Marshland Component of Project

Construction for the proposed project would occur along the shoreline of the tidal Brickhill River at the Plum Orchard Historic District on the back barrier side of Cumberland Island and will not impact tidal water bottoms below the mean sea level. The shoreline stabilization project work will occur between the high tide level and mean sea level with an approximate area of impact of 14,271 sq ft. These areas are within NPS defined wetlands and defined floodplain areas, and within jurisdictional wetlands as defined by the state of Georgia. The Plum Orchard shoreline is already a manipulated area, with an assortment of structures set along the river bank, including a wooden bulkhead, some rubble-based riprap, a dock, an unimproved boat ramp, and a 150-foot dike. These manmade "improvements" have been a factor in accelerated erosion observed at Plum Orchard. A service road and manicured lawns contribute to erosion as the water collects and funnels into waterways that spill over and cut the riverbank. Subsurface flow in the tidal creek also undermines the bank. The collective result is a highly dysfunctional, unstable shoreline that is putting cultural and natural resources in jeopardy. All shoreline work for the riprap section will be staged from a barge, which will contain a ramp that will allow material and equipment to access shoreline work. All the work will be accomplished during low tide. Appropriate mechanical equipment will be used to place the riprap and reduce damage to the existing vegetation and shoreline so minimal natural resource impacts will occur. In combination with the riprap, a living shoreline (livable landscape) consisting of bags filled with oyster shells and some fill material planted with native Spartina marsh grass will be installed along the base of the riprap at the mean sea level. The northern section of the Plum Orchard shoreline will also be stabilized with a combination of surge stone mixed with soil and planted with native vegetation consisting of Spartina marsh grass bayberry, and wax myrtle.

There will be a total of 650 feet of shoreline stabilized during this project. The treatment areas are divided into a northern and southern section. This division is due to a preexisting hardened structure and preexisting rubble and riprap. The northern section encompasses 425' and southern section encompasses 225'. Each section will have two treatments: The northern section will receive surge stone and plantings (Exhibit D). The southern section will receive geotextile fabric and rip rap (Exhibit C) and plantings (Exhibit CI).

Approximately 300 tons of riprap will be used the Exhibit C treatment. The length of impact is 214.29 cubic yards, 3716 square feet, and 225 linear feet. There will be approximately 5400 square feet of geotextile fabric placed below the riprap.

Exhibit CI Contractor shall supply oyster shells in mesh bags approximately 3' x 3' x 8"h along the edge of the shore (185' of shoreline). Contractor shall plant 425 each Spartina Alterniflora Smooth Cordgrass on 4' center in this area. Grasses shall be sprig plantings and plants shall have sufficient root system to assure success rate of 85%. Trumpet Creeper (25 ea Campus radicans) shall be planted on top of the slope. The length of impact for the placement of the mesh bags is 54.68 cubic feet, 555 square feet, and 185 linear feet.

460 cubic yards of fill will be used on the entirety of the 650 feet of shoreline. Using the Exhibit D treatment with a maximum fill depth of 25', this will be approximately 16,250 feet and 650 linear feet.

Exhibit D will use 500 tons of surge stone, 3”-8” in size. This will be 400 cubic yards, 425 linear feet, and approximately 10,000 square feet. This will then be then covered with 8” of soil and planted over with Spartina Alterniflora, Wax Mrytle, and Southern Bayberry.

Upland Component of Project

There is no upland component for this project except for the movement of equipment and materials.

Marshland Buffers for Upland Component

The Marshland Buffer for upland consists approximately 34,000sqft of maintained lawn. Impacts within this location would be temporary and mitigations to address impacts have been discussed and outlined by the Georgia State Historic Preservation Office.

Stormwater Management Plan of the Upland Component

No sewage, industrial or other waste will be disposed of in surface waters, and no surface waters will be withdrawn, diverted or impounded during or after the stabilization of the Plum Orchard shoreline. During construction, appropriate erosion and sediment control measures will be used to control erosion and prevent sediment runoff into the Brickhill River adjacent to the project area.

Impervious Surface Calculations of the Upland Component

Impervious surface calculations of the upland is approximately 34,000sqft.

Zoning Letter & Signed Drawings from Local Gov

Federal property is not subject to local zoning ordinances.

Alternative Analysis

The National Park Service considered several alternatives including hardening and extending the current sea wall, building t-shaped catch basins to capture soil, sloping of the bluff to reduce tidal impacts, and doing nothing. The NPS determined the most effective process would be to establish a living shoreline as this provided the long-term protection of resources while enhancing the surrounding aquatic/tidal habitat for the local flora/fauna.

Landfill or Hazardous Waster Statement

Project area is not located adjacent to landfill or hazardous waste sites according to the GA Environmental Protection Division Hazardous Waste Support Unit and National Park Service inventories.

Water Quality Certification

“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.”

No sewage, industrial or other waste will be disposed of in surface waters, and no surface waters will be withdrawn, diverted or impounded during or after the stabilization of the Plum Orchard shoreline. During construction, appropriate erosion and sediment control measures will be used to control erosion and prevent sediment runoff into the Brickhill River adjacent to the project area.

Erosion and Sedimentation Statement

"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))."

The proposed project to reduce erosion and stabilize the shoreline at Plum Orchard will potentially disturb land within 25 feet of the banks of the tidal Brickhill River. However, this activity must be conducted along the river bank. Shoreline access for the project work will extend approximately 800 feet along the shoreline and 25 feet inland from the shoreline. The Plum Orchard shoreline is already a manipulated area, with an assortment of structures along the river bank, including a wooden bulkhead, some rubble-based riprap, a dock, an unimproved boat ramp and a 150-foot dike. Disturbance of the shoreline area during project construction should be minimal, as all shoreline work for the riprap section will be staged from a barge and utilize a ramp that will allow material and equipment to access shoreline work. All of the work will be accomplished during low tide. Appropriate mechanical equipment will be used to place the riprap and reduce damage to the existing vegetation and shoreline so minimal natural resource impacts will occur. In combination with the riprap, a living shoreline (livable landscape) consisting of bags filled with oyster shells and some fill material planted with native *Spartina* marsh grass will be installed along the base of the riprap at the mean tide level. Along approximately 400 linear feet of shoreline at the northern end of the site, surge stone will be mixed into the top portion of an 8 inch soil fill layer covering the area between high tide level and mean sea level. Native vegetation will be planted on this fill. The riprap, fill and planted vegetation will be placed over the existing unstable eroded slope and provide protection against further erosion. If needed, a variance for the activities would be obtained prior to the start of the construction for the shoreline stabilization.

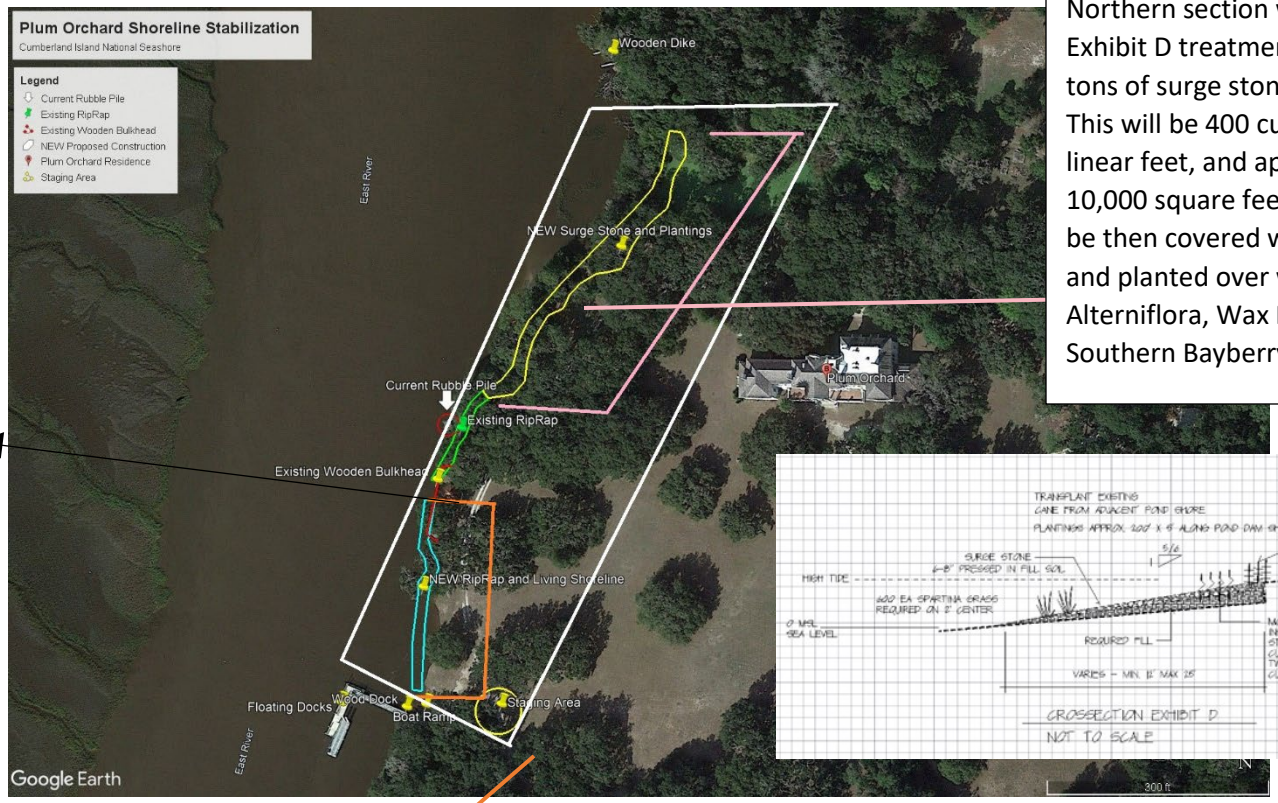
Public Interest Statement

The Plum Orchard site contains a mansion built by the Carnegie family, and additional structures including various support buildings, a boat house, dock ruins, a levee or dike used to create a duck pond, and terrapin pen. In 1984, the mansion and associated structures and surrounding grounds were listed on the National Register of Historic Places. The 1200 feet of shoreline associated with Plum Orchard is naturally vulnerable to erosion due to its location on the outside bend of the Brickhill River with its strong currents. Erosion rates have increased dramatically in the last 30 to 40 years according to quantitative assessments and casual observations. Within the past several years serious undercutting has taken place along the bank leading to small sinkholes, severe slumping, and rapid, irregular bank loss. Previous manmade "improvements" to the shoreline, including a wooden bulkhead, some rubble-based riprap, and a dock, have also been a factor in accelerated erosion observed at Plum Orchard. The unstable shoreline creates a safety hazard, alters the local natural environment, threatens habitat, and is an imminent threat to features of the National Register Plum Orchard Historic District. Once completed, the proposed shoreline stabilization project will use a combination of bioengineering, livable landscape and appropriate plantings in concert with riprap to provide protection to important cultural resources located within the Plum Orchard Historic District. The project will reduce shoreline erosion and stabilize this area, reduce the risk of impacts from future storms and sea level rise and increase the resiliency of the shoreline.

Total shoreline stabilized will be 650 feet. Maximum depth of work will be 25 feet.

460 cubic yards of fill will be used on the entirety of the 650 feet of shoreline. Using the Exhibit D treatment with a maximum fill depth of 25', this will be approximately 14,271 feet and 650 linear feet

The green section will not receive any treatment as there is existing riprap and a sea wall. This divides the two treatments.



Northern section will receive Exhibit D treatment. Will use 500 tons of surge stone, 3"-8" in size. This will be 400 cubic yards, 425 linear feet, and approximately 10,000 square feet. This will then be then covered with 8" of soil and planted over with Spartina Alterniflora, Wax Mrytle, and Southern Bayberry.

Southern section will receive treatments Exhibit C and Exhibit CI. Approximately 300 tons of riprap will be used the Exhibit C treatment. The length of impact is 214.29 cubic yards, 3716 square feet, and 225 linear feet. There will be approximately 5400 square feet of geotextile fabric placed below the riprap.

Exhibit CI Contractor shall supply oyster shells in mesh bags approximately 3' x 3' x 8"h along the edge of the shore (185' of shoreline). Contractor shall plant 425 each Spartina Alterniflora Smooth Cordgrass on 4' center in this area. Trumpet Creeper (25 ea). The length of impact for the placement of the mesh bags is 54.68 cubic yard, 555 square feet, and 185 linear feet.