

APPENDIX IV

SECTION 404(b)(1) EVALUATION

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DREDGED MATERIAL
BEACH PLACEMENT

I. Project Description

a. Location. St. Lucie Inlet

b. General Description. The work would consist of routine maintenance dredging of an estimated 400,000 cubic yards of sand from portions of the entrance channel and impoundment basin as needed. The channel is 300 feet wide and 18 feet deep, tapering to 150 feet wide and 12 feet deep and then to 100 feet wide and 9 feet deep. The approximate length of the project is 9200 feet. The impoundment basin is 450 feet by 2500 feet and will be dredged to a required depth of 13 feet. Shoal material will be placed in the beach disposal area located 4000 feet south of the Inlet and extend south for approximately 10,000 feet. This area is located at the Hobe Sound National Wildlife Refuge and the St lucie Inlet State Park.

c. Authority and Purpose. Authorization for this project is provided by the Harbor and River Act of 31 May 1974, House Document 294/93/1. Since the initial maintenance, sand and sediments have periodically accumulated in the channel reducing the navigable capacity of the project. The channel depths are reduced by sedimentation. In order to maintain the Federal standard, the channel must be dredged.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material. St. Lucie Inlet material is fine to coarse calcareous and quartz sand having a grain size range from 0.07 to 10mm. The amount of fine material for the inlet is less than five percent.

(2) Quantity of Material. Approximately 400,000 cubic yards of material would be dredged.

(3) Source of Material. The material would be excavated from the St. Lucie Inlet navigation channel.

e. Description of the Proposed Discharge Site.

(1) Size and Location. The site is a previously used beach disposal area located 4,000 feet south of the inlet and extending for 10,000 feet further south.

(2) Type of Site. The site is a sandy beach environment with typical dunes and vegetation.

(3) Type of Habitat. It is a typical beach environment used by shorebirds for

feeding, migratory birds for nesting, and sea turtles for nesting.

(4) Timing and Duration of Discharge. The dredging would take approximately 3 months. The dredging cycle is approximately every 2 years.

£ Description of Disposal Method. The material would be pumped to the site in a slurry. A berm would be created along the shoreline to contain the material and as the material settles out and fills in the area a new berm is created in the new area to be filled.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The disposal area would be located below the mean high water mark along the beach.

(2) Sediment Type. Sand.

(3) Dredged/Fill Material Movement. The dredged material would move within the littoral drift zone. This would supplement the sand budget of the area causing a net increase in the accretion of sand on the beach south of the disposal area.

(4) Physical Effects on Benthos. None.

(5) Other Effects. None.

(6) Actions Taken to Minimize Impacts. None.

b. Water Circulation, Fluctuation and Salinity Determinations

(1) Water

(a) Salinity. No impacts to salinity at disposal site.

(b) Water Chemistry. No impacts

(c) Clarity. None.

(d) Color. There would be a short-term turbidity plume created until the sand rapidly settles out of the water column.

(e) Odor. none.

(f) Taste. Not applicable.

(g) Dissolved Gas Levels. None.

(h) Nutrients. None.

(i) Eutrophication. None.

(2) Current Patterns and Circulation. The placement of dredged material at this site would not affect current patterns.

(3) Normal Water Level Fluctuations. Not applicable.

(4) Salinity Gradients. Not applicable.

(5) Actions That Will Be Taken to Minimize Impacts.
None.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulate and Turbidity Levels in Vicinity of Disposal Site. Levels should not exceed state standards.

(2) Effects (degree and duration) on Chemical and Physical values

(a) Light penetration. Short-term light penetration reduction will be temporarily experienced in the surf zone.

(b) Dissolved Oxygen. No impact.

(c) Toxic Metals and Organics. No impact.

(d) Pathogens. Not Applicable.

(e) Aesthetics. There would be a turbidity plume within the surf zone. The plumes would be short-term duration.

(f) Others as Appropriate. None.

(3) Effects on Biota (consider environmental values in **sections 230.21**, as appropriate)

(a) Primary Production, Photosynthesis. None.

(b) Suspension/Filter Feeders. Little or no impact is expected.

(c) Sight Feeders. Little or no impact is expected.

(4) Actions taken to Minimize Impacts. Turbidity would meet State standards.

d. Contaminant Determinations. No sources of pollution have been identified in the project area, therefore, no contaminants are expected to be encountered.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton. No significant effects.

(2) Effects on Benthos. There would be no significant impacts on benthos in the area.

(3) Effects on Nekton. There would be no significant impact on the nekton community in the area from this dredging and disposal occurrence.

(4) Effects on Aquatic Food Web. There would be no significant impact on the aquatic food web in the area from this dredging and disposal occurrence.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. Not applicable.

(b) Wetlands. Not applicable.

(c) Mud Flats. Not applicable.

(d) Vegetated Shallows. None would be affected.

(e) Coral Reefs. None would be affected.

(f) Riffle and Pool Complexes. Not applicable.

(6) Threatened and Endangered Species. The placement along the beach may affect nesting sea turtles. A window of protection has been established between 30 May and 30 September where no beach disposal is allowed. Other measures include beach monitoring and relocation of nests within the construction area during a period between 1 March and the beginning of construction.

(7) Other Wildlife. Migratory bird nesting could be affected by the placement of material on the beach between 1 April and 30 August. The nesting areas would

be avoided during this time.

(8) Actions to Minimize Impacts. Precautions will also be taken to avoid impacting manatees within the dredging area.

£ Proposed Disposal Site Determinations

(1) Mixing Zone Determination. Not applicable.

(2) Determination of Compliance with Applicable Water Quality Standards. The discharge must comply with State water quality standards.

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply. Not applicable.

(b) Recreational and Commercial Fisheries. Immediate impacts to commercial fisheries resources will be insignificant.

(c) Water Related Recreation. Not applicable.

(d) Aesthetics. There would be noise and visual impacts from the presence and operation of the heavy equipment and the pipeline along the shoreline.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. The discharge site is located south of the Hobe Sound National Wildlife Refuge and St. Lucie Inlet State Park. There would be short-term disruption of recreation at these sites during construction.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. There would be no adverse impacts on the aquatic ecosystem at this site.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Not applicable.

SECTION 404(b)(1) EVALUATION
DREDGED MATERIAL
NEARSHORE PLACEMENT

I. Project Description

a. Location. St. Lucie Inlet

b. General Description. The work would consist of routine maintenance dredging of an estimated 400,000 cubic yards of sand from portions of the entrance channel and impoundment basin as needed. The channel is 300 feet wide and 18 feet deep, tapering to 150 feet wide and 12 feet deep and then to 100 feet wide and 9 feet deep. The approximate length of the project is 9200 feet. The impoundment basin is 450 feet by 2500 feet and will be dredged to a required depth of 13 feet. Shoal material will be placed in the nearshore disposal area located between State Monuments R-89 and R-99 within the 20-foot bottom contour off Hobe Sound.

c. Authority and Purpose. Authorization for this project is provided by the Harbor and River Act of 31 May 1974, House Document 294/93/1. Since the initial maintenance, sand and sediments have periodically accumulated in the channel reducing the navigable capacity of the project. The channel depths are reduced by sedimentation. In order to maintain the Federal standard, the channel must be dredged.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material. St. Lucie Inlet material is fine to coarse calcareous and quartz sand having a grain size range from 0.07 to 10mm. The amount of fine material for the inlet is less than five percent.

(2) Quantity of Material. Approximately 400,000 cubic yards of material would be dredged.

(3) Source of Material. The material would be excavated from the St. Lucie Inlet navigation channel.

e. Description of the Proposed Discharge Site.

(1) Size and Location. The nearshore disposal area would be located south of Hobe Sound Park between State Monuments R-89 and R-99 and within the 20-foot bottom contour.

(2) Type of Site. The site is a sandy littoral drift zone along the shoreline.

(3) Type of Habitat. The bottom habitat is a shifting sandy environment.

(4) Timing and Duration of Discharge. The dredging would take approximately 3 months. The dredging cycle is approximately every 2 years.

f. Description of Disposal Method. The material would be dumped from either a hopper dredge or a bottom opening barge.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The disposal area would be located within the 20-foot bottom contour.

(2) Sediment Type. Sand.

(3) Dredged/Fill Material Movement. The dredged material would move within the littoral drift zone. This would supplement the sand budget of the area causing a net increase in the accretion of sand on the beach south of the disposal area.

(4) Physical Effects on Benthos. None.

(5) Other Effects. None.

(6) Actions Taken to Minimize Impacts. None.

b. Water Circulation, Fluctuation and Salinity Determinations

Water

(a) Salinity. No impacts to salinity at disposal site.

(b) Water Chemistry. No impacts

(c) Clarity. None.

(d) Color. There would be a short-term turbidity plume created until the sand rapidly settles out of the water column.

(e) Odor. none.

(f) Taste. Not applicable.

(g) Dissolved Gas Levels. None.

(h) Nutrients. None.

(i) Eutrophication. None.

(2) Current Patterns and Circulation. The placement of dredged material at this site would not affect current patterns.

(3) Normal Water Level Fluctuations. Not applicable.

(4) Salinity Gradients. Not applicable.

(5) Actions That Will Be Taken to Minimize Impacts.
None.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulate and Turbidity Levels in Vicinity of Disposal Site. Levels should not exceed state standards.

(2) Effects (degree and duration) on Chemical and Physical values

(a) Light penetration. Short-term light penetration reduction will be temporarily experienced at the disposal site during dumping.

(b) Dissolved Oxygen. No impact.

(c) Toxic Metals and Organics. No impact.

(d) Pathogens. Not Applicable.

(e) Aesthetics. There would be a turbidity plume created at the dumping site. The plumes would be short-term duration.

(f) Others as Appropriate. None.

(3) Effects on Biota (consider environmental values in sections 230.21, as appropriate)

(a) Primary Production, Photosynthesis. None.

(b) Suspension/Filter Feeders. Little or no impact is expected.

(c) Sight Feeders. Little or no impact is expected.

(4) Actions taken to Minimize Impacts. Turbidity would meet State standards.

d. Contaminant Determinations. No sources of pollution have been identified in the project area, therefore, no contaminants are expected to be encountered,

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton. No significant effects.

(2) Effects on Benthos. There would be no significant impacts on benthos in the area.

(3) Effects on Nekton. There would be no significant impact on the nekton community in the area from this dredging and disposal occurrence.

(4) Effects on Aquatic Food Web. There would be no significant impact on the aquatic food web in the area from this dredging and disposal occurrence.

Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. Not applicable.

(b) Wetlands. Not applicable.

(c) Mud Flats. Not applicable.

(d) Vegetated Shallows. None would be affected.

(e) Coral Reefs. None would be affected.

(f) Riffle and Pool Complexes. Not applicable.

(6) Threatened and Endangered Species. None would be affected.

(7) Other Wildlife. None would be affected.

(8) Actions to Minimize Impacts. Precautions will also be taken to avoid impacting manatees within the dredging area.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination. Not applicable.

(2) Determination of Compliance with Applicable Water Quality Standards. The discharge must comply with State water quality standards.

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply. Not applicable.

(b) Recreational and Commercial Fisheries. Immediate impacts to commercial fisheries resources will be insignificant.

(c) Water Related Recreation. Not applicable.

(d) Aesthetics. The turbidity plume would be visible to the residents along the coastal shoreline. However, the disposal site is not immediately adjacent to the residential properties.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. The discharge site is located south of the Hobe Sound Park and should not affect recreation at this park.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. There would be no adverse impacts on the aquatic ecosystem at this site.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Not applicable.