additional considerations, the pros and cons for Site 8 are summarized below:

Cons:

- Increased possibility of flood damage to residential dwellings if an impoundment fails
- Requires additional Georgia Safe Dams coordination and review and dam failure flood analysis to be performed. In the event GAEPD classifies as Category I, additional permitting and monitoring would be required.
- Noise and visibility impacts to nearby residential area would be an issue – impoundment site is 170 feet from an existing residential development
- No design has been developed – adds 8 months to schedule and $1.0 – $ 1.5M in design costs
- Environmental Baseline Survey (EBS) needed but the expected risk is moderate
- Subsurface investigation needed to characterize the material used to fill wetlands and address any constructability issues
- Soils data (suitability for use for dikes/levees, depth to water table, etc.) no longer apply to filled portions of the site

Pros:

- No restrictive covenant issues
- Most wetlands already filled and mitigated; additional $38,000 in mitigation required
- Would save $2.5 - $4.0M in construction costs

4.4.3. Site 4 Pros and Cons

Using the criteria in Table 1 and additional considerations, the pros and cons for Site 4 are summarized below:

Cons:

- Restrictive covenant must be modified
- Wetland mitigation costs estimated at $666,330

Pros:

- Reduced possibility of flood damage to residential dwellings if impoundment fails
- Noise and visibility and impacts less likely to be an issue – impoundment is 1,330 feet from inhabited dwellings
- No changes in design costs or schedule required
- No change in construction cost
- EBS, endangered species, cultural surveys completed -- no effect
- Available soils data is accurate
- Subsurface conditions not likely to be a problem

4.4.4. Site 4 Reconfigured Pros and Cons

Using the criteria in Table 1 and additional considerations, the pros and cons for Site 4 Reconfigured are summarized below:

Cons:

- Presence of borrow pits increases design and construction costs.
- Affects floodway for spillway by decreasing flow area. Additional hydraulic modeling would be required.
- Wetland mitigation costs are estimated to be between $462,000 and $840,000
- No design has been developed – adds 4 months to schedule and $400,000 in design costs
- Would add $1.5 - $4.0M to construction costs
- Encroaches into 100-year floodplain conflicting with Executive Order 11988: Floodplain Management.

Pros:

- Reduced possibility of flood damage to residential dwellings if an impoundment fails
- Noise and visibility and impacts less likely to be an issue – impoundment is 1,500 feet from inhabited dwellings
- No need to modify restrictive covenant
- EBS, endangered species, cultural surveys completed -- no effect
- Available soils data is accurate

4.5 Proposed Action at Site 4 (Preferred Alternative)

After completion of the alternatives analysis, USACE identifies Site 4 as the most practicable site for construction of the RWSI. Environmental impacts for construction at that location that

can be mitigated to an acceptable level. Relative to all the other sites considered, construction of the RWSI at Site 4 minimizes lessens the acres of wetlands impacts, minimizes potential land use compatibility issues, and minimizes risk to human health and safety due to flooding while optimizing the engineering design criteria of being adjacent to the existing raw water pipeline and relatively close to the City's municipal and industrial water treatment facility. Relative to the three sites considered during the second phase of the alternatives analysis, construction of the RWSI on Site 4 is further from residential developments thereby minimizing risk to human health and safety due to flooding and minimizing the adjacent land use compatibility considerations. In addition, it should be noted that construction of the RWSI on Site 4 Reconfigured or Site 8 would result in an additional $1.0 to $1.5 million impact to design costs and delay project construction schedule by four to eight months.

This 117-acre site is adjacent to the raw water pipeline and 3.8 miles from the City's water plant. A 95% design has been prepared that places the 33-acre impoundment footprint within the site. Wetlands have been delineated in the field on the entire 117-acre tract. The RWSI footprint as currently designed would encroach on a total of 13.5 acres of wetlands, 2.1 acres of which are protected under a restrictive covenant. The restrictive covenant would require USACE to triple-mitigate for the 2.1 acres of wetland impact. The total mitigation cost is estimated to be $666,330. The entire site has been cleared for presence of cultural resources, endangered species, and other environmental liabilities under CERCLA.

The NRCS Soil Resource Report for this site and field investigations show the water table at approximately 1 foot or below within the footprint of the impoundment, which would not significantly reduce constructability. There are no known subsurface risks since the site is under natural conditions (planted pines, mixed pine-hardwoods). The design footprint places the RWSI 1,330 feet from the nearest residential dwellings, so noise/visibility present low risk for adverse impacts. Land use compatibility is acceptable and advantageous when compared to other site alternatives.

No increase in design or construction costs or schedule would be incurred for this alternative. This alternative is located between and adjacent to other infrastructure such as the City's raw water pipeline and Interstate 95; is compatible with existing land use; and would most efficiently provide the necessary raw water impoundment facility for the mitigation needs of SHEP.

Site 4 (Preferred Alternative) is located 1,500 feet from the nearest residential development to the north and 1,330 feet to the northwest. Site 8 is located adjacent to the nearest residential development (Rice Hope) to the northwest (Rice Hope). Site 8 is also in a land use zone classified as "Residential Single Family". A portion of Site 4 is classified as "Undeveloped Land" and part is classified as "Residential Single Family" in the Port Wentworth Comprehensive Plan.

5.0 SECTION 404 IMPACTS OF THE PREFERRED ALTERNATIVE

The RWSI footprint as currently designed would encroach on a total of 13.5 acres of wetlands, 2.1 acres of which are protected under a restrictive covenant. The restrictive covenant would require USACE to triple-mitigate for the 2.1 acres of wetland impact. The total mitigation cost is estimated to be $666,330.

6.0 APPLICATION OF THE SECTION 404 (b) (1) GUIDELINES

The proposed project, including the amount of wetlands that would be impacted, has been described in preceding paragraphs. The purpose of this Section 404 (b) (1) evaluation is to assess the RWSI siting alternatives to determine if they meet the intent of the Section 404 (b) (1) Guidelines.

7.0 TIMING AND DURATION OF DISCHARGE

Discharge of fill associated with construction and operation of the RWSI would take approximately one year for construction; operation of the impoundment would continue indefinitely.

8.0 SUBPART B – COMPLIANCE WITH THE SECTION 404 (b) (1) GUIDELINES

8.1 Restrictions on Discharge (Section 230.10)

8.1.1 Practicable Alternatives.

“ No **discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (1) For the purpose of this requirement, practicable alternatives include, but are not limited to: (i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters; (ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters.”**

Under the proposed action, construction of the RWSI would result in the discharge of dredged material into waters of the United States as a result of the placement of fill material to construct a 30-ft high dam enclosing a 33-acre impoundment.

Because of the need to locate the RWSI adjacent to the City’s raw water pipeline, the prevalence of wetlands in the vicinity of the pipeline, and the need to minimize the potential danger to human life and property should a dike failure occur near businesses and residential developments in the vicinity of the pipeline, there is no practicable alternative to discharging dredged material into waters of the United States. Of the three alternatives that were analyzed in Phase II of the screening process (Site 4 – Preferred Alternative, Site 4 Reconfigured, and Site 8), all three would require discharge of fill material into waters of the United States. Of these three alternatives only Site 4 – Preferred Alternative is practicable considering land use compatibility and constructability. Site 4 Reconfigured is not practicable due to constructability problems because of the presence of excavated borrow pits in the southern portion of the tract. Site 8 is not practicable due to the increased risk to life and land use compatibility/noise/visibility issues because it would place the impoundment within 170 ft of an occupied residential development. Although there is no practicable alternative to the discharge of dredged material into waters of the United States or ocean waters, the proposed mitigation plan presented in the EA would provide compensatory mitigation for all wetland impacts resulting from the proposed action.

8.1.2 State Water Quality Standard or Toxic Effluent Standards.

"(b) Discharged of dredged material shall not be permitted if it;"

"Causes or contributes, after consideration of disposal dilution and dispersions, to violations of any applicable state water quality standard;"

"(2) Violates any applicable toxic effluent standard or prohibition under Section 370 of the Clean Water Act."

The discharge of clean fill material obtained from offsite borrow areas associated with construction of the RWSI would not result in the violation of any state water quality standard or violate any applicable toxic effluent standard or prohibition under Section 370 of the Clean Water Act.

8.1.3 Threatened and Endangered Species.

"(3) Jeopardizes the continued existence of species listed as endangered and threatened under the Endangered Species Act of 1973, as amended."

USACE, Savannah District has made a determination based on the results of a survey for threatened and endangered species that the project, as currently proposed, would have "no effect" on Pond spicebush; Red-cockaded woodpecker; Wood stork; Piping plover; Flatwoods salamander; Leatherback, Loggerhead, Kemp's ridley, and Green sea turtles; gopher tortoise; West Indian manatee; North Atlantic right whale; Shortnose and Atlantic sturgeons. This determination is based on a lack of appropriate habitat for these species.

The only federally listed species observed at the proposed project site is American alligator, listed as "threatened by similarity of appearance."

The District's determination will be coordinated as part of the EA for the project with the US Fish and Wildlife Service and the National Marine Fisheries Service.

8.1.4 Marine Sanctuaries.

"Violates any requirements imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection Research and Sanctuaries Act of 1972."

No marine sanctuary is located near the project site.

8.1.5 Human Health or Welfare.

"(c) Except as provided under Section 404(b)(2), no discharge of dredged or fill material which will cause or contribute to significant degradation of the waters of the United States. Findings of significant degradation related to the proposed discharge shall be based upon appropriate factual determinations, evaluations, and tests required by Subparts B and G of the consideration of Subparts C-F with special emphasis on the persistence and

permanence of the effects contributing to significant degradation considered individually or collectively include:"

"(1) Significant adverse effects of the discharge of pollutants on human health, or welfare including, but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites."

The discharge of fill material associated with implementation of the RWSI would not result in the discharge of pollutants that would have adverse effects on municipal water supplies, plankton, fish, shellfish, wildlife or special aquatic sites. There would be no discharge of fill material in the vicinity of a municipal water supply intake, designated shellfish harvesting area or special aquatic site.

8.1.6 Aquatic Life and Wildlife Dependent on Aquatic Ecosystems.

"(2) Significant adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent upon aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their by-products outside the disposal site through biological, physical, and chemical processes."

None of the fill material associated with the construction and operation of the RWSI is considered contaminated, and therefore implementation of the RWSI would not result in the spread or transfer of pollutants outside of the project area.

8.1.7 Aquatic Ecosystem Diversity, Productivity and Stability.

"(3) Significant adverse effects of the discharge of pollutants on aquatic ecosystems diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or

(4) Significant adverse effects of the discharge of pollutants on recreational, aesthetic, and economic values."

The discharge of fill material associated with construction and operation of the RWSI will not result in the discharge of pollutants that would have significant adverse impacts on aquatic systems, diversity, productivity, and stability; or on recreational, aesthetic and economic values.

7.1.8 Steps Taken to Minimize Adverse Effects.

"(d) Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practical steps have been taken which will minimize the potential adverse effects of the discharge on the aquatic ecosystem."

Contract specifications will include use of all appropriate Best Management Practices (BMPs) and preparation of an erosion and sedimentation control plan, including all necessary design documentation and narratives for construction of the shoreline erosion control measures, to be approved by the Government.

9.0 FACTUAL DETERMINATION (SECTION 230.11)

9.1 Physical Substrate Determination.

Consideration shall be given to the similarity in particle size, shape, and degree of compaction of the material proposed for discharge and the material constituting the substrate at the disposal site and any potential changes in substrate elevation and bottom contours.

Possible Loss of Environmental Values. The placement of fill material as provided for in the RWSI design is not expected to cause any substantial changes in substrate elevation or bottom contours in the aquatic environment outside the footprint of the impoundment and access road.

Actions to Minimize Impacts. The RWSI has been sited within the available 117-acre tract so as to minimize impacts to wetlands.

9.2 Water Circulation, Fluctuations, and Salinity Determinations.

Consideration shall be given to water chemistry, salinity, clarity, color, odor, taste, dissolved gas levels, temperature, nutrients, and eutrophication plus other appropriate characteristics. Also to be considered are the potential diversion or obstruction of flow, alterations of bottom contours, or other significant changes in the hydrologic regime. Changing the velocity of water flow can result in adverse changes in location, structure, and dynamics of aquatic communities, shoreline erosion and deposition, mixing rates and stratification, and normal water-level fluctuation patterns. These affects can alter or destroy aquatic communities.

The construction and operation of the proposed RWSI would not cause the diversion or obstruction of flow, alterations of bottom contours or significant changes in the in the hydrologic regime.

Loss of Environmental Value

No net loss of environmental value from a change in the hydrologic regime as a result of implementing the proposed RWSI is envisioned based on the preceding discussion.

Actions to Minimize Impacts

Construction and operation of the proposed RWSI would not result in any significant changes in hydrologic conditions at the site

9.3 Suspended Particulate/Turbidity Determinations.

Effects due to potential changes in the kinds and concentrations of suspended particulate/turbidity in the vicinity of the disposal site. Factors to be considered include grain size, shape and size of any plume generated, duration of the discharge and resulting plume, and whether or not the potential changes will cause violations of applicable water quality standards. Consideration shall include the proposed method, volume, location, and

rate of discharge, as well as the individual and combined effects of current patterns, water circulation and fluctuations, wind and wave action, and other physical factors on the movement of suspended particulates.

Construction and operation of the proposed RWSI would not result in any significant changes in suspended particulate/turbidity conditions at the site

Loss of Environmental Values

Due to reduction in light transmission, reduction in photosynthesis, reduced feeding and growth of sight dependent species, direct destructive effects to nektonic and planktonic species, reduced DO, increased levels of dissolved contaminants, aesthetics.

Construction and operation of the proposed RWSI would not result in reduction in light transmission, reduction in photosynthesis or direct destructive effects to nektonic and planktonic species.

Actions to Minimize Impacts

No impacts are anticipated.

9.4 Contamination Determination.

Consider the degree to which the proposed discharge will introduce, relocate, or increase contaminants. This determination shall consider the material to be discharged, the aquatic environment at the proposed disposal site, and the availability of contaminants. Consideration of Evaluation and Testing (parts 230.60 and 230.61).

Borrow sources for the required fill to construct the RWSI will be tested to confirm that they are free of contaminants.

Loss of environmental values

Construction and operation of the proposed RWSI would not result in the loss of any environmental values due to the introduction, relocation or increase in contaminant levels at the disposal sites.

Actions to Minimize Impacts

No impacts are anticipated.

9.5 Aquatic Ecosystem and Organism Determinations.

Effect on the structure and function of the aquatic ecosystem and organisms and effect on the re-colonization and existence of indigenous aquatic organisms or communities.

Construction and operation of the proposed RWSI would not result in the loss of any environmental values associated with the structure and function of the aquatic ecosystem and

organisms and effect on the re-colonization and existence of indigenous aquatic organisms or communities.

Fish, Crustaceans, Mollusks and Other Aquatic Organisms in the Food Web

Construction and operation of the proposed RWSI would not interfere with any recreational or commercial fishing operations. There would be no discharge of fill material in the vicinity of any commercial or recreational shellfish harvesting area.

Other Wildlife

There will be only minimal adverse impacts to wildlife and wildlife habitat as result of construction and operation of the RWSI. Most of these impacts would be associated with converting 33 acres of planted pine and mixed pine-hardwood forest to an open water impoundment. Field studies conducted in 2012 of this site indicated minimal to moderate evidence of wildlife utilization. Much of the habitat within the footprint of the RWSI was in silvicuture (mostly planted pines) and has been recently clear cut.

10.0 PROPOSED DISPOSAL SITE DETERMINATIONS

Each disposal site shall be specified through application of the guidelines. The mixing zone shall be confined to the smallest practicable zone within each specified disposal site that is consistent with the type of dispersion determined to be appropriate by the application of the guidelines.

Construction and operation of the proposed RWSI would only place fill within the footprint of the impoundment and associated pumps and access road.

11.0 DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Cumulative Effects attributable to the discharge of dredged or fill material in Waters of the United States should be predicted to the extent reasonable and practical.

CEQ regulations stipulate that the cumulative effects analysis consider the potential environmental impacts resulting from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” CEQ guidance in considering cumulative effects involves defining the scope of the other actions and their interrelationships with the preferred alternative.

The proposed RWSI is part of the approved mitigation plan for the SHEP project, and therefore is designed to offset the projected water quality impacts from SHEP and historical cumulative impacts from deepening Savannah Harbor. In achieving the project purpose, there would be unavoidable impacts to existing wetlands. However, the wetland mitigation plan is designed to compensate for these adverse impacts. Coordination with appropriate resource agencies will continue on other SHEP- related mitigation to ensure future actions do not result in direct or indirect impacts to jurisdictional wetlands in the vicinity.

No other significant cumulative impacts associated with the proposed action and other past, present, and foreseeable actions have been identified during this assessment.

12.0 DETERMINATION OF SECONDARY IMPACTS ON THE AQUATIC ECCOSYSTEM

The project was reviewed for potential secondary/indirect impacts such as those associated with utility relocation, new infrastructure needs, water quality issues, etc. The only known secondary and/or indirect impact that would be necessary for the construction and operation of the RWSI would be impacts to water quality associated with storm water discharges. The acreage of impervious surface coverage for existing residential, commercial, and industrial development in the Lower Savannah watershed (HUC 03060109) is orders of magnitude higher than what is proposed for the current project. In regard to impacts on water quality issues in the receiving waters of the Savannah River, it is likely that non-point source contributions from the existing commercial, industrial, and or residential areas would have already contributed to a loss of downstream riverine function. Therefore, it is not likely that the non-point source runoff associated with this project would contribute significantly to the current storm water loading and/or have a significant impact on the downstream, riverine system. Therefore, secondary and/or indirect impacts associated with the proposed project would be expected to be minimal.

13.0 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH RESTRICTIONS ON DISCHARGE (SECTION 230.12)

13.1 Determinations.

a. An ecological evaluation of the discharge of fill material associated with the construction and operation of the RWSI has been made following the evaluation guidance in 40 CFR 230.6, in conjunction with the evaluation considerations in 40 CFR 230.5.

b. Potential short-term and long-term effects of the proposed work on the physical, chemical, and biological components of the aquatic ecosystem have been evaluated and it has been found that the proposed discharge will not result in significant degradation of the environmental values of the aquatic ecosystem.

c. There are no less environmentally damaging practicable alternatives to the proposed work that would accomplish the project goals and objectives.

(1) The proposed work will not cause or contribute to violations of any applicable State water quality standards, will not violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act, will not jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, and will not violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

(2) The proposed work will not cause or contribute to significant degradation of the waters of the United States.

(3) The discharge includes all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.

13.2 Findings.

On the basis of the guidelines, the proposed site for the discharge of fill material as proposed by the SHEP RWSI project is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.