

## 5.0 ENVIRONMENTAL EFFECTS

### 5.1 Introduction

This environmental assessment evaluates the impacts of the alternative actions described in Section 4.0, *Formulation and Evaluation of Alternatives*. Many of the environmental impacts of highway and bridge construction evaluated in this environmental assessment (EA) are similar or identical to those of the 2005 RGR/SEIS, which provides more detailed discussions of environmental impacts and is incorporated by reference.

### 5.2 General Definitions

The following definitions were used to evaluate the context, intensity, duration, and cumulative nature of impacts associated with project alternatives:

Context is the setting within which an impact is analyzed, such as the affected region, society as a whole, the affected interests, and/or a locality. In this environmental assessment, the intensity of impacts are evaluated within a local (e.g. construction footprint) or project area context, while the intensity of the contribution of effects to cumulative impacts are evaluated in a regional context.

Impact Intensity: For this analysis, intensity or severity of the impact is defined as follows:

- Negligible - impact to the resource or discipline is barely perceptible and not measurable and confined to a small area.
- Minor - impact to the resource or discipline is perceptible and measurable and is localized
- Moderate - impact is clearly detectable and could have appreciable effect on the resource or discipline; or the impact is perceptible and measurable throughout the project area
- Major - impact would have a substantial, highly noticeable influence on the resource or discipline on a regional scale.

Duration: The duration of the impacts in this analysis is defined as follows:

- Short term - when impacts occur only during construction or last less than one year; or
- Long term - impacts that last longer than one year.

**TABLE 5-1: POTENTIAL ENVIRONMENTAL EFFECTS OF FINAL ALTERNATIVES**

Stage Constraint	7.5 Feet	8.0 Feet		8.5 Feet	
Alternatives	Alt 1.1 No Action	Alt 2.2.2a Raise Road Add 1-Mile Eastern Bridge	Alt 2.2.2b Raise Road & Add 1-Mile Western Bridge	Alt 3.2.2a Raise Road & Add 1-Mile Eastern Bridge	Alt 3.2.2b Raise Road & Add 1-Mile Western Bridge
<b>Surface Waters</b>	No beneficial effect. Current deliveries are constrained by stages at G-3273 and height of Tamiami Trail roadway above water surface in L-29 Canal. These constraints cause closure of S-333 Structure and limit deliveries to a peak flow of 1,250 cfs.	Peak water flow into ENP would increase to 1,577 cfs, a 26% increase over no-action.	Same as 2.2.2.a	Peak water flow into ENP would increase to 1,848 cfs, a 47% increase over no-action.	Same as 3.2.2.a
<b>Water Quality</b>	No effect	Minor, short-term increases in sediment and nutrients during construction adjacent to roadway culverts and bridge footprint. Short-term, moderate release of soil-bound nutrients where roadway is degraded after the bridge is built to create conveyance. No permanent change in water quality.	Same as 2.2.2.a	Same in type and location as 2.2.2a; Due to increased roadway work to achieve higher stage constraint, the duration and footprint of impacts (adjacent to the road) may be a little larger (refer to text for footprints). When construction is complete, no further adverse effects are anticipated.	Same as 3.2.2.a
<b>HTRW</b>	No effect	No effect	No effect	No effect	No effect
<b>Water Deliveries to ENP</b>	No beneficial effect. Current deliveries are constrained by stages at G-3273 and height of Tamiami Trail roadway above water surface in L-29 Canal. These constraints cause closure of S-333 Structure and limit deliveries to a peak flow of 1,250 cfs.	Peak water flow into ENP would increase to 1,577 cfs, a 26% increase over no-action.	Same as 2.2.2.a	Peak water flow into ENP would increase to 1,848 cfs, a 47% increase over no-action.	Same as 3.2.2.a
<b>Parklands</b>	No effect	8.5 acres lost to bridge and bridge approaches.	9.0 acres lost to bridge and bridge approaches.	Same as Alt. 2.2.2a	Same as Alt. 2.2.2b

		6.3 acres temporarily affected.	6.7 acres temporarily affected.		
<b>Biological Communities</b>	No change. Adverse quantity and timing of flows into ENP have led to loss of deep marsh and slough habitat and reduced dry season refugia for fishes, leading to overall reduction in fish populations, reduced forage for wading birds.	Flow volume would increase 55% over no-action, potentially improving conditions for fish propagation and wading bird foraging during dry seasons. Additionally, adding a bridge would increase potential connectivity and reduce adverse velocity changes by 26%, reducing erosion and sedimentation associated with culverts and assisting to preserve the ridge-and slough landscape. Deep marsh inundation would be expected to last longer and reach a deeper stage than previous non-bridge alternatives.	Same as 2.2.2a, but since sloughs are slightly deeper on the western side, a modest increase slough hydroperiods may be slightly more favorable for fish refugia and wading bird foraging than the previous alternative.	Flow volume would increase 92% over no-action, potentially improving conditions for fish propagation and wading bird foraging during dry seasons. Additionally, adding a bridge would increase potential connectivity and reduce adverse velocity changes by 26%, reducing erosion and sedimentation associated with culverts and assisting to preserve the ridge-and slough landscape. Deep marsh inundation would be expected to last longer and reach a deeper stage than previous non-bridge alternatives.	Same as 3.2.2a, but since sloughs are slightly deeper on the western side, a modest increase slough hydroperiods may be slightly more favorable for fish refugia and wading bird foraging than the previous alternative.
<b>Average Annual Lift (Habitat Units)</b>	No effect	8,559	9,154	13,109	13,705
<b>Ecological Connectivity between WCA and ENP Marshes</b>	No effect. High-velocity flows through culverts during periods of high flow impede potential connections between ENP and WCA marshes; continuous roadway is a barrier to movement of large animals. L-29 canal and Levee continue to act as a barrier to movement of native species, especially terrestrial species.	Potential for ecological connectivity between ENP and upstream wetlands, which could be realized if the L-29 Levee is removed and the L-29 Canal filled under future projects.	Potential for ecological connectivity between ENP and upstream wetlands, which could be realized if the L-29 Levee is removed and the L-29 Canal filled under future projects.	Potential for ecological connectivity between ENP and upstream wetlands, which could be realized if the L-29 Levee is removed and the L-29 Canal filled under future projects.	Potential for ecological connectivity between ENP and upstream wetlands, which could be realized if the L-29 Levee is removed and the L-29 Canal filled under future projects.
<b>Wetlands</b>	No effect	2.29 acres filled; 6.6 acres temporarily affected; 8.5 acres restored by highway removal. 63,000 acres of	8.95 acres filled; 6.72 acres temporarily affected; 8.5 acres restored by highway	Same as Alt. 2.2.2a	Same as Alt. 2.2.2b

		improved quality.	removal. 63,000 acres of improved quality.		
<b>Ridge and Slough Processes</b>	Deep marshes and their characteristic flora are uncommon in the NESRS landscape. Shortened hydroperiods and lowered maximum stages (relative to historic conditions) favor sawgrass over slough vegetation. Patterning of landscape into ridge-and slough is being gradually eliminated by sedimentation of sloughs.	Moderate improvement in ridge and slough processes.	Moderate improvement in ridge and slough processes.	Moderate improvement in ridge and slough processes.	Moderate improvement in ridge and slough processes.
<b>Protected Species</b>					
<b>Cape Sable Seaside Sparrow</b>	No beneficial effect. Long-term high volume water releases from S-12 gates may have adversely affected CSSS habitat inside ENP in Sub-population "A." This adverse effect would continue until more releases can be made east of the L-67 levees into ENP.	The closest occupied CSSS nest lies 10 miles south of the project area. Construction activities would have no effect on this species. There is no designated Critical Habitat located within the project area, so none would be affected. The project may affect but is not likely to adversely affect the CSSS.	The closest occupied CSSS nest lies 10 miles south of the project area. Construction activities would have no effect on this species. There is no designated Critical Habitat located within the project area, so none would be affected. The project may affect but is not likely to adversely affect the CSSS.	The closest occupied CSSS nest lies 10 miles south of the project area. Construction activities would have no effect on this species. There is no designated Critical Habitat located within the project area, so none would be affected. The project may affect but is not likely to adversely affect the CSSS.	The closest occupied CSSS nest lies 10 miles south of the project area. Construction activities would have no effect on this species. There is no designated Critical Habitat located within the project area, so none would be affected. The project may affect but is not likely to adversely affect the CSSS.
<b>Eastern Indigo Snake</b>	No effect. This species may be in the project area, although there are no known sightings.	Because it could potentially be in the area affected by construction activities, USACE would implement the "Standard Construction Precautions for the Indigo Snake" during construction. The project may affect, but is not likely to adversely affect the Eastern indigo snake	Because it could potentially be in the area affected by construction activities, USACE would implement the "Standard Construction Precautions for the Indigo Snake" during construction. The project may affect, but is not likely to adversely affect the Eastern indigo snake	Because it could potentially be in the area affected by construction activities, USACE would implement the "Standard Construction Precautions for the Indigo Snake" during construction. The project may affect, but is not likely to adversely affect the Eastern indigo snake	Because it could potentially be in the area affected by construction activities, USACE would implement the "Standard Construction Precautions for the Indigo Snake" during construction. The project may affect, but is not likely to adversely affect the Eastern indigo snake
<b>Florida Panther</b>	No beneficial effect. Minor Florida panther cover habitat was	A linear strip of native and exotic woody vegetation, which constitutes low	A linear strip of native and exotic woody vegetation, which	A linear strip of native and exotic woody vegetation, which	A linear strip of native and exotic woody vegetation, which constitutes low

	identified in 2006 Biological Opinion along the south side of Tamiami Trail in the project area. This habitat would not be affected under the no-action alternative.	quality panther habitat, would be removed along the highway for construction of the transition roadways and the bridge. This may affect but is not likely to adversely affect the panther.	constitutes low quality panther habitat, would be removed along the highway for construction of the transition roadways and the bridge. This may affect but is not likely to adversely affect the panther.	constitutes low quality panther habitat, would be removed along the highway for construction of the transition roadways and the bridge. This may affect but is not likely to adversely affect the panther.	quality panther habitat, would be removed along the highway for construction of the transition roadways and the bridge. This may affect but is not likely to adversely affect the panther.
<b>Everglade Snail Kite</b>	No beneficial and some apparent long-term adverse effects due to ponding of water in southern WCA-3A when releases cannot be made through the S-12 gates West of L-67. Ponding during the snail kite nesting season inhibits foraging for apple snails, the kite's principal prey item.	Because the closest known snail kite nest is a considerable distance from the project area, no specific precautions are necessary at this time. The project may affect, but is not likely to adversely affect the Everglade snail kite. Raising the stage constraint will allow releases from WCA-3A and potentially reduce adverse high stages in the WCA, which are believed to have degraded snail kite foraging habitat.	Because the closest known snail kite nest is a considerable distance from the project area, no specific precautions are necessary at this time. The project may affect, but is not likely to adversely affect the Everglade snail kite. Raising the stage constraint will allow releases from WCA-3A and potentially reduce adverse high stages in the WCA, which are believed to have degraded snail kite foraging habitat.	Because the closest known snail kite nest is a considerable distance from the project area, no specific precautions are necessary at this time. The project may affect, but is not likely to adversely affect the Everglade snail kite. Raising the stage constraint will allow releases from WCA-3A and potentially reduce adverse high stages in the WCA, which are believed to have degraded snail kite foraging habitat.	Because the closest known snail kite nest is a considerable distance from the project area, no specific precautions are necessary at this time. The project may affect, but is not likely to adversely affect the Everglade snail kite. Raising the stage constraint will allow releases from WCA-3A and potentially reduce adverse high stages in the WCA, which are believed to have degraded snail kite foraging habitat.
<b>Wood Stork</b>	No effect. There are two nesting colonies of WS close to the road in ENP (see text) but they are not sensitive to highway traffic	About 1,200 feet of bridge approach road would fall within the Secondary Zone of the West Colony. Highway construction would occur on 3,700 feet in the primary zone and 2,050 feet of the secondary zone of the Tamiami West Colony, and in 3,000 feet in the secondary zone of the East Colony. With management according to the USFWS Guidelines, the project may affect, but is not likely to adversely affect the wood stork.	No effect from bridge construction. Highway construction would be the same as Alt 2.2.2a. With management according to the USFWS Guidelines, the project may affect, but is not likely to adversely affect the wood stork.	About 1,200 feet of bridge approach road would fall within the Secondary Zone of the West Colony. Highway construction would be the same as Alt 2.2.2a. With management according to the USFWS Guidelines, the project may affect, but is not likely to adversely affect the wood stork.	No effect from bridge construction. Highway construction would be the same as Alt 2.2.2a. With management according to the USFWS Guidelines, the project may affect, but is not likely to adversely affect the wood stork.

<b>Other Wildlife</b>	No Effect	Bridge provides one-mile reduction in potential opportunity for mortality	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
<b>Air Quality</b>	No effect	Minor, localized short-term increase in particulates and combustion products due to construction; no permanent change (air quality standards not violated).	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
<b>Transportation</b>	No effect	Traffic flow would be maintained, but delays could be encountered in construction zones.	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
<b>Public Recreation</b>	No effect	Permanent loss of bank fishing at bridge location.	Permanent loss of bank fishing at bridge location.	Permanent loss of bank fishing at bridge location.	Permanent loss of bank fishing at bridge location.
<b>Cultural Resources</b>	No effect	No effect	No effect	No effect	No effect
<b>Aesthetics</b>	No effect	Potential for improved view of Everglades	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
<b>Noise</b>	No effect	Short-term localized noise in construction zones	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
<b>Businesses</b>	No effect	Approximately 0.88 acres would be needed for permanent and temporary construction easements from FP&L. If raising of the highway occurs at the access to properties of private landowners, temporary work area easements would be required. Operation of the project would require perpetual and occasional flowage easements.	If raising of the highway occurs at the access to properties of private landowners, temporary work area easements would be required. Operation of the project would require perpetual and occasional flowage easements.	Approximately 0.88 acres would be needed for permanent and temporary construction easements from FP&L. If raising of the highway occurs at the access to properties of private landowners, temporary work area easements would be required. Operation of the project would require perpetual and occasional flowage easements.	If raising of the highway occurs at the access to properties of private landowners, temporary work area easements would be required. Operation of the project would require perpetual and occasional flowage easements.

### 5.3 Geology and Soils

Although construction of the project involves the movement of soils, driving of piles, and making shallow excavations into the limestone bedrock, there would be no effect on geological conditions or soils along the Tamiami Trail from the No-Action Alternative and only a small local effect from the Action Alternatives.

### 5.4 Surface Waters

**No-Action Alternative.** The No-Action Alternative would maintain the existing capacity for conveying water from the L-29 Canal, under the Tamiami Trail, to ENP without causing deterioration of the roadway. The existing culvert system (19 culvert sets), which extends along the length of the Tamiami Trail in the project area (*Figure 5-1*) would continue to provide a general equalization of flows to ENP. No structures would be placed in the L-29 Canal or adversely affect its ability to provide conveyance and equalization of flows from the L-29 Canal into ENP. Channel dimensions would not decrease. The stage elevation constraint in the L-29 Canal would remain at 7.5 feet and the existing culverts would remain capable of conveying a peak flow of 1,250 cubic feet per second.

#### **Action Alternatives.**

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** A one-mile eastern bridge would be located between the Radio One communications tower and structure S-334. The bridge would be constructed outside the FDOT right-of-way, 40 feet south of the existing road. Most of the land on which the bridge would be located is federally owned land that is part of ENP; the remainder is owned by Florida Power and Light (FPL). All vegetation and soil would be removed beneath the bridge to facilitate water flows. The existing highway would require reconstruction at either end of the bridge to provide a transition from the existing alignment to the bridge. After completion of bridge construction, the unneeded portion of the highway embankment would be removed. This modification to the hydraulic conveyance system, coupled with the 8.0-foot stage elevation in the L-29 Canal, would be capable of a peak flow of 1,577 cubic feet per second, an increase in peak flow of 327 cubic feet per second over the no action alternative. The average annual flow would increase by 35 percent.

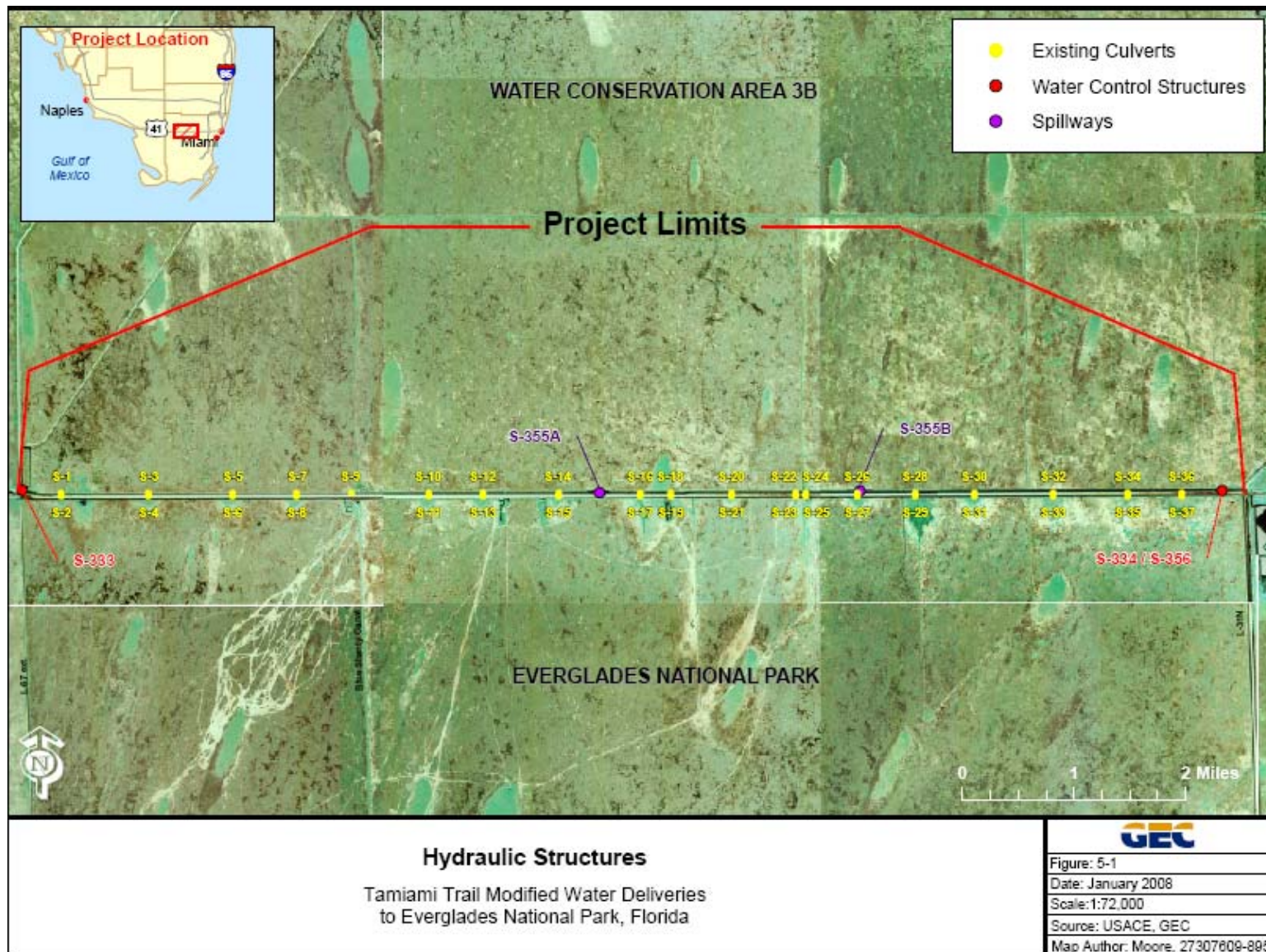


FIGURE 5-1: HYDRAULIC STRUCTURES



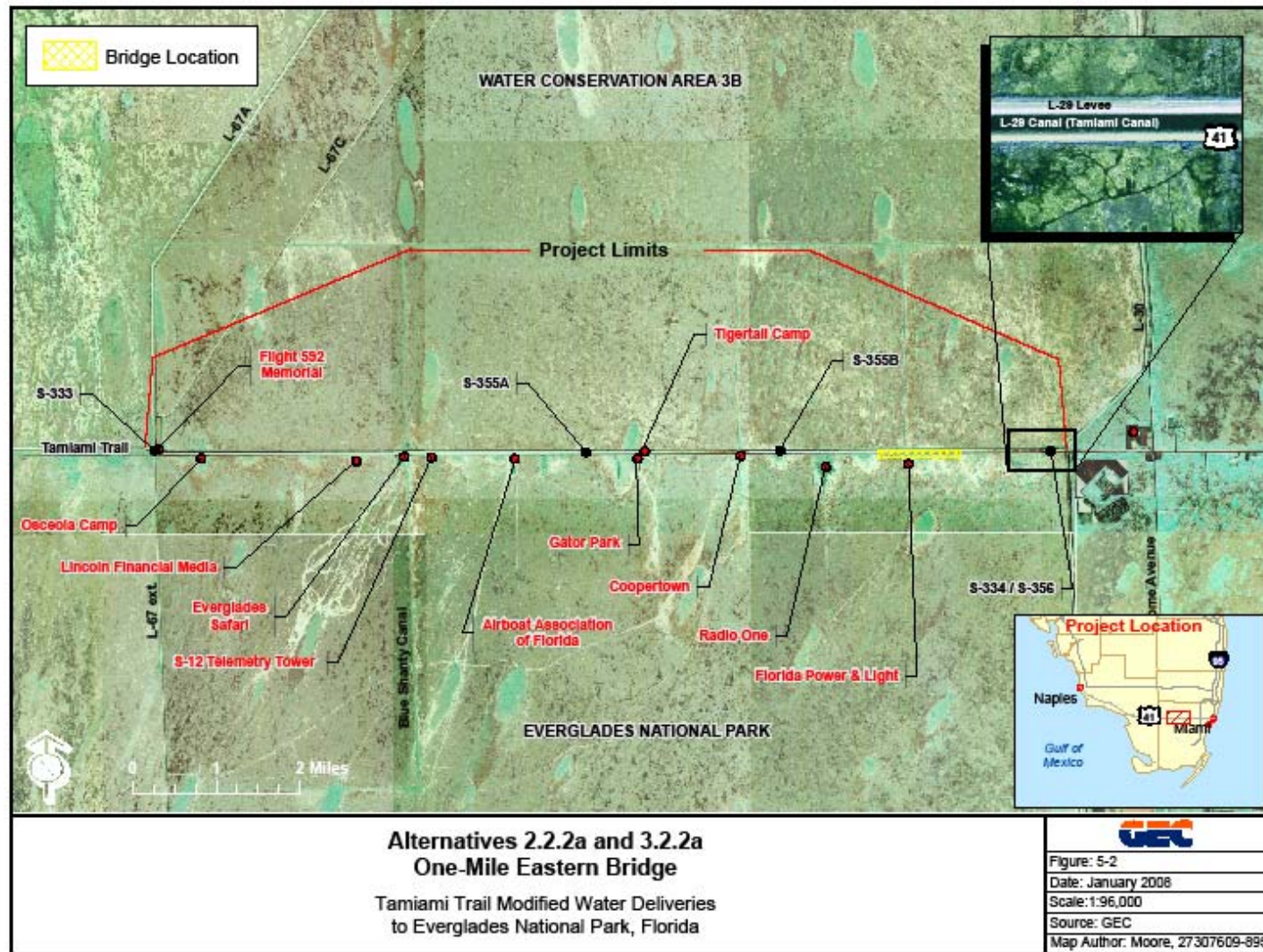
**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** By raising the stage constraint from 8.0 to 8.5 feet, the eastern bridge would be capable of conveying a peak flow of 1,848 cubic feet per second. This would provide an increase in peak flow of 598 cubic feet per second and a 47 percent increase in average flow over the no action condition.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Features of the bridge and its capability to convey surface waters would be the same as those of the eastern bridge with a stage constraint of 8.5 feet.

## **5.5 Water Quality**

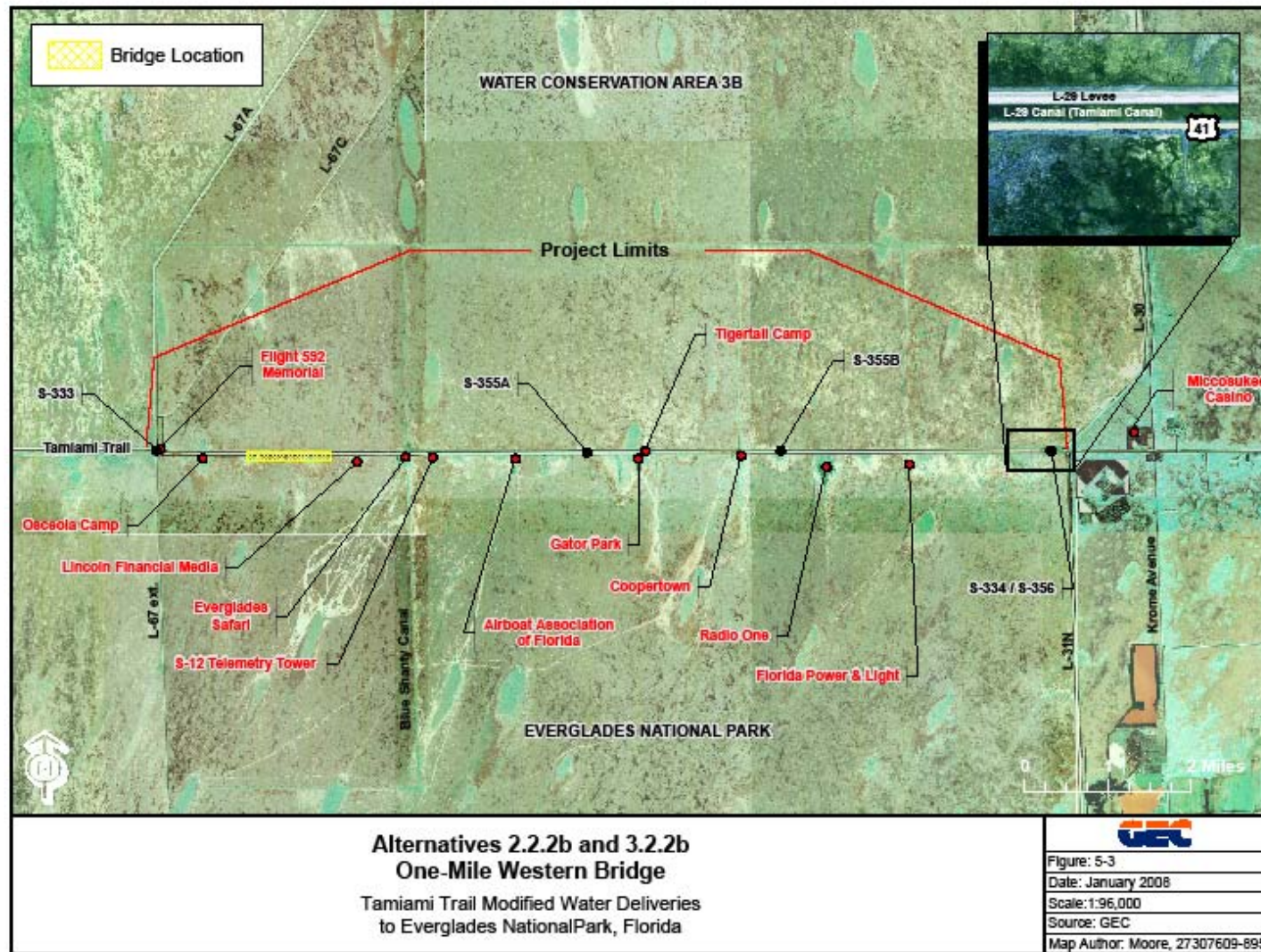
**No-Action Alternative.** The No-Action Alternative would have no effect on water quality.

**Alternative 2.2.2a. Raising the Road and Adding a 1-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** Construction would result in localized, short-term increases in concentrations of suspended solids and turbidity. Following completion of construction, turbidity and suspended solids concentrations are expected to return to existing conditions. BMPs would be implemented following coordination with DOI and FDEP. This alternative would include the construction of a water quality treatment system to collect and treat stormwater runoff from the bridge prior to its release into ENP. Therefore, this alternative could provide an incremental benefit to long-term water quality by treating a one-mile section of highway runoff.



**FIGURE 5-2: ALTERNATIVES 2.2.2A & 3.2.2A ONE-MILE EASTERN BRIDGE**





**FIGURE 5-3: ALTERNATIVES 2.2.2B & 3.2.2B ONE-MILE WESTERN BRIDGE**

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** As with the eastern bridge, construction would result in localized short-term increases in suspended solids and turbidity. BMPs for controlling turbidity would be fully coordinated with DOI and FDEP prior to implementation. This alternative would also include a water quality treatment system to collect and treat stormwater runoff from the bridge prior to its release into ENP, which would benefit water quality in the long term.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** The effects of this alternative on water quality would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** The effects of this alternative on water quality would be the same as those of Alternative 2.2.2a.

## 5.6 Hazardous, Toxic and Radioactive Waste

**No-Action Alternative.** The No-Action Alternative would neither affect nor be affected by HTRW.

**Action Alternatives.** None of the action alternatives would affect or be affected by HTRW. If contaminants are found during project construction, a safety zone would be established around the contaminated site, and the site would be remediated before construction could resume.

## 5.7 Special Environmental Resources

### 5.7.1 Everglades National Park

**Water Deliveries to Everglades National Park.** *Table 5-2* summarizes some of the changes to water deliveries to ENP provided by alternatives.

**TABLE 5-2: WATER DELIVERIES TO EVERGLADES NATIONAL PARK**

Alternative	Average Annual Volume		Peak Flow		Potential Hydrologic Connectivity of WCA-3B and NESS (% tot length)
	kacre-ft/yr	% Increase	cfs	% Increase	
<b>No-Action</b>	177	0%	1,250	0%	0.0
<b>2.2.2a</b>	274	55%	1,577	26%	9.0
<b>2.2.2b</b>	274	55%	1,577	26%	9.0
<b>3.2.2a</b>	340	92%	1,848	47%	9.0
<b>3.2.2b</b>	340	92%	1,848	47%	9.0

**No-Action Alternative.** The No-Action Alternative would maintain the existing hydraulic conveyance of flows from the L-29 Canal to ENP. While no adverse direct impacts would result from the No-Action Alternative, no benefits from increased flows would be realized.

### **Action Alternatives**

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** A one-mile eastern bridge could increase average annual flows by about 55 percent; peak flows could increase by about 26 percent. One mile of connectivity would be provided between ENP and the L-29 Canal, which with the potential degradation of the L-29 Levee, would enable hydrologic connectivity between WCA-3B and NESRS. There would be net loss of 15 acres of wetlands near the existing roadway within ENP. The permanent conversion from mixed exotic and native vegetation to a bridge and its approaches would allow for the significant benefits of additional water provided to thousands of acres within ENP.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Effects of a western bridge would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** With a stage constraint of 8.5 feet the eastern bridge would be capable of increasing annual flows by 92 percent and peak flows by 47 percent. Other effects would be the same as for Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Effects of a western bridge would be the same as those of Alternative 3.2.2a.

### **5.7.2 Parklands**

This section examines the extent of ENP-owned land that would be affected by the project. Because a bridge would be located primarily on ENP lands 40 feet to the south of the existing highway, new construction would be necessary to provide transitions from the existing highway alignment to the bridge. These transitional areas to access the bridge would be constructed on ENP property, resulting in a permanent loss through conversion to highway embankment.

A temporary wetland loss would occur in the 50-foot construction easement on ENP south of a bridge. Vegetation in this area would be removed to facilitate access by equipment. After bridge construction had been completed, the site would be restored.

**No-Action Alternative.** Existing conditions would be maintained. No conversion of parklands would take place.

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** The eastern bridge would result in a permanent loss of approximately 8.5 acres of parkland that would be lost under the bridge and incorporated into the two portions of the highway that transition to the bridge. Additionally, construction easements would temporarily affect about 6.3 acres of parkland.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Because a construction footprint for the western bridge has not been prepared, parklands required for the project were estimated with the assumption that all affected land is within ENP. The western bridge would result in the permanent loss of approximately 9.0 acres of parkland that would be lost under the bridge and incorporated into the portions of the highway that transition to the bridge. The construction easements would temporarily affect about 6.7 acres.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** Effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Effects would be the same as those of Alternative 3.2.2b.

### 5.7.3 Biological Communities

**Habitat Units.** Engineers, hydrologists, and biologists from six agencies (SFWMD, ENP, FWS, FWC, FDEP, and USACE) collaborated in November 2007 to identify hydrologic and ecological conditions that would occur with alternative lengths and locations of conveyance (equal to bridge length and location) of water under Tamiami Trail. The goal was to evaluate and compare quantitative benefits for each alternative. Ten performance measures were developed and placed into four groups for convenience of evaluation:

1. Restore Water Deliveries to ENP
  - A. Average annual flow volumes
  - B. Potential connectivity of WCA-3B Marsh and NESRS as percent of total project length
  - C. One in ten year maximum discharge
2. Restore Ridge and Slough Processes
  - A. Number of sloughs crossed by bridges

- B. Difference between average velocity in marsh and average velocity at road
- C. Flows into NESRS provided via bridge
- 3. Restore Vegetative Communities
  - A. Number of days water depth > 2 feet during wet season peak
  - B. Number of days water depth > 3 feet during wet season peak
  - C. Average water depth during wet season peak
- 4. Restore Fish and Wildlife Resources
  - A. Reduction in wildlife mortality

All environmental outputs were calculated on an average annual basis to account for the fact that several years may be required before full attainment of the functional capacities is realized. Results of the analysis are presented in **Table 5-3**. More information about the benefits analysis can be found in Section 4.2.4.

**TABLE 5-3: RESULTS OF THE BENEFITS ANALYSIS EXPRESSED IN HABITAT UNITS**

Alternative	Total Habitat Units	Average Annual Lift (HU)
No-Action	9,103	0
2.2.2a Raising the Road and Adding a 1-Mile Eastern Bridge (8-ft Constraint)	18,108	8,559
2.2.2b Raising the Road and Adding a 1-Mile Western Bridge (8-ft Constraint)	18,733	9,154
3.2.2a Raising the Road and Adding a 1-Mile Eastern Bridge (8.5-ft Constraint)	22,851	13,109
3.2.2b Raising the Road and Adding a 1-Mile Western Bridge (8.5-ft Constraint)	23,477	13,705

**Ecological Connectivity.** In the short term, the project has a potential of increasing the aquatic habitat connectivity between the L-29 Canal and ENP. This is considered an undesirable effect because of consequences such as facilitating the spread of non-native species into ENP. The project offers a long-term potential for enabling additional connectivity between ENP and upstream wetlands, which could be realized if the L-29 Levee is removed and the L-29 Canal filled under future projects.

**No-Action Alternative.** Biological community structure has become affected by the loss of pre-C&SF hydroperiods and a general reduction in water levels and flows in the Everglades. The No-Action Alternative would maintain existing

water levels and flows, prolonging the existing structure of biological communities. No increase in ecological connectivity would be realized.

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge(Stage Constraint of 8.0 Feet).** The bridge would provide an ecological connectivity of one mile.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** The bridge would provide an ecological connectivity of one mile.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** The bridge would provide an ecological connectivity of one mile.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** The bridge would provide an ecological connectivity of one mile.

#### **5.7.4 Wetlands**

To determine the number of acres and types of vegetated wetlands affected by the project, Geographic Information Systems (GIS) technology was used by ENP to compare the construction footprint of the alternatives to a land use database. **Table 5-4** shows the land uses and number of acres impacted by each of the alternatives.

The additional conveyance and water distribution associated with this project would enable the restoration of many thousands of acres of wetlands of NESRS within ENP, thereby offsetting wetland losses. Wetland habitats would be improved through the partial restoration of deep sloughs in NESRS and the promotion of sheetflow downstream of the bridges and culverts. Wetland area would be reestablished upstream of the bridge where the highway embankment would be removed.



**TABLE 5-4: LAND USE IMPACTS RESULTING FROM ALTERNATIVE ACTIONS**

Description	Alternative												
	No Action	2.2.2a			2.2.2b <sup>1</sup>			3.2.2a			3.2.2b		
		Permanent Construction Easement	Temporary Construction Easement	Wetlands Created by Embankment Removal	Permanent Construction Easement	Temporary Construction Easement	Wetlands Created by Embankment Removal	Permanent Construction Easement	Temporary Construction Easement	Wetlands Created by Embankment Removal	Permanent Construction Easement	Temporary Construction Easement	Wetlands Created by Embankment Removal
Graminoid Wetlands	--	0.61	3.57	N/A	5.53	4.15	N/A	0.61	3.57	N/A	5.53	4.15	N/A
Forested Wetlands	--	1.38	2.72	N/A	--	--	N/A	1.38	2.72	N/A	--	--	N/A
Mixed Forest & Graminoid Wetlands	--	--	0.31	N/A	2.95	2.24	N/A	--	0.31	N/A	2.95	2.24	N/A
Uplands	--	6.67	--	N/A	0.43	0.33	N/A	6.67	--	N/A	0.43	0.33	N/A
Upland Forest	--	--	0.13	N/A	--	--	N/A	--	0.13	N/A	--	--	N/A
Open Water	--	0.3	--	N/A	0.04	--	N/A	0.3	--	N/A	0.04	--	N/A
<b>TOTAL ACRES</b>	0.00	8.96	6.73	8.5	8.95	6.72	8.5	8.96	6.73	8.5	8.95	6.72	8.5
<b>TOTAL WETLAND ACRES</b>	--	2.29	6.60	8.5	8.95	6.72	8.5	2.29	6.60	8.5	8.95	6.72	8.5

<sup>1</sup> Because no engineering footprints exists for alternatives 2.2.2b, and 3.2.2b, acreages are estimated

**No-Action Alternative.** Under the No-Action Alternative, no impacts to wetlands would occur.

### **Action Alternatives**

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** This alternative would result in both permanent and temporary losses in vegetated wetlands. The proposed bridge would be located 40 feet south of the existing highway alignment. Access to the bridge would require constructing transitions from the existing highway alignment 40 feet to the south to intersect the bridge. A permanent loss of wetlands would occur from constructing the transitions. Wetlands under the bridge would be permanently lost by conversion to open water. The area would be cleared of soil and vegetation to promote the flow of water. Shading by the bridge would prevent the reestablishment of wetlands. A total of 2.29 acres of wetlands would be lost (*Table 5-4*).

A 50-foot-wide construction easement needed for the operation of cranes and other heavy equipment to construct the bridge would create a temporary loss of wetland function. Vegetation within this area would be removed to facilitate access by equipment. After bridge construction has been completed, the sites would be returned to wetlands. Approximately 6.6 acres of wetlands would be temporarily impacted (*Table 5-4*).

The existing highway embankment would be removed from the flow-way created by the bridge. The area would be cleared of soil and returned to the elevation of the surrounding wetlands. It is expected that approximately 8.5 acres of wetlands would be restored by this action.

This alternative would result in the long-term improvement in the quality of over 63,000 acres of wetlands in ENP.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Effects of the western bridge would be similar to those of the eastern bridge. Because no construction footprint of the western bridge has been completed, wetland acreages in *Table 5-4* for this alternative are estimates based on the Florida Land Use, Cover, and Forms Classification System (FLUCCS) data (FDOT, 1999) for the general area where the bridge would be located. FLUCCS codes used for the analysis were modified by the SFWMD in 2002. It is assumed that the construction footprint would be the same as that of the eastern bridge. Transitions to the bridge and bridge construction would result in a permanent loss of about 8.95 acres of wetlands. An estimated 6.72 acres would be temporarily lost. Approximately 8.5 acres of wetlands would be

restored through the removal of the highway embankment from the bridge flow-way. Approximately six acres of wetlands used for a bridge constructed easement would be temporarily impacted.

As with the eastern bridge, this alternative would result in the long-term improvement in the quality of over 63,000 acres of wetlands in ENP.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** Effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Effects would be the same as those of Alternative 2.2.2b.

### 5.7.5 Protected Species

The 2005 Fish and Wildlife Coordination Act Report (FWCAR) referenced six threatened or endangered species in the project area: CSSS, eastern indigo snake, Florida panther, snail kite, West Indian manatee, and wood stork. FWS and the FWC also identified the Frog City wading bird colony as potentially requiring protective measures during construction.

**Cape Sable Seaside Sparrow.** A federally endangered species, the CSSS is currently being protected under the Interim Operating Plan (IOP) as described in the December 2006 IOP FSEIS. As part of the FWS 1999 Biological Opinion on the project, Reasonable and Prudent Alternatives (RPAs) were developed to “preclude jeopardy” to the CSSS. The December 2006 IOP FSEIS, accompanied by a FWS Biological Opinion of November 17, 2006, evaluated additional reasonable and prudent alternatives and Action Alternatives for water management actions to avoid jeopardy to the CSSS. All alternatives considered in this LRR-EA would be capable of passing sufficient flow through their respective hydraulic openings to satisfy the RPAs of the 1999 and 2006 Biological Opinions for the CSSS. The closest occupied Cape Sable seaside sparrow nest lies 10 miles south of the project area. Construction activities would have no effect on this species. There is no designated Critical Habitat located within the project area, so none would be affected. It is concluded that the project may affect, but is not likely to adversely affect the Cape Sable seaside sparrow.

**Eastern Indigo Snake.** This species may be in the project area, although there are no known sightings. Because it could potentially be in the area affected by construction activities, the 2005 FWCAR requested the implementation of *Standard Protection Measures for the Eastern Indigo Snake* during construction. USACE would include the “Standard

Construction Precautions for the Indigo Snake” in the project design. It is concluded that the project may affect, but is not likely to adversely affect the Eastern indigo snake.

**Florida Panther.** Telemetry data from radio-collared panthers between 1991 and 2000 indicates there were no panthers present in the vicinity of Tamiami Trail. In 2001, collared panther #85 ranged to within about one-half mile south of Tamiami Trail. That panther died four years ago and no other panthers are known to be in the area (email pers. com., Sonny Bass, 8/2/05). The FWS determined that formal consultation under Section 7 of the Endangered Species Act would be necessary to assess the effects of habitat loss. Under the recent panther consultation protocols, any loss of habitat greater than five acres in the primary habitat zone must undergo formal consultation. The primary habitat zone for the panther extends north through NESRS to the southern edge of Tamiami Trail. A linear strip of native and exotic woody vegetation would be removed along the highway for construction of the transition roadways and the bridge. The USFWS considers this to be low quality potential panther habitat due to proximity of the highway and the infestation of exotic vegetation. The project may provide some protection for any panther that might wander north in the future by providing safe passage across the highway under the two bridges. The USACE has agreed to compensate for the loss of panther habitat through the preservation and restoration of land located on the western side of the 8.5 Square Mile Area (SMA), which is part of the MWD Project. It is concluded that the project may affect, but is not likely to adversely affect the Florida panther.

**Everglade Snail Kite.** Potential effects on the snail kite would be a result of construction activities during the 36 months it would take to complete the project. Based on nesting data from 2000 to 2004, the closest nests to Tamiami trail that have been recorded to date are 500 feet from the road (2000) and 1,800 feet (2004). Because the closest known snail kite nest is a considerable distance from the project area, no specific precautions seem appropriate at this time. The FWS and the Florida Fish and Wildlife Conservation Commission monitor snail kite nesting and would notify the USACE if new information would warrant a change. There is no designated critical habitat located within the project area, so none would be affected. It is concluded that the project may affect, but is not likely to adversely affect the Everglade snail kite.

**West Indian Manatee.** For the period of record of over 20 years, there has been only one record of a manatee utilizing the L-29 Canal adjacent to Tamiami Trail. It is highly unlikely that a manatee would be encountered in the project area. However, the USACE has agreed to provide for manatee

protection procedures in its construction contracts. There would be no activities in the canal during construction. It is concluded that the project may affect, but is not likely to adversely affect the west Indian manatee.

**Wood Stork.** There are two nesting wood stork colonies located in the vicinity of Tamiami Trail: the Tamiami West Colony and the smaller Tamiami East Colony. The FWS has applied the *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Ogden 1990) to designate primary and secondary management zones for both colonies. The primary zone is the most critical area and must be managed according to recommended guidelines to insure the colony's survival. Restrictions in the secondary zone are needed to minimize disturbances that might impact the primary zone, and to protect essential areas outside of the primary zone. The FWS has designated the primary zone for the Tamiami West Colony as the distance of 1,300 feet extended in all directions from the core area of the colony; the secondary zone includes the area between the 1,300 and 2,500 foot radii. The primary zone of the Tamiami East Colony extends 1,000 feet from the center of the colony; the secondary zone is the area between 1,000 feet and 2,000 feet from the colony center.

The existing Tamiami Trail runs through about 3,700 feet of the primary zone and 2,050 feet of the secondary zone of the Tamiami West Colony. Approximately 3,000 feet of the highway lies in the secondary zone of the East Colony. Highway construction would occur within these respective zones. Alternatives 2.2.2b and 3.2.2b would not involve bridge or bridge approach construction within the protection zones. For Alternatives 2.2.2a and 3.2.2a, no bridge construction would occur within the wood stork protection zones, but approximately 1,200 feet of bridge approach road would fall within the Secondary Zone of the West Colony. The following FWS guidelines for the primary and secondary zones are quoted from the FWCAR accompanying the 2003 GRR/SEIS.

1. **Primary Zone:** From February (or onset of nesting activity) through the onset of the rainy season (or when the young have fledged), highway construction (e.g., heavy human/equipment activity, pile driving, blasting) should not be permitted in the reach of the highway affected by that alternative.
2. **Secondary Zone:** No unauthorized human activity (on foot, airboat, or off-road vehicle) should occur at any time of the year within the reach of highway affected by that alternative on the south side of the highway and particularly during the nesting season.
3. **Length of Restrictions:** These restrictions shall remain in effect during the construction phase of the Tamiami Trail Project.

4. **Qualified Observer:** Subject to the approval of the FWS and FWC, a qualified observer(s) shall be stationed onsite during the construction phase of the Tamiami Trail project. The observer shall monitor wood stork activity and shall notify FWS, FWC and the USACE if wood stork behavior is modified such that roosting, nest building, breeding, nesting, and/or fledging of young is disrupted or otherwise interfered with.
5. **Modification of Restrictions:** If new information becomes available concerning the wood stork colonies, the USACE, FWS and FWC should immediately contact each other to determine what modifications, if any, are warranted.

The USACE would manage construction activities within the protection zones according to the USFWS “Draft Supplemental Habitat Management Guidelines for the Wood Stork in the South Florida Ecological Services Consultation Area.” By so doing, it is concluded that the project may affect, but is not likely to adversely affect the wood stork.

The Frog City rookery, which supports nesting by tricolored herons and great egrets, is located in WCA-3B close to the L-29 Levee approximately one-quarter mile west of the Tigertail Camp. Because all alternatives would be located south of the L-29 Levee/Canal, FWS and FWC did not recommend that any buffer zone restrictions be applied to the Frog City colony. The colony is protected from construction noise by the approximately 20-foot-high L-29 Levee; the wading birds nesting at this colony have acclimated to continuous highway traffic and noise. Therefore, no adverse impacts to the rookery are anticipated.

**Other Protected Species.** The Frog City rookery, which supports nesting by tricolored herons and great egrets, is located in WCA-3B close to the L-29 Levee approximately one-quarter mile west of the Tigertail Camp. Because all alternatives would be located south of the L-29 Levee/Canal, FWS and FWC did not recommend that any buffer zone restrictions be applied to the Frog City colony. The colony is protected from construction noise by the approximately 20-foot-high L-29 Levee; the wading birds nesting at this colony have acclimated to continuous highway traffic and noise. Therefore, no adverse impacts to the rookery are anticipated.

Because construction activities would be restricted to the immediate vicinity of the highway, no adverse effects on the American alligator, the Everglades mink, or any wading birds are expected.

### 5.7.6 Other Wildlife

The restoration of more natural hydropatterns in NESRS would increase the abundance and availability of forage fish during the crucial nesting period. Improved foraging would, in turn, improve nesting success. Other effects of the project would include the potential for decreasing wildlife mortality on the highway.

**No-Action Alternative.** The No-Action Alternative would maintain the existing effects of the Tamiami Trail on hydropatterns, wading birds, and other wildlife. The amount of wildlife mortality on Tamiami Trail would be unchanged.

### Action Alternatives

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet.** A one-mile conveyance would aid in the restoration of hydropatterns in NESS, thereby benefiting wading birds.

Although there are no specific provisions made to reduce wildlife mortality, the bridge spans are anticipated to provide some reduction in mortality of wildlife crossing the Tamiami Trail, particularly at the eastern bridge where a wildlife mortality survey revealed the highest incidence of mortality along the project (47 percent of deaths) (USFWS, 2003). Bridging a one-mile section of the 11-mile-long Tamiami Trail would reduce the opportunity for wildlife mortality by about nine percent.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet.** Similar to the eastern bridge alternative, hydropatterns and wading birds would benefit from a one-mile-wide conveyance.

The bridge spans are anticipated to provide some reduction in mortality of wildlife crossing the Tamiami Trail. Small animals would be able to move north or south in the bridged area without the need to cross a highway. Although the wildlife mortality survey (USFWS, 2003) indicated that the highest incidence of mortality was at the eastern portion of the project area, because the eastern bridge and the western bridge are the same dimensions, this alternative would offer the same reduction in opportunity for wildlife mortality (about nine percent) as an eastern bridge.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** Improvements to habitat quality resulting from a stage constraint of 8.5 feet would provide incremental

benefits to wildlife over those of Alternative 2.2.2a. Otherwise, the effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Improvements to habitat quality resulting from a stage constraint of 8.5 feet would provide incremental benefits to wildlife over those of Alternative 2.2.2b. Otherwise, the effects would be the same as those of Alternative 2.2.2b.

## 5.8 Air Quality

**No-Action Alternative.** The No-Action Alternative would result in no adverse effect on air quality.

**Action Alternatives.** Every federally funded project must be consistent with state plans for implementing the provisions of the Clean Air Act Amendments (State Implementation Plans). This project is in conformance with the State Implementation Plan and Clean Air Act Section 176 because it is not located within a National Ambient Air Quality Standards (NAAQS) non-attainment area and it would not result in violations of the NAAQS. Emissions associated with this alternative would be largely generated from heavy machinery operating for short periods. Construction activities would cause minor short-term air quality impacts in the form of fugitive dust or airborne particulate matter from earthwork. The area is rural and the existing air quality is good to moderate, additional short-term loadings of exhaust from internal-combustion engine gases would not measurably impact the quality of the air.

## 5.9 Transportation

**No-Action Alternative.** The No-Action Alternative would result in no adverse effect on transportation.

**Action Alternatives.** Implementation of the project would not increase or decrease traffic on the Tamiami Trail under any alternative. Construction associated with raising of the roadway would reduce the undulations and cracks in the highway surface and improve the drivability of the road. During construction of the project, traffic may be delayed in construction zones, particularly when it is necessary to temporarily close one lane of the highway. Under these situations, signage, signals, and other appropriate traffic control measures would be utilized to ensure safety.

The highway would remain available for evacuation during hurricane season; improvements made to the highway would improve safe travel of motorists during future evacuations.



Under the Action Alternatives, Tamiami Trail itself would be raised and resurfaced. Additionally, sections of the road would be bridged. Alternatives 2.2.2a and 3.2.2a would involve constructing a one-mile eastern bridge between Radio One and structure S-334 (*Figure 5-2*). The bridge would be constructed outside the FDOT right-of-way, 40 feet south of the existing road. The existing highway would require reconstruction at either end of the bridge to provide a transition from the existing alignment to the bridge. After completion of bridge construction, the unneeded portion of the highway embankment would be removed. Alternative 3.2.2b would involve building a 1-mile western bridge (*Figure 5-3*). Features of the bridge and transitions would be the same as those of the eastern bridge.

## 5.9 Public Recreation

**No-Action Alternative.** No adverse impacts to non-commercial recreation (e.g., private airboating, fishing, wildlife viewing) would result. Access to boat ramps via S-333 and S-334 would not be affected. No effect on bank fishing access to the north bank of the L-29 Canal is anticipated.

### Action Alternatives

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** Bank fishing from the Tamiami Trail would not be available at construction sites during the construction period. Although the use of shoulders for temporary lanes would preclude parking on roadsides in the construction area, a method of "rolling construction" would be employed, and impacts from construction would be localized. After the completion of construction, bank fishing from the roadway in the L-29 Canal at culvert outfalls could resume fully. Because the roadway embankment would be removed from the bridge location, there would be a net loss of bank fishing opportunity. Bank fishing losses at the bridge locations on the south side of the highway would be more than compensated for by the north side of the canal, which would not be impacted by the project and which would provide a safer location away from traffic. However, access to the north side of the canal via the unpaved road is not as convenient as the paved highway. On the south side of the highway, only culvert fishing is possible because there is no other open water. These locations would be decreased where the bridge replaces culverts.

No effects on boat ramps or non-commercial airboating and related activities would occur.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Except for differences in location,

Effects of this alternative on public recreation are the same as those of the eastern bridge.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2b.

## 5.10 Cultural Resources

**No-Action Alternative.** The No-Action Alternative would not adversely affect cultural resources.

**Action Alternatives.** All four action alternatives would involve modifications to the Tamiami Trail and associated Tamiami Canal. These historic structures would be affected by the project.

Five cultural resources have been recorded within the Tamiami Trail Modified Waters to the ENP-GRR/SEIS project area; four being eligible or potentially eligible to the National Register of Historic Places. It has been determined two, 8DA6765 (Tamiami Trail), and 8DA6766 (Tamiami Canal) would be adversely affected by proposed Alternative 2.2.2a. A draft Memorandum of Agreement (MOA) has proposed a kiosk be constructed in an appropriate area, showing the history of the area. Consultation with the Advisory Counsel, ENP, federally recognized Native American Tribes, FDOT, SHPO, SFWMD and other interested parties, addressing the MOA is ongoing. The consultation with all parties would continue until the implementing regulations for Section 106 of the National Historic Preservation Act (36CFR800) are met.

Adverse effects to the Tamiami Trail and Tamiami Canal would be mitigated by appropriate measures identified in a MOA with the Florida SHPO.

As the anticipated stage increase resulting from implementation is 12 inches, the effects to archeological sites located within the Shark River Slough National Register Archeological District in ENP by rising waters should be negligible, as this is well below historic flood stage. However, as detailed topographic data are not available for all sites within the District, monitoring of these sites for erosion and cumulative effects from future restoration projects would be employed.

Should construction activities uncover any unanticipated archaeological finds, activity in the immediate area of the find would be stopped and the USACE notified. Construction would not continue until the site finds are evaluated by a professional archaeologist and the USACE provides a notice to proceed.

In the event that human remains are found during construction or maintenance activities, the provisions of *Chapter 872, Florida Statute (872.05)* would apply to the extent there exists a waiver of Federal sovereignty. *Chapter 872, Florida Statute* states:

*When human remains are encountered, all activity that might disturb the remains shall cease and may not resume until authorized by the District Medical Examiner (if the remains are less than 75 years old) or the State Archaeologist (if the remains are more than 75 years).*

If Native American remains are encountered within the boundary of ENP, provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) would apply.

### 5.11 Aesthetics

**No-Action Alternative.** The No-Action Alternative would have no effect on the aesthetics of the area.

### Action Alternatives

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** The removal of exotic vegetation on the southern side of the Tamiami Trail would be necessary for construction of the bridge and the highway transition to the bridge. Depending on how the bridge is constructed, it may improve the aesthetic quality of the area by offering motorists a view of the expanse of the Everglades within the project corridor.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** The effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway; Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2a.

## 5.12 Noise Environment

**No-Action Alternative.** No effects on the noise environment would be created by the No-Action Alternative.

### Action Alternatives

Noise modeling performed for the 2005 RGRR/SEIS concluded that the project would have little or no impact on the baseline, future without project, or future with project noise environment at sensitive receptor sites located at the Osceola and Tigertail camps. The model also predicted no noise impact on the Flight 592 Memorial.

Construction and vibration noise generated during project construction would cause temporary impacts through increased noise levels near the receptor sites. Noise emissions from construction equipment range generally from 70 dBA for pumps and portable equipment to approximately 95 dBA for tractors, graders, and other heavy equipment. Construction of bridge supports would entail the use of pile driving. There is a possibility that pile driving activity could cause disturbance to nearby rookeries.

Avoidance and/or mitigation options would be developed during the project development and design phases and specified in construction plans in accordance with FDOT's *Standard Specifications for Road and Bridge Construction*.

## 5.13 Economic Effects of Construction Expenditures

**No-Action Alternative.** Without construction, no economic effects of construction expenditures would be realized.

**Action Alternatives.** Analyses in the 2005 RGRR/SEIS using the IMPLAN model concluded that the Action Alternatives would stimulate economic activity in the region through short-term construction activities. IMPLAN is a regional impact model that enables the evaluation of the economic impact of specific activities such as construction of public works projects. IMPLAN was used in this analysis to estimate the economic impacts of the proposed project as measured by expected increases in business activity, personal income, and employment. The IMPLAN model for Miami-Dade County indicated that each million dollars in construction expenditures would result in an expected increase of \$2.179 million in business sales, \$0.969 million in personal income, and 22 jobs within the local economy.

## 5.14 Effects on Businesses

### 5.14.1 Project Construction

**No-Action Alternative.** No effects on businesses of the area would occur.

**Action Alternatives.** Six privately owned commercial properties are present along the south side of Tamiami Trail.

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** Construction of the eastern bridge would require the acquisition of property rights from Florida Power and Light (FP&L). Efforts are currently underway to obtain a construction easement for FP&L lands that are needed for the construction of the bridge. Approximately 0.44 acres would be needed for a permanent construction easement and an additional 0.44 acres needed for a temporary construction easement. If raising of the highway occurs at the private landowner's property access, temporary work area easements would be required.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Because all property required for constructing the bridge for this alternative is owned by ENP, the acquisition of property rights from businesses is not needed. As with Alternative 2.2.2a, raising of the road may require work area easements from private landowners.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2a.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** The effects would be the same as those of Alternative 2.2.2b.

### 5.14.2 Flooding

**No-Action Alternative.** No impacts on businesses from flooding are anticipated.

**Action Alternatives.** It is anticipated that the federal government would acquire an interest in real estate from the private landowners that would be impacted not from the project's construction but rather the operation of the project. An analysis performed by the USACE on each affected tract and discussed in Appendix F, Real Estate Plan, concluded that perpetual and occasional flowage easements are required for Florida Power and Light, Radio One, Coopertown, Gator Park, Everglades Safari and Lincoln

Financial. DOI has the responsibility of acquiring any lands within the ENP boundary. The necessary interests in the Airboat Association of Florida would be acquired by USACE. The operations of the project would not be implemented until the necessary real estate interests have been acquired.

### **5.15 Effects on Ecotourism**

The airboat businesses on Tamiami Trail (Everglades Safari Park, Gator Park, and Coopertown Airboat Rides) draw a large influx of state, national, and international tourists to this area of ENP every year. The three operations cumulatively bring in approximately 300,000 visitors annually, with peak numbers occurring in the winter months. Business owners have reported that these numbers are growing steadily every year.

**No-Action Alternative.** No effects on ecotourism would result from the No-Action Alternative.

**Action Alternatives.** While the flow of traffic along the Tamiami Trail would be maintained, the inconveniences associated with highway and bridge construction may inhibit some tourists from visiting the businesses. Following the completion of construction and the improvement of the highway, visitations would be expected to rebound.

### **5.16 Airboat Association of Florida**

The Airboat Association of Florida is a non-profit conservation and outdoor recreation organization. The site is located approximately three and a half miles from the western end of the project corridor.

**No Action Alternative.** No effects on the Airboat Association of Florida would result from the No-Action Alternative.

**Action Alternatives.** All action alternatives include provisions for maintaining access to the site. During construction, the flow of traffic on the Tamiami Trail would be maintained; however, motorists accessing the site may experience temporary delays because of traffic control measures.

If raising of the highway occurs at the access to the Airboat Association, a temporary work area easement would be required.

### **5.17 Osceola and Tigertail Camps**

**No-Action Alternative.** The No-Action Alternative would not result in any effects on the Osceola or Tigertail camps.

**Action Alternatives.** Under all action alternatives, access to the Osceola and Tigertail Camps would be provided during construction and following

completion of the project. Short-term traffic disruptions and noise would be created by construction.

With an increase in the stage elevation of water levels in the L-29 Canal, there may be some minor inundation in low lying areas. In the case of the Tigertail Camp, the impact of flooding has already been addressed by raising the buildings and access. This is not yet the case for the Osceola Camp, which would be raised by USACE pending the outcome of negotiations between the Osceola Family and ENP regarding how to implement the mitigation measures.

### **5.18 Flight 592 Memorial**

No impacts on the Flight 592 Memorial are expected. Access to the site would be provided.

### **5.19 Environmental Justice and Impacts on Children**

#### **5.19.1 Environmental Justice**

An environmental justice analysis, which is intended to “analyze and address the distributional effects of environmental impacts on certain populations,” is included to address the requirements of Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The purpose of the EO is to prevent the impacts of an action from falling disproportionately on minority or low-income communities. A determination that disproportionate impacts are evident can be subjective and a matter of legal interpretation. Disproportionate impacts occur when, in order to minimize or avoid impacts to another community or environmental resource, the impacts are instead focused on the minority or low-income community.

Neither the No-Action alternative nor the Action Alternatives are expected to create long-term adverse impacts to the Tigertail or Osceola camps. Likewise, no disproportionate impacts are expected.

#### **5.19.2 Impacts on Children**

An investigation of environmental health risks and children is included to comply with the intent of EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. Data used to characterize the population within the affected area were obtained from local resources through interviews.

No increased environmental health or safety risks to children in either Tigertail or Osceola camps are expected.

## 5.20 Cumulative Impacts

Cumulative impacts are defined in 40 CFR 1508.7 as those impacts that result from:

*...the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

Cumulative environmental effects for the proposed project were assessed in accordance with guidance provided by the President's Council on Environmental Quality (CEQ). This guidance provides an 11-step process for identifying and evaluating cumulative effects in NEPA analyses, which may be further grouped into three general phases: Scoping, Describing the Affected Environment, and Determining the Environmental Consequences (CEQ, 1997, p. v).

### 5.20.1 Scoping

The CEQ provides the following summary guidance for the scoping phase of the cumulative effects analysis:

*In many ways, scoping is the key to analyzing cumulative effects; it provides the best opportunity for identifying important cumulative effects issues, setting appropriate boundaries for analysis, and identifying relevant past, present, and future actions. Scoping allows the NEPA practitioner to "count what counts" (CEQ, 1997, p. v).*

**Identifying the significant cumulative effects issues associated with the proposed action:** All impacts on affected resources can be called cumulative. However, according to CEQ guidance, "the role of the analyst is to narrow the focus of the cumulative effects analysis to important issues of national, regional, or local significance" (CEQ, 1997, p. 12). Based on public and agency scoping and review on previous NEPA documents for this project (Section 1.9), the following resources have been identified as target resources for the cumulative effects analysis:



- Hydrology, including hydrological conditions in Everglades National Park (ENP) and Northeast Shark River Slough (NESRS).
- Water quality
- ENP parklands
- Protected species
- Vegetated wetlands
- Recreation
- Airboat touring businesses

**Past, Present and Reasonably Foreseeable Actions Affecting Resources in the Study Area:** Historically, the Everglades was a shallow wetland conveying water from Lake Okeechobee to the southern coast of Florida. The original construction of the Tamiami Trail, completed in 1928, involved the bridging of deep-water sloughs in the ridge and slough habitat through which the highway was built. Although modifications to the flow of water were begun in the 1880s, the greatest influence on the alteration of flow was the C&SF Flood Control Project, which was originally authorized by Congress in 1948.

With the construction of WCA-3A, WCA-3B, and the extension of the L-67 Levee, flows to ENP became subject to water supply deficits during the dry season and excesses during the wet season, resulting in a decline in ecological quality. During this period, reduced flows allowed the bridges along Tamiami Trail to be replaced with sets of culverts.

Among the first Congressional actions to offset adverse impacts to ENP by improving the supply and distribution of water was the Flood Control Act of 1968, which provided for modifications to the C&SF Project through the implementation of the ENP-South Dade Conveyance System. Additional Congressional actions ensued, among which was the ENP Protection and Expansion Act of 1989, which provided for the MWD program, and the Water Resources Development Act of 2000, which established the Comprehensive Everglades Restoration Program (CERP). **Table 5-5** lists past, current, and anticipated future actions affecting the study area.

**TABLE 5-5: PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS  
AND PLANS AFFECTING THE STUDY AREA**

<b>Past Actions/Authorized Plans</b>	<b>Current Actions and Operating Plans</b>	<b>Reasonably Foreseeable Future Actions and Plans</b>
Construction of the Tamiami Trail (USACE)  Modified Water Deliveries to ENP (USACE, ENP)	Tamiami Trail Modifications LRR (this EA)  Conveyance between WCA-3A and WCA-3B (Conveyance and Seepage Control Project) (USACE/ENP)  Additional Lands—8.5 SMA (Willing Seller Land Acquisition Program) (FDEP); Land acquisition still in finalization for authorized Alt. 6D; Construction underway for 8.5 SMA levees, canals, and pump station (USACE)	CERP WCA-3 Decomartmentalization (USACE/SFWMD)  Complete Mod Water Deliveries, operate along with C-111 Project Features under CSOP (USACE)  Lower East Coast Regional Water Supply Plan—South Florida Ecosystem Restoration Plan (SFWMD)-Integrate 8.5 SMA into IOP operations of C&SF system, phase II
Experimental Program of Water Deliveries to ENP—Test Iterations 1-7 (Shark River Slough) (USACE)  CSSS 1999 Biological Opinion  Interim Structural and Operational Plan (ISOP) 2000-2001	IOP 2002 to Present	IOP envisions operating up to stage of 9.7 feet in L-29
ENP Protection and Expansion Act	ENP GMP (ENP) Determination of real estate actions.	Final real estate acquisitions and disposition in East Everglades including businesses along S. Tamiami Trail
MWD to ENP—Raising Tigertail Camp (USACE/ENP)	Real Estate Acquisition and Osceola Camp raising (ENP)	
C-111 Project	East Coast Buffer/Broward County Water Preserve Areas Project (SFWMD) awaiting authorization  Build-out of C-111 under 1999, 2002, 2006 Sparrow BO, IOP	Complete build-out of C-111 Impoundments and structural features with replacement of temporary structures by permanent. IOP to be replaced by Combined Structural and Operational Plan (CSOP) when C-111 and Mod Waters are complete.  If authorized in the next WRDA, the Broward County Water Preserve Areas project, (report approved in 2007) may be authorized in the next WRDA
	Lower East Coast Regional Water Supply Interim Plan (SFWMD)	IOP, IOP II then CSOP

Source: U.S. Army Corps of Engineers.

**Timeframe:** Considering the past, present, and future events affecting the study area, the temporal boundaries for the cumulative impact assessment were established as follows:

- Past-back to 1928, when construction of the Tamiami Trail was completed.
- Present-2008, when the USACE and DOI plan for work on the Tamiami Trail Modifications is to be initiated.
- Future-present to 2058, which is considered a reasonable period for assessment given the indefinite life of the project.

**Geographic Scope:** For purposes of cumulative impact assessment, the spatial boundary (scope of analysis) is considered to be the same as the boundary used in the Benefits Analysis (Appendix E). The area is defined by L-67 Extension on the west, Tamiami Trail on the north, and the L-31N and the 8.5 Square Mile Area (SMA) on the east. The southern limit is defined as an east-west line connecting the end of the L-67 Extension to 8.5 SMA. The total area is 63,195 acres.

#### **5.20.2 Describing the Affected Environment (Baseline Condition)**

This phase of the cumulative effects assessment involves characterizing the resources in terms of their response to change and capacity to withstand stress, characterizing the stresses affecting the resources, and defining the baseline condition for these resources. Descriptions of affected resources are summarized in Chapter 3.0 of this LRR/EA and in referenced documentation.

#### **5.20.3 Determining the Environmental Consequences**

One main goal of this cumulative effects assessment is to determine whether the sustainability of resources affected by the proposed project are adversely affected by other past, present, and reasonably foreseeable future actions. In simpler terms, the Tamiami Trail Modifications must impact a resource in order to combine with other actions for *cumulative impacts* on that resource.

Causal relationships are very difficult to determine when multiple actions and resources are involved (CEQ, 1997). However, upon considering the identified past, present, and reasonably foreseeable future actions, the following resources have been identified as having a potential to accumulate impacts from the proposed project and other actions.

**Hydrology.** Past effects on the hydrology of the Everglades by various projects are summarized in Chapter 3 of this LRR. The proposed project would not directly affect hydrology but would provide the opportunity for

future modifications in the hydrology of NESRS and ENP through the operational aspects of the Mod Waters program and CERP.

**Everglades National Park.** The primary source of water for the ENP comes from direct rainfall and accounts for approximately 70% of the total influx. The remaining 30% enters the ENP in the form of surface flow. Since 1985, the water delivery management schedule for ENP has followed the Rainfall Plan. The operational target for the managed deliveries under the Rainfall Plan is 45% delivered to Western Shark River Slough (WSRS) (via the S-12 structures) and 55% delivered to NESRS (via S-333, S-355A, and S-355B). The Rainfall Plan bases the amount and timing of water deliveries to SRS on recent rainfall and evapotranspiration to the north in WCA-3A. Weekly adjustments are made to delivery rates based on the previous week's flow rate and the rainfall and evapotranspiration data from the previous ten weeks. In addition to the Rainfall Plan component, a supplemental stage component is added based on the degree to which average water levels in WCA-3A exceed the regulation schedule. Under normal or dry conditions, this stage component is zero.

**Northeast Shark River Slough.** NESRS is a complex area located in the northeast corner of the ENP. It is currently the northern terminus of Shark River Slough, which is aligned from the northeast to southwest across the ENP. Tamiami Trail is the northern boundary, the L-31N Canal the eastern boundary, and the L-67 Extension Canal the western boundary of the area. Historically, the area would be characterized as wet the majority of the year, but regional developments have impacted fresh water routes into the area and the dry seasons can significantly reduce surface waters.

The NESRS is an important area with regard to water delivery, but it is a complex area. The average annual number of days of inundation in NESRS ranges from 1 to 60 days, to 240 to 300 days immediately adjacent to L-31N Canal, and to 330 to 365 days toward the west near the L-67 Extension Levee. In a dry year, the range is from 0 to 60 days to 240 to 300 days. In a wet year, such as 1995, the hydroperiod is in the maximum of 300 to 365 days of inundation per year. There is a significant difference between a dry year and a wet year. Average ponding depths generally range from 0.5 to 1.5 feet. For a wet year, depths are about twice the average. For a dry year, depths average from 0.5 to 1.0 foot.

The intent of on-going and foreseeable future projects is to increase flows to ENP and restore, to the extent practicable, the natural hydrology of the area. This LRR provides an incremental component of that restoration.

**Water Quality.** Effects of the proposed project on water quality consist of short-term localized elevations in suspended solids in conjunction with construction activities.

Water quality in the study area is significantly influenced by development. The C&SF project had led to significant changes in the landscape by opening large land tracts for urban development and agricultural uses, and by the construction of extensive drainage networks.

Natural drainage patterns in the region have been disrupted by the extensive array of levees and canals such that nonpoint source (stormwater) runoff and point sources of pollution (wastewater discharges) are now entering the system in many areas. Several pollutants of concern have been identified and include metals, pesticides, nutrients, biologicals, physical pollutants, and other various industrial constituents. Specifically, phosphorus and pesticides are considered the most important contributors to water quality degradation in the area.

In the central Everglades, phosphorus concentrations entering the ENP were lower in 1997 than the interim and long-term limits established by the 1992 Settlement Agreement in *United States v. South Florida Water Management District*, Case No. 88-1886-CIV-WMH (S.D.Fla.). While no significant trends in annual average mercury concentrations in water, sediment, or fish have been observed in recent years, mercury concentrations in fish tissue were high enough to warrant a no-consumption advisory for largemouth bass throughout most of the eastern two thirds of the ENP, and a recommendation of limited consumption for the southeast corner of the ENP.

The best water quality conditions in the ENP were found in the central Shark River Slough and along regions of the basin.

In addition to the proposed project, construction operations associated with other on-going and future projects would result in localized and temporary elevated levels of suspended solids and turbidity. However, because the flow rates through the Everglades are relatively low, there would be no effect on the sustainability of water through these actions.

Even though concentrations of pollutants in highway runoff may increase as traffic volumes increase from an estimated 5,200 vehicles per day in 2000 to an estimated 9,200 vehicles per day in 2020, there would be little effect on surrounding water quality or wetlands (USACE, 2003). The proposed project, as well as other on-going and future projects, is not expected to induce additional traffic. Construction of a bridge and the incorporation of storm

water collection and treatment facilities would provide an incremental reduction in the amount of potentially contaminated runoff entering ENP.

**Everglades National Park.** Direct effects of the proposed project on ENP include the conversion of parklands to transportation conveyances in the form of bridges and bridge approaches. Through providing the opportunity for increased flows the project offers the potential for improvement of ENP wetland habitats.

In combination with other reasonably foreseeable future projects, such as additional bridges, the proposed project would convert parklands to highway right-of-way. The quality of parklands is expected to improve as MWD and CERP projects offset some of the deterioration caused by past water projects in the Everglades.

**Protected Species.** It has been concluded that the proposed project may affect but is not likely to adversely affect any protected species. Species that may be affected are discussed in the following paragraphs.

Threatened and endangered species of the Everglades have been adversely affected by past actions that have resulted in habitat degradation and destruction and by such actions as the introduction of exotic species. Ongoing and future projects are expected to provide some degree of restoration to the habitats of protected species. Consultation under Section 7 of the Endangered Species Act will serve to control cumulative impacts on protected species from actions that involve Federal funding, permits, or direct Federal involvement.

**Cape Sable Seaside Sparrow.** In the 1930s, Cape Sable was the only known breeding range for the sparrow. Areas on Cape Sable that were occupied by Cape Sable seaside sparrows in the 1930s have experienced a shift in vegetative communities from freshwater vegetation to mangroves, bare mud flats, and salt-tolerant plants such as *Batis maritima* and *Borrchia frutescens*.

The hurricane of 1935 is believed to have initiated the succession of the plant community on Cape Sable from one dominated by freshwater plants to one dominated by salt tolerant plants. Sea level rise, reduced freshwater flows to the area resulting from upstream water management practices, and another hurricane in 1960 were also likely factors in this habitat change. As a result, the CSSS no longer use this area. The currently preferred nesting habitat of the CSSS appears to be a mixed marl prairie community that often includes muhly grass (*Muhlenbergia filipes*). These short-hydroperiod, mixed marl

prairies contain moderately dense, clumped grasses with open space permitting ground movements by the sparrow.

Sparrows tend to avoid tall, dense, sawgrass-dominated communities, spike rush (*Eleocharis*) marshes, extensive cattail (*Typha*) monocultures, long-hydroperiod wetlands with tall, dense vegetative cover, and sites supporting woody vegetation. The birds also avoid sites with permanent water cover. The suitability of short-hydroperiod, mixed marl prairie communities for the sparrow is driven by a combination of hydroperiod and periodic fires. Fires prevent hardwood species from invading these communities and prevent the accretion of dead plant material, both of which decrease the suitability of habitat for Cape Sable seaside sparrows. In the Taylor Slough area, sparrow numbers increased annually in areas that had been burned up to three years previously.

The proposed project would have no direct affect on the CSSS or its habitat. Because the proposed project would provide an opportunity for increased flows into ENP, thereby providing an opportunity for greater flexibility than is now present, it is possible that future operation and management of flows could enhance CSSS habitats.

**Snail Kite:** The principal threat to the snail kite is the loss or degradation of wetlands and littoral zones of lakes in central and south Florida. The C&SF Project encompasses 17,913 square miles (46,600 km<sup>2</sup>) from Orlando to Florida Bay and includes about 990 miles (1,600 km) each of canals and levees, 150 water control structures, and 16 major pump stations. This system has disrupted the volume, timing, direction, and velocity of freshwater flow. Drainage of Florida's interior wetlands has reduced the extent and quality of habitat for both the apple snail and the snail kite. Nearly half of the Everglades has been drained for agriculture and urban development. The Everglades Agricultural Area (EAA) alone eliminated 3,051 square miles (8,029 km<sup>2</sup>) of the original Everglades, and the urban areas in Miami-Dade, Broward and Palm Beach counties have also reduced the extent of habitat. North of ENP the remaining marsh has been dissected into five shallow impoundments, the WCAs. Although the major drainage works completed conversion of wetlands to agriculture in the EAA by about 1963, loss of wetlands continues to the present at a slower, but significant, rate.

Despite the cumulative effects of many decades of wetland development and water management practices, which have resulted in degradation of snail kite foraging habitat due to the loss of wet prairie communities and degradation of nesting habitat due to the loss of woody vegetation, snail kite numbers have exhibited an increasing trend over the past decade. The minor

increase in the chances of disturbance to nesting kites in the WCAs due to future tribal and hunting camp use would be a negligible incremental addition to the baseline adverse effects.

Depending on the alternative, the proposed project would fill a small amount of wetlands. However, it is unlikely that this loss would to have an effect on the apple snail or the snail kite. Because the proposed project would provide an opportunity for increased flows into ENP, future operation and management of flows could result in improved habitat quality of many tens of thousands of acres of wetlands.

**Florida Panther.** The Florida panther population may have numbered as many as 500 at the turn of the century. Historically, the panther was distributed from eastern Texas or western Louisiana and the lower Mississippi River valley east through the southeastern States in general, intergrading with other subspecies to the west and northwest. The first bounty on Florida panthers was passed in 1832, and another Florida law passed in 1887 authorized a payment of \$5.00 for panther scalps. Hunting, habitat loss, and reduced prey availability have led to the decline of this species since that time.

The State of Florida declared the panther a game species in 1950 and an endangered species in 1958. The population was estimated at 100 to 300 statewide in 1966. The Federal government listed panthers as endangered in 1967. The UFWS cited heavy hunting and trapping pressures, an inability to adapt to changes in the environment, and developmental pressures as the reasons for the decline of the panther. The Florida Panther Act, a State law enacted in 1978, made killing the panther a felony.

Depending on the alternative selected, the proposed project would fill a strip of marginal potential panther habitat. It is concluded that the project is unlikely to adversely affect the panther.

**Wood Stork.** The loss or degradation of wetlands in central and south Florida is one of the principal threats to the wood stork. Nearly half of the Everglades have been drained for agriculture and urban development. The EAA alone eliminated 802,900 ha of the original Everglades, and the urban areas in Miami-Dade, Broward and Palm Beach counties have contributed to the loss of spatial extent of wood stork habitat. ENP has preserved only about one-fifth of the original extent of the Everglades, and areas of remaining marsh outside of ENP have been dissected into impoundments of varying depths.



The C&SF Project encompasses 4,660,000 ha from Orlando to Florida Bay and included about 1,600 km each of canals and levees, 150 water control structures, and 16 major pump stations. This system has disrupted the volume, timing, and direction of fresh water flowing through the Everglades. The natural sheet flow pattern under which the Everglades evolved since about 5,000 years ago has not existed for about 75 years. Although major drainage works completed the conversion of wetlands to agriculture in the EAA by about 1963, loss of wetlands continues to the present at a slower, but significant rate. In the entire State of Florida between the mid- 1970s to the mid-1980s, 105,000 ha of wetlands (including marine and estuarine offshore habitats) were lost.

Depending on the alternative selected, the proposed project would result in the filling of a small amount of wetlands. However, because the proposed project would provide an opportunity for increased flows into ENP, future operation and management of flows could result in improved habitat quality of many tens of thousands of acres of wetlands. The application of management practices and observance of restrictions during construction operations in the primary and secondary zones of the eastern and western wood stork rookeries are not expected to adversely affect the nesting and rearing of young. The project is unlikely to have an adverse effect on the wood stork.

**Indigo Snake.** The indigo snake was listed as threatened in 1979 because of a loss of habitat associated with farming, construction, forestry, and other land use conversions, as well as over-collecting for the pet trade. In south Florida, the snake can be found in a variety of habitats, including wet prairies and mangrove swamps. Farther north, it can be found in pine-hardwood forest, mixed hardwood forest, creek bottoms, agricultural fields, and sandy habitats of the Florida scrub communities, typically in association with gopher tortoises.

This species may be in the project area, although there are no known sightings. Because it could potentially be in the area affected by construction activities, the 2005 FWCAR requested the implementation of *Standard Protection Measures for the Eastern Indigo Snake* during construction. USACE would include the “Standard Construction Precautions for the Indigo Snake” in the project design. It is concluded that the project may affect, but is not likely to adversely affect the Eastern indigo snake.

**Vegetated Wetlands.** Direct effects of the project on vegetated wetlands consist of filling wetlands and their conversion to bridge approaches. With the construction of the bridge, the existing highway embankment would be removed and allowed to revert to wetlands. By creating the potential for

increased flows to ENP, the project provides an opportunity for the improvement of the wetland communities to the south of the Tamiami Trail.

The Everglades ecosystem is characterized by the unique mosaic of freshwater wetland communities that dominates the landscape between Lake Okeechobee and Florida Bay. The Everglades has experienced dramatic impacts over the last century, with approximately one-half of the original wetlands being lost to urban and agricultural development. The remaining wetlands have largely been adversely affected by water management practices that have altered the natural Everglades hydrological regime.

The Everglades landscape is dominated by a complex of freshwater wetland communities that includes open water sloughs and marshes, dense grass- and sedge-dominated marshes, forested islands, and wet marl prairies. These communities generally occur along a hydrological gradient with the slough/open water marsh communities occupying the wettest areas (flooded more than nine months per year), followed by sawgrass marshes (flooded six to nine months per year), and wet marl prairie communities (flooded less than six months per year).

Alteration of the normal flow of freshwater through the Everglades has also contributed to conversions between community types, invasion by exotic species, and a general loss of community diversity and heterogeneity. In contrast to the vast extent of wetland communities, upland communities comprise a relatively small component of the Everglades landscape and are found in the many tree islands scattered throughout the region.

**Slough/Open Water Marsh.** The slough/open water marsh community occurs in the lowest, wettest areas of the Everglades. This community is a complex of open water marshes containing emergent, floating aquatic, and submerged aquatic vegetation components. Vegetative trends in ENP have included a substantial shift from the longer hydroperiod slough/open water marsh communities to shorter hydroperiod sawgrass marshes.

**Sawgrass Marsh.** Sawgrass marshes occurring on deep organic soils (>1 meter) form tall, dense, nearly monospecific stands, while those occurring on shallow organic soils (<1 meter) form sparse, short stands that contain additional herbaceous species. The adaptations of sawgrass to flooding, burning, and oligotrophic conditions contribute to its dominance of the Everglades vegetation. Sawgrass-dominated marshes once covered an estimated 300,000 acres of the Everglades. Approximately 70,000 acres of tall, monospecific sawgrass marsh was converted to agriculture in the EAA. Urban encroachment from the east and development within other portions of the Everglades has consumed an additional 125,000 hectares of sawgrass-

dominated communities. In addition, invasion of sawgrass marshes by exotic woody species has led to the conversion of some marsh communities to forested wetlands.

**Wet Marl Prairies.** Wet marl prairies occur on marl soils and exposed limestone and experience the shortest hydroperiods of the slough/marsh/prairie wetland complex. Marl prairie is a sparsely vegetated community that is typically dominated by muhly grass. Periphyton mats that grow loosely attached to the vegetation and exposed limestone also form an important component of this community. Marl prairies occur in the southern Everglades along the eastern and western periphery of Shark River Slough. Approximately 59,000 hectares of the eastern marl prairie has been lost to urban and agricultural encroachment. In addition, invasion of sawgrass marshes and wet prairies by exotic woody species has led to the conversion of some marsh communities to forested wetlands.

**Tree Islands.** Tree islands occur within the freshwater marshes on areas of slightly higher elevation relative to the surrounding marsh. The lower portions of tree islands are dominated by hydrophytic, evergreen, broad-leaved hardwoods. Tree islands typically have a dense shrub layer. Elevated areas on the upstream side of some tree islands may contain an upland, tropical hardwood hammock community dominated by species of West Indian origin. Portions of the WCAs have been flooded to the extent that many forested islands have lost all tropical hardwood hammock trees. Tree islands are considered an extremely important contributor to habitat heterogeneity and overall species diversity within the Everglades ecosystem.

**Conclusions.** The proposed project would convert various types of wetlands to highway right-of-way or clear those under bridge locations. However, because the proposed project would provide an opportunity for increased flows into ENP, future operation and management of flows could result in improved wetland quality of many tens of thousands of acres of wetlands within ENP.

As part of the restoration of flows to ENP, on-going and future projects are anticipated to provide partial restoration of the ridge and slough geomorphology of NESRS that past projects have altered. Overall cumulative impacts on wetland, upland, and aquatic habitats in ENP, while likely not a complete restoration of historic conditions, are anticipated to be improvements over existing conditions.

**Recreation.** Recreational opportunities are abundant in south Florida. In addition to the marine based recreation activities of the urbanized east coast, the ENP and WCAs provide high quality boating, fishing, hiking, and nature interpretation activities which annually attract many recreational visitors.

The ENP has been designated a World Heritage Site, an International Biosphere Reserve, and a Wetland of National Significance. In addition, 86 percent of the ENP is designated Wilderness under the Wilderness Act of 1964. The State of Florida has designated ENP an Outstanding Florida Water.

Past projects have involved the construction of canals, roads, and levees, which have provided recreational opportunities. Anticipated projects, as well as reasonably foreseeable future actions, may reduce or modify recreational opportunities through the filling of canals and the degradation of levees. Bank fishing along the Tamiami Trail on the south side of the L-29 Canal would be eliminated in the area of a bridge. Any additional future bridges would further reduce fishing from the highway right-of-way.

**Airboat Touring Businesses.** Effects of the proposed project on airboat touring businesses may include the creation of traffic delays in construction areas that could inhibit visitors. The proposed project would create a potential for the passage of higher flows in association with future projects, thereby increasing the potential for flooding of commercial properties. The Everglades Expansion Act provided authorization to ENP to acquire the properties and also provided ENP with the authorization to enter into concession contracts with business owners. ENP is currently preparing a General Management Plan to guide decisions, among which would be the addressing of airboat touring businesses.

#### **5.20.4 Magnitude and Significance of Cumulative Effects**

The primary goal of cumulative effects analysis is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and future actions. One way to analyze this is to determine the separate effects of past actions, present actions, the proposed action, and other future actions. Once each group of effects is determined, the effects can be calculated, keeping in mind that the effects of two or more actions are sometimes complex and not always additive. According to CEQ (1997) guidance, once effects are identified, a table can be used to itemize effects into categories of past, present, proposed, and future actions. ***Table 5-6*** shows the net cumulative effects of each resource.

**TABLE 5-6: SUMMARY OF CUMULATIVE EFFECTS**

<b>Resource</b>	<b>Past Actions</b>	<b>Present Actions</b>	<b>Proposed Action</b>	<b>Future Actions</b>	<b>Cumulative Effect</b>
Hydrology	Flood and water control projects have greatly altered the natural hydrology of the Everglades.	Federal and state agencies are coordinating on and implementing projects to improve Everglades hydrology.	Bridge construction alternatives would provide a potential for some hydrological restoration.	Additional MWD actions and CERP propose to restore hydrology to more natural conditions	Although it is unlikely that natural hydrologic conditions would be fully restored, improved hydrology would occur.
Water Quality	Water quality has been degraded from development and agriculture.	Efforts to improve water quality from agricultural areas are ongoing. State and federal projects in the Everglades would result in localized and temporary elevated levels of suspended solids and turbidity. However, because the flow rates through the Everglades are relatively low, there would be no effect on the sustainability of water through these actions.	Construction operations would result in localized and temporary elevated levels of turbidity and suspended solids. Highway runoff from bridges would be treated prior to discharge. The TTM project would not have an overall effect on water quality.	Aggressive actions by the State of Florida would decrease pollutant concentration and loadings to the Everglades.  If authorized in the next WRDA, the Broward County Water Preserve Areas project, (report approved in 2007) would reduce storm runoff deliveries to WCA 3 and improve water quality coming across into the Trail.	While anthropogenic effects on water quality are unlikely to be eliminated, water quality is expected to improve over existing and recent past conditions.
ENP Parklands	The ENP Protection and Expansion Act authorized the expansion of over 100,000 acres. Over 99 percent of these lands are now in federal ownership.	ENP is preparing a General Management Plan to guide decisions for long-range park management, including decisions regarding further land acquisitions.	Depending on the alternative selected, a small acreage of parklands would be lost to provide a bridge and bridge approaches.	Further modifications to Tamiami Trail are likely to require the conversion of additional parklands to roadways and bridges	Losses of parklands would likely be limited to modifications of the Tamiami Trail. However, additional bridges would improve the quality of remaining parklands.

Cape Sable Seaside Sparrow	The hurricane of 1935, sea level rise, reduced freshwater flows to the area resulting from upstream water management practices, and another hurricane in 1960 are believed to have altered succession of the plant community on Cape Sable from one dominated by freshwater plants to one dominated by salt tolerant plants. The currently preferred nesting habitat of the CSSS appears to be a mixed marl prairie community that often includes muhly grass.	Ongoing projects such as IOP have been implemented to maintain CSSS populations. The USFWS recovery plan is used as a management tool.	The proposed project would have no direct effect on the CSSS or its habitat. The proposed project would provide an opportunity for increased flows into ENP, thereby providing an opportunity for greater flexibility than is now present.	It is possible that future operation and management of flows could enhance CSSS habitats.	Habitat improvement, monitoring of populations and management through the recovery plan are anticipated to enable the survival of the CSSS.
Everglade Snail Kite	Drainage of Florida's interior wetlands, conversion of wetlands to agriculture, and urban development have reduced the extent and quality of habitat for the snail kite and its prey, the apple snail.	The population of the Everglade snail kite has stabilized since 1976 and apparently increased due in part to wet habitat conditions. While the kite was primarily restricted to an area south of Lake Okeechobee 20 years ago, it has reestablished itself in much of its historic range. Kites are now found breeding and feeding in the Kissimmee Chain of Lakes area and the marshes of the Upper	Depending on the alternative, the proposed project would fill a small amount of wetlands. However, it is unlikely that this loss would have an effect on the apple snail or the snail kite. The proposed project would provide an opportunity for increased flows into ENP that would improve the quality of habitat.	Future projects are expected to improve the operation and management of flows and improved habitat quality of many tens of thousands of acres of wetlands. The snail kite may also benefit from the Comprehensive Everglades Restoration Plan, which attempts to create a more natural water cycle.	Habitat improvement efforts through CERP are anticipated to allow snail kite populations to be maintained.

		St. Johns River. Annual snail kite surveys from 1969 to 1978 indicated population counts of 65 to 267 birds. In the 1990's, surveys produced counts of from 378 to 996 individuals.			
Florida Panther	<p>The panther population may have numbered as many as 500 at the turn of the century. The first bounty on Florida panthers was passed in 1832, and another Florida law passed in 1887 authorized a payment of \$5.00 for panther scalps. The State of Florida declared the panther a game species in 1950 and an endangered species in 1958. The Federal government listed panthers as endangered in 1967. The UFWS cited heavy hunting and trapping pressures, an inability to adapt to changes in the environment, and developmental pressures as the reasons for the decline of the panther. The Florida Panther Act, a State law enacted in 1978, made killing the panther a felony.</p>	<p>Many of the remaining panthers live in or near Big Cypress National Preserve and ENP. The NPS is cooperating with USFWS, the FFWCC, and other organizations for recovery of the panther. Efforts are centered on research, captive breeding, and public education. Radio-collaring of several panthers has shown what areas and habitat types they use. Other studies have identified white-tailed deer as their principal prey.</p>	<p>Depending on the alternative selected, the proposed project would fill a strip of marginal potential panther habitat. It is concluded that the project is unlikely to adversely affect the panther.</p>	<p>With the numbers so low and suitable habitat in south Florida so restricted, captive breeding and reestablishment in other areas would be crucial for reversing the population decline. Future projects associated with Everglades restoration may offer some improvement to panther habitat in ENP.</p>	<p>Panthers are at considerable risk of extinction. Only 80 to 100 remain, making this one of the most endangered mammals.</p>

Wood Stork	Changes in the hydrologic regime of the Everglades have contributed to the decline in the wood stork population in south Florida. Water management has alternately drained or flooded former wood stork feeding habitat, for flood control and water supply. This affected foraging habitat, food production nesting and rearing. In 1984 wood storks were listed as endangered by the USFWS.	Ongoing efforts have been made by federal and state agencies to implement projects to improve Everglades hydrology. One of the benefits in these restoration efforts is improvement in wood stork foraging habitat, which would lead to greater nesting and rearing success.	There are two nesting wood stork colonies located in the vicinity of Tamiami Trail. The USACE would manage construction activities within the protection zones according to the USFWS "Draft Supplemental Habitat Management Guidelines for the Wood Stork in the South Florida Ecological Services Consultation Area." By so doing, it is concluded that the project may affect, but is not likely to adversely affect the wood stork.	Hydrological restoration planned as part of CERP would further improve wood stork foraging habitat.	Improvement of degraded wood stork populations is expected to be facilitated by the restoration and enhancement of suitable habitat through efforts to restore more natural hydrologic conditions in the Everglades.
Eastern Indigo Snake	The indigo snake was listed as threatened in 1979 because of a loss of habitat associated with farming, construction, forestry, and other land use conversions, as well as over-collecting for the pet trade.	John F Kennedy Space Center has been supporting environmental monitoring and research. Goals of their "include protection, preservation, and enhancement of the natural environment at KSC. Over 60 Indigo snakes in all have been fitted with radio transmitters and tracked to collect data. In 1989, the DOI created a 30,000-acre refuge near Big Cypress National Preserve that provides habitat and protection for many species,	This species may be in the project area, although there are no known sightings. Because it could potentially be in the area affected by construction activities, the USACE would include the "Standard Construction Precautions for the Indigo Snake" in the project design. The project may affect, but is not likely to adversely affect the eastern indigo snake.	The USACE would continue to incorporate measures for the protection of indigo snakes into their projects in Florida. These would continue to include postings of educational information on indigo snakes in educational kiosks and to implement USFWS Draft Eastern Indigo Snake Standard Protection Measures. CERP projects would contribute to the restoration of habitat that supports indigo snakes	While development and other actions have reduced available habitat for the indigo snake, state and federal facilities and management efforts are likely to enable the indigo snake to survive as a protected species.



		including the indigo snake. Active management at military installations in Florida target the indigo snake.			
Vegetated Wetlands	Large reductions in acreage of wetlands due to development and alteration of hydrology.	Actions are underway to reclaim wetlands from the 8.5 square mile area. Efforts are being taken by state and federal regulatory agencies to reduce wetland losses.	Bridge construction alternatives would result in the loss of some wetland acreage, but removal of the highway embankment would enable the restoration of 8.5 acres. The project would offer the potential to improve wetland quality through future projects.	Future actions are expected to restore flows to ENP to more natural conditions, thereby improving the quality of wetland habitats.	While the quantity of wetlands would not be restored to historic proportions, the quality of degraded wetlands would be improved.
Recreation	Construction of the Tamiami Trail provided the opportunity for access to the Everglades for recreational purposes.	Present and ongoing actions would not affect recreational opportunities.	Construction of a bridge would reduce the opportunity for fishing from the south side of the L-29 Canal by one mile; however, ample opportunity remains.	Future actions are expected to be fully compatible with recreational opportunities.	ENP would remain one of the world's foremost recreational and tourism sites.
Airboat Touring Businesses	Commercial airboat tours from facilities along Tamiami Trail have been conducted since the 1940s. The ENP Protection and Expansion Act authorized ENP to acquire these commercial properties and further authorized ENP to enter into concession contracts with the tour operators.	ENP is preparing a General Management Plan (GMP) to guide decisions for long-range park management, including a determination on authorization and implementation of airboat tour concessions.	While construction of proposed action may create a nuisance that could temporarily affect airboat tour operations, no other direct effects are anticipated. Temporary easements may be needed to provide access from a raised highway to the businesses.	The Record of Decision for the ENP GMP/EIS would include a determination of whether and to what extent commercial airboat concessions would be authorized and implemented. Acquisition of lands and buildings would be deferred until completion of the GMP.	It has not been determined what decisions would be made through the GMP. Therefore, while past and present actions can be determined, future actions are not foreseeable. Airboat tours may remain as ENP concessions or some or all may be eliminated.

## Conclusion

Implementation of this project is an incremental component in the restoration of more natural flows into ENP. This project would provide a means for conveying increased flows past the Tamiami Trail and providing higher water levels for the restoration of wetlands to the south. Therefore, the Tamiami Trail Modification project is expected to contribute to a net beneficial cumulative impact on the regional ecosystem.

### 5.21 Irreversible and Irretrievable Commitments of Resources

**No-Action Alternative.** No irreversible or irretrievable commitments of resources would be realized.

#### Action Alternatives.

**Alternative 2.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet).** Commitments described for the previous alternatives would be required for raising the road. Additional commitments of labor, materials, and energy would be required for bridge construction. The additional right-of-way on which the bridge and its approaches would be constructed would result in the irreversible and irretrievable loss of approximately 8.5 acres of natural parklands to accommodate the various components of the project.

**Alternative 2.2.2b. Raising the Road and Adding a One-Mile Western Bridge (Stage Constraint of 8.0 Feet).** Commitments described for the previous alternatives would be required for raising the road. Additional commitments of labor, materials, and energy would be required for bridge construction. The additional right-of-way on which the bridge and its approaches would be constructed would result in the irreversible and irretrievable loss of an estimated 9.0 acres of natural parklands to accommodate the various components of the project.

**Alternative 3.2.2a. Raising the Road and Adding a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet).** Commitments described for the previous alternatives would be required for raising the road. Additional commitments of labor, materials, and energy would be required for bridge construction. The additional right-of-way on which the bridge and its approaches would be constructed would result in the irreversible and irretrievable loss of an estimated 8.5 acres of natural parklands to accommodate the various components of the project.

**Alternative 3.2.2b Raise/Resurface Roadway: Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet).** Commitments described for the previous alternatives would be required for raising the road. Additional commitments of labor, materials, and energy would be required for bridge construction. The additional right-of-way on which the bridge and its approaches would be constructed would result in the irreversible and irretrievable loss of an estimated 9.0 acres of natural parklands to accommodate the various components of the project.

## **5.22 Secondary Impacts**

Secondary impacts involve those linked to the project but that occur subsequent to construction. Secondary impacts of the project on specific environmental resources are discussed throughout Section 5.0, Environmental Effects of Alternatives. The Tamiami Trail Modifications project is a component of the overall MWD project, which is intended to facilitate hydrologic restoration of the Everglades by providing additional water to NESRS. For hydrologic restoration to be achieved in a timely manner, the project must be implemented. The intent of the project, therefore, is to facilitate beneficial secondary impacts, which would consist of improvements to the Everglades ecosystem.

## **5.23 Compatibility with Federal, State and Local Objectives**

This project has been coordinated with agencies of Federal and state governments. Agency representatives have participated in workshops, meetings, and other project-related activities, and have provided reviews of this document. There is no known incompatibility with the objectives of Federal, state, or local entities.

## **5.24 Conflicts and Controversy**

Public meetings and comments received regarding the bridging of Tamiami Trail have identified several areas of conflict and controversy.

- Numerous organizations and individuals have advocated the construction of a 10.7-mile bridge over the entire road segment to maximize potential re-connection of the WCAs and Park wetlands.
- The suite of studied alternatives includes many that are perceived by some commenters to be incapable of delivering substantial benefits, due to cost constraints.
- Others have expressed concern that construction of features on the south side of the highway results in a loss of wetlands in ENP. Some have proposed that the highway be relocated to the region of the L-29 Levee to avoid impacts to ENP.
- Recreation interests have expressed concern that the project may result in a loss of access for fishing and boating/airboating.

- Representatives of the Miccosukee Tribe have expressed several concerns: that the MWD program has required an excessive amount of time and affected tribal lands; that the dividing of the MWD program into three projects has masked environmental impacts; that construction actions would result in traffic congestion and disruptions to privacy at the Tigertail and Osceola Camps; and that there may be an increased flooding potential.
- Suggestions were made by some commenters that improved maintenance of culverts may be sufficient to provide MWD flows without the necessity for constructing a bridge; the high cost of bridges relative to road repair was one reason for this comment.
- Various individuals have expressed concern that the project would adversely affect local businesses. Others have advocated that the project evaluate the impact of the MWD program on the “Gladesmen culture.”
- Concern has been expressed by ENP and SFWMD that raising the water level in the L-29 Canal to an elevation of 8.0 feet would be insufficient to achieve the unconstrained flows needed to provide significant environmental benefits. It has been recommended by ENP and SFWMD that the elevation be increased to 8.5 feet.
- One commenter, representing several non-governmental organizations and herself, objected to concrete bridge construction on the assumption that the cement used would ultimately come from limestone mines in the Lake Belt area.

### **5.25 Compliance with Environmental Requirements**

Coordination and evaluation of required compliance with specific Federal acts, EOs and other policies for the various alternatives was achieved, in part, through the coordination of this document with appropriate agencies and the public. This compliance was established in conjunction with the 1992 GDM/EIS, the 2003 GRR/SEIS, and the 2005 RGRR/SEIS.

#### **5.25.1 Anadromous Fish Conservation Act**

Anadromous fish species would not be affected by this project. This act is not applicable.

#### **5.25.2 Bald Eagle Protection Act**

No bald eagles are known to occur in the project area. The project is in compliance with the Act.

#### **5.25.3 Clean Air Act of 1972**

The proposed project is in partial compliance at this time. Full compliance would be achieved through the coordination and review of this EA with the Environmental Protection Agency and the issuance of any required permits. No air permit would be required for the construction. If the contractor has to

perform any onsite activity that would require permits, the permits would be acquired by the contractor. Because Miami-Dade County is in attainment with National Ambient Air Quality Standards (NAAQS), the project is in compliance with the Clean Air Act Conformity Rule.

#### **5.25.4 Clean Water Act of 1972**

A 404(b)(1) Evaluation has been prepared (***Annex A***) and would be coordinated along with this EA. Full compliance with this Act would be achieved upon the issuance of a Section 401 water quality certification (WQC) and National Pollutant Discharge Elimination System permits by the State of Florida. A NPDES permit would be acquired for the construction activity. No point source NPDES permits would be required for discharges.

#### **5.25.5 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990**

There are no designated coastal barrier resources in the project area that would be affected by this project. These acts are not applicable.

#### **5.25.6 Coastal Zone Management Act of 1972**

A federal consistency determination in accordance with 15 CFR 930 Subpart C is included in Annex A. The State's consistency review for this project would be performed during the coordination of this draft EA. Full compliance would occur with the issuance of the WQC by the State of Florida.

#### **5.25.7 Endangered Species Act of 1973**

This project would comply with the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, *et seq.*; PL 93-205. The CESAJ has made a commitment to providing ornithological observers during construction, and to stage construction such that it does not interrupt nesting activities at the two wood stork rookeries located in close proximity to Tamiami Trail. The FWS informally concurred with the USACE "not likely to adversely affect" determinations for all listed species except the Florida panther (USACE, 2003 GRR/SEIS). Subsequently (2005 RGRR/SEIS), the FWS concluded that the project may affect, but is not likely to adversely affect the Florida panther. Documentation of compliance with the ESA is provided in Appendix B.

#### **5.25.8 Estuary Protection Act of 1968**

No designated estuary would be affected by project construction activities however; operations of the project may benefit Florida Bay. Full compliance with the Act would occur upon review of this EA by the NMFS.

**5.25.9 Farmland Protection Policy Act of 1981**

No prime or unique farmland would be impacted by implementation of this project. The project is in compliance.

**5.25.10 Federal Water Project Recreation Act**

This project is in full compliance with the Federal Water Project Recreation Act, as amended, 16 U.S.C 460-1 (12), *et seq.*, P.L. 89-72.

**5.25.11 Fish and Wildlife Coordination Act of 1958**

This project has been extensively coordinated with the FWS. Fish and Wildlife Coordination Act (FWCA) reports were submitted by the FWS for the 1994 GRR, 2002 IOP FEIS and the 2006 IOP FSEIS. The FWS is currently preparing a FWCA report for the proposed action which will be included in the final EA. This project would be in compliance with the Act.

**5.25.12 Fishery Conservation and Management Act of 1976**

Full compliance with the Act would occur upon review of this EA by the NMFS.

**5.25.13 Magnuson-Stevens Fishery Conservation and Management Act**

This project is inland and not expected to adversely affect Essential Fish Habitat. Full compliance with the Act would occur upon review of this EA by the NMFS.

**5.25.14 Marine Mammal Protection Act of 1972**

The West Indian manatee is not likely to be adversely affected by the project. Coordination with FWS would continue as construction and operational guidelines are incorporated to avoid impacts to this species. Full compliance with the Act would occur after review of this EA by the FWS.

**5.25.15 Marine Protection, Research and Sanctuaries Act (MPRSA)**

The term “dumping” as defined in the Act (3[33 USC. 1402] (f)) does not apply to this project. Therefore, the MPRSA does not apply.

**5.25.16 Migratory Bird Treaty Act and Migratory Bird Conservation Act**

No migratory birds would be adversely affected by project activities. The project would be in compliance with these acts upon review of this EA by the FWS.

**5.25.17 National Environmental Policy Act of 1969**

Environmental information on the project has been compiled and this EA has been prepared in compliance with NEPA. Full compliance with the Act would be achieved upon coordination of this EA and signing of a Finding of No Significant Impact (FONSI).

**5.24.18 National Historic Preservation Act of 1966 (Inter Alia) (PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), Archeological Resources Protection Act of 1979, Native American Graves Protection and Repatriation Act of 1990, and Executive Order (EO) 11593)**

Archival research, field work and consultation with the SHPO have been conducted in accordance with statutes protecting archaeological, cultural, and historic resources. The Tamiami Trail and the Tamiami Canal have been identified as eligible for NRHP listing. A Memorandum of Agreement with SHPO would be signed, and documentation of historic structures would be completed. This project complies with the provisions of the above statutes and executive orders.

**5.24.19 Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, Comprehensive Environmental Response Compensation and Liability Act (CERCLA) as amended by the 5.26.21 Superfund Amendments and Reauthorization Act (SARA) of 1996, Toxic Substances Control Act of 1976**

A preliminary Phase I HTRW assessment was conducted in late 2006 to address the potential for the occurrence of HTRW in the study area. No specific sites were identified within the footprint of the proposed project. The project is in compliance with these Acts.

**5.24.20 Rivers and Harbors Act of 1899**

The proposed work would not obstruct navigable waters of the United States. The project is in full compliance.

**5.24.21 Submerged Lands Act of 1953**

The project would not occur on submerged lands of the State of Florida. This Act does not apply.

**5.24.22 Wild and Scenic River Act of 1968**

No designated Wild and Scenic river reaches would be affected by project related activities. This act is not applicable.

**5.24.23 Executive Order 11514, Protection of Environment**

E.O. 11514 directs federal agencies to *"initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals."* This project is in compliance.

**5.24.24 Executive Order 11988, Flood Plain Management**

This E.O. instructs Federal Agencies to avoid development in flood plains to the maximum extent feasible. The current project is not a "development" but rather a restoration action. This project is in compliance.

**5.24.25 E.O. 11990, Protection of Wetlands**

The locations that would be used for construction of bridges, approaches, and construction access areas are a mosaic of wetlands with small tree island uplands. A permanent loss of 2.29 acres of wetlands is expected, but this project would result in an overall improvement in the quality of approximately 63,000 acres of wetlands. This project complies with the goals of this executive order.

#### **5.24.26 Executive Order 12962, Recreational Fisheries**

Executive Order 12962 requires the evaluation of federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries. This project is in compliance.

#### **5.24.27 E.O. 12898, Environmental Justice**

This E.O. directs federal agencies to provide for full participation of minorities and low-income populations in the federal decision-making process and further directs agencies to fully disclose any adverse effects of plans and proposals on minority and low-income populations. Efforts were made to avoid, minimize, or compensate for any adverse effect of this project on the Native Americans living in the project area. The project would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The project is in compliance with this E.O.

#### **5.24.28 Executive Order 13045, Protection of Children**

Executive Order 13045, requires each Federal agency to “identify and assess environmental risks and safety risks [that] may disproportionately affect children” and ensure that its “policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This project has no environmental or safety risks that may disproportionately affect children. The project is in compliance.

#### **5.24.29 E.O. 13089, Coral Reef Protection**

No coral reefs would be impacted by this project. This E.O. does not apply.

#### **5.24.30 E.O. 13112, Invasive Species**

The project would help reduce the abundance and variety of invasive plant species in the project area. The project is in compliance with this E.O.

#### **5.24.31 E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds**

The project has been coordinated with the USFWS. The project is expected to benefit migratory birds by improved habitat and increased availability of forage species (amphibians, fish, aquatic invertebrates) for wading birds. The project is in compliance.



### 5.25 References

- Florida Department of Transportation (FDOT). 1999. Florida Land use Cover and Forms Classification System Handbook. Third Edition.*
- Ogden, J.C. 1990. Habitat Management Guidelines for the Wood Stork in the Southeast Region . Submitted to the U.S. Fish and Wildlife Service, Atlanta, GA.*
- USACE. 2003. General Reevaluation Report/Supplemental Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail. Modified Water Deliveries To Everglades National Park, Miami-Dade County, FL.*
- USFWS. 2003. Final Fish and Wildlife Coordination Act Report, Modified Water Deliveries to Everglades National Park: Tamiami Trail Project, Miami-Dade County, Florida; U.S. Fish and Wildlife Service, South Florida Field Office, Vero Beach, FL.*

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