APPENDIX A

SECTION 404(B)(1) EVALUATION

TYBEE ISLAND SHORE PROTECTION PROJECT, GEORGIA 2015 RENOURISHMENT

U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT

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SECTION 404(B)(1) EVALUATION OF DREDGE AND FILL MATERIAL

Tybee Island Shore Protection Project, Georgia 2015 Renourishment

1.0 INTRODUCTION

The following evaluation is prepared in accordance with Section 404(b)(1) of the Clean Water Act of 1977 (CWA) to evaluate the environmental effects of the proposed placement of dredged or fill material in Waters of the United States. Toxic and hazardous waste pertaining to fill or dredge activities are also regulated under the CWA. Specific portions of the regulations are cited and an explanation of the regulation is given as it pertains to the project. These guidelines can be found in Title 40, Part 230 of the Code of Federal Regulations.

2.0 PROPOSED ACTION AND ENVIRONMENTAL SETTING

2.1 PROPOSED ACTION

This authorized 3.5 mile long project was initially constructed in 1974 with a 50-year project life and periodic renourishments to occur every 7 years. The beach was last renourished in 2008 and is scheduled to be renourished again in 2015. In 2015, there will be 9 years left in the project life, the Savannah District, with the non-Federal sponsor's concurrence, selected to perform the 2015 periodic renourishment for the remaining 9 years of the 50-year project life. The renourishment volume to be placed includes the volume needed to restore the project plus an additional 312,000 cubic yards to account for potential erosion through 2024. The beach template will be slightly modified to include placement of the additional material by extending the berm up to the North terminal groin of the template. This area has been nourished during previous renourishment cycles, but not during the 2008 renourishment. In addition, the berm will be extended seaward up to 50 feet beyond the previously constructed template to account for erosion during the additional 2 years for a 9 year cycle. The same borrow area that was used for the 2008 renourishment, Borrow Area 4, will be used for this final renourishment. The borrow area is approximately 7,000 feet (1.3 miles) southeast of the southernmost Federal terminal groin. Figure 1 shows the proposed borrow area.

As proposed, the project will be constructed using a hydraulic cutterhead pipeline and support equipment. A submerged pipeline will extend from the borrow site to the southerly tip of Tybee Island. Shore pipe will be progressively added to perform fill placement along the shorefront areas to be renourished. Temporary toe dikes will be utilized in a shore parallel direction to control the hydraulic effluent and reduce turbidity. The sand will be placed in the form of varying design templates based upon alongshore volumetric fill requirements which reflect beach conditions at the time of construction. Figure 2 shows the proposed fill limits and locations.

The Savannah District 1994 Section 934 report evaluated 26 combinations of alternate berm widths (40 to 70 feet), berm heights (+11.0 to +17.0 feet), and beach slopes. This provided a

variety of potentially feasible widths and heights. Five alternate berm widths and heights were selected for detailed evaluation, and costs and benefits were computed for each of the alternatives. The analysis concluded a 40-foot wide berm at elevation +11.0 feet with 1V:20H slope was the most desirable beach template.

In the 1998 Savannah District Environmental Assessment for South Tip Beach/Tybee Creek, it was concluded that in order to maintain the integrity of the restored beach at Back River between periodic renourishment, advance nourishment would be provided by placing fill material one foot above the beach template, up to elevation 12 feet Mean Low Water (MLW) and providing additional material on the beach slope. A berm elevation of +12 feet MLW and 1V:15H slope was proposed for the Back River/Tybee Creek segment of the proposed renourishment project.

For the current project template design is based on project performance and erosion rates since the last renourishment project in 2008. Beach fill will primarily be placed in areas included in the previous renourishment in 2008. These areas include the North Beach (North End Groin to Oceanview Court), Second Street area (Oceanview Court to Center Street), Middle Beach (Center Street to 11th Street), South Beach (11th Street to South End Groin), and Back River/Tybee Creek (South Tip Groin Field to Inlet Avenue). Additional fill will be placed between these areas to provide a more stable beach profile and to avoid some of the excessive losses in the 2nd Street "hot spot" from project end losses and offshore losses that resulted from the wide beach constructed at this location during the last renourishment. Constructed beach widths on the Back River Beach vary from 30 feet to 110 feet at +11.22 Mean Lower Low Water (MLLW). Beach widths on the Front Beach will vary from a 25 foot width berm, to a berm approximately 350 feet wide at the elevation of +11.22 MLLW. Based on natural angle of repose on the existing beach, and experience with previous placement, a beach slope of 1 vertical on 25 horizontal will be required on the front beach. The Back River will have an 11.2 foot elevation MLLW and a 1V:15H slope. Figures 3 and 4 show the proposed design template.

Beach fill final placement will be based on physical conditions and funds available at the time of construction. Alternative bid schedules will be used to optimize the quantity of beach fill placed for the funds available. The proposed project is expected to commence by November 2015, and be completed by April 30, 2016. Federal participation in the Federal project expires in 2024, 9 years after the time of the proposed construction.

ENVIRONMENTAL SETTING

2.2 GENERAL DESCRIPTION

Tybee Island is one of a series of barrier islands lying along the Atlantic coast from Florida to North Carolina. The island is located directly south of the Savannah River entrance, about 17 miles east of the city of Savannah, Chatham County, Georgia. It is bounded on the north by the Savannah Harbor, to the east by the Atlantic Ocean, and on the south and west by Tybee Creek and a vast tidal marsh system. The major portion of the land mass above high tide is occupied by the City of Tybee Island. The City of Tybee Island is the only population center on the island

with the major portion of its economy primarily oriented toward support facilities which service summer vacationers.

Figure 1: Proposed Borrow Area

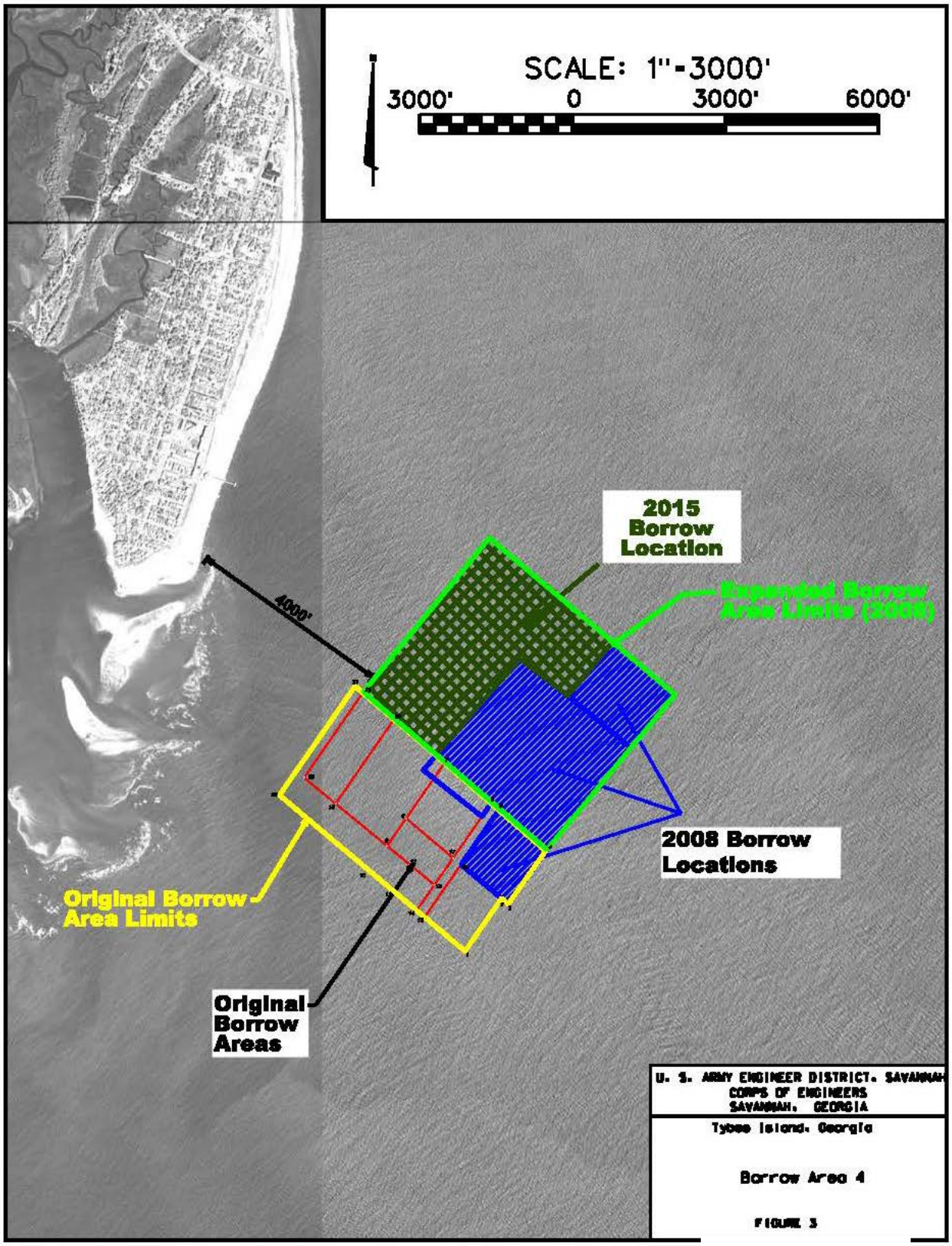


Figure 2: Proposed Fill Limits for the 2015 Tybee Beach Renourishment

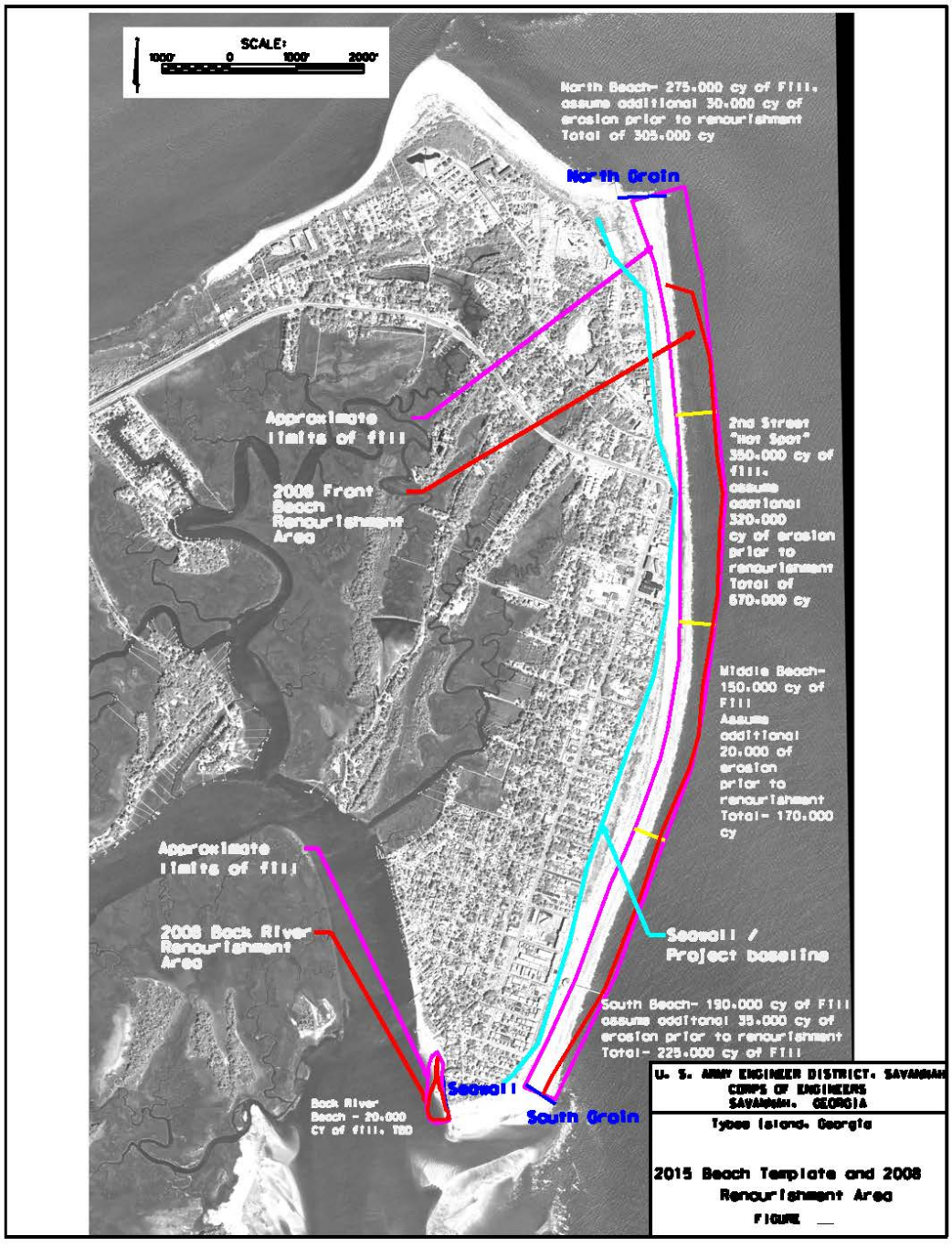


Figure 3: Template Design for Proposed Renourishment

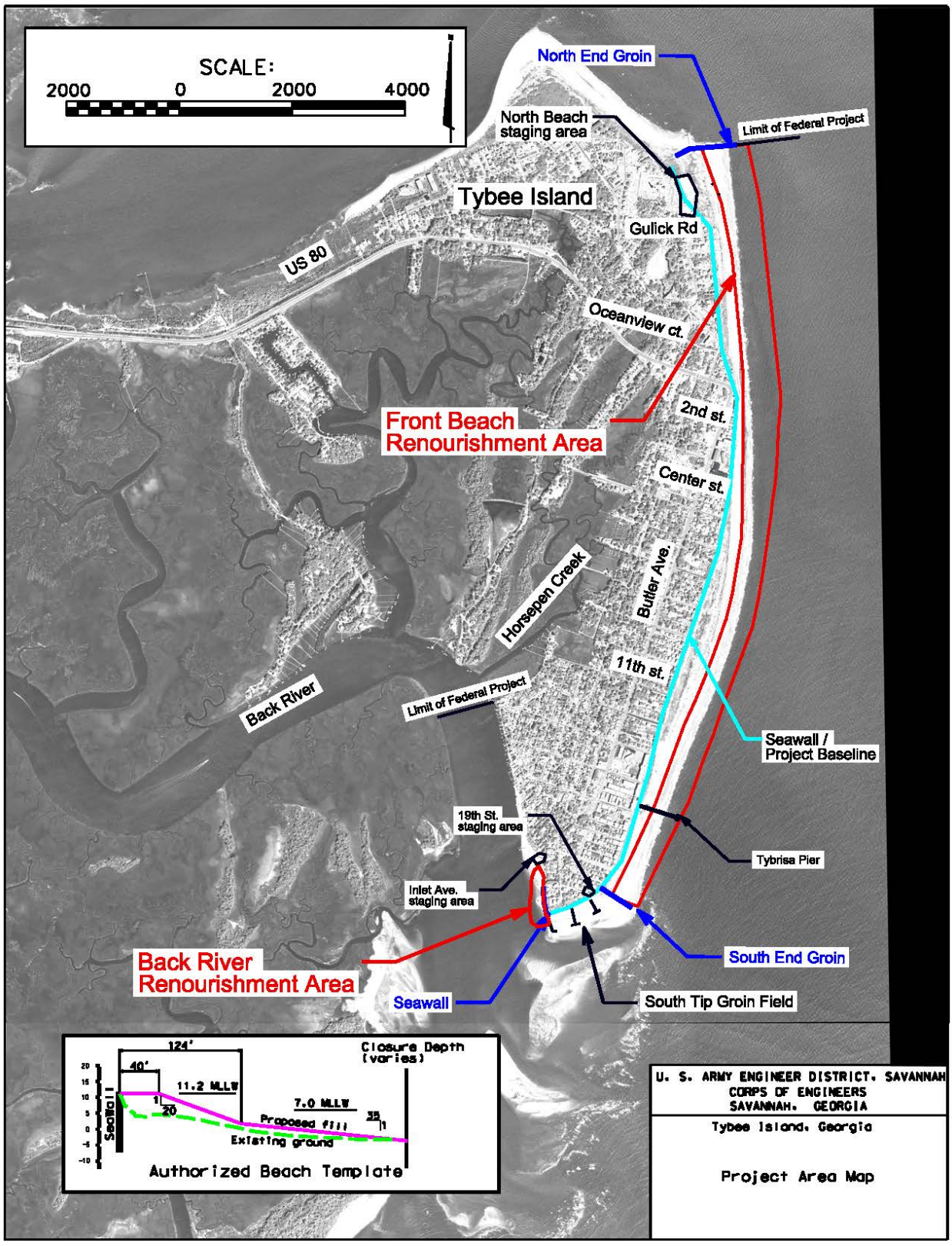
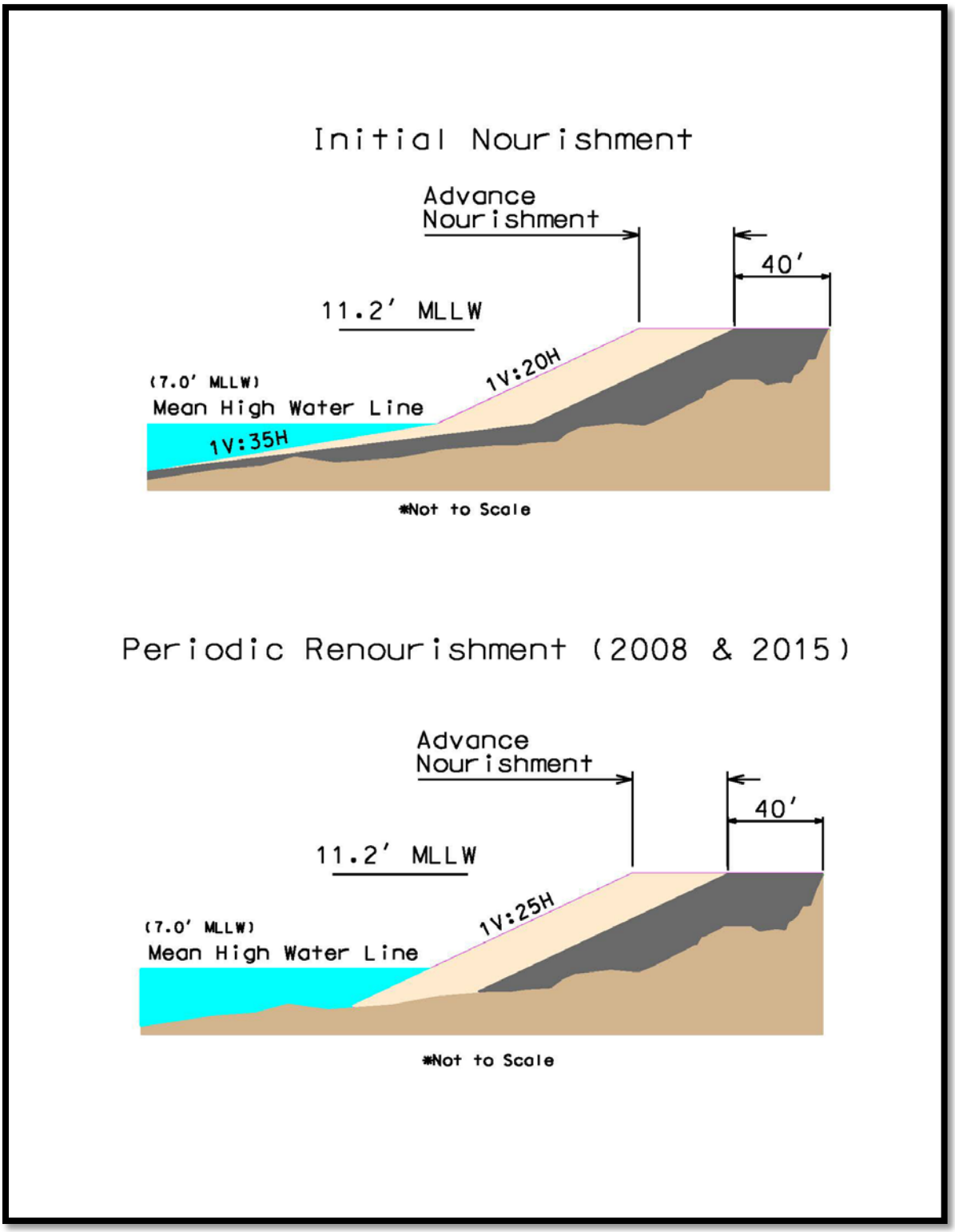


Figure 4: Proposed Template*



***Back River Beach will have a slope of 1V:15H**

2.2.1 Threatened, Endangered and other Listed Species

The Savannah District has prepared an updated Biological Assessment of Threatened and Endangered Species (see BATES, Appendix C) and may receive an updated Biological Opinion (BO, Appendix D) from the US Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS). The 2008 BO determined that implementation of this beach restoration may affect piping plover and designated critical habitat unit GA-1. In addition, the Savannah District and resource agencies have determined if the renourishment extends past April 30 loggerhead and leatherback sea turtles are likely to be adversely affected. The Savannah District believes that the project, implemented according to special conditions included in the BATES and the BO, will not be likely to adversely affect the other listed species in the area, including the Florida manatee and Shortnose and Atlantic sturgeon.

3.0 SUBPART B - COMPLIANCE WITH THE GUIDELINES

The following objectives should be considered in making a determination of any proposed discharge of dredged or fill material into waters of the United States.

3.1 RESTRICTIONS ON DISCHARGE

"(a) ***except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practical 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."***

Beach renourishment was the only practicable or feasible alternative identified for shore protection at Tybee Island, Georgia.

Some incidental loss of sediments to the water column will occur during the dredging process and placement of dredged material on the beaches and during construction. Construction losses have been estimated to be 20%. These losses would not result in a violation of state water quality standards.

Impacts at the proposed borrow area and on the beach would include impacts to benthic resources. Based on recommendations during the 2008 renourishment from NMFS a monitoring program of both the fill and borrow area was implemented to document changes relative to control areas and assess long-term recovery. Results of this monitoring may be located in the EA, sections 4.18.1 and 4.18.2. Consultation with NMFS will be conducted to determine if benthic monitoring is appropriate for this last authorized renourishment. Suspended particulate may be expected to have some adverse impact on filter feeders, but those impacts are expected to be temporary. Where appropriate, construction activities would be timed so that possible turbidity impacts to larval estuarine fish and shellfish would be minimized. To minimize these impacts, the proposed actions in this area would not take place during the critical reproductive season for estuarine fish and shellfish.

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

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

Turbidity at the site would increase during construction. However, this situation would be temporary and localized. Part of these losses would be from suspended silts and clays that might travel far from the site before settling, while the majority would be from fine sands that settle near but outside the project template. As mentioned previously, temporary toe dikes will be utilized in a shore parallel direction to control the hydraulic effluent and reduce turbidity. No State water quality standards are expected to be violated.

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

A Public Notice will be issued on this proposed activity in conjunction with a request to the State of Georgia for issuance of a Section 401 – Water Quality Certification for this project after District and Division reviews. A review of the project specifications indicates that the proposed action is not expected to reduce water quality below applicable standards or violate other prohibitions under Section 307 of the Act. This conclusion is based on the fact that the dredged material is not known to contain contaminants at toxic levels.

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

A separate BATES was prepared and will be coordinated with both the USFWS and the NMFS in December 2013 during public review. The BATES concluded that the proposed project may affect piping plover and designated critical habitat unit GA-1. In addition, it was determined that if the renourishment extends past April 30 loggerhead and leatherback sea turtles are likely to be adversely affected. The District feels that the project, with special conditions included in any contract for dredging, will not be likely to adversely affect the other listed species in the area, including the Florida manatee.

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

No marine sanctuary or other items addressed under this act would be affected by the proposed work.

"(c) ***Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted 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) Significantly 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."

Sediment testing was performed on sediments proposed for excavation in this project to assess the potential for contaminant-related environmental impacts from the dredged material. The testing concluded that the sediments proposed for excavation and beach nourishment do not contain contaminants at toxic levels. Therefore, provisions of the above paragraph are not expected to be violated. The placement of dredged material on the beach would have a short-term impact on the turbidity of the receiving waters. This impact is expected to last only for the time of the construction and the discharged sediments would quickly settle out or be swept out of the immediate vicinity via the tidal system.

"(2) Significantly 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."

The sediments to be dredged are not considered to contain pollutants at toxic levels. Therefore, provisions of the above paragraph are not expected to be violated.

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

The proposed activity is not expected to adversely affect ecosystems, diversity, productivity and stability, or recreational, aesthetic, and economic values primarily because it is a shore protection project that would protect property and would enhance the aesthetic and recreational values of the area.

"(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 impacts of the discharge on the aquatic ecosystem."***

Construction and future periodic renourishment activities would be targeted to avoid the nesting season for sea turtles to the maximum extent practicable. Project construction dates are planned to avoid impacts to larval fish and shellfish to the extent practicable. Additional steps that will be

taken to minimize the potential impacts of the project on threatened and endangered species are enumerated in the BATES, Appendix C, and in the EA.

3.2 FACTUAL DETERMINATION.

3.2.1 Physical Substrate Determinations

Since the substrate is common to the area and has been disturbed before, the proposed activities are not expected to have an adverse effect on the physical substrate of bottom sediments in the immediate project vicinity. The proposed project would protect the Federal Authorized Template consisting of a 40-foot berm at +11.22 feet MLLW, with a 1V:20H slope extending to MHW and a 1V:35H slope from that point to MLW.

3.2.2 Water Circulation, Fluctuations, and Salinity Determinations

The proposed dredging is not expected to result in any adverse effects on water circulation, fluctuations, salinity or water quality degradation. Excavation of the borrow area is not expected to significantly alter the current patterns at the site. Extension of the borrow site in a northward direction was selected to avoid potential impacts to Little Tybee Island to the south.

3.2.3 Suspended Particulate/Turbidity Determinations

3.2.3.1 Effects on Physical Properties of the Water Column

Effects on the water column are primarily those associated with a reduction on light transmission, aesthetic values, and direct destructive effects on nektonic and planktonic populations. The proposed shore protection project would have the following impacts on these factors:

a. Reduction in light transmission. Sediment which becomes suspended in the water column as a result of the shore protection project is expected to result in a temporary elevation in suspended solids along the shore until the fines are swept offshore by tidal action. This impact should be temporary in nature as the sediments will quickly settle out or be dispersed.

b. Aesthetics. The turbidity produced by operation of the pipeline dredge will result in minor adverse impacts on the aesthetic appeal of the area. The decrease in aesthetics will be temporary and cease soon after construction is completed.

3.2.3.2 Effects on Biota

There will be a temporary disruption in benthic communities at the borrow site and at the beach areas. The temporary increase in turbidity surrounding the construction site will also have a short-term and minor adverse impact on benthics in the vicinity of the project. No lasting changes in community structure are expected, as the beach areas have already

experienced nourishment activities. The proposed project is expected to have little impact on dissolved oxygen because of the rapid aeration in the surf zone.

3.2.4 Contamination Determination

The sediments to be excavated have been evaluated. Potentially toxic materials detected in the sediments were found to be below toxic levels (See EA Section 3.08.2). Therefore, the material dredged during this project would impact neither the communities from which it is taken nor communities at the beach project.

3.2.5 Aquatic Ecosystem and Organism Determinations

There is expected to be a minor, short-lived impact on organisms associated with the borrow site and the beach areas. These effects would be temporary and no significant impacts are expected.

3.2.5.1 Threatened and Endangered Species

The BATES concluded that the proposed project may affect wintering piping plovers and designated critical habitat unit GA-1. In addition, it was determined that if the renourishment extends past April 30 loggerhead and leatherback sea turtles are likely to be adversely affected. The District feels that the project, with special conditions included in any contract for dredging, will not be likely to adversely affect the other listed species in the area, including the Florida manatee and sturgeon species. While the renourishment actions may result in short-term adverse effects, it is our belief that the piping plover and designated critical habitat areas would ultimately benefit from them.

3.2.5.2 Planktonic and Nektonic Species

Impacts to planktonic and nektonic species would be minor in scope, primarily due to increase in turbidity during the dredging operation and placement of material at the beach areas.

3.2.5.3 Other Wildlife

The proposed project would have minimal impact on other wildlife.

3.2.5.4 Effects on Benthos

There will be a temporary disruption in benthic communities at the borrow site and beach areas where some organisms would be lost by covering. Some organisms which inhabit the beach sites are capable of upward burrowing and lateral migration and results of the benthic monitoring showed evidence of some species survival. These organisms are subject to changes associated with daily and seasonal shifts in their habitat substrate and have been shown to recolonize nourished beaches.

3.2.5.5 Wetlands

No special wetland sites have been identified at the project site that could be adversely affected by the proposed project.

3.2.6 Proposed Disposal Site Determination

Construction of this project has been found to be a practical and feasible alternative for shore protection for Tybee Island. The site has a history of erosion. Placement of suitable material on the site is expected to be beneficial to the beach as it would be expected to increase the width of the intertidal beach and to provide storm protection.

3.2.7 Determination of Cumulative Effects on the Aquatic Ecosystem

Construction of protective measures to control erosion at Tybee Island was undertaken as early as 1882 with the construction of three rock groins at the north end of the island. This was followed by many other features that have been damaged or destroyed by wind and wave action. The proposed work would allow for continued renourishment of the authorized Federal project. No significant adverse cumulative impacts have been identified.

4.0 FINDINGS OF COMPLIANCE OR NONCOMPLIANCE WITH RESTRICTIONS ON DISCHARGE

4.1 DETERMINATIONS

a. That an ecological evaluation of the discharge of dredged material associated with the proposed action has been made following the evaluation guidance in 40 CFR 230.6, in conjunction with the evaluation considerations at 40 CFR 230.5.

b. That potential short-term and long-term effects of the proposed action 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. That there are no less environmentally damaging practicable alternatives to the proposed work that would accomplish project goals and objectives.

(1) That the proposed action 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, is not likely to adversely affect 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) That the proposed work will not cause or contribute to significant degradation of the Waters of the United States.

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

4.2 FINDINGS

Based on the determinations made in this Section 404 (b)(1) evaluation, the finding is made that, with the conditions enumerated in this document, the proposed action complies with the Section 404(b)(1) Guidelines.