

Section 404(b)1 Evaluation

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**CLEAN WATER ACT
SECTION 404(b) (1) EVALUATION**

SITE 1 IMPOUNDMENT PROJECT

1. Project Description

a. Location. The Site I Impoundment Project is located in southern Palm Beach County, Florida west of the City of Boca Raton. The project site is located south of Water Conservation Area 1 (WCA-1) and north of the Hillsboro Canal (Figure 1-1).

b. General Description. The Site 1 Impoundment Project is one of 13 components originally discussed in the Draft Water Preserve Area (WPA) Feasibility Study (October 2001). The project consists of a 1,660-acre, eight-foot deep aboveground impoundment with associated control structures and a seepage control canal. A portion of the Hillsboro Canal will be deepened to provide additional conveyance capacity. The project is planned to capture, store and redistribute fresh water previously lost to tide and to regulate the quality, quantity, timing and distribution of water flows, as an integral part of the Comprehensive Everglades Restoration Plan (CERP).

c. Authority and Purpose. The Site 1 Impoundment Project was authorized by Section 601 the Water Resources Development Act (WRDA) of 2000, Public Law 106-541. The purpose of the project is to provide groundwater recharge; reduce seepage from adjacent natural areas; provide water supply for environmental and urban demands and prevention of saltwater intrusion.

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material: Fill material for the levees will be dredged and excavated material that will be removed within the immediate project area. The material will consist primarily of limestone rock and overlying soils consisting of sand, and clay.

(2) Quantity of Material: The quantity of material is summarized in **Table C-1**.

(3) Source of Material: The fill material will be material removed *in situ* during excavation of the impoundment, seepage canals, intake and discharge pools and deepening of the Hillsboro Canal.

TABLE C-1: DREDGE AND FILL QUANTITIES

Material	Gross Volume cu-yds	Rock Volume cu-yds	Overburden Volume cu-yds
Excavated Material			
Hillsboro Canal Improvement	87,002	87,002	0
Seepage Canal (C-508N)	254,648	100,269	154,379
F & W Littoral Shelves	37,816	0	37,816
Intake & Discharge Basins	63,946	40,199	23,747
Total	443,412	227,470	215,942
Reusable Material (70%)	310,388	159,229	151,159
Unusable Material-Spoil (30%)	133,024	68,241	64,783
Fill Material Required			
Levee Construction	935,500		
Revetment - Bedding Stone	4,901		
Revetment - Rip rap	9,563		
Total Fill Required to Construct Levees	949,964		
Backfill Borrow Pits (Spoil)	133,024		
Total Volume of Fill	1,082,988		
Additional Fill Required to Construct Levees *	639,576		

* The additional fill needed to construct the levees will be obtained by excavating 1 to 2 feet of soil from inside the impoundment footprint.

e. Description of the Proposed Discharge Site.

(1) Location: The fill material will be used to construct the perimeter and internal levees of the impoundment. Any material excavated or dredged that is unsuitable for levee construction will be used to partially backfill existing on-site borrow pits.

(2) Size: Approximately 23,765 feet of perimeter levee would be constructed that would tie into the existing C&SF L-40 Levee creating and impoundment approximately 1,660 acres in size. A 6,315-foot levee would also be constructed in the interior of the impoundment separating it into two cells. The total impoundment footprint including the levees would be approximately 1,800 acres.

(3) Type of Site: The disposal site consists of a mixture of disturbed wetland communities, improved pasture, abandoned tree nursery, and existing borrow pits.

(4) Type of Habitat: The most prevalent habitat types within the project footprint are degraded wetland areas converted to pasture. These areas are dominated by exotic grasses maintained for grazing, but also exhibit native wetland species. Other habitat types present include remnant sawgrass plain infested with melaleuca and an abandoned tree nursery composed of largely exotic species. Also within the area are several abandoned borrow pits.

(5) Timing and Duration of Discharge: Project construction is scheduled to begin in 2006 and take approximately 3 years to complete.

f. Description of Disposal Method. The material dredged from the Hillsboro canal would be placed onto the adjacent right-of-way on either side of the canal. The material would then be collected and transported to the impoundment site using conventional earth moving equipment.

2. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope: The top of the levees would be at elevation 26 ft. NGVD with side slopes of 1 vertical on 3 horizontal

(2) Sediment Type: The material to be excavated and used as fill is a combination of limestone, clay and fine sediments.

(3) Dredge/Fill Material Movement: Material excavated from within the impoundment footprint will be used to construct the levees. Material dredged from the Hillsboro Canal will likewise be used to construct the levees. Any material not suitable for levee construction would be used to backfill existing borrow pits. There will be no deposition of material in unconfined waters where it would be subject to movement.

(4) Physical Effects on Benthos: There are no benthic organisms within the fill areas.

b. Water Circulation, Fluctuation and Salinity Determination.

(1) Water Column Effects: During dredging operations to deepen the Hillsboro Canal, the water column would become temporarily more turbid. The use of turbidity curtains may be required to confine the turbidity to the immediate vicinity of dredging.

(2) Current Patterns and Circulation: Dredging would not affect current patterns or circulation. Construction of the impoundment and levees would also not affect current patterns or circulation.

(3) Normal Water Level Fluctuations and Salinity Gradients: One of the goals of this restoration process is to create a more natural salinity regime based on lessening freshwater runoff from the watershed during the rainy season, while storing water for

gradual release to the estuary during the dry season. Once the impoundment is constructed salinity fluctuations would more closely approach a rainfall driven pattern.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site: Construction of the impoundment levees would require deposition of fill over wetlands permanently converting these areas to upland sites. Temporary increases in suspended particulates can be expected during construction at the levee fill sites as well as the dredging location in the Hillsboro Canal. All appropriate measures to reduce and contain turbidity will be employed so state Water Quality Standards would not be violated.

(2) Effects on Chemical and Physical Properties of the Water Column:

(a) Light penetration: During dredging operations in the Hillsboro Canal, there would be a temporary reduction in light penetration in the immediate vicinity of dredging. Once construction is completed, light penetration is expected to return to pre-construction levels.

(b) Dissolved Oxygen: During dredging operations, there could be a temporary reduction in the dissolved oxygen content in the water column in the immediate vicinity of dredging. Once construction is completed, dissolved oxygen is expected to return to pre-construction levels.

(c) Toxic Metals, Organics and Pathogens: No toxic metals, organics, or pathogens would be released by project construction.

(d) Aesthetics: During construction, visual aesthetics would be negatively impacted. After completion, aesthetics would improve once new vegetation becomes established.

(3) Effects on Biota:

(a) Primary Productivity and Photosynthesis: Wetland disposal of excavated materials would adversely affect existing degraded wetlands by covering existing vegetation. The vegetation on the project site would be replaced by an above ground impoundment with some wetland value. The project also has a littoral shelf designed into the seepage canal adjacent to the impoundment. The sloping littoral shelf is intended to provide zones of appropriate hydroperiods for plant diversity and habitat. Wetland functional values overall would increase.

(b) Suspension/Filter Feeders: During dredging operations in the Hillsboro Canal, there would be a temporary increase in turbidity and possibly a decrease in suspension/filter feeders due to construction activities. These organisms would return to current levels after construction is completed.

(c) Sight Feeders: During dredging operations in the Hillsboro Canal, there would be a temporary increase in turbidity and possibly a decrease in sight feeders due to construction activities. These organisms would return to current levels after construction is completed.

d. Contaminant Determinations. Deposited fill material would not introduce, relocate, or increase contaminants.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton: No adverse affects on plankton are expected.

(2) Effects on Benthos: A temporary decrease in the benthos within the area dredged in the Hillsboro Canal would occur. It is expected that the benthos would return to current levels after construction is completed.

(3) Effects on Nekton: No adverse affects on nekton are expected.

(4) Threatened and Endangered Species: The USACE has determined that the implementation of this project will either benefit, or not adversely affect, endangered and/or threatened species and their habitat present in or near the project area. Special protection measures will be implemented during construction to minimize impacts to any listed species present.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination: This determination is not applicable. Areas proposed for disposal are too shallow to allow determination of a mixing zone.

(2) Determination of Compliance with Applicable Water Quality Standards: The project would comply with Federal and State water quality standards.

(3) Potential Effects on Human Use Characteristics:

(a) Municipal and Private Water Supply: In addition to the primary goal of helping to restore the greater Everglades ecosystem, the proposed impoundment would help to improve urban and agricultural water supplies.

(b) Recreational and Commercial Fisheries: Construction activities would not significantly affect recreational or commercial fisheries.

(c) Water Related Recreation: The recreation resources within the proposed project area would not be adversely affected, but some temporary disruption would be expected during construction.

Construction of the impoundment levees could potentially disrupt access to some recreation resources within the immediate project area (boat ramp, bank fishing, wildlife observation). However, recreational resources, access, and use would return to historic conditions once the project construction has been completed.

(d) Aesthetics: During construction, the visual appearance of the new impoundment and levees may be somewhat unattractive. The levees would be grassed to prevent erosion and help blend them into the landscape background as unobtrusively as possible. The existing landscape characteristics would be replaced with views of levees and open water within the impoundment areas.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: There are no such designated areas present within the area proposed for construction of project features.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The restoration of hydrology of the greater Everglades ecosystem and the increase in spatial extent of protected wetland acreage in the region will produce extensive cumulative beneficial effects. These beneficial effects are expected to substantially outweigh the cumulative adverse effects produced by the aquatic ecosystem alterations that may be necessary to construct some of the project components.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Implementation of this project would indirectly affect some coastal biological communities in the near shore areas in the vicinity of the Boca Inlet and the Atlantic Intracoastal Waterway (AIWW). The project would reduce damaging fresh water releases from Lake Okeechobee as well as reducing storm water runoff to the AIWW and Boca estuaries by capturing some of these flows. This is anticipated to allow for a more natural salinity gradient within the estuaries, as well as reducing the fluctuation of salinity caused by fresh water pulsed flows. Seagrass beds would benefit from the reduction and controlled fresh water flows.

3. Findings of Compliance or Non-Compliance with the Restrictions on Discharge.

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.
- c. The discharge of fill materials will not cause or contribute to violations of any applicable State water quality standards for Class III waters. The discharge operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The placement of fill materials in the project area will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

e. The placement of fill materials will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

f. On the basis of the guidelines, the proposed disposal site for the discharge of fill and/or dredged material is specified as complying with the requirements of these guidelines.

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