

APPENDIX E

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

**SECTION 404 (B) (1)
EVALUATION**

FOR

**AUGUSTA ROCKY CREEK
SECTION 205 FEASIBILITY STUDY,
RICHMOND COUNTY, GEORGIA**

FEBRUARY 2016

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

AUGUSTA ROCKY CREEK SECTION 205 FEASIBILITY STUDY RICHMOND COUNTY, GEORGIA

1.0 INTRODUCTION

The following evaluation is prepared in accordance with Section 404(b)(1) of the Clean Water Act of 1977 to evaluate the environmental effects of the proposed placement of dredged or fill material in waters of the United States. 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 ENVIRONMENTAL SETTING

Rocky Creek: Rocky Creek is found in the southern part of the county and flows toward the Savannah River. The downstream portion of the creek enters the Phinzy Swamp and exits into the Savannah River through Butler Creek. Topography of the basin is typical of the piedmont region, with surface elevations ranging between 700 and 1,000 feet, North Atlantic Vertical Datum 1988 (NAVD 88).

2.2 PROPOSED ACTION

2.3 GENERAL DESCRIPTION

Rocky Creek:

Land use throughout this portion of the Rocky Creek basin is typical of urban streams and has been developed primarily for residential subdivisions; while some is occupied by commercial and industrial property. This development involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity and reduce economic damages from flooding in some of the developed areas of this drainage basin.

Most of the impacts to the environment from implementation of the TSP would be beneficial; and there have not been any significant adverse impacts identified to natural resources. As designed, the Rosedale detention area would limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream (USEPA 1999). Subsequent to this reduction to downstream erosion, benefits may occur to wetlands, floodplains, riparian vegetation, and bottomland hardwoods.

The proposed structural improvement detailed below includes renovation of Rosedale Dam into a detention area. This detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the existing floodplain/wetland areas for floodwater detention. The detention area as designed is expected to hold water 3-4 hours during an average summer rain event; approximately 12 hours during typical flood events; and approximately 21 hours (no more than 36 hours) during the 25-year flood event (over an approximate area of 21 acres).

The detention of water for longer periods in the detention area may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff, and decreasing sedimentation/erosion, and enhancing wetland vegetation. The treatment efficiency of detention areas is usually limited to removal of suspended solids and associated contaminants due to gravity settling. Their removal of pollutants of potential water quality concern can be limited (USEPA 1999).

Description of Actions Subject to Section 404 of Clean Water Act

Rocky Creek: There are no significant amounts of wetlands in the vicinity of the project impact area and there are no activities in the proposed action that are within jurisdictional wetlands as determined by a jurisdictional wetland delineation (Buck Engineering 2004; and USACE 2015a). There is one 0.4 of an acre wetland within the area of detention for flood events (Appendix A; Figure 4); but not near the stream channel, construction areas (Rosedale Dam renovations), or within areas receiving sedimentation. The detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the floodplain areas for floodwater detention. The Rosedale Dam Detention Area would not adversely impact any jurisdictional wetlands or floodplains, which have been degraded in the past by the extensive development of the floodplain. This detention area as designed is expected to hold water 3-4 hours during an average summer rain event; and approximately 12 hours during typical flood events.

The proposed action includes approximately 55 cubic yards of fill for renovating Rosedale Dam within the stream channel, which are waters of the U.S. (but are not jurisdictional wetlands). The proposed renovations include placing a 5 by 6-foot (150-foot long) concrete box culvert through the breach in the dam for normal creek flow (Drawings 1 and 2; Appendix B). The breach would then be filled to elevation 232.0 feet NAVD 88 to form a notch for all flows up to the 25-year flood event. The entire structure would require clearing, grubbing and grassing (5 acres) to protect the structural integrity of the earthen dam. The box culvert would be sunk 1 foot below grade [per 2005 US Fish and Wildlife Coordination Act Report (FWCAR)] to allow development of a natural stream channel through the culvert and facilitate passage of wildlife (see Drawings 1 & 2; Appendix B). The total impact from fill material to the stream channel would be 150 linear feet.

Another benefit of the sunken box culvert at the Rosedale Dam renovation would result from avoiding the potential for scouring of the channel bottom along the edge of the culvert, which would create a barrier to wildlife passage through the culvert. This barrier would have created

hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

The box culvert has been designed to approximate the existing channel width, to allow normal low flow and bed load sediment to pass unimpeded. This design would allow the upstream detention area to remain dry under normal weather conditions, with only normal creek flows passing through. Per recommendations from the US Fish and Wildlife Service (USFWS) and EPA, the culvert is designed to maintain bank full width and allowing proper shear stress for proper bed load transport (USFWS 2015 and Able 2003b). In the Design and Implementation (D/I) Phase, the size of the culvert may be modified, as needed to achieve these goals.

Rock revetments would be used at the face and outlet of the detention structure to reduce potential erosion and scouring at the structure; with a subsequent reduction in sedimentation and turbidity further downstream. Operations and Maintenance (O&M) of the area would include removal of sedimentation before accumulation is excessive enough to kill existing vegetation. The accumulation of sediment is expected to be small; and therefore, the potential for adverse impacts to existing vegetation would be expected to be less than the baseline condition. The detention area is not expected to result in increased sediment loads for the creek. Furthermore, the detention area would be expected to decrease the amount of sediment discharged further downstream during flood events by slowing down the floodwaters and detaining some of the sediments.

Threatened, Endangered and other Listed Species

The US Fish and Wildlife Service (USFWS) concurred that the proposed action is not likely to adversely affect Federally protected species in their Fish and Wildlife Coordination Act Report dated January 2014 (Appendix D). The only Federally protected species under USFWS jurisdiction that is known to use the vicinity is the endangered wood stork (*Mycteria americana*). This species is known to use the nearby Phinizy Swamp Complex site on a regular basis for feeding; this Swamp Complex is located approximately 5 miles southeast of the project site. The proposed action is not expected to have any adverse impacts to this species.

None of the state listed species or their habitat have been identified within the project impact area during site investigations; therefore no significant impact to these resources is expected.

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 U.S.

3.1 RESTRICTIONS ON DISCHARGE - (SECTION 230.10)

"(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."

No other practicable alternative with less environment impacts on the aquatic ecosystem has been identified.

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

"(1) 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 analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project. Fill material requirements for the project would primarily come from the re-use of existing soil on site and any remaining needs would come from local approved sources.

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

Endangered Species are addressed in the EA for this action. No federally listed species have been found on the site and the work is expected to have no affect on listed species.

"(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."

The proposed work is expected to improve water quality and conservation. Therefore, this project is expected to have a beneficial effect on, fish, shellfish, wildlife, and special aquatic sites; and may have a beneficial effect on water supplies and plankton.

"(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 analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project.

"(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."

By slowing down water flow through the basin during flood events, the proposed project would enhance the function of existing wetlands/floodplains consequently improving fish and wildlife habitat quality of the project impact area. These improvements to the stream ecosystem would facilitate filtering and absorption of any contamination present in the drainage basin. No effects due to the discharge of pollutants are expected. The detention area would be expected to result in minor beneficial impacts on the filtering of pollutants.

"(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."

As designed (see description under proposed action), the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream.

In addition, the design of Rosedale Dam was modified based on recommendations to the PDT from the USFWS to allow more natural flows through the stream channel. The box culvert would be sunk 1 foot below grade [per US Fish and Wildlife Coordination Act Report (FWCAR)] to allow development of a natural stream channel through the culvert and facilitate passage of wildlife (see Drawings 1 & 2; Appendix B). The box culvert would allow the upstream detention area to remain dry under normal weather conditions, with only normal creek flows passing through.

The box culvert was designed to be approximately the existing channel width, to allow low flow and bed load sediment to pass unimpeded. In the D/I Phase, the design may be modified as needed.

Another benefit of the sunken box culvert at the Rosedale Dam renovation would result from avoiding the potential for scouring of the channel bottom along the edge of the culvert, which would create a barrier to wildlife passage through the culvert. This barrier would have created

hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the stream, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

3.2 FACTUAL DETERMINATION. - (SECTION 230.11)

3.2.1 Physical Substrate Determinations

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.

Fill material requirements for the project would primarily come from the re-use of existing soil on site and any remaining needs would come from local approved sources. If locally approved sources are used, soils would be selected that are compatible with existing soils.

Possible loss of environmental values

No losses of environmental value are expected and the features in the project design are designed to improve environmental values of the project area.

Actions to minimize impacts

Any fill material used would be the minimum necessary to fulfill the project design; and existing soil on site will be re-used to the maximum extent practicable.

The box culvert at the Rosedale Dam renovation would be buried 1 foot below grade to avoid the potential for scouring of the channel bottom along the edge of the culvert that would create a barrier to wildlife passage through the culvert. This barrier would have created hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

As designed, the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream (USEPA 1999).

3.2.2 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 effects can alter or destroy aquatic communities.

As designed, the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream; and should also prevent loss of wetlands and riparian vegetation from erosion and scouring.

3.2.2.1 Loss of Environmental Value

As described above, this project is designed to increase environmental value of the site by improving the function of floodplains, a stream, and wetlands within a degraded ecosystem. Past land use and development throughout this portion of the Rocky Creek basin has involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed; as well as increased flow velocities during storm events. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity and reduce flows during flood events.

3.2.2.2 Actions to Minimize Impacts

Proposed fills are the minimum necessary to accomplish project purposes. The proposed culvert at Rosedale Dam is specifically designed to accomplish project purposes.

The Rosedale Dam renovation is designed to be approximately the existing channel width to allow low flow and bed load sediment to pass unimpeded. In the D/I Phase, the notch may be modified as needed. The notch will need to be at proper cross section for bank full width; allowing proper shear stress for proper bed load transport.

3.2.3 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.

Turbidity impacts due to construction are expected to be temporary. In addition, plans include sediment barriers and silt screens to restrict turbidity and sediment loss during construction.

3.2.3.1 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.

Impacts are expected to be minor and temporary and cease soon after construction is completed.

3.2.3.2 Actions to Minimize Impacts

The District follows sediment and erosion control best management practices in its designs. As stated above, barriers will be installed to minimize sediment loss and turbidity during construction.

The analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project.

The detention of water for longer periods in the detention areas may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff that would contribute to turbidity that are present in the drainage basin; decreasing sedimentation/erosion, and establishing wetland vegetation.

3.2.4 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).

There is no reason to expect any contaminant related impacts from the proposed work.

3.2.5 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.

3.2.5.1 Threatened and Endangered Species

This work is expected to have no effect on threatened or endangered species.

3.2.5.2 Fish, Crustaceans, Mollusks and other Aquatic Organisms in the Food Web

This project is expected to result in minor improvement in the habitat for these animals.

3.2.5.3 Other Wildlife

This project is expected to result in minor improvement in the habitat for other wildlife.

3.2.5.4 Special Aquatic Sites

The detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the floodplain/wetland areas for floodwater detention. A jurisdictional wetland delineation has been conducted (USACE 2015) includes a 0.4 of an acre jurisdictional wetland (USACE 2015a) and is illustrated in Figure 4 of Appendix A. The detention area would not adversely impact any jurisdictional wetlands or floodplains since the TSP does not involve any excavation or discharge of fill material into the detention area.

The proposed detention area and vicinity have been degraded in the past by the extensive development of the floodplain. The detention area as designed is expected to hold water 3-4

hours during an average summer rain event; approximately 12 hours during typical flood events; and no more than 36 hours during the 25-year flood event (over an approximate area of 21 acres). The detention area impacted by floodwater detention does include a portion of the 0.4 acre of jurisdictional wetlands (USACE 2015).

The detention of water for longer periods in the detention areas may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff, and decreasing sedimentation/erosion, and establishing wetland vegetation.

3.2.5.5 Potential Effects on Human Use Characteristics

The proposed work is expected to result in positive impacts regarding this issue.

3.2.5.6 Possible Loss of Environmental Values

The proposed work is expected to increase the environmental value of the site.

3.2.5.7 Actions to Minimize Impacts

The proposed work is expected to result in positive impacts to the environment.

3.2.6 Proposed Disposal Site Determination

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.

The proposed amount of fill required for the renovation of Rosedale Dam is the minimum required to fulfill the project purpose of Flood Risk Management. No practicable alternatives are available that produce the same benefits.

3.2.7 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.

Beneficial impacts from the detention area would be expected to offset to a minor degree the many past adverse impacts to the stream ecosystem and floodplain from many decades of development activities. Land use throughout this portion of the Rocky Creek basin is typical of urban streams and has been developed primarily for residential subdivisions; while some is occupied by commercial and industrial property. This development involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity of floodplains and wetlands within the watershed.

3.2.8 Determination of Secondary Effects on the Aquatic Ecosystem

Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

The box culvert at the Rosedale Dam renovation would be buried 1 foot below grade to avoid the potential for scouring of the channel bottom along the edge of the culvert that would create a barrier to wildlife passage through the culvert. This barrier would have created hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

Habitat for many animals would be improved from these features as well as habitat diversity for the area. Secondary beneficial effects on water quality may occur in Phinizy Swamp, which is downstream of Rocky Creek.

4.0 FINDINGS OF COMPLIANCE OR NONCOMPLIANCE WITH RESTRICTIONS ON DISCHARGE – (SECTION 230.12)

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. Several alternatives were eliminated for not accomplishing all project goals or for being too costly. The No Action alternative is found to be unacceptable.

(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, 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) 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.